

MagIC Net 2.2



Online Help
8.102.8019EN



Metrohm AG
CH-9101 Herisau
Switzerland
Phone +41 71 353 85 85
Fax +41 71 353 89 01
info@metrohm.com
www.metrohm.com

MagIC Net 2.2

Online Help

Teachware
Metrohm AG
CH-9101 Herisau
teachware@metrohm.com

This documentation is protected by copyright. All rights reserved.

Although all the information given in this documentation has been checked with great care, errors cannot be entirely excluded. Should you notice any mistakes please send us your comments using the address given above.

Documentation in additional languages can be found on <http://products.metrohm.com> under **Literature/Technical documentation**.

Table of contents

1	Introduction	1
1.1	Welcome to MagIC Net	1
1.2	Operation	2
1.3	Connecting devices	3
1.4	Method editor	4
1.5	Database	5
1.6	Communication	6
1.7	Conformity	7
1.8	Versions	8
1.9	Online help	13
1.10	What is new in MagIC Net 2.2?	14
1.10.1	New features	14
1.10.2	Improvements	15
1.10.3	Fixed bugs and problems	15
2	General program functions	16
2.1	Program parts	16
2.1.1	Program parts - Overview	16
2.1.2	Workplace - Desktop	17
2.1.3	Database - Desktop	17
2.1.4	Method - Desktop	18
2.1.5	Configuration - Desktop	18
2.1.6	Manual control - Desktop	19
2.2	Login/password protection	19
2.2.1	General information on Login/Password protection	19
2.2.2	Login	20
2.2.3	Log out manually	21
2.2.4	Log out automatically	21
2.2.5	Changing password	21
2.3	Electronic signatures	22
2.3.1	Rules for electronic signatures	22
2.3.2	Procedure for electronic signatures	23
2.3.3	Signature Level 1	24
2.3.4	Signature Level 2	25
2.3.5	Delete Signature Level 2	27
2.4	Formula editor	28
2.4.1	Input field	28
2.4.2	Calculation algorithms	29
2.4.3	Variables	31

3.5.3	Enter assignment ID	138
3.6	Text templates	138
3.6.1	List of text templates	138
3.6.2	Edit text template	139
3.7	Subwindow Run	139
3.7.1	Run - General	139
3.7.2	Run test	140
3.7.3	Equilibration	141
3.7.4	Single determination	142
3.7.5	Determination series	152
3.8	Subwindow Live display	178
3.8.1	Live display - General	178
3.8.2	Live display - Analyses	179
3.8.3	Live display - Modifying evaluation parameters	180
3.8.4	Live display - Modifying recording time	180
3.8.5	Live display - Application note	180
3.9	Subwindow Report	181
3.9.1	Report - General	181
3.9.2	Latest report	181
3.9.3	Selected report	181
3.9.4	Report overview	181
3.9.5	Properties report overview	183
3.10	Subwindow Watch window	183
3.10.1	Watch window - Overview	183
3.10.2	Watch window - Device information	183
3.10.3	Watch window - Messages	184
3.10.4	Watch window - Properties	184
3.11	Subwindow time program	185
4	Database	186
4.1	Database - General	186
4.1.1	Database - Definition	186
4.1.2	Database - Desktop	186
4.1.3	Database - Menu bar	187
4.1.4	Database - Toolbar	191
4.1.5	Database - Subwindows	192
4.1.6	Database - Functions	193
4.1.7	Views	194
4.2	Database display	197
4.2.1	Open database	197
4.2.2	Select database	198
4.2.3	Display single database	199
4.2.4	Display databases next to one another	199
4.2.5	Display databases one below the other	199
4.2.6	Close database	199

VI ■■■■■■

4.8.6	Information - Analyses	335
4.8.7	Information - Messages	336
4.8.8	Information - Determination comment	336
4.9	Subwindow Results	336
4.9.1	Results - Overview	336
4.9.2	Results - Results	337
4.9.3	Results - Statistics	337
4.9.4	Results - Monitoring	338
4.9.5	Results - Properties	338
4.10	Curves subwindow	339
4.10.1	Curves - Overview	339
5	Method	341
5.1	Method - General	341
5.1.1	Method - Definition	341
5.1.2	Method - Desktop	341
5.1.3	Method - Menu bar	342
5.1.4	Method - Toolbar	343
5.1.5	Method - Functions	344
5.2	Method editor	345
5.2.1	Creating new method	345
5.2.2	Opening method	345
5.2.3	Selecting method	347
5.2.4	Editing method	348
5.2.5	Checking method	348
5.2.6	Recalculating calibration data	349
5.2.7	Update calibration data and chromatograms	349
5.2.8	Saving method	350
5.2.9	Modification comment on method	352
5.2.10	Print method report	352
5.2.11	Closing method	353
5.3	Method - Properties	354
5.3.1	Properties - Sample data	354
5.3.2	Properties - View	354
5.3.3	Properties - Method comment	355
5.3.4	Properties - Application note	355
5.3.5	Configuring sample data	355
5.4	Managing methods	358
5.4.1	Managing methods	358
5.4.2	Renaming method	360
5.4.3	Copying method	360
5.4.4	Moving method	360
5.4.5	Deleting method	361
5.4.6	Sending method to	361
5.4.7	Exporting a method	362
5.4.8	Importing method	362
5.4.9	Renaming imported method	362

5.4.10	Signing methods	363
5.4.11	Showing method history	368
5.5	Method groups	369
5.5.1	Manage method groups	369
5.5.2	Edit method groups	370
5.6	Subwindow Devices	371
5.6.1	Devices - General	371
5.6.2	Devices - Menu Edit	372
5.6.3	Devices - Functions	372
5.6.4	Devices - Start parameter	379
5.6.5	Analyses - Functions	380
5.6.6	Analyses - Properties	381
5.7	Subwindow Time program	385
5.7.1	Time program - General	385
5.7.2	Time program - Desktop	386
5.7.3	Editing time program	387
5.7.4	Time program - Commands	390
5.8	Subwindow Evaluation	398
5.8.1	Evaluation - General	398
5.8.2	Evaluation - Integration	399
5.8.3	Evaluation - Components	405
5.8.4	Evaluation - Standards	409
5.8.5	Evaluation - Calibration	415
5.8.6	Evaluation - Results	427
5.8.7	Evaluation - Calculations	439
5.8.8	Evaluation - UV/VIS	468
5.9	Subwindow Chromatograms	471
5.9.1	Chromatograms - General	471
5.9.2	Chromatograms - Update	471
5.9.3	Chromatograms - Calculating	472
6	Configuration	473
6.1	Configuration - General	473
6.1.1	Configuration - Definition	473
6.1.2	Configuration - Desktop	473
6.1.3	Configuration - Menu bar	474
6.1.4	Configuration - Toolbar	476
6.1.5	Configuration - Subwindows	476
6.1.6	Configuration - Functions	477
6.1.7	Views	478
6.2	Administration	481
6.2.1	User administration	481
6.2.2	Security settings	490
6.2.3	Program administration	500
6.3	Configuration data	504
6.3.1	Export/Import	504

6.3.2	Backup/Restore	509
6.3.3	Templates	511
6.3.4	Options	516
6.4	Audit Trail	519
6.4.1	Audit Trail - General	519
6.4.2	Audit Trail table	523
6.5	Subwindow Devices	535
6.5.1	Configuration - Devices	535
6.5.2	Device table	535
6.5.3	Device properties	540
6.6	Subwindow Columns	541
6.6.1	Configuration - Columns	541
6.6.2	Column table	541
6.6.3	Column properties	544
6.7	Subwindow Eluents	553
6.7.1	Configuration - Eluents	553
6.7.2	Eluent table	553
6.7.3	Eluent properties	556
6.8	Subwindow Solutions	560
6.8.1	Configuration - Solutions	560
6.8.2	Solution table	561
6.8.3	Solution properties	564
6.9	Subwindow Accessories	573
6.9.1	Configuration - Accessories	573
6.9.2	Accessories table	574
6.9.3	Accessories properties	576
6.10	Subwindow Rack data	581
6.10.1	Configuration - Rack data	581
6.10.2	Rack table	581
6.10.3	Rack properties	583
6.11	Subwindow Common variables	588
6.11.1	Configuration - Common variables	588
6.11.2	Table of common variables	589
6.11.3	Common variables properties	592
7	Devices	596
7.1	850 Professional IC	596
7.1.1	850 Professional IC - Overview	596
7.1.2	850 Professional IC - Configuration	598
7.1.3	850 Professional IC - Method	610
7.1.4	850 Professional IC - Manual Control	648
7.2	881 Compact IC pro	659
7.2.1	881 Compact IC pro - Overview	659
7.2.2	881 Compact IC pro - Configuration	659
7.2.3	881 Compact IC pro - Method	671
7.2.4	881 Compact IC pro - Manual Control	698

7.3	882 Compact IC plus	705
7.3.1	882 Compact IC plus - Overview	705
7.3.2	882 Compact IC plus - Configuration	705
7.3.3	882 Compact IC plus - Method	716
7.3.4	882 Compact IC plus - Manual Control	741
7.4	883 Basic IC plus	747
7.4.1	883 Basic IC plus - Overview	747
7.4.2	883 Basic IC plus - Configuration	747
7.4.3	883 Basic IC plus - Method	753
7.4.4	883 Basic IC plus - Manual Control	771
7.5	814 USB Sample Processor and 815 Robotic USB Sample Processor XL	774
7.5.1	814 USB Sample Processor - Overview	774
7.5.2	815 Robotic USB Sample Processor XL - Overview	775
7.5.3	814 USB Sample Processor und 815 Robotic USB Sample Processor XL - Configuration	775
7.5.4	814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Method	786
7.5.5	814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Manual Control	795
7.6	858 Professional Sample Processor	800
7.6.1	858 Professional Sample Processor - Overview	800
7.6.2	858 Professional Sample Processor - Configuration	800
7.6.3	858 Professional Sample Processor - Method	811
7.6.4	858 Professional Sample Processor - Manual Control	823
7.7	863 Compact Autosampler	829
7.7.1	863 Compact Autosampler - Configuration	829
7.7.2	863 Compact Autosampler - Method	834
7.7.3	863 Compact Autosampler - Manual control	839
7.8	889 IC Sample Center	841
7.8.1	889 IC Sample Center - Overview	841
7.8.2	889 IC Sample Center - Configuration	841
7.8.3	889 IC Sample Center - Method	845
7.8.4	889 IC Sample Center - Manual Control	863
7.8.5	889 IC Sample Center - Troubleshooting	867
7.9	886 Professional Thermostat / Reactor	872
7.9.1	886 Professional Thermostat / Reactor - Overview	872
7.9.2	886 Professional Thermostat / Reactor - Configuration	873
7.9.3	886 Professional Thermostat / Reactor - Method	879
7.9.4	886 Professional Thermostat / Reactor - Manual Control	881
7.10	887 Professional UV/VIS Detector	882
7.10.1	887 Professional UV/VIS Detector - Overview	882
7.10.2	887 Professional UV/VIS Detector - Configuration	882
7.10.3	887 Professional UV/VIS Detector - Method	888
7.10.4	887 Professional UV/VIS Detector - Manual Control	896

7.11	872 Extension Module	898
7.11.1	872 Extension Module IC Pump	898
7.11.2	872 Extension Module IC Module	910
7.11.3	872 Extension Module Sample Prep	926
7.11.4	872 Extension Module Liquid Handling	934
7.11.5	872 Extension Module Suppression	948
7.11.6	872 Extension Module Suppression – MCS	958
7.12	771 IC Compact Interface	970
7.12.1	771 IC Compact Interface - Configuration	970
7.12.2	771 IC Compact Interface - Method	974
7.12.3	771 IC Compact Interface - Manual control	977
7.13	High-pressure gradient pump	977
7.13.1	High-pressure gradient pump - Configuration	977
7.13.2	High pressure gradient pump - Method	977
7.13.3	High-pressure gradient pump - Manual Control	985
7.14	800 Dosino	987
7.14.1	800 Dosino - General	987
7.14.2	Configuration MSB Device	987
7.14.3	800 Dosino - Method	988
7.14.4	800 Dosino - Manual Control	1003
7.15	846 Dosing Interface	1006
7.15.1	846 Dosing Interface - Configuration	1006
7.15.2	846 Dosing Interface - Method	1010
7.15.3	846 Dosing Interface - Manual Control	1010
7.16	801 Stirrer, 803 Ti Stand, 804 Ti Stand	1011
7.16.1	Stirrer - General	1011
7.16.2	Configuration MSB Device	1011
7.16.3	Stirrer - Method	1011
7.16.4	Stirrer - Manual Control	1013
7.17	Remote Box MSB	1014
7.17.1	Remote Box MSB - General	1014
7.17.2	Configuration MSB Device	1014
7.17.3	Remote Box MSB - Method	1014
7.17.4	Remote Box MSB - Manual Control	1021
7.18	Barcode reader	1022
7.18.1	Barcode reader - General	1022
7.18.2	Barcode reader - Overview	1023
7.18.3	Properties - General	1024
7.18.4	Properties - Settings	1025
7.18.5	Properties - GLP	1026
7.18.6	Establish a connection to the barcode reader	1027
7.19	RS-232 device	1028
7.19.1	RS-232 device - Configuration	1028
7.19.2	RS-232 device - Method	1033
7.19.3	RS-232 device - Manual Control	1041

8	Manual Control	1042
8.1	Manual Control - General	1042
8.2	Manual control - Desktop	1042
8.3	Selecting device	1043
8.4	Device window	1044
9	How to proceed?	1046
9.1	Audit Trail	1046
9.1.1	Opening Audit Trail	1046
9.1.2	Filtering Audit Trail	1046
9.1.3	Exporting Audit Trail	1047
9.1.4	Archiving Audit Trail	1048
9.1.5	Deleting Audit Trail	1049
9.2	Backup	1050
9.2.1	Backing up database	1050
9.2.2	Restoring database	1052
9.2.3	Backing up configuration data	1053
9.2.4	Restoring configuration data	1054
9.2.5	Backing up methods	1055
9.2.6	Archive Audit Trail	1057
9.3	Determinations	1059
9.3.1	Starting single determination	1059
9.3.2	Starting determination series	1059
9.3.3	Search for determinations	1060
9.3.4	Filter determinations	1060
9.3.5	Displaying determinations of a batch	1062
9.3.6	Signing determination	1062
9.3.7	Export determinations	1064
9.3.8	Importing determinations	1065
9.3.9	Deleting determinations	1066
9.3.10	Make the determination version current	1067
9.3.11	Reprocessing determinations	1068
9.3.12	Completing determinations	1077
9.3.13	Printing determination report	1077
9.3.14	Printing determination overview	1079
9.4	Databases	1080
9.4.1	Database in general	1080
9.4.2	Open database	1080
9.4.3	Close database	1081
9.4.4	Create database	1081
9.4.5	Backing up database	1082
9.4.6	Restoring database	1084
9.4.7	Delete database	1084
9.5	Configuration data	1085
9.5.1	Configuration data in general	1085

9.5.2	Export configuration data	1085
9.5.3	Importing configuration data	1086
9.5.4	Backing up configuration data	1086
9.5.5	Restoring configuration data	1088
9.6	Methods	1089
9.6.1	Open method	1089
9.6.2	Closing method	1089
9.6.3	Create method	1090
9.6.4	Save method	1090
9.6.5	Deleting method	1091
9.6.6	Exporting method	1092
9.6.7	Import methods	1092
9.6.8	Sign methods	1093
9.6.9	Making previous method version current	1094
9.6.10	Print method report	1095
9.6.11	Backup methods	1096
9.7	Method groups	1098
9.7.1	Creating method group	1098
9.7.2	Deleting method group	1098
9.8	Sample tables	1099
9.8.1	Create sample table	1099
9.8.2	Edit sample table	1100
9.8.3	Loading working sample table	1101
9.8.4	Edit working sample table	1102
9.9	Reports	1103
9.9.1	Creating report template	1103
9.9.2	Edit report template	1104
9.9.3	Printing determination report	1106
9.9.4	Printing determination overview	1107
9.10	No help available	1108
Index		1109

1 Introduction

1.1 Welcome to MagIC Net

Introduction



MagIC Net

MagIC Net is the complete software solution for ion chromatography. It does not matter whether it is an ion chromatograph, dosing device or sample changer – all the required devices are automatically detected, monitored and addressed. The data produced is saved in a database, a reliable and retraceable procedure.

It's MagIC! From «One-Button IC», **MagIC Net** is ready for any task – in routine operation for one instrument or in highly automated applications in FDA-regulated Client/Server environments. Appearance and available functions can always be adapted to the exact needs of the user.

With **MagIC Net**, Metrohm provides a uniform software product for all aspects of ion chromatography. Companies with international operations

can use the same software platform in all sites around the globe to determine samples and exchange data and methods without loss.

Overview of the main program features

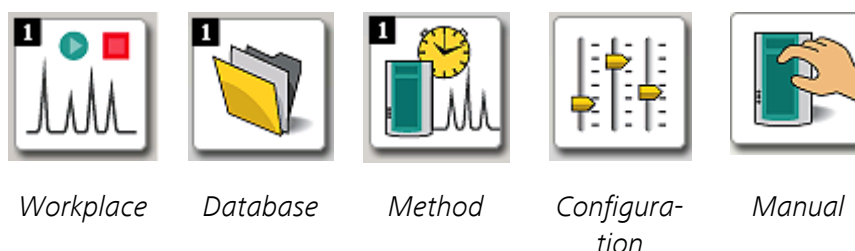
- *Program interface: easy to operate and configure*
- *Simple integration of devices and accessories*
- *Convenient method editor*
- *Database-based program with Client/Server functionality*
- *A wide range of import and export functions*
- *FDA-compatibility in acc. with 21 CFR Part 11*
- *Comprehensive online help*
- *Program versions*

1.2 Operation

Introduction

Introduction

The modern **user interface** makes it simple for the user to find his/her way around **MagIC Net**. All the commands and control elements are where you would expect to find them. The bar on the left edge of the screen gives you access to the five basic elements of **MagIC Net**:



Depending on the access rights, these buttons are either visible or invisible. The menu bar is in the upper part of the screen. It is also possible for the individual commands to be masked out, depending on the access rights.

In the centre of the screen are the **information windows** with the settings, sample entry masks, live curves or results. This view can be set individually for each user with the aid of the new Layout Manager. This means that the users only see the buttons needed for their work. This reduces the introductory period for routine users to a minimum; incorrect operation as a result of overcrowded screens are also a thing of the past.

MagIC Net provides a wide range of **method and results templates**. These tried and tested templates allow any user to create new methods fast and simply and to use them immediately.

1.3 Connecting devices

Introduction

Introduction

MagIC Net and the Professional IC devices are ideally matched to one another. Together with the iColumns and Dosinos, they form an intelligent system of components, that are automatically recognized by **MagIC Net**. Software and devices communicate with each other. The devices provide the software with all the necessary data, which is optimized, monitored and, if required, documented to FDA standards by **MagIC Net**.

You can also profit from the strengths of **MagIC Net** with earlier Metrohm IC generation devices. These devices are operated in the usual manner with IC Net. IC Net can easily be remote controlled via **MagIC Net** and the measuring signal is transmitted to **MagIC Net** via the 771 IC Interface.

Third-party devices can be controlled via a Remote Box and their signals also recorded with the 771 IC Interface.

Devices that can be controlled with MagIC Net

- 850 Professional IC
- 881 Compact IC pro
- 882 Compact IC plus
- 883 Basic IC plus
- 814 USB Sample Processor
- 815 Robotic USB Sample Processor XL
- 858 Professional Sample Processor
- 863 Compact Autosampler
- 889 IC Sample Center
- 886 Professional Thermostat / Reactor
- 887 Professional UV/VIS Detector
- 872 Extension Module
- 771 IC Interface
- 800 Dosino
- 846 Dosing Interface
- **Various:** 801 Magnetic Stirrer, 803 Ti Stand, 804 Ti Stand, Remote Box MSB, barcode readers, RS-232 devices, 981 Professional Analog Out ...

For a description of the devices supported by the different versions of MagIC Net 2.2, see *chap. 1.8 "Versions "*, p. 8.

1.4 Method editor

Introduction

Introduction

The new **method editor** gets out more of your ion chromatography system. The method parameters are logically grouped in the **Devices**, **Time program** and **Evaluation** subwindows. Changes to the method can be visualized immediately in the fourth subwindow **Chromatograms** using the last chromatogram.

With the aid of the numerous templates, methods can be created fast and easily. For routine and automated tasks, there are tried and tested methods available. Just a few clicks and they are adapted and ready to use.

The method has just one time program that controls all the devices involved, can request parallel or sequential sub programs, and can make logical decisions. Several chromatograms can be recorded and evaluated in different manners within one method: anions and cations from the same sample, for example, can be determined with one method – all the results of a sample are thus in one data set. Sample changers can be used in several methods at the same time. A sample can be prepared while the chromatogram of the previous sample is being recorded. This saves time and increases sample throughput.

MagIC Net is flexible and adapts to your workflow and not vice versa.

Overview of functions

- Several chromatograms with one method.
- One time program for all devices.
- Method manager (*see Chapter 5.4.1, page 358*).
- Separate management of access rights for each method group (*see Chapter 5.5.2.3, page 370*).
- Templates for method development (*see Chapter 5.2.1, page 345*).
- Plausibility tests for methods (*see Chapter 5.2.5, page 348*).
- Method-specific fixed values for sample data (*see Chapter 5.3.1, page 354*).
- Comments and application notes (*see Chapter 5.3.3, page 355*) can be added to the methods (*see Chapter 5.3.4, page 355*).
- Parallel runs (*see Chapter 5.7.4.2.2, page 393*).
- Loop functions (*see Chapter 5.7.4.2.4, page 394*).

1.5 Database

Introduction

MagIC Net is based on an **object-oriented database**, that has proven itself in practice. In the **configuration database**, all program settings, user administration, methods and templates are stored and in the **determination databases** defined by the user, the determination data. These databases can be installed locally on the computer reserved for measurements and make up a simple measurement system. **MagIC Net** is however scalable and grows with operational requirements. As soon as data security and central data management make it necessary, **MagIC Net** is installed as a **Client/Server configuration**. The **MagIC Net** database is then installed on a server. All measurement and office computers work as clients. All results are stored centrally in this network and can be accessed and processed by all Client PCs. All clients also access the same pool of methods.

The new database has all the major tools necessary for management of, searching for and grouping of results. Quick filters allow the user to search through thousands of determinations within seconds and to display the result clearly. Chart plots give a fast overview of the sequence of results based on time.

All options for **reprocessing** are available to the user.

Overview of functions

- Object-oriented Client/Server database (see Chapter 6.2.3.1, page 500).
- Layout manager for the database view (see Chapter 3.1.7, page 106).
- Quick filter (see Chapter 4.7.6.3, page 273).
- Efficient search functions (see Chapter 4.7.4, page 268).
- Access rights control for every database (see Chapter 4.3.5.3, page 203).
- Automatic database backup (see Chapter 4.3.5.4, page 204).
- Fast overview of results or specially designed control charts (see Chapter 4.7.16, page 289).
- Curve overlay (see Chapter 4.7.17, page 297).
- Reprocess determinations (see Chapter 4.7.18, page 301).

1.6 Communication

Introduction

The decisive factor for the acceptance of PC-controlled analysis systems is being able to **integrate** it easily and economically in existing laboratory information systems, central databases and long-term archiving systems.

MagIC Net is communicative. **LIMS systems** can easily import work lists into the **MagIC Net** sample table and control them remotely, without extra modules. Data generated in **MagIC Net** can be exported in XML format. Connection to LIMS systems on the market is thus not difficult. Export to long-term archiving systems such as NuGenesis SDMS or Scientific Software Cyberlab is also supported.

The **Report generator** provides a simple and flexible solution for creating analysis reports. The report generator allows you to freely define the report. It is therefore possible at any time to display one or more determinations in a choice of PDF layouts or as a printout.

A special feature is that **MagIC Net** messages, error messages or results from the method run can be sent to the user by **E-mail**.

Overview of functions

- Importing sample data (*see Chapter 3.3.1.6, page 119*).
- Various export formats, e.g. XML, CSV, SLK, CDF, measuring point list (*see Chapter 4.6.2.1, page 255*).
- Automatic data export, e.g. to NuGenesis SDMS, Scientific Software CyberLAB, etc (*see Chapter 5.8.6.3, page 428*).
- Report designer (*see Chapter 4.4.4.1.1, page 211*).
- E-mail functions for status messages, error messages or results (*see Chapter 2.7, page 99*).
- Sending determinations by E-mail (*see Chapter 4.7.8, page 284*).
- Importing external determinations (*see Chapter 4.7.10, page 285*).

1.7 Conformity

Introduction

MagIC Net also sets new standards with respect to the fulfilling of **GMP, GLP and FDA requirements**. The latest quality standards and validation procedures were already being applied at the time of software development and programming. MagIC Net has been designed to fulfill the **FDA directive 21 CFR Part 11** and its customer-specific interpretations. This is evidenced by a Certificate of Conformity. A centralized user administration defines the access rights for program functions, methods and results, whereby any number of users with freely definable access profiles are possible. The system administrator can conveniently access the user administration from any MagIC Net client. Access to the software is password-protected and there is a choice of MagIC Net or Windows login.

The use of **digital signatures** makes it possible to sign methods and results. There are two signatures available with differing properties. With the first signature (Level 1, Review) the user confirms that he has programmed the method correctly or carried out the analysis correctly. With the second signature (Level 2, Release) the method or result is released and protected against further modifications. It is thus possible to mirror customized workflows in **MagIC Net**.

All data is organized according to the **version** and protected against unauthorized access, modification or deleting in the database. The database itself controls access to the data in network operation and provides archiving and restore functions.

The **«Audit Trail»** protocols all actions by the user and all major system processes.

Conformity relevant properties of MagIC Net

- Conformity is priority in development and validation.
- Centralized user administration (*see Chapter 6.2.1.1, page 481*).
- Detailed access rights (*see Chapter 6.2.1.2.2, page 483*).
- Password protection under MagIC Net or Windows (*see Chapter 6.2.2.2, page 491*).
- Digital signature on two levels (*see Chapter 2.3, page 22*).
- One signature each for methods and results.
- Documentation of all methods and changes in results (*see Chapter 4.7.14, page 288*).
- Traceability thanks to detailed Audit Trail (*see Chapter 6.4.1.1, page 519*).

1.8 Versions

Introduction

MagIC Net 2.2 is available in **four versions**, which differ regarding the scope of functions; MSB devices and barcode readers are supported by each version.

6.6059.223 MagIC Net multi

Client/Server version with all functions incl. 3 licenses.

Supported devices:	Ion chromatographs: 881 Compact IC pro 882 Compact IC plus 850 Professional IC 771 IC Compact Interface Sample changers: 863 Compact Autosampler 858 Professional Sample Processor 814 USB Sample Processor 815 Robotic USB Sample Processor XL 889 IC Sample Center Detectors: 850 Professional IC Detector 887 Professional UV/VIS Detector Other devices: 846 Dosing Interface RS-232 device for TRANSFER command 872 Extension Module 891 Professional Analog Out 886 Professional Thermostat / Reactor
Max. number of devices:	unlimited

Max. number of ion chromatographs:	unlimited
Max. number of sample changers:	unlimited
Max. number of detectors:	unlimited
Compatible with FDA 21 CFR Part 11:	✓
User administration:	✓
Security settings:	✓
Audit Trail:	✓
Client/Server support:	✓
Number of licenses:	3
Additional licenses as an option:	✓
XML data export to LIMS:	✓
Parallel runs:	✓
Upgrade possible:	

6.6059.222 MagIC Net professional

Local server version with all functions, except Client/Server functionality.

Supported devices:	Ion chromatographs: 881 Compact IC pro 882 Compact IC plus 850 Professional IC 771 IC Compact Interface Sample changers: 863 Compact Autosampler 858 Professional Sample Processor 814 USB Sample Processor 815 Robotic USB Sample Processor XL 889 IC Sample Center Detectors: 850 Professional IC Detector 887 Professional UV/VIS Detector Other devices: 846 Dosing Interface RS-232 device for TRANSFER command 872 Extension Module 891 Professional Analog Out 886 Professional Thermostat / Reactor
Max. number of devices:	unlimited
Max. number of ion chromatographs:	unlimited
Max. number of sample changers:	unlimited
Max. number of detectors:	unlimited
Compatible with FDA 21 CFR Part 11:	✓
User administration:	✓
Security settings:	✓

Audit Trail:	✓
Client/Server support:	
Number of licenses:	1
Additional licenses as an option:	
XML data export to LIMS:	✓
Parallel runs:	✓
Upgrade possible:	✓

6.6059.221 MagIC Net compact

Local server version with limited functionality and limited device support.

Supported devices:	Ion chromatographs: 881 Compact IC pro 882 Compact IC plus 771 IC Compact Interface Sample changers: 863 Compact Autosampler 858 Professional Sample Processor 814 USB Sample Processor 815 Robotic USB Sample Processor XL 889 IC Sample Center Detectors: 850 Professional IC Detector 887 Professional UV/VIS Detector Other devices: 846 Dosing Interface RS-232 device for TRANSFER command 891 Professional Analog Out
Max. number of devices:	2
Max. number of ion chromatographs:	1

Max. number of sample changers:	1
Max. number of detectors:	1
Compatible with FDA 21 CFR Part 11:	✓
User administration:	✓
Security settings:	✓
Audit Trail:	✓
Client/Server support:	
Number of licenses:	1
Additional licenses as an option:	
Additional licenses as an option:	
XML data export to LIMS:	✓
Parallel runs:	✓
Upgrade possible:	✓

6.6059.220 MagIC Net basic

Local server version with limited functionality and limited device support.

Supported devices:	Ion chromatographs: 883 Basic IC Sample changers: 863 Compact Autosampler Detectors: 850 Professional IC Detector Other devices: (none)
Max. number of devices:	2
Max. number of ion chromatographs:	1
Max. number of sample changers:	1
Max. number of detectors:	1

Compatible with FDA 21 CFR Part 11:	
User administration:	✓
Security settings:	
Audit Trail:	
Client/Server support:	
Number of licenses:	1
Additional licenses as an option:	
XML data export to LIMS:	✓
Parallel runs:	✓
Upgrade possible:	

1.9 Online help

Introduction

Calling up the Help

MagIC Net has an extensive and detailed online help that can be requested in two ways:

- General call

With the menu item **Help ► MagIC Net**, or the symbol  the online help with the topic *Welcome to MagIC Net* is opened. From there you can jump via **Contents**, **Index**, **Search** or personal **Favorites** to the desired topic.

- **Context-sensitive call**

With the function key **[F1]** on the keyboard you can jump directly to the topic which will show information on the active element in **MagIC Net** (dialog window, tab).

Symbols and conventions

The following symbols and styles are used in this documentation:

<i>Configuration</i>	Link to another help topic in which information is shown for the marked term.
Database	Dialog text Designation for names of parameters, menu items, tabs and dialog windows in the software.
100	Designation for parameter values in input fields.

File ► New	Menu or menu item; Path needed to reach a certain point in the program.
[Continue]	Button
	Formula editor Formulae can be entered in fields with this symbol, and the formula editor opens when you click on the symbol (<i>see Chapter 2.4, page 28</i>).
1	Instruction step Carry out these steps in the sequence shown.
	Caution This symbol draws attention to a possible risk of damage to instruments or instrument parts.
	Note This symbol marks additional information and tips.

1.10 What is new in MagIC Net 2.2?

Introduction

1.10.1 New features

New instruments

- 886 Professional Thermostat / Reactor
- 887 Professional UV/VIS Detector
- 2 new extension modules:
 - 2.872.0110 Extension Module Suppression
 - 2.872.0120 Extension Module Suppression – MCS
- 4 new model versions of the 850 Professional IC system:
 - 2.850.1210 Professional IC Cation LP-Gradient
 - 2.850.2250 Professional IC Anion MSM-HC LP-Gradient
 - 2.850.1220 Professional IC Cation HP-Gradient
 - 2.850.2260 Professional IC Anion MSM-HC HP-Gradient

News in the program part Configuration

- In the configuration of the sample changers 858 Professional IC Sample Processor, 814 USB Sample Processor, 815 Robotic USB Sample Processor and 863 Compact IC Autosampler, a position can be defined, to which the sample changer automatically moves when initializing (initial position).
- A new configuration option allows to considerably accelerate the recalculating and the export of determinations.

News in the program part Database

- A new report template type for reports of several determinations in tabular form is available.

News in the program part Method

- In the start parameters of the high-pressure pump, a start-up time can be defined, allowing a column-friendly starting of the pump.

1.10.2 Improvements

General improvements

- Curves in the graphics window can be displayed with relative scaling.

Improvements for the program part Database

- The form report allows a higher flexibility with more result fields selectable.
- The method report has been improved by the output of more parameters and options.
- Faster opening of the dialog **Open database**.
- Possibility to quickly select the 5 last recently used databases in the menu **File**.
- In the report modules **Result table** and **Curves + Result table**, now up to 6 decimal places can be defined.
- In the calibration curve printout and in the statistics report, the components are now sorted according to the retention time.
- In the calibration report, the weighting and the calibration mode are additionally shown.
- Deleting determinations has been accelerated.

1.10.3 Fixed bugs and problems

Program part Database

- Fixed: In the printout of the curve overview, an unnecessary horizontal line was printed out in rare cases.
- Fixed: Recalibrating determinations with several analyses did not work correctly under exceptional circumstances.
- Fixed: If one or several determinations were hidden in the details overview of the database, an unnecessary message was displayed.



Manual program part

- Manual control of devices



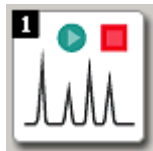
Note

Access to the individual program parts can be deactivated in the user administration. In this case, the corresponding symbols are hidden.

2.1.2 Workplace - Desktop

Program part: **Workplace**

Workplace symbol



Clicking on the workplace symbol in the vertical bar on the left opens the program part **Workplace** while, at the same time, the workplace symbol is shown in color. The upper left corner of the symbol contains a black field displaying the number of workplaces currently opened (*see Chapter 3.2.3.1, page 111*).

Elements

The desktop of the program part **Workplace** comprises the following elements:

- Workplace-specific menu bar.
- Workplace-specific toolbar.
- Main window in which up to 6 subwindows can be displayed.

2.1.3 Database - Desktop

Program part: **Database**

Database symbol



Clicking on the database symbol in the vertical bar on the left opens the program part **Database** while, at the same time the database symbol is shown in color. The upper left corner of the symbol contains a black field

displaying the number of databases currently opened (see *Chapter 4.2.2*, page 198).

Elements

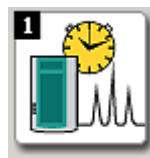
The desktop of the program part **Database** comprises the following elements:

- Database-specific menu bar.
- Database-specific toolbar.
- Main window in which up to 6 subwindows can be displayed.

2.1.4 Method - Desktop

Program part: **Method**

Method Symbol



Clicking on the method symbol in the vertical bar on the left opens the program part **Method** while, at the same time the method symbol is shown in color. The upper left corner of the symbol contains a black field displaying the number of methods currently opened (*see Chapter 5.2.3, page 347*).

Elements

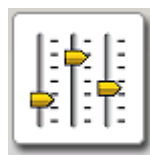
The desktop of the program part **Method** comprises the following elements:

- Method-specific menu bar.
- Method-specific toolbar.
- Main window in which up to four subwindows can be displayed at the same time.

2.1.5 Configuration - Desktop

Program part: **Configuration**

Configuration symbol



By clicking on on the configuration symbol in the vertical bar at the left-hand margin the program part **Configuration** is opened, at the same time the configuration symbol is shown in color.

Elements

The desktop of the program part **Configuration** comprises the following elements:

- Configuration-specific menu bar.
- Configuration specific toolbar.
- Main window in which up to 6 subwindows can be displayed.

2.1.6 Manual control - Desktop

Program part: **Manual Control**

Manual Control symbol



If you click on the **Manual** symbol in the vertical bar on the left margin, the program part **Manual Control** will be opened in its own window, while the **Manual** symbol will be shown in color at the same time.

Elements

The desktop of the program part **Manual control** comprises the following elements:

- Selecting device
- Device window

2.2 Login/password protection

2.2.1 General information on Login/Password protection

Program parts: **Workplace / Database / Method / Configuration**

Login into MagIC Net

MagIC Net can be configured so that all users have to log in with their **user name** and **password** and this data is automatically checked. This requires a **user administration** to be set up and the corresponding **security settings** to be made. This data is saved in the configuration database. In the case of client/server systems, this is on the server and applies globally for all clients (central user administration).

FDA-conforming settings

If you are to be in conformity with FDA, the settings on the tab **Login/Password protection** in the dialog window **Security settings** have to be activated corresponding to 21 CFR 11 with the button **[Set]**. The following conditions are therefore complied with:

- A **login with user name and password** is required each time the program is started.
- The **password administration** is carried out in **MagIC Net**.
- **User names** must be **unique**. Users entered once cannot be deleted.
- **Passwords** must be **unique** per user. None of the expired passwords already used once by the user may be reused.
- Passwords must comprise a **minimum number of characters**.
- Passwords must be changed according to a defined **validity period**.
- The **number of login attempts** is limited. If this number is exceeded, the user will automatically be set to the status **inactive**.

Actions

If the login is activated, the following actions can be performed:

- *Log in at program start*
- *Manual logout*
- *Automatic logout*
- *Change password*

2.2.2 Login

Program parts: **Workplace / Database / Method / Configuration**

If both the options **Enforce login with user name** and **Enforce login with password** are activated in the **Security settings**, the dialog window **Login** will appear every time the program is started and after each time the user logs out.

User

Entering a short name for the user.

Input	24 characters

Password

Password entry.

Input	24 characters



Note

Users who log in for the first time or users whose status has been reset from **inactive** or **removed** back to **active**, must log in with the **Start password**(see *Chapter 6.2.1.3.1, page 488*) specified by the administrator. Afterwards, the window **Change password** will automatically be opened, in which a new password has to be entered.



Note

The password always has to be changed before the **Validity** of the password expires. For users who are logging in for the first time or users whose status has been reset from **inactive** or **removed** back to **active**, this window is automatically opened after logging in with the **Start Password**. For **Old Password** you also need to enter the **Start Password** specified by the Administrator.

Old password

Entry of the previous password.

Input	24 characters

New password

Entry of the new password. The password options are defined in the **Security settings** on the tab **Login/Password protection**.

Input	24 characters

Confirm password

Confirmation of the new password.

Input	24 characters

2.3 Electronic signatures

2.3.1 Rules for electronic signatures

Program parts: **Method / Database**

In MagIC Net, methods and determination can be **electronically signed** at two levels. The following rules apply for this:

- **Signature levels**

Signature levels for methods and determinations can be signed at two levels (Signature Level 1 and Signature Level 2) by entering the user name and password.

- **Multiple signing**

Methods and determinations can be signed several times at each level.
All signatures are saved and documented in the Audit Trail.

- **Sign at Level 1**

If Level 2 has been signed then no more signatures are possible at Level 1.

- **Sign at Level 2**

Level 2 can only be signed if signatures already exist at Level 1.

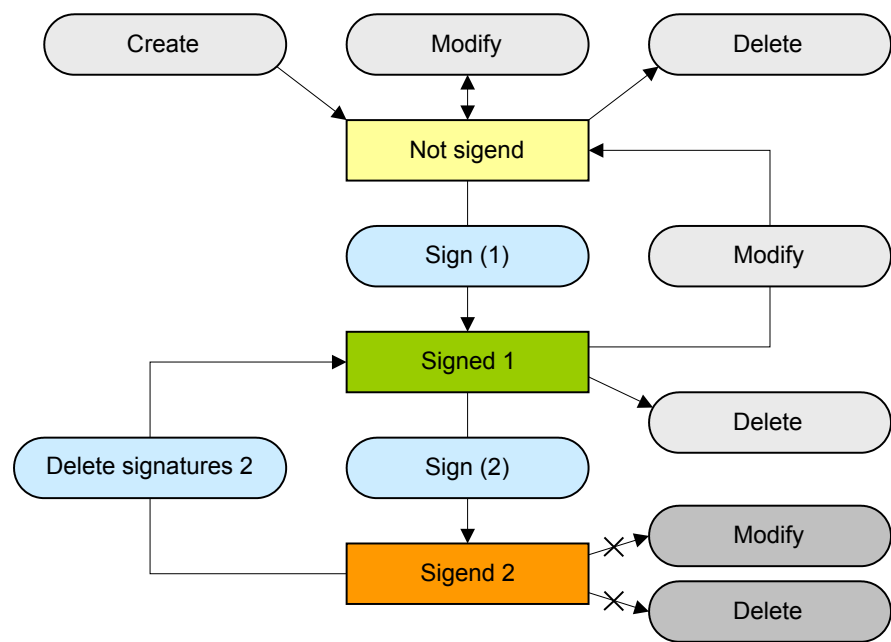
- **Different users**
The same user may only sign on either Level 1 or Level 2.
- **Reason and comment**
Each signature must be accompanied by a reason selected from predefined default reasons. A further comment can also be entered.
- **Saved data**
The signature date, user name, full name, reason and comments are saved for each signature.
- **Deleting signatures 1**
Signatures at Level 1 are automatically deleted again when compiling a new version.
- **Deleting signatures 2**
Signatures at Level 2 can only be deleted by users who have the appropriate rights.
- **Sign methods**
Methods can only be signed individually.
- **Signature options**
The options for electronic signatures are set in the **Signatures** tab in the **Security settings** dialog window.

2.3.2 Procedure for electronic signatures

Program parts: **Database / Method**

Methods and determinations exhibit one of the following three states in relation to signatures (see flow diagram):

- **Not signed**
Methods and determinations which are not signed can be deleted and changed, a new version being created at each change.
- **Signed (1)**
When signing methods and determinations at Level 1, no new versions are generated. If methods and determinations signed at Level 1 are changed, a new version is generated, which no longer contains any signatures. Methods and determinations signed at Level 1 can be deleted.
- **Signed (2)**
When signing methods and determinations at Level 2, no new versions are generated. Methods and determinations signed at Level 2 can neither be changed nor deleted. However, it is possible to delete the signatures (2), whereby the signatures (1) are retained.



2.3.3 Signature Level 1

Dialog window: Database ► Determinations ► Sign ► Signature 1... ► Signature Level 1

or

Dialog window: Method ► File ► Method Manager... ► Method Manager ► [Sign] ► Signature 1... ► Signature Level 1

Methods or determinations can be signed at Level 1 in the **Signature Level 1** window.



Note

Methods or determinations which have been signed at Level 1 can be changed and deleted. If the altered method or determination is saved as a new version then all existing signatures will be deleted automatically, i.e. the method or determination must be signed again.

Info

Information display for signing and deleting signatures. The following messages are possible:

Selection	Signature possible Signature 1 not possible (signature 2 exists) Signature not possible (accessed by other client)

The selected method or determination can be signed.

The selected method or determination can no longer be signed at Level 1 as it has already been signed at Level 2.

The selected method or determination cannot be signed as it is already marked to be signed on a different client.

User

Entry of the user name (short name).

Input	24 characters

Password

Password entry.

Input	24 characters

Reason

Selection from the **Default reasons** defined in the **Security Settings** dialog window for the category **Signature level 1**.

Selection	Selection from the Default reasons

Comment

Entry of comment on the signature.

Input	1000 characters

[Sign]

Sign method or determination. The window remains open.



Note

Methods or determinations can only be signed at Level 1 if the user belongs to a user group with the corresponding authorization.

2.3.4 Signature Level 2

Dialog window:Method ▶ File ▶ Method Manager... ▶ Method Manager ▶ [Sign] ▶ Signature 2... ▶ Signature Level 2

or

**Dialog window:Database ▶ Determinations ▶ Sign ▶ Signature
2... ▶ Signature Level 2**

Methods or determinations can be signed at Level 2 in the **Signature Level 2** window.



Note

Methods or determinations signed at level 2 are **locked**, i.e. they can neither be edited nor deleted. In order to be able to edit such methods or determinations again, the signatures on Level 2 must first be deleted.

Info

Information for signing and deleting signatures is displayed in this box.
The following messages are possible:

Selection	Signature possible Signature 2 not possible (signature 1 missing) Signature not possible (accessed by other client)
Signature possible	The selected method or determination can be signed.
Signature 2 not possible (signature 1 missing)	The selected method or determination cannot be signed at Level 2 as it has not yet been signed at Level 1.
Signature not possible (accessed by other client)	The selected method or determination cannot be signed as it is already marked to be signed on a different client.

User

Entry of the user name (short name).

Input	24 characters

Password

Password entry.

Input	24 characters

Reason

Selection from the **Default reasons** defined in the **Security Settings** dialog window for the category **Signature level 2**.

Selection	Selection from the Default reasons

Comment

Entry of comment on the signature.

Input	1000 characters

Sign method or determination. The window remains open.

Methods or determinations can only be signed at Level 2 if the user belongs to a user group with the corresponding authorization.



Note

Signatures 2 can only be deleted if the user belongs to a user group with the corresponding authorization.

2.4 Formula editor

Dialog window: **Formula editor**

The formula editor serves as a support when entering formulas for calculating results. It has an automatic **Syntax check**, which is activated when applying the formula. The general rules of priority apply for the calculation operations.

The **Formula Editor** dialog window contains the following elements:

- **Input field**
Entry of the calculation formula (*see Chapter 2.4.1, page 28*).
- **Function buttons**
Buttons for the rapid entry of operators and parentheses (*see Chapter 2.4.1, page 28*).
- **Variables**
Selection of the variables available for the calculation formula (*see Chapter 2.4.3, page 31*).
- **Operators/functions**
Selection of the operators and functions variables available for the calculation formula (*see Chapter 2.4.4.1, page 43*).
- **Description**
Description of the selected variables, operators or functions.

2.4.1 Input field

Dialog window: **Formula editor**

The calculation formula is entered in the input field of the formula editor. The following options are available for the entry:

Entry via keyboard

- **Numbers**
Numbers as well as mathematical functions can be entered directly via the keyboard.
- **Text**
Text must be enclosed in quotation marks " (e.g. **"my text"**).
- **Variables**
Variables must be entered and ended with an apostrophe ' (e.g. **'MV.my variable'**).

time

Time indications must always be made with the aid of the **Time()** function.

Entry using the function buttons

Mathematical operators and parentheses can simply be added to the formula using the corresponding buttons. A space is automatically added before and after the sign.

	Addition		Equal to		Logic AND
	Subtraction		Greater than		Logic OR
	Multiplication		Less than		Round parentheses
	Division		Not equal to		Curly parentheses: Request values of variables with index, the Index is in curly parentheses
	Potentiation		Less than or equal to		Molar mass calculator
			Greater than or equal to		Undo last action
					Redo last action

Entry via selection

The element selected in the fields **Variables** or **Operators** can be added to the formula by double clicking or **[Insert]**.

2.4.2 Calculation algorithms

Dialog window: **Formula editor**

Numerical format

The standard IEEE 754 (1985) for binary floating point arithmetic is implemented in "double precision" (64 Bit) in the software.

Rounding off process

Measured values and results are rounded off symmetrically (commercial rounding). In so doing, **1, 2, 3, 4** are always rounded down and **5, 6, 7, 8, 9** always rounded up.

Examples

2.33 yields **2.3**

2.35 yields **2.4**

2.47 yields **2.5**

the number of significant digits has now been reduced by three to four digits by omitting the prefix "milli".



The above losses of accuracy by rounding off in the area of the maximum certain places are only relevant theoretically. Most of the time they are lower by several orders of magnitude than – as an example – the uncertainties resulting from weighing out the sample.

2.4.3 Variables

2.4.3.1 Variables - Overview

Dialog window: **Formula Editor** ► **Variables**

Variables are automatically generated by the program during or at the end of the determination. You can use the formula editor to access these and either use the values for further calculations or output them as a result.

Variable types

The following types of variables are differentiated:

Variable type	Syntax	Description
Sample data variables		Sample data variables contain all of the sample data of the determination.
<i>Sample data variables</i>	'SD.Variable name' These variables contain the sample data of a single determination and/or the sample data of the current determination of a determination series.	
<i>Sample data variables of the next sample line</i>	'SD.NEXT.Variable name' These variables contain the sample data of the <i>next</i> determination of a determination series.	

Variable type	Syntax	Description
Method variables		Method variables can contain parameters of a method or data which has been generated in the method run.
<i>Evaluation parameter variables</i>	'ED.Variable name' 'ED.Analysis name. Variable name' 'ED.Analysis name. Component name. Variable name'	
<i>Time program variables</i>	'TP.Command number. Variable name'	
<i>Subprogram variables</i>	'SR.Subprogram name. Variable name'	
<i>Hardware variables</i>	'HW.Hardware class. Hardware name. Variable name'	
<i>Determination variables</i>	'DV.Variable name'	
Result variables		Result variables are automatically generated during the evaluation either by the program or from the results defined by the user.
Single result variable	'RS.Result name'	
Component result variable	'RS.Analysis name. Component name. Result name'	
System variables	'SV.Variable identification'	System variables are general variables which are adopted in the determination at the start of the determination.
Common variables	'CV.Variable name'	Common variables are global variables, which are adopted from the table of the program part Configuration at the start of the determination and assigned to the determination.

Entering variables

Variables must always be entered and ended with an apostrophe ' (e.g. **'SD.myVariable'**).

You can select the variables directly in the formula editor so as to avoid syntax errors.



Note

When using variables, always observe their data type (**Number**, **Text** or **Date/Time**).

2.4.3.2 Sample data variables

Dialog window: **Formula Editor** ▶ **Variables** ▶ **Variable types**

Syntax

'SD.Variable name'

These variables contain the sample data of a single determination and/or the sample data of the current determination of a determination series. They are automatically generated after a determination has been run. The data type (**Text**, **Number** or **Date/Time**) depends on the variable.

Available sample data variables

Variable name	Description	Data type
METHOD	Method which has been used for the sample determination	Text
IDENT	Identification of the sample	Text
TYPENAME	Name of the sample type	Text
TYPEVALUE	Numerical value of the sample type: 'Sample' and 'Blank' = 0 all other sample types = Sample type number (e.g. 'Standard 2' = 2)	Number
POSITION	Position of the sample	Number
INJECTIONS	Number of injections of the same sample (multiple determination)	Number
INJCOUNT	Injection number of a multiple determination	Number
VOLUME	Volume of the sample [µL]	Number
DILUTION	Dilution of the sample	Number
AMOUNT	Amount of the sample	Number
INFO1	Sample identification info 1	Text
INFO2	Sample identification info 2	Text
INFO3	Sample identification info 3	Text
INFO4	Sample identification info 4	Text
VALUE1	Sample identification value 1	Number
VALUE2	Sample identification value 2	Number
VALUE3	Sample identification value 3	Number
VALUE4	Sample identification value 4	Number

2.4.3.3 Sample data variables of the next sample line

Dialog window: **Formula Editor** ▶ **Variables** ▶ **Variable types**

Syntax

'SD.NEXT.Variable name'

These variables contain the sample data of the *next line of the sample table* of a determination series; this also applies when the determination of the current sample line involves the running of a multiple injection. These variables are distinguished in the syntax from the sample data variables of the current sample data line by means of the word **NEXT**. The data type (**Text**, **Number** or **Date/Time**) depends on the variable.



Note

- The sample data variables of the next sample line are available **only in the time program**.
- The variable names in '**SD.NEXT.Variable name**' are the same as with the normal sample data variables (*see Chapter 2.4.3.2, page 33*), with the **exception** of **INJCOUNT**, which is not available here.
- In the event of a single determination or if the current determination is the last determination of a series, then all of the '**SD.NEXT.Variable name**' variables contain the value **Invalid**.

2.4.3.4 Evaluation parameter variables

Dialog window: **Formula Editor** ▶ **Variables** ▶ **Variable types**

The evaluation parameter variables are method-specific and are automatically generated after a determination in which an evaluation has been defined has been run. The data type (**Text**, **Number** or **Date/Time**) depends on the variable.

Syntax

'ED.Variable name'

Available evaluation parameter variables

Variable name	Description	Data type
CONCUNIT	Unit of the concentration	Text
DT	Void time of the analysis [min]	Number
DAT	Recording time of the analysis [min]	Number
RET	Specified retention time [min]	Number
RETWIN	Specified time slot for retention time [%]	Number

2.4.3.5 Time program variables

Dialog window: **Formula Editor** ► **Variables** ► **Variable types**

The time program variables are method-specific and are automatically generated after certain time program commands have been run. The data type (**Text**, **Number** or **Date/Time**) depends on the variable.

Syntax

TP.'Command number'.'Variable name'

Available time program variables

Variable name	Description	Data type
LOOPNO	Number of loop runs	Number
MWAIT	Time until the 'Wait' command has been manually terminated [s]	Number
SDA	Start time point of the data recording	Date/ Time
SDAN	Noise of the chromatogram	Number
SDAD	Drift of the chromatogram	Number
SDAT	Temperature at the start time point of the data recording [°C]	Number
SDAP	Pressure at the start time point of the data recording	Number
MPA	Measured pressure [Mpa]	Number
BAR	Measured pressure [bar]	Number
PSI	Measured pressure [Psi]	Number
CONDUCTIVITY	Measured conductivity	Number
ANALOG SIGNAL	Measured analog signal [mV]	Number
NOISE	Measured noise	Number
DRIFT	Measured drift	Number
TEMP	Measured temperature [°C]	Number
DVOL	Dosed volume [mL]	Number
CONC	Concentration of the solution	Number
AVOL	Aspirated volume [mL]	Number
CONC1	Concentration of the solution	Number
CONC2	Concentration of the solution	Number
RPO	Current rack position when terminating the command 0 = Rack position when terminating the command not defined	Text
RAN	Current, absolute rotation angle of the rack in relation to the axis of the selected tower [°]	Number

Variable name	Description	Data type
SAN	Current, absolute swing angle of the robotic arm [°]	Number
LPO	Current, absolute lift position [mm]	Number
SPO	1...4 = Current external position when terminating the command 0 = Position when terminating the command not defined	Number
TOU	1 = max. waiting time expired 0 = max. waiting time not expired	Number
DATA{x}	Data from RS-232 communication (command: Transfer). x = xth data segment.	Text
TSLs	Time elapsed [min] since the previous (manual or automatic) forward switching of the rotor of the affected module of the type MSM, MSM-HC, SPM. TSLs stands for Time Since Last Step .	Number
ABSORBANCE	Measured absorbance [mAu] in the corresponding measuring channel	Number

Special case

The device-independent time program command **Calculation**(see *Chapter 5.7.4.2.8, page 396*) generates 2 variables of the form **TP.'Command number'.'Result name'.'Variable name'** for each single result:

Variable name	Description	Data type
VAL	Value of the result 'Result name' from the time program command no. 'Command number'.	(dependent on the formula used)
UNI	Unit of the result 'Result name' from the time program command no. 'Command number'.	Text

2.4.3.6 Subprogram variables

Dialog window: **Formula Editor** ► **Variables** ► **Variable types**

The subprogram variables are method-specific and are generated when a subprogram is called up. The data type (**Text**, **Number** or **Date/Time**) depends on the variable.

Syntax

'SR.Subprogram name.Variable name'

Available subprogram variables

Variable name	Description	Data type
LCO	Loop counter. Number of completed cycles of a call. Each new call sets the counter to 1 . This variable is also valid if the subprogram has not been called as a loop, and then has the value 1 .	Number
FIN	Status. 1 = Subprogram has been called up and terminated at least once. 0 = Subprogram has been called up and not yet terminated. invalid = subprogram has never been called up.	Number

2.4.3.7 Hardware variables

Dialog window: **Formula Editor** ► **Variables** ► **Variable types**

The hardware variables are method specific and are automatically generated. They contain certain parameters of the columns and modules which can be used in the method. The data type (**Text**, **Number** or **Date/Time**) depends on the variable.

Syntax

'HW.Hardware class.Hardware name.Variable name

Available hardware variables

Variable name	Description	Data type
HW.COL.'Column name'.ID	Inner diameter of the column [mm]	Number
HW.COL.'Column name'.LEN	Length of the column [mm]	Number
HW.COL.'Column name'.PS	Particle size of the column [µm]	Text
HW.COL.'Column name'.IDPRE	Inner diameter of the guard column [mm]	Number
HW.COL.'Column name'.LENPRE	Length of the guard column [mm]	Number

2.4.3.8 Determination variables

Dialog window: **Formula Editor** ► **Variables**

Determination variables are general variables that are generated in the method run. They are not assigned to individual commands. The **Variables** field of the Formula editor lists the **determination variables** which are available for the current method, sorted according to name.

Available result variables

The following result variables are automatically generated by the program. They are available at the time of the creation of the time program.

The variables marked with an asterisk (*) are only executed if the corresponding option is activated in the evaluation.

Variable name	Description	Data type
NUM	Peak number	Number
COMP	Component name	Text
RET	Retention time [min]	Number
FWHM	Width at half peak height [min]	Number
HGT	Height of the peak (unit depends on the measuring signal)	Number
HGT%	Peak height ratio, 100% for a normalization of the peak heights of all peaks	Number
AREA	Area of the peak (unit: measuring signal unit x minutes)	Number
AREA%	Peak area ratio, 100% for a normalization of the sum of all peak areas	Number
CAP	Capacity factor: Ratio of the corrected retention time to the void time	Number
RES	Resolution for two adjoining peaks	Number
PLA	Theoretical plates: Effectiveness of the column for the peak	Number
PLAM	Theoretical plates per meter: Effectiveness of the column for the peak	Number
PGF	Gauss factor of the peak	Number
ASY	Peak asymmetry	Number
CONC	Concentration of the component	Number
CONC%	Concentration ratio, 100% for a normalization of the sum of all concentrations	Number
CONCMEAN	Concentration mean value from a single or multiple determination	Number
CONCMEANSD	Standard deviation of the concentration mean value, including calibration errors	Number
CONCMEAN-CONF95	Half width of the confidence interval for the concentration mean value, at 95% confidence	Number
LDTCCONF95	Detection limit from linear calibration function, at 95% confidence	Number
STDCONC	Standard concentration of the component	Number
TYPE	Peak type, designates several properties of the peak	Number
START	Peak start [min]	Number
END	Peak end [min]	Number
A044	Width of the peak between the peak start and peak maximum at 4.4 % of the peak height [min]	Number

Variable name	Description	Data type
B044	Width of the peak between the peak maximum and peak end at 4.4 % of the peak height [min]	Number
A05	Width of the peak between the peak start and peak maximum at 5.0% of the peak height [min]	Number
B05	Width of the peak between the peak maximum and peak end at 5.0 % of the peak height [min]	Number
A10	Width of the peak between the peak start and peak maximum at 10% of the peak height [min]	Number
B10	Width of the peak between the peak maximum and peak end at 10% of the peak height [min]	Number
A134	Width of the peak between the peak start and peak maximum at 13.4 % of the peak height [min]	Number
B134	Width of the peak between the peak maximum and peak end at 13.4 % of the peak height [min]	Number
A324	Width of the peak between the peak start and peak maximum at 32.4 % of the peak height [min]	Number
B324	Width of the peak between the peak maximum and peak end at 32.4 % of the peak height [min]	Number
A50	Width of the peak between the peak start and peak maximum at 50% of the peak height [min]	Number
B50	Width of the peak between the peak maximum and peak end at 50% of the peak height [min]	Number
A61	Width of the peak between the peak start and peak maximum at 61% of the peak height [min]	Number
B61	Width of the peak between the peak maximum and peak end at 61% of the peak height [min]	Number
HVA	Height of the base at the peak start over the baseline of the chromatogram	Number
HVB	Height of the base at the peak end over the baseline of the chromatogram	Number
PVA	Peak to valley ratio of the peak height to the height of the foot point at peak start over the baseline of the chromatogram.	Number
PVB	Peak to valley ratio of the peak height to the height of the foot point at peak end over the baseline of the chromatogram.	Number
WIDTH	Base width of the peak [min].	Number
CALK0	Coefficient of zeroth-order of the calibration curve	Number
CALK1	Coefficient of first order of the calibration curve	Number
CALK2	Coefficient of second order of the calibration curve	Number
CALK3	Coefficient of third order of the calibration curve	Number

Variable name	Description	Data type
CALCORR	Correlation coefficient of the calibration curve	Number
CALPSD	Percentage standard deviation of the calibration curve	Number
CALXMEAN	Arithmetic mean of the x value of the calibration points	Number
CALYMEAN	Arithmetic mean of the y value of the calibration points	Number
CALNUM	Number of calibration points	Number
CALTERM	Number of terms of the calibration curve	Number
CALXSD	Standard deviation of the x value of the calibration points	Number
CALYRSD	Residual standard deviation of the y values of the calibration points from the calculated calibration curve	Number
REC*	Recovery	Number
SREC*	Recovery (spiking)	Number
INJCOUNTFIN	Number of injections carried out for a single or multiple determination	Number
WVLMAX{x}	Wavelength maximum in wavelength interval x of the spectrum.	Number

Results statistics

If results are evaluated statistically, the result variable of the statistical order is comprised of the variable of the result through which the statistic has been made and the attached name of the statistical order, e.g.

'RS'. 'Analysis name'. 'Component name'. 'Result name'. MNV (component result)

'RS'. 'Result name'. MNV (single result)

Variable name	Description	Data type
MNV	Mean value	Number
ASD	Absolute standard deviation	Number
RSD	Relative standard deviation	Number
MIN	Minimum value	Number
MAX	Maximum value	Number

Monitoring results

If results are monitored, the result variable of the monitoring comprises the variable of the monitored result and the attached abbreviation **OVF**:

'RS'. 'Analysis name'. 'Component name'. 'Result name'. OVF (component result)

'RS'. 'Result name'. OVF (single result)

Variable name	Description	Data type
OVF	Monitoring	Number

2.4.3.10 System variables

Dialog window: **Formula Editor** ► **Variables**

System variables are general variables which are adopted in the determination at the start of the determination. They are assigned neither to individual commands nor to determinations. The **Variables** field of the Formula editor lists all **System variables** which are available for the current method.

Syntax

'SV.Variable name'

Examples: **'SV.SIN'**, **'SV.SLI'**

You can select the system variables directly in the formula editor under **Variables/System variables** in order to avoid syntax errors.

Available system variables

Variable name	Description	Data type
FUN	Full name of the logged-in user	Text
REM	Remarks	Text
SEN	Indication whether the end of the sample table has been reached; 1 = yes, 0 = no	Number
SFL	Indication whether the sample table actual line is the first line after start ; 1 = yes, 0 = no	Number
SIN	Indication whether the determination has been started as a single determination or within a series; 1 = single determination, 0 = series determination	Number
SLI	Sample table actual line (number)	Number
STC	Start counter	Number
USN	Short name of the logged-in user	Text

2.4.3.11 Common variables

Dialog window: **Formula Editor** ► **Variables**

Common variables are global variables, which are adopted from the corresponding table of the program part **Configuration**, where the common variables can be defined, at the start of the determination and assigned to the determination. The **Variables** field of the Formula editor lists all **Common Variables** which are available for the current method, sorted according to name.

'CV.Variable name.Variable name'

You can select the common variables directly in the formula editor under **Variables/Common Variables** in order to avoid syntax errors.

Variable name	Description	Data type
VAL	Value of the Common Variable (facultative, i.e. ' CV.Test.VAL ' = ' CV.Test ') 	Text, number or date/ time
UNI	Unit of the Common Variable	Text

2.4.4.1 Operators/functions - Overview

Overview of the operators and functions

Operators	Functions
Arithmetic: - Addition (+) - Subtraction (-) - Multiplication (*) - Division (/) - Potentialiation (^)	Arithmetic: - Exponential function (Exp) - Natural logarithm (Ln) - Common logarithm (Log) - Square root (Sqrt) - Absolute value (Abs) - Fraction (Frac) - Integer (Int) - Round integer (Round) - Sign (Sign) - Quantiles of the Student's t-distribution (Tinv)
Logic: - AND - OR	Date/Time: - Time() - Time(Date) - Time(Date+Time)

Operators	Functions
Comparison: ▪ <i>Equal to (=)</i> ▪ <i>Greater than (>)</i> ▪ <i>Greater than or equal to (>=)</i> ▪ <i>Less than (<)</i> ▪ <i>Less than or equal to (<=)</i> ▪ <i>Not equal to (<>)</i>	Type conversion: ▪ <i>NumberToText</i> ▪ <i>NumberToTime</i> ▪ <i>TextToNumber</i> ▪ <i>TextToTime</i> ▪ <i>TimeToNumber</i> ▪ <i>TimeToText</i>
	Text: ▪ <i>TextPosition</i> ▪ <i>SubText</i> ▪ <i>Trim</i>
	Miscellaneous: ▪ <i>Error</i> ▪ <i>Case</i>

Priority rules of the operators

The operators are evaluated in the order in which they are listed in the table below. In order to attain the required order, it may be necessary to place operators in parentheses.

	Operators
Arithmetic	$\wedge$
	$*, /$
	$+, -$
Comparison	$<, <=, >, >=$
Logic	AND, OR

2.4.4.2 Arithmetical operators

2.4.4.2.1 Addition

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

Operand1 + Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**.

Examples

Operand1	Operand2	Result	Example	Remark
both operands of the same type:				
Number	Number	Number	1.2 + 3 = 4.2	-

Operand1	Operand2	Result	Example	Remark
Text	Text	Text	"Metrohm" + "AG" = "Metrohm AG"	If the maximum permissible length (65 536 characters) of the character string is exceeded by addition of the operands, the surplus characters will be removed from the second operand.
Time	Time	Number	Time(1998;04;06) + Time(1964;02;03) = 59300.875 (for UTC+1)	Result: Number of days calculated from December 1899, dependent on the system time
Operand of different type: The operand which does not correspond to the result type is converted to the relevant result type before the operation.				
Number	Text	Text	1.2 + "Metrohm" = "1.2Metrohm"	-
Text	Number	Text	"Metrohm" + 1.2 = "Metrohm1.2"	-
Number	Time	Number	2.0 + Time(1999;11;7) = 36472.96 (for UTC+1)	Result: Number of days calculated from December 1899, dependent on the system time
Time	Number	Number	Time(1999;10;7) + 2.0 = 36441.92 (for UTC+2)	Result: Number of days calculated from December 1899, dependent on the system time
Text	Time	Text	"Metrohm" + Time(1999;10;7) = "Metrohm1999-10-07 00:00:00 UTC+2"	Before the operation, the operand of the type Date/Time is converted to Text .
Time	Text	Text	Time(1999;01;7) + "Metrohm" = "1999-01-07 00:00:00 UTC +1Metrohm"	The same rules apply here as for the previous operation.

2.4.4.2.2 Subtraction

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

Operand1 - Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**.

Examples

Operand1	Operand2	Result	Example	Remark
both operands of the same type:				
Number	Number	Number	1.2 - 3 = -1.8	-
Text	Text	Text	"Metrohm" - "AG" = invalid	This operation is not allowed.

Operand1	Operand2	Result	Example	Remark
Time	Time	Number	Time(1998;01;06) - Time(1964;12;03) = 12'087.00 (for UTC+1)	Result: Number of days calculated from December 1899, dependent on the system time
Operand of different type: The operand which does not correspond to the result type is converted to the relevant result type before the operation.				
Number	Text	Text	1.2 - "Metrohm" = invalid	This operation is not allowed.
Text	Number	Text	"Metrohm" - 1.2 = not valid	This operation is not allowed.
Number	Time	Number	2.0 - Time(1999;10;7) = -36'437.917 (for UTC+2)	Result: Number of days calculated from December 1899, dependent on the system time
Time	Number	Number	Time(1999;10;7) - 2.5 = 36'437.917 (for UTC+2)	Result: Number of days calculated from December 1899, dependent on the system time
Text	Time	Text	"Metrohm" - Time(1999;10;7) = invalid	This operation is not allowed.
Time	Text	Text	Time(1999;10;7) - "Metrohm" = invalid	This operation is not allowed.

2.4.4.2.3 Multiplication

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

Operand1 * Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**.

Examples

Operand1	Operand2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	1.2 * 3 = 3.6	-
Text	Text	Text	"Metrohm" * "AG" = invalid	This operation is not allowed.
Time	Time	Number	Time(1998;05;06) * Time(1902;02;03) = 27'478'004.545 (for UTC+1 or +2 for summer time)	Result: Number of days calculated from December 1899, dependent on the system time
Operand of different type: The operand which does not correspond to the result type is converted to the relevant result type before the operation.				
Number	Text	Text	2 * "Metrohm" = "MetrohmMetrohm"	-
Text	Number	Text	"Metrohm" * 2 = "MetrohmMetrohm"	-

Operand1	Operand2	Result	Example	Remark
Number	Time	Number	2.0 * Time(1999;10;7) = 72'879.833 (for UTC+2)	Result: Number of days calculated from December 1899, dependent on the system time
Time	Number	Number	Time(1999;10;7) * 2.0 = 72'879.833 (for UTC+2)	Result: Number of days calculated from December 1899, dependent on the system time
Text	Time	Text	"Metrohm" * Time(1999;10;7) = invalid	This operation is not allowed.
Time	Text	Text	Time(1999;10;7) * "Metrohm" = invalid	This operation is not allowed.

2.4.4.2.4 Division

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

Operand1 / Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**.

Examples

Operand1	Operand2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	1.2 / 3 = 0.4	Operand2 must not be zero!
Text	Text	Text	"Metrohm" / "AG" = invalid	This operation is not allowed.
Time	Time	Number	Time(1998;04;06) / Time(1964;02;03) = 1.533 (for UTC +1 or +2 for summer time)	Result: Number of days calculated from December 1899, dependent on the system time
Operand of different type: The operand which does not correspond to the result type is converted to the relevant result type before the operation.				
Number	Text	Text	1.2 / "Metrohm" = invalid	This operation is not allowed.
Text	Number	Text	"Metrohm" / 1.2 = invalid	This operation is not allowed.
Number	Time	Number	10'000 / Time(1999;10;7) = 274 (for UTC+2)	Result: Number of days calculated from December 1899, dependent on the system time
Time	Number	Number	Time(1999;02;17) / 10'000 = 3.621 (for UTC+1)	Result: Number of days calculated from December 1899, dependent on the system time
Text	Time	Text	"Metrohm" / Time(1999;10;7) = invalid	This operation is not allowed.
Time	Text	Text	Time(1999;10;7) / "Metrohm" = invalid	This operation is not allowed.

Operand1	Operand2	Result
1	1	1
0	1	0
1	0	0
0	0	0

Examples

Oper- and1	Oper- and2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	5 AND 4 --> 1 4 AND 0 --> 0	Numbers greater than 0 are interpreted as 1 (true).
Text	Text	Number	"Metrohm" AND "AG" --> 1 "" AND "AG" --> 0	An empty character string ("") is interpreted as 0 (false), everything else as 1 (true). The first operation therefore corresponds to 1 AND 1 --> 1 .
Time	Time	Number	Time(1999;10;07) AND Time(1999;10;07) --> 1	Time() : see <i>Time(Date)</i>
Operands of a different type:				
Number	Text	Number	1.2 AND "1.2" --> 1 0 AND "1" --> 1 0 AND "0" --> 1 0 AND "" --> 0	Before the operation, the operand of the type Number is converted to the type Text , as a conversion from Text to Number is not advisable. During the second operation, the 0 is therefore converted to "0" , which corresponds to the logical value 1 (true), as every character string that is not empty is interpreted as 1.
Text	Number	Number	"Metrohm" AND 1.2 --> 1	The same rules apply here as for the previous operation.
Number	Time	Number	2.0 AND Time(1999;10;7) --> 1 0 AND Time(1999;10;07) --> 0	Before the operation, the operand of the type Date/Time is converted to Number and all data from December 30, 1899 are interpreted as 1 (true).
Time	Number	Number	Time(1999;10;7) AND 2.5 --> 1	The same rules apply here as for the previous operation.
Text	Time	Number	"Metrohm" AND Time(1999;10;7) --> 1 "" AND Time(1999;10;07) --> 0	Before execution of the operation, the operand of the type Date/Time is converted to the type Text and every character string that is not empty is interpreted as 1 (true).
Time	Text	Number	Time(1999;10;7) AND "Metrohm" --> 1	The same rules apply here as for the previous operation.

Operand1	Operand2	Result	Example	Remark
Number	Time	Number	2.0 OR Time(1999;10;7) --> 1 0 OR Time(1964;02;03) --> 1	Before the operation, the operand of the type Date/Time is converted to Number and all data from December 30, 1899 are interpreted as 1 (true).
Time	Number	Number	Time(1999;10;7) OR 2.5 --> 1	The same rules apply here as for the previous operation.
Text	Time	Number	"Metrohm" OR Time(1999;10;7) --> 1	Before execution of the operation, the operand of the type Date/Time is converted to the type Text and every character string that is not empty is interpreted as 1 (true).
Time	Text	Number	Time(1999;10;7) OR "Metrohm" --> 1	The same rules apply here as for the previous operation.

2.4.4.4 Relational operators

2.4.4.4.1 Equal to

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

Operand1 = Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. The result type is always a number (**1** = true, **0** = false).

Examples

Operand1	Operand2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	5 = 5 --> 1 4 = 5 --> 0	-
Text	Text	Number	"Metrohm" = "AG" --> 0 "aG" = "AG" --> 0	When making a comparison between two texts the ASCII value of the character sequence is compared (see Chapter 2.4.4.10, page 75). Attention: Uppercase and lowercase letters have different values!
Time	Time	Number	Time(1998;04;06) = Time(1964;02;03) --> 0	(see Chapter 2.4.4.6.2, page 63)
Operands of a different type:				
Number	Text	Number	1.2 = "1.2" --> 1 1.2 = "Metrohm" --> 0	Before the relational operation, the Number is converted to Text , afterwards the texts are compared according to ASCII value (see Chapter 2.4.4.10, page 75).

Oper-and1	Oper-and2	Result	Example	Remark
Text	Number	Number	" Metrohm " = 1.2 --> 0	The same rules apply here as for the previous operation.
Number	Time	Number	2.0 = Time(1999;10;07) --> 0	Before the operation, the operand of the type Date/Time is converted to Number . During execution of the operation, the exact value is always used after this conversion, even if maximum 5 places after the comma can be displayed (see Chapter 2.4.4.7.5, page 68).
Time	Number	Number	Time(1999;10;7) = 2.0 --> 0	The same rules apply here as for the previous operation.
Text	Time	Number	" Metrohm " = Time(1999;10;07) --> 0	Before the operation, the operand is converted from the type Date/Time to Text (here thus: " 1999-10-07 00:00:00 UTC+2 "), afterwards the texts are compared according to ASCII value (see Chapter 2.4.4.10, page 75).
Time	Text	Number	Time(1999;10;07) = " Metrohm " --> 0	The same rules apply here as for the previous operation.

2.4.4.4.2 Greater than

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

Operand1 > Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. The result type is always a number (**1** = true, **0** = false).

Examples

Oper- and1	Oper- and2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	5 > 4 --> 1 4 > 5 --> 0	-
Text	Text	Number	"Metrohm" > "AG" --> 1 "Aarau" > "Zug" --> 0	When making a comparison between two texts the ASCII value of the character sequence is compared (<i>see Chapter 2.4.4.10, page 75</i>). Attention: Uppercase and lowercase letters have different values!

Oper- and1	Oper- and2	Result	Example	Remark
Time	Time	Number	Time(1998;04;06) > Time(1964;02;03) --> 1	(see Chapter 2.4.4.6.2, page 63)
Operands of a different type:				
Number	Text	Number	1.2 > "Metrohm" --> 01.23 > "1.2" --> 1	Before the relational operation, the Number is converted to Text , afterwards the texts are compared according to ASCII value (see Chapter 2.4.4.10, page 75).
Text	Number	Number	"Metrohm" > 1.2 --> 1	The same rules apply here as for the previous operation.
Number	Time	Number	2.0 > Time(1999;10;07) --> 0	Before the comparison, the operand is converted from the type Date/Time to a Number .
Time	Number	Number	Time(1999;10;07) > 2.0 --> 1	The same rules apply here as for the previous operation.
Text	Time	Number	"Metrohm" > Time(1999;10;07) --> 1	Before the operation, the operand is converted from the type Date/Time to Text (here thus: "1999-10-07 00:00:00 UTC +2"), afterwards the texts are compared according to ASCII value (see Chapter 2.4.4.10, page 75).
Time	Text	Number	Time(1999;10;7) > "Metrohm" --> 0	The same rules apply here as for the previous operation.

2.4.4.4.3 Greater than or equal to

Dialog window: **Formula editor ► Operators/Functions**

Syntax

Operand1 >= Operand2

The operands can be entered either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. The result type is always a number (**1** = true, **0** = false).

Examples

Oper- and1	Oper- and2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	5 >= 4 --> 1 4 >= 5 --> 0	-

Oper- and1	Oper- and2	Result	Example	Remark
Number	Number	Number	5 < 4 --> 0 4 < 5 --> 1	-
Text	Text	Number	"Metrohm" < "AG" --> 0	When making a comparison between two texts the ASCII value of the character sequence is compared (see Chapter 2.4.4.10, page 75). Attention: Upper-case and lowercase letters have different values!
Time	Time	Number	Time(1998;04;06) < Time(1964;02;03) --> 0	(see Chapter 2.4.4.6.2, page 63)
Operands of a different type:				
Number	Text	Number	1.2 < "Metrohm" --> 11.2 < "1" --> 0	Before the relational operation, the Number is converted to Text , afterwards the texts are compared according to ASCII value (see Chapter 2.4.4.10, page 75).
Text	Number	Number	"Metrohm" < 1.2 --> 0	The same rules apply here as for the previous operation.
Number	Time	Number	2.0 < Time(1999;10;07) --> 1	Before the comparison, the operand is converted from the type Date/Time to a Number .
Time	Number	Number	Time(1999;10;07) < 2.0 --> 0	The same rules apply here as for the previous operation.
Text	Time	Number	"Metrohm" < Time(1999;10;07) --> 0	Before the operation, the operand is converted from the type Date/Time to Text (here thus: "1999-10-07 00:00:00 UTC +2"), afterwards the texts are compared according to ASCII value (see Chapter 2.4.4.10, page 75).
Time	Text	Number	Time(1999;10;7) < "Metrohm" --> 1	The same rules apply here as for the previous operation.

2.4.4.4.5 Less than or equal to

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

Operand1 <= Operand2

The operands can be entered either directly or as variables and can be of the type **Text**, **Number** or **Date/Time**. The result type is always a number (**1** = true, **0** = false).

Examples

Oper- and1	Oper- and2	Result	Example	Remark
Operands of the same type:				
Number	Number	Number	5 <> 4 --> 1 5 <> 5 --> 0	-
Text	Text	Number	"Metrohm" <> "AG" --> 1	When making a comparison between two texts the ASCII value of the character sequence is compared (<i>see Chapter 2.4.4.10, page 75</i>). Attention: Uppercase and lowercase letters have different values!
Time	Time	Number	Time(1998;04;06) <> Time(1964;02;03) --> 1	(<i>see Chapter 2.4.4.6.2, page 63</i>)
Operands of a different type:				
Number	Text	Number	1.2 <> "1.2" --> 0 1.2 <> "Metrohm" --> 1	Before the relational operation, the Number is converted to Text , afterwards the texts are compared according to ASCII value (<i>see Chapter 2.4.4.10, page 75</i>).
Text	Number	Number	"Metrohm" <> 1.2 --> 1	The same rules apply here as for the previous operation.
Number	Time	Number	2.0 <> Time(1999;10;07) --> 1	Before the comparison, the operand is converted from the type Date/Time to a Number .
Time	Number	Number	Time(1999;10;07) <> 2.5 --> 1	The same rules apply here as for the previous operation.
Text	Time	Number	"Metrohm" <> Time(1999;10;07) --> 1	Before the operation, the operand is converted from the type Date/Time to Text (here thus: "1999-10-07 00:00:00 UTC +2"), afterwards the texts are compared according to ASCII value (<i>see Chapter 2.4.4.10, page 75</i>).
Time	Text	Number	Time(1999;10;7) <> "Metrohm" --> 1	The same rules apply here as for the previous operation.

2.4.4.5 Arithmetical functions

2.4.4.5.1 Exponential function

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = Exp(number)

Calculates e^{number} . Other notation for $y = e^{(\text{number})}$, whereby e is the Euler number ($e = 2.71828\dots$).



Parameters

Number	Exponent

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

$$\text{Exp}(1.5) = 4.48169$$

Exp('CV.AverageTemp') = Power of the exponent (common variable **CV.AverageTemp**) for base e

2.4.4.5.2 Natural logarithm

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

$$y = \text{Ln}(\text{number})$$

Gives the logarithm of the entered number for base e. Alternative notation for $y = \log_e(\text{number})$, whereby e is the Euler number ($e = 2.71828\dots$).

Parameters

Number > 0

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

$$\ln(3) = 1.09861$$

Ln('CV.AverageTemp') = Natural logarithm of the value of the common variable **CV.AverageTemp** for base e

2.4.4.5.3 Common logarithm

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

$$y = \text{Log}(\text{number})$$

Gives the logarithm of the entered number for base 10. Alternative notation for $y = \log_{10}(\text{number})$.

Parameters

Number > 0

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Log(10) = 1

Log('CV.AverageTemp') = Common logarithm of the value of the common variable **CV.AverageTemp**

2.4.4.5.4 Square root

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = Sqrt(number)

Gives the square root of the entered number. Alternative notation for $y = \sqrt{\text{number}}$ or $y = {}^2\sqrt{\text{number}}$.

Parameters

Number ≥ 0

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Sqrt(33) = 5.745

Sqrt('CV.AverageTemp') = Square root of the value of the common variable **CV.AverageTemp**

2.4.4.5.5 Absolute value

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = Abs(number)

Gives the absolute value of the entered number, i.e. the value of the number irrespective of its sign.

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Abs(-55.3) = 55.3

Abs('CV.AverageTemp') = Value of the common variables **CV.AverageTemp** without signs

2.4.4.5.6 Fraction

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = Frac(number)

Gives the fraction of the entered number.



Note

In the results properties, the number **Decimal places** of the result must always be given, as otherwise the fraction cannot be displayed.

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Frac(-55.325) =0.325

Frac('CV.AverageTemp') = Value of the common variable **CV.AverageTemp** without sign

2.4.4.5.7 Integer

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = Int(number)

Gives the integer of the entered number.

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

$$\text{Int}(-55.325) = -55$$

Int('CV.AverageTemp') = Integer of the value of the common variable
CV.AverageTemp

2.4.4.5.8 Rounding integer

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = Round(number)

Gives the rounded value of the entered number as a whole number.



Note

If the first decimal place is 5 or greater, the number is rounded up to the next whole number (commercial rounding).

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Examples

Round(-55.5259) = -56

Round('CV.AverageTemp') = Rounded value of the common variable
CV.AverageTemp

2.4.4.5.9 Sign

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = Sign(number)

Gives the sign of the entered number: **1** for a positive number, **-1** for a negative number.

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.

Confidence interval of the titer = 1.001 ± 0.008

month 1...12

day **1...31**

A parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.



Note

Only the integral part is used for all parameters.

A variable of the type **Date/Time** cannot be transferred as a parameter here.

Both for the automatic and explicit conversion of a **Time** to the type **Number**, the number of days are counted since **December 30, 1899** at **01 hours**.

Attention: December 30, 1899 01 hour = 0.00000 days, this number is **rounded** off to 5 decimal places, but a relational operation for example is carried out with the exact value!

Return value

Date/Time in the format **yyyy-mm-dd hh:mm:ss UTC ±xx**

Note

UTC = Universal Time , from which the times in the various time zones of the earth are derived. CET (Central European Time) is equal to UTC plus 1 hour, in the summer time UTC plus 2 hours.

Examples

Time(2004;02;02) = 2004-02-02 00:00:00 UTC +1 (dependent on the system time)

Time('CV.Test year';'CV.Test month';'CV.Test day') = Date comprised of the common variables

2.4.4.6.3 Time(Date + Time)

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = Time(year; month; day; hour; minute; second)

Gives the entered numbers in the format **Date/Time**.

Parameters

year **00...99** or **1000...9999**

month 1...12

day **1...31**

hour 0...23

minute 0...59

second 0...59

A parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this is not possible, the result of this operation is given as **invalid**.



Note

Only the integral part is used for all parameters.

A variable of the type **Date/Time** cannot be transferred as a parameter here.

Both for the automatic and explicit conversion of a **Time** to the type **Number**, the number of days are counted since **December 30, 1899** at **01 hours**.

Attention: December 30, 1899 01 hour = 0.00000 days, this number is **rounded** off to 5 decimal places, but a relational operation for example is carried out with the exact value!

Return value

Date/Time in the format **yyyy-mm-dd hh:mm:ss UTC ±xx**

Note

UTC = Universal Time , from which the times in the various time zones of the earth are derived. CET (Central European Time) is equal to UTC plus 1 hour, in the summer time UTC plus 2 hours.

Examples

Time(2004;06;02;10;30;25) = 2004-06-02 10:30:25 UTC +2

(dependent on the system time)

Time('CV.TestYear';'CV.TestMonth';'CV.TestDay';'CV.TestHour';'CV.TestMin';'CV.TestSek') = Date comprised of the common variables

2.4.4.7 Type Conversion functions

2.4.4.7.1 NumberToText

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = NumberToText(numberl)

Gives the entered number as **Text**.

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**.

Examples

NumberToText(-55.3) = -55.3

NumberToText('CV.AverageTemp') = Vale of the common variable (AverageTemp) als **Text**

2.4.4.7.2 NumberToTime

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = NumberToTime(number)

Gives the entered number as **Date/Time**, whereby the number is interpreted as the number of days since December 30, 1899 at 01 hours.

Parameters

Number

The parameter can be indicated either directly as a number or as a variable of the type **Number**.

Examples

NumberToTime(35545.526) = 1997-05-25 14:37:26 UTC+2
(dependent on the system time)

NumberToTime(35780.55) = 1997-12-16 14:12:00 UTC+1 (NumberToTime(35545.526) = 1997-05-25 14:37:26 UTC+2 (dependent on the system time))

NumberToTime('CV.TestDate') = Value of the common variable (Test-Date) as **Date/Time**

2.4.4.7.3 TextToNumber

Dialog window: **Formula editor ► Operators/Functions**

Syntax

y = TextToNumber(Text)

Gives the entered text as a **number**.

Parameters

Text

The parameter may only contain **numerical characters** or variables of the type **Text**, as otherwise a type conversion is not possible. The result of this conversion or the calculation would then be **invalid**. In addition, text must be marked by **inverted commas**.

Examples

TextToNumber("-55.3") = -55.3

TextToNumber('CV.DurchschnTemp') = Value of the variables (AverageTemp) as **Number**

TextToNumber('MV.ID1') = entered text of **ID 1** as **Number**

2.4.4.7.4 TextToTime

Dialog window: **Formula editor ► Operators/Functions**

Syntax

y = TextToTime(Text;Format)

Gives the entered text as a **Date/Time**.

Parameters

Text

The parameter may only contain **numerical characters** or variables of the type **Text**, as otherwise a type conversion is not possible (Result = **invalid**). As a **delimiter** between Year, Month etc. you can use the following characters: slash (/), full stop (.), minus (-), semi-colon (;), colon (:), space and comma. You can determine the **order** of the individual data yourself, but must indicate this in the **Format** parameter.

Format

Indicates in which format or order the text has been entered. This parameter must be marked by **inverted commas** and can comprise the following code characters:

Characters	Significance
y	Year



Note

Both for the automatic and explicit conversion of a **Time** to the type **Number** the number of days are counted since **December 30, 1899 at 01 hours**.

Attention: December 30, 1899 01 hours = 0.00000 days, this number is **rounded** off to 5 decimal places, but a relational operation for example is carried out with the exact value.

Parameters

Time

This parameter can be indicated either in the form of a time function or as a variable of the type **Time**.

Examples

TimeToNumber(Time()) = current date and current time represented as **Number** (in days since December 1899)

TimeToNumber(Time(1999;12;31;23;59;59)) = 36525.95832

TimeToNumber(Time('TestYear';TestMonth';TestTag')) = Value of the common variables as number of days as a **Number**

2.4.4.7.6 TimeToText

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = TimeToText(Time)

Gives the time entered as **Text**.

y = TimeToText(Time;Format)

Gives the time entered as **Text** in the required format.

Parameters

Time

This parameter can be indicated either in the form of a time function or as a variable of the type **Date/Time**.

Format

Indicates in which format or order the time is to be output as text. This parameter can comprise the following code characters and must be marked by **inverted commas**:

Characters	Significance	Example
'	Inverted commas for entering any text	
"	Entry of '	'



Note

If you wish to indicate the time in the format **AM/PM**, it is necessary in addition to the formatting character **h** to use the AM/PM marking **a** (see last example below).

Examples

TimeToText(Time()) = current date and current time (system) as **Text**

TimeToText(Time(2004;05;04)) = 2004-05-04 00:00:00 UTC+2
(dependent on the system time)

TimeToText('CV.TestZeit') = Value of the common variable (type **Time**)
as **Text**

**TimeToText(Time(2000;12;31);"EEEE', 'dd'. 'MMMM' 'yyyy") =
Sunday, December 31, 2000**

```
TimeToText(Time(1997;05;22);"M'/'d'/'yyyy', 'ha") = 5/22/1997,
12PM
```

2.4.4.8 Text functions

2.4.4.8.1 TextPosition

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = TextPosition(Text ; sample text)

Gives the **Index** which indicates at which point the **sample text** appears for the first time in the **Text**. The numbering of the index begins at **1**!

Parameters

Text

The parameter can be indicated either directly or as a variable of the type **Text**, **Number** or **Date/Time**.

Sample text

The parameter can be indicated either directly or as a variable of the type **Text**, **Number** or **Date/Time**. If the types of the two parameters do not coincide, the type is converted from **Sample text** to the type **Text**. If the **Sample text** is not included in the **Text**, the status **invalid** is given.



Note

Entries of the type **Number** are always provided with a decimal place.

Example: **TextPosition("12345";3) = invalid**, as the 3 is converted to 3.0 before the operation in 3.0 and this is not included in the text.

Examples

TextPosition("Citric acid";"acid") = 9, the word "**acid**" occurs in the text from index number 9 onwards

TextPosition("Citric acid";"Acid") = invalid, the word "**Acid**" (capitalized) does not occur in the text

TextPosition("Citirc acid";"salt") = invalid, the word "**salt**" does not occur in the text

TextPosition(Time(2004;05;05);"5") = 7

TextPosition(3362.14;"6") = 3

TextPosition('MV.ID2';"Carbonate") = Index in which the word part "Carbonate" begins for the first time in the ID2

2.4.4.8.2 SubText

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = SubText(Text ; Position ; Length)

Gives that part of the text from **Text** which begins at the index **Position** and which has the length **Length**.

Parameters

Text

The parameter can be indicated either directly as text or as a variable of the type **Text**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If this type conversion is not possible, the result of this operation is given as **invalid**.

Position

The numbering of the **Position** begins at **1**. The parameter can be indicated either **directly as a number** or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If a type conversion is not possible or the position does not exist, the result of this operation is given as **invalid**.

Length

The parameter can be indicated either directly as a number or as a variable of the type **Number**. If the parameter does not correspond to the expected type, it will automatically be converted to this. If a type conversion is not possible or the length indicated here is greater than the length of the subtext, **invalid** is given

Examples

SubText("Citric acid";9;5) = acid

SubText("Citric acid";9;6) = invalid, only five characters exist from position 9 onwards

SubText('MV.ID2';1;3) = the first three characters of the identification 2

2.4.4.8.3 Trim

Dialog window: **Formula editor ► Operators/Functions**

Syntax

y = Trim(Text)

Gives the **Text** without spaces before and after.

y = Trim(Text ; sample text)

Gives the **Text** without **Sample text**.

Parameters

Text

The parameter can be indicated either directly or as a variable of the type **Text**, **Number** or **Date/Time**.

Sample text

The parameter can be indicated either directly or as a variable of the type **Text**, **Number** or **Date/Time**. If the types of the two parameters do not coincide, the type is converted from **Sample text** to the type **Text**.



Note

Entries of the type **Number** are always provided with a decimal place.

Example: **Trim("12345";3) = 12345**, as the 3 is converted to 3.0 before the operation and this is not included in the text.

Examples

Trim(" Citric acid ") = "Citric acid"

Trim("Citric acid";"acid") = Lemons

Trim("Citric acid";"salt") = Citric acid

2.4.4.9 Miscellaneous functions

2.4.4.9.1 Case

Dialog window: **Formula editor** ► **Operators/Functions**

Syntax

y = Case(Condition ; value_true ; value_false)

y = Case(Condition ; value_true ; value_false ; value_error)

Gives **value_true** if the condition is true. Otherwise **value_false** is given.
If an error occurs in the condition (result **invalid**), **value_error** is given.

Parameters

Condition	Number

Any variable (type **Number**) can be entered here, or a relational or logic operation can be performed whose operators can be transferred either directly or as a variable. These can be of the type **Text**, **Number** or **Date/Time**.

Value true

If **condition** $\leftrightarrow$ **0**, this parameter is saved as a result of the function. This parameter can be transferred either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. Entire operations can also be transferred here.

Value false

If **condition = 0**, this parameter is saved as a result of the function. This parameter can be transferred either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. Entire operations can also be transferred here.

Value_error

If **condition = invalid**, this parameter is saved as a result of the function. This parameter can be transferred either directly or as a variable and can be of the type **Text**, **Number** or **Date/Time**. Entire operations can also be transferred here.

Examples

Case('MV.ID1' = "", "ID1 empty", "ID1 not empty") = if no entry has been made for ID1 in the run window, the text **ID1 empty**, otherwise **ID1 not empty** will be saved in the result.

Case('RS.IntermediateRes' > 5.5;"Intermediate result too high"; RS.IntermediateRes * 26.5;"Error occurred") = If the result "IntermediateRes" is greater than 5.5, the text "Intermediate result too high" will be written into the result, otherwise the intermediate result will be multiplied by 26.5. If an error occurs during the comparison

2.4.4.9.2 Error

Syntax

Gives **+1** if the **value is invalid** (error) or **0** if the **value is valid**. This function can be used e.g. to check variables for their existence or validity.

Value

Examples

Error('RS.ZwischenRes') = 1: the intermediate result is invalid.

Dialog window: **Formula editor**

ASCII value (dec)	Characters	ASCII value (dec)	Characters	ASCII value (dec)	Characters
32	Space	64	At sign (@)	96	Accent grave (`)
33	Exclamation mark (!)	65	A	97	a
34	Quotation mark (")	66	B	98	b
35	Hash mark (#)	67	C	99	c
36	Dollar (\$)	68	D	100	d
37	Percent (%)	69	E	101	e
38	Commercial "and" (&)	70	F	102	f
39	Inverted comma (')	71	G	103	g
40	Opening paren- theses (())	72	H	104	h
41	Closing paren- theses ())	73	I	105	i

ASCII value (dec)	Characters	ASCII value (dec)	Characters	ASCII value (dec)	Characters
42	Multiplication sign (*)	74	J	106	j
43	Addition sign (+)	75	K	107	k
44	Apostrophe (')	76	L	108	l
45	Subtraction sign (-)	77	M	109	m
46	Point (.)	78	N	110	n
47	Slash mark (/)	79	O	111	o
48	0	80	P	112	p
49	1	81	Q	113	q
50	2	82	R	114	r
51	3	83	S	115	s
52	4	84	T	116	t
53	5	85	U	117	u
54	6	86	V	118	v
55	7	87	W	119	w
56	8	88	X	120	x
57	9	89	Y	121	y
58	Colon (:)	90	Z	122	z
59	Semi-colon (;)	91	Square parentheses (I)	123	Curly parentheses (I)
60	Less than (<)	92	Backslash (\)	124	Vertical stroke (I)
61	Equals (=)	93	Square parentheses (I)	125	Curly parentheses (I)
62	Greater than (>)	94	Circumflex (^)	126	Tilde (~)
63	Question mark (?)	95	Underscore (_)		

2.4.5 Molar mass calculator

Dialog window: **Molar mass calculator**

The dialog window **molar mass calculator** is used for the simple entry of molar masses into the formula editor and is opened with the button



Mode of operation

The molecular formula of any chemical compound can be entered in the **Molecular formula** field, after which pressing **[OK]** will cause the molar mass of the compound to be calculated and entered directly into the formula editor.

The molecular formula can be entered either directly or by clicking on the symbols of the periodic system.

Examples

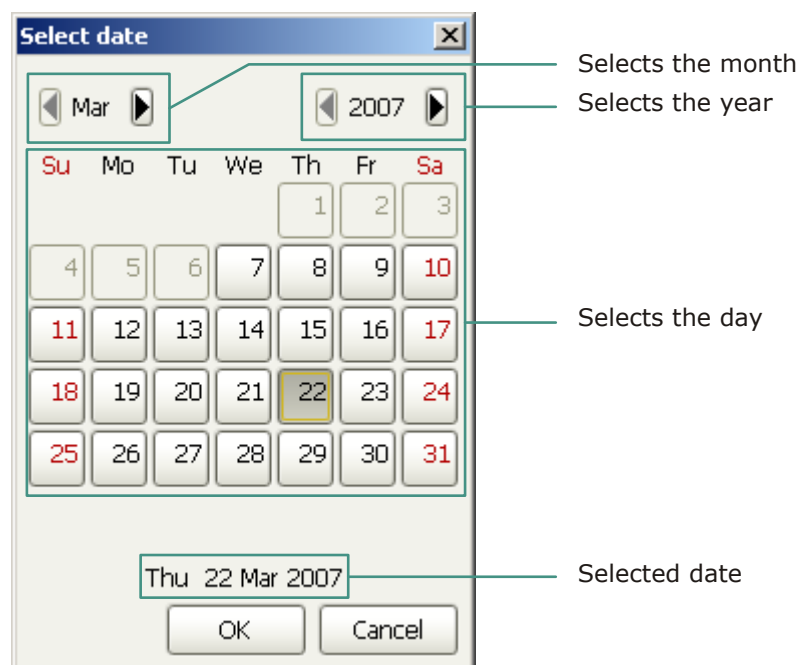
Molecular formula	Molar mass
H ₂ SO ₄	98.0734
Ca(OH) ₂	74.09268
AlCl ₃ ·6H ₂ O	238.43174

2.5 Editing

2.5.1 Select date

Dialog window: **Select date**

The dialog window **Select date** serves for entering a date in a field and is opened with the button .



2.5.2 Text editor

Dialog window: **Text editor**

The text editor serves for entering formatted text in text fields and is opened with the button .

The toolbar of the text editor includes the following functions:



Cut selected text and copy it to the clipboard.



Copy selected text to the clipboard.



Paste text from the clipboard.



Open editor for entering a hyperlink (see Chapter 2.5.3, page 79).



Open formula editor for entering calculation formulas .(see Chapter 2.4, page 28)



Note

In order for results of formulas of the type **Date** to be output correctly, they must be converted for text windows with the function **TimeToText**(see Chapter 2.4.4.7.6, page 69) to **Text**.



Font size in pt.



Select font color.



Bold.



Italic.



Underlined.



Left-justified.



Centered.



Right-justified.

2.5.3 Hyperlink

Dialog window: **Hyperlink**

The dialog window **Hyperlink** serves for entering a hyperlink in a field and is opened with the button .

Displayed text

Designation of the hyperlink that is displayed.

Link target

Address of the link target to which the hyperlink refers (Web site, E-mail address, file,...).



The button opens a selection dialog in order to link a file as a link target.

2.6 Graphics window

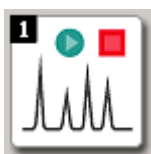
Subwindow: Workplace ▶ Live display #

Subwindow: Database ▶ Curve #

Subwindow: Database ▶ Determinations ▶ Reprocess ▶ Chromatograms - 'Ident' #

Subwindow: Method ▶ Chromatograms - 'Ident' #

The Graphics window is used for displaying the recorded chromatograms and calibration curves. It is used in the following program parts:



Workplace

Live display of chromatograms and spectra during the recording of a determination (see Chapter 3.8, page 178).



Method

Assigning the peaks and visualizing the effects of parameter changes on chromatograms, spectra and calibration curves during the method development (see Chapter 5.9, page 471).



Database

Viewing chromatograms, spectra and calibration curves of the recorded determinations (see Chapter 4.10, page 339).

Reprocessing determinations (see Chapter 4.7.18.4.4, page 308):

- Assigning the peaks and visualizing the effects of parameter changes on chromatograms and calibration curves during reprocessing.
- Manual integration.



Note

The Graphics window does not have exactly the same properties in all program parts. Where there are deviations, this is specially indicated.

2.6.1 Elements

Subwindow: Workplace ▶ Live display #

Subwindow:Database ▶ Curve #

Subwindow: Database ▶ Determinations ▶ Reprocess ▶ Chromatograms - 'Ident' #

Subwindow: Method ▶ Chromatograms - 'Ident' #

Header

This contains the title of the subwindow and a button for minimizing/maximizing the subwindow.



Note

The **Ident** of the determination is also displayed in the database and method.

Tabs

Each analysis which has been assigned a data source has its own tab. Chromatograms of the determination and the associated calibration data set as well as the calibration curves of the components are displayed there.

Radio buttons

Switches back and forth between **Chromatogram view**, **Calibration curve view** and **Spectrum view**.

If an analysis has been selected which does not have an evaluation (auxiliary curve), the radio buttons will be inactive and the chromatogram view set.



Note

Not available in **Workplace ▶ Live display #**. Only the current chromatogram can be displayed during recording.

Selection	Chromatogram Calibration curve Spectrum
Default value	Chromatogram

Chromatogram

This radio button activates the chromatogram view. If the radio button is active, the spin box will contain the chromatogram selection. The chromatogram of the last determination or a determination which has been incorporated in the calibration can be displayed.

Calibration curve

This radio button activates the calibration view. If the radio button is active, the spin box is labeled with **Components** and contains the calibration curve selection for all components.

Spectrum

This radio button is only available for analyses using the 887 Professional UV/VIS Detector. It activates the spectrum view. The selection list next to it contains the names of the spectra.

Current measuring value

Left field above the chromatogram, shows the current measured value when recording the chromatogram.



Note

Available only in **Workplace** ▶ **Live display #.**

Cursor

Right field above the chromatogram, shows the coordinates of the cursor position.



Note

The cursor position is displayed in the header of the subwindow **Data-base ► Curve #**.

2.6.2 Chromatogram view

Subwindow: Workplace ▶ Live display #

Subwindow:Database ▶ Curve #

Subwindow: Database ▶ Determinations ▶ Reprocess ▶ Chromatograms - 'Ident' #

Subwindow: Method ▶ Chromatograms - 'Ident' #

The chromatogram view consists of the following elements:

- **Chromatogram** field for selecting the displayed curve.
- **Overview window** which displays the complete curve and the zoom range.
- **Curve window**, you can zoom and configure the display here.

Chromatogram

Chromatogram

Selection of the determination whose curve is displayed.



Note

Not available in **Workplace ▶ Live display #**. Only the current chromatogram can be displayed during recording.

Database

The chromatogram can be selected from selected determination and from all determinations located in its calibration data set.

Selection **Chromatogram** | **Blank** | **Standard 1...n**

Default value	Chromatogram
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	
0.000000	

Method

The chromatogram of the last determination or the last sample which has been measured can be selected, while all the determinations which are incorporated in the current calibration data set are also available.

Selection **Last chromatogram | Sample | Blank | Standard 1...n**

Default value	Last chromatogram
1	1

Overview window

This always displays the entire measurement curve. The zoom range is represented as a red square in the overview window, which can be moved with the mouse.

Curve window

This serves for displaying and viewing the measurement curve. The curve can be zoomed in or out and its visualization (background, axes, peak label,...) completely configured.

If you click on the curve window with the right mouse button, a **context-sensitive menu** will appear with the following menu items:

Show all	Shows whole curve. This menu item is always enabled.
Default view	Shows default view. This menu item is inactive, if Show all is selected for both axes as the definition of the default view (see Chapter 2.6.9.1, page 91).
Zoom	Opens dialog window for setting the zoom range (see Chapter 2.6.8, page 90).
Unzoom	Resets the last zoom action.
Properties...	Opens the dialog window Properties - 'Analysis name' to define properties of the curve display (see Chapter 2.6.9, page 91).
Copy	Copies the chromatogram displayed in the graphics window.



Note

The following menu items are only available in dialog window **Reprocessing** (subwindow: **Database ► Determinations ► Reprocess ► Chromatograms - 'Ident' #**) (see Chapter 4.7.18.4.4, page 308).

Add peak	Adds peak. Only active if cursor is not placed on a peak.
Add valley	Adds rider. Only active if cursor is placed on a peak. Is not possible to insert a rider in peaks with a common baseline or in other riders.
Remove peak	Removes marked peak. Only active if a peak is marked.
Divide peak	Splits peak at cursor position into two peaks with a common baseline. Only active if a peak is marked.

Link peaks	Joins peaks with common baseline to one peak. Only active if two peaks with a common baseline are marked.
 Note The following menu items are only available in program part Method and in dialog window Reprocessing (Subwindow: Method ► Chromatograms - 'Ident' # or Subwindow: Database ► Determinations ► Reprocess ► Chromatograms - 'Ident' #).	
New component	Opens Dialog window Component to define a new component. The cursor position is automatically applied as the retention time (<i>see Chapter 5.8.3.2, page 406</i>).
New Event	Opens Integration event dialog window to define a new event. The cursor position is automatically applied as the retention time (<i>see Chapter 5.8.2.4, page 402</i>).

2.6.3 Calibration curve view

Subwindow:Database ▶ Curve #

Subwindow: Database ▶ Determinations ▶ Reprocess ▶ Chromatograms - 'Ident' #

Subwindow: Method ▶ Chromatograms - 'Ident' #

The calibration curve view consists of the following elements:

- **Component** field for selecting the displayed calibration curve.
- Graphic showing the calibration points and the **calibration curve**.
- The mathematical **properties** of the calibration curve.
- A table with the **calibration points**.

Component

Component

Selection of the component whose calibration curve is displayed. The selection comprises all components which are defined in the active analysis.

Calibration curve

Shows the calibration curve of the component which is selected in the **Component** field.

The graphic of the calibration curve is synchronized with the calibration points table. A calibration point can be selected both in the curve and in the table. The point is then highlighted in **blue** and the corresponding line

The label of the axes or assignment in respect to which property is applied to the x/y axis is derived from the function type of the calibration which is defined in the method. For a calibration with an internal standard, the unit of the measuring quantity is called **Ratio**.

If you click on the calibration curve with the right mouse button, a **context-sensitive menu** will appear with the following menu items:

Show all	Shows whole curve. This menu item is always enabled.
Default view	This menu item is inactive for the calibration curve.
Zoom	Opens dialog window for setting the zoom range (<i>see Chapter 2.6.8, page 90</i>).
Unzoom	Resets the last zoom action.
Copy	Copies the calibration curve displayed in the graphics window.

Properties

Displays several characteristic values of the calibration curve.

Function

Function of the calibration curve.

Relative standard deviation

Relative standard deviation of the calibration curve.

Correlation coefficient.

Correlation coefficient of the calibration curve.

Curve type

Curve type of the calibration curve. This is derived from the method used to record the determination (*see Chapter 5.8.5.2, page 415*).

Weighting

Weighting used to incorporate a calibration point in the calibration curve. This is derived from the method used to record the determination (*see Chapter 5.8.5.2, page 415*).

Retention time of the last standard or retention time of the last determination

Is displayed only if **Readjust retention times** is selected in the method (see Chapter 5.8.3.3, page 407).

If you click on the table for the calibration points with the right mouse button, a **context-sensitive menu** will appear with the following menu items:

On	Switches check box Used for the marked calibration points on.
Off	Switches check box Used for the marked calibration points off
Invert selection	Inverts the setting Used for the marked calibration points.
Change calibration	Opens dialog window Select calibration (see Chapter 2.6.10, page 98).

2.6.4 Spectrum view

Subwindow: Workplace ▶ Live display #

Subwindow:Database ▶ Curve #

Subwindow: Method ▶ Spectrum #

The spectrum view consists of the following elements:

- The field **Spectrum** for selecting the displayed spectrum.
- **Curve window**, you can zoom and configure the display here.

Spectrum

Spectrum

Selection of the spectrum to be displayed.

Curve window

This serves for displaying and viewing the measurement curve. The curve can be zoomed in or out and its visualization (background, axes, peak label,...) completely configured.

If you click on the curve window with the right mouse button, a **context-sensitive menu** will appear with the following menu items:

Show all	Shows whole curve. This menu item is always enabled.
Default view	Shows default view. This menu item is inactive, if Show all is selected for both axes as the definition of the default view (see Chapter 2.6.9.1, page 91).
Zoom	Opens dialog window for setting the zoom range (see Chapter 2.6.8, page 90).

Unzoom	Resets the last zoom action.
Properties...	Opens the dialog window Properties - 'Analysis name' to define properties of the curve display (<i>see Chapter 2.6.9, page 91</i>).
Copy	Copies the chromatogram displayed in the graphics window.

2.6.5 Zooming

Subwindow: Workplace ▶ Live display #

Subwindow: Database ▶ Curve #

Subwindow: Database ▶ Determinations ▶ Reprocess ▶ Chromatograms - 'Ident' #

Subwindow: Method ▶ Chromatograms - 'Ident' #

Zooming with the mouse

Curves can be zoomed as often as required by spanning a section of the curve display with the left-hand mouse key pressed down. The smallest range that can be zoomed is 10^{-6} .

Zooming with the dialog

Zooming can be undone with a double-click on the section of the graph or with the context-sensitive menu command **Show All**.

The context-sensitive menu item **Zoom** opens the dialog window **Set Zoom** for entering the zoom range (*see Chapter 2.6.8, page 90*).

Zooming with the keyboard

The arrow keys only become active if the Graphics window has the focus. It receives the focus by clicking on the Graphics Window, the focus being displayed by a red frame.

Zooming with the keyboard can make the zoom range bigger than in the Overview Window. In this case, the Overview Window does not change its size. Only a partial frame or not even a red frame is drawn.

[↑]	Zooms in the view in the direction of the Y axis.
[↓]	Zooms out the view in the direction of the Y axis.
[←]	Zooms in the view in the direction of the X axis.
[→]	Zooms out the view in the direction of the X axis.

If an event is selected in the table for the integration events, its starting time point will be highlighted by a **blue** vertical cursor and its ending time point by a **red** vertical cursor in the curve window. Events which have a time point are highlighted by a red cursor. The cursors can be moved manually. The changed times are accepted in the evaluation with the **[Update Event]** button (*see Chapter 5.8.2.4, page 402*).

Retention times

Tab: Method ▶ Evaluation ▶ Components ▶ Component table

If a component has been selected in the component table, its retention time will be highlighted by a **blue** vertical cursor in the curve window. The cursor can be moved manually. The changed retention time is updated with accepted in the evaluation with the **[Update Retention Time]** button (see Chapter 5.8.3.2, page 406).

2.6.8 Set Zoom

Dialog window: **Graphics window** ► **Zoom...** ► **Zoom**

Specifies the displayed area, which is always spanned over the whole size of the curve window.



Note

The settings are temporary. They are not saved in the properties of the curve display.

X axis

Visible range in X direction.

from

Starting point in x direction.

Range	-10¹² ... 10¹²

to

Endpoint in x direction

Range	$-10^{12} \dots 10^{12}$

Y axis

Visible range in Y direction.

from

Starting point in y direction.

Range	$-10^{12} \dots 10^{12}$

Endpoint in y direction

Range	$-10^{12} \dots 10^{12}$

Subwindow: Workplace ▶ Live display #

Subwindow:Database ▶ Curve #

Subwindow: Database ▶ Determinations ▶ Reprocess ▶ Chromatograms - 'Ident' #

Subwindow: Method ▶ Chromatograms - 'Ident' #

The context-sensitive menu item **Properties...** in the curve window opens the dialog window **Properties - 'Analysis Name'**. The visualization of the curve display can be configured here. The window contains up to four tabs

The label and scaling of the axes is defined on the **Properties - Axes** tab.

X axis

Freely definable label of the axis.

Selection	auto any text
Default value	auto

auto

The axis is labeled with the unit of the applied size.

any text

Any text can be entered.

The default view includes option buttons for defining the standard visualization of the axes.

Selection **Show all | Range**
 Default value **Show all**

Show all

The axis scaling is selected in such way that all points of the curve are displayed.

Range

Only the area indicated of the axis between **from** and **to** is displayed. These two fields can only be edited if the option **Range** is activated.

from

Initial value for scaling the axis. The displayed unit corresponds to the setting in the **Axis label** field.

Range	$-10^{12} \dots 10^{12}$

to

Final value for scaling the axis. The displayed unit corresponds to the setting in the **Axis label** field.

Range	$-10^{12} \dots 10^{12}$

Y axis

Axis label

Freely definable label of the axis.

Selection	auto any text
Default value	auto

auto

The axis is labeled with the unit of the applied size.

any text

Any text can be entered.

Default view

The default view includes option buttons for defining the standard visualization of the axes.

Selection **Show all** | Range
 Default value **Show all**

Show all

The axis scaling is selected in such way that all points of the curve are displayed.

Range

Only the area indicated of the axis between **from** and **to** is displayed. These two fields can only be edited if the option **Range** is activated.

from

Initial value for scaling the axis. The displayed unit corresponds to the setting in the **Axis label** field.

Range	$-10^{12} \dots 10^{12}$

to

Final value for scaling the axis. The displayed unit corresponds to the setting in the **Axis label** field.

Range	-10¹² ... 10¹²

Scaling

Selection whether the y axis is to be scaled absolutely or relatively.

Selection	Absolute Relative
Default value	Absolute

Absolute

The values displayed correspond to the actual measured values. The Y axis starts at $y_0(\text{abs})$ and ranges to $y_{\text{max}}(\text{abs})$.

Relative

Only selectable for chromatograms and spectra. The curve is represented in the same way as with absolute scaling. The y axis however starts at 0 and ranges to $y_{\text{max}}(\text{abs}) - y_0(\text{abs})$. This calculation applies for positive as well as for negative polarity. Example: A signal in the range of -600 to -500 is shown in the range of 0 to 100 with relative scaling.

2.6.9.2 Properties - Chromatogram

The peak label, display of the baseline and curve visualization are defined in the **Properties - Chromatogram** tab.

Peak label

Orientation

Specifies the orientation of the peak label.

Range	0° (horizontal) ... 90° (vertical)
Default value	90° (vertical)

Always visible

on | off (Default value: **on**)



Note

The peak label is always located on the tip of the peak, regardless of whether positive or negative peaks are involved.

Specifies where the peak label is located if the **peak tip is not visible** (e.g. via zoom).

- If the option is **active**, the peak label is displayed on the upper and lower edge of the curve window.
- If the option is **inactive**, the peak label will always remain at the peak tip, i.e. it is also not visible.

The following properties can be activated/deactivated for the peak label:

Peak number

on | off (Default value: **off**)

Number of the peak. The recognized peaks are numbered consecutively in order. A peak which cannot be assigned to any component, is **always** provided with the peak number.

Component name

on | off (Default value: **on**)

Name of the component. The component name is displayed if the peak can be assigned to a component from the component table.

Retention time

on | off (Default value: **on**)

Retention time of the peak.

Concentration

Concentration of the components. No concentration can be calculated and displayed for a peak which cannot be assigned to any component.

Tooltip

on | off (Default value: **on**)

The Tooltip appears if the mouse cursor rests on a peak and shows the peak properties **Component name**, **Retention time** and **Concentration** if they are activated for the peak label.

Baseline

Show baseline

on | off (Default value: **on**)

Specifies whether the baseline is displayed.

Show base point

on | off (Default value: **on**)

Specifies whether the base points of the peaks are displayed.

Curve

Filter spikes

on | off (Default value: **on**)

Specifies whether the curve is smoothed for the display. The spike filter smooths the first and last points of the curve and the points which are

2.6.9.3 Properties - Reference chromatogram

 **Note**

Not possible in **Database ▶ Curve #** and **Database ▶ Determinations ▶ Reprocess ▶ Chromatograms - 'Ident' #**. The reference chromatogram can only be displayed in the method development and during the recording.

Selection	Off Last standard Last check standard Last chromatogram
Default value	Off

No reference chromatogram is shown.

The chromatogram of the most recently determined standard is shown.

The chromatogram of the most recently determined check standard is shown.

The chromatogram of the most recently recorded determination is shown, regardless of which sample type has been determined.

As soon as a new **standard** (for **Last standard**), **check standard** (for **Last check standard**) or any **sample type** (for **Last chromatogram**) has been determined, the associated chromatogram is displayed as a reference chromatogram. The latest available reference chromatogram is displayed.

Properties - Display

The visual appearance of the Graphics window is defined in the **Properties - Display** tab.

Overview

Shows Overview window

on | off (Default value: **on**)

Check box for showing/hiding the Overview window.

Curve

Area for defining the color of the measurement curve.

Curve

List box for the color of the measurement curve

Line thickness

Range	1 ... 10 pPixels
Default value	1 pPixels

Baseline

List box for the color of the baseline.

Comparison curve

Area for defining the color of the comparison curve.

Comparison curve

List box for the color of the comparison curve

Line thickness

Range	1 ... 10 pPixels
Default value	1 pPixels

Graph

Area for defining the appearance of the Graphics window.

Background

Clicking on the symbol  opens the dialog window **Select color**.

Axes

List box for the color of the axes.

Line thickness

Range	1 ... 10 pPixels
Default value	1 pPixels

Grid

on | off (Default value: **off**)

Check box for showing/hiding a grid in the background of the measurement curve.

List box for the color of the grid.

2.6.10 Changing calibration

Client

Selection list used for selecting the client whose calibration data set is to be loaded.

Selection	all clients
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

If the selection is confirmed with **[OK]**, the calibration data set of the client on which the action is to be executed is overwritten with the calibration data set of the selected client.

2.6.11 Choosing color

The dialog window contains radio buttons for setting the hue, saturation and brightness.

Color selection

Clicking in the left color field allows you to select a color; the settings for the color are automatically transferred to the fields for the color setting at the same time.

Scroll bar

The scroll bar in the center of the dialog window is synchronized with the activated field of the color setting. This allows the **Hue**, **Saturation** and **Brightness** to be set very quickly.

Color setting

The hue, saturation and brightness of the color can be set independently of one another.

Selection	Hue Saturation Brightness
Default value	Hue

Hue

Hue entry.

Range	0 ... 359

Saturation entry.

Range	0 ... 100

Brightness entry.

Range	0 ... 100

The RGB values for the selected color are displayed.

Display of the red contribution.

Range	0 ... 255

Display of the green contribution.

Range	0 ... 255

Display of the blue contribution.

Range	0 ... 255

A sample with the color set is displayed in the lower part of the dialog window.

2.7.1 Send E-mail

Dialog window: **[E-mail]** ► **Send E-mail**

Selection of the template for sending E-mails.

Subject to describe the message.

3 Workplace

3.1 Workplace - General

3.1.1 Workplace - Definition

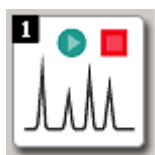
Program part: **Workplace**

Workplace is defined in **MagIC Net** as the program part in which up to 4 workplaces can be opened next to one another for the simultaneous, independent running of determinations.

3.1.2 Workplace - Desktop

Program part: **Workplace**

Workplace symbol



Clicking on the workplace symbol in the vertical bar on the left opens the program part **Workplace** while, at the same time, the workplace symbol is shown in color. The upper left corner of the symbol contains a black field displaying the number of workplaces currently opened (*see Chapter 3.2.3.1, page 111*).

Elements

The desktop of the program part **Workplace** comprises the following elements:

- Workplace-specific menu bar.
- Workplace-specific toolbar.
- Main window in which up to 6 subwindows can be displayed.

3.1.3 Workplace - Menu bar

3.1.3.1 Workplace - Main menu

Program part: **Workplace**

The menu bar in the program part **Workplace** contains the following main menu items:

- *File*
Create, edit, close workplaces; save methods; open manual control.
- *View*
Change layout, load views, save views, edit properties of subwindows.

Properties Run window	Sets properties for the tab Single determination or Determination series in the subwindow Run .
Properties live display 1	Sets properties for the subwindow Live display 1 (see Chapter 3.8, page 178).
Properties live display 2	Sets properties for the subwindow Live display 2 (see Chapter 3.8, page 178).
Properties Watch window	Sets properties for the subwindow Watch window (see Chapter 3.10, page 183).
Toolbar	Switch toolbar display on/off.

3.1.3.4 Workplace - Menu Tools

Program part: **Workplace**

 Run test	Carries out run test for determination(s) (see Chapter 3.7.2, page 140).
Sample table ►	
 New...	Opens a new and empty sample table (see Chapter 3.3.1.1, page 112).
 Open...	Opens a saved sample table (see Chapter 3.3.1.2, page 112).
 Manager...	Opens the saved sample table manager (see Chapter 3.3.3.1, page 130).
 Timer...	Defines automatically executed actions (see Chapter 3.4.1, page 132).
Sample assignment table...	Defines sample identifications which a certain method can be assigned to (see Chapter 3.5.1, page 136).
Text templates...	Creates text templates for the sample data (see Chapter 3.6.1, page 138).

3.1.3.5 Help Menu

Program part: **Workplace / Database / Method / Configuration**

 MagIC Net Help	Open MagIC Net Help.
About	Displays information about the program and the installation.

3.1.4 Workplace - Toolbar

Program part: **Workplace**

 Sample table/New...	Opens a new and empty sample table (<i>see Chapter 3.3.1.1, page 112</i>).
 Sample table/Open...	Opens a saved sample table (<i>see Chapter 3.3.1.2, page 112</i>).
 Sample table/Manager...	Opens the saved sample table manager (<i>see Chapter 3.3.3.1, page 130</i>).
 Change layout	Changes layout of the loaded workplace view (<i>see Chapter 3.1.7.2, page 107</i>).
 Load view	Loads a saved workplace view (<i>see Chapter 3.1.7.3, page 108</i>).
 Save view	Saves the current workplace view (<i>see Chapter 3.1.7.4, page 109</i>).
 Run test	Carries out run test for determination(s) (<i>see Chapter 3.7.2, page 140</i>).
 Timer...	Defines automatically executed actions (<i>see Chapter 3.4.1, page 132</i>).
 Split vertically	Splits workplace window vertically and display two workplaces side by side (<i>see Chapter 3.2.3.3, page 111</i>).
 Split horizontally	Splits workplace window horizontally and display two workplaces below each other (<i>see Chapter 3.2.3.4, page 112</i>).
 Unsplit	Unsplits the workplace window (<i>see Chapter 3.2.3.2, page 111</i>).
 Logout	Logout user (<i>see Chapter 2.2.3, page 21</i>).
 MagIC Net Help	Open MagIC Net Help.

3.1.5 Workplace - Subwindows

Program part: **Workplace**

Selection

The following subwindows can be displayed in the main window:

- *Run*
Window for the control of run sequences and entering of sample data. This subwindow is permanently on display.
- *Live Live display 1*
Display of live curves, measured values and messages for the determination running.

- *Live display 2*
Display of live curves, measured values and messages for the determination running.
- *Report*
Display of reports of recorded determinations.
- *Watch window*
Shows important information concerning method and instruments.
- *Time program*
Display of the time program of the method loaded.

Presentation

The subwindows can be enlarged or made smaller to suit by dragging the separating bar between the windows.

By clicking on the button  above at the right, the subwindows can be maximized so that only one subwindow is displayed in the main window. The original view of all subwindows is restored when the  button is clicked in the maximized subwindow again.

3.1.6 Workplace - Functions

Program part: **Workplace**

The following functions can be carried out in the **Workplace** program part:

Views

- *Define the workplace view layout*
- *Load workplace view*
- *Save workplace view*
- *Rename workplace view*
- *Delete workplace view*

Workplaces

- *Create workplace*
- *Edit workplace*
- *Select workplace*
- *Close workplace*

Sample tables

- *Create sample table*
- *Open sample table*
- *Edit sample table*
- *Edit sample data*
- *Save sample table*
- *Print sample table*
- *Define sample table properties*
- *Sample table manager*



Single determination

- *Start/stop single determination*
- *Interrupt/resume single determination*
- *Enter sample data*
- *Modify sample data live*
- *Define properties*

Determination series

- *Start/stop series*
- *Interrupt/resume determination*
- *Interrupt/resume series*
- *Load sample table*
- *Edit sample table*
- *Enter sample data*
- *Modify sample data live*
- *Define properties*

Subwindow Live display

- *Define properties*

Subwindow Report

- *Select a report*

Tools

- Perform run test
- Edit sample assignment table
- Define text templates

3.1.7 Views

3.1.7.1 Views - General

Program parts: **Workplace / Database / Configuration**

Definition

The term **View** defines the contents and design of the main window in the program parts **Workplace**, **Database** and **Configuration**. The following elements belong to a view:

- Number, arrangement, sequence and size of the subwindows.
- Representation within the individual subwindows, i.e. column sequence, column width, sorting and filter.

Functions

The following functions are possible for views:

- *Change layout*
Defines the number, arrangement and sequence of the subwindows for the current view.

- ## Automatic save

Automatic load

The standard procedure is that the view with the following subwindow is opened with the very first program start:

- ## Export/Import

3.1.7.2 Change layout

With the symbol  or the menu item **View ► Change Layout...** the dialog window **Change layout** is opened.

Selects a graphical symbol for the number, arrangement and sequence of the subwindows.

■■■■■■■■ 107

Available subwindows

Displays the subwindows that are still available for displaying the view.

Selection	Subwindow selection
☐ All ☒ Selected ☐ None	☐ All ☒ Selected ☐ None

Displayed subwindows

Displays the subwindows that are shown in the view.

Selection	Subwindow



Add the selected subwindow to the view.



Remove the selected subwindow from the view.



Move the selected subwindow upward (modifies sequence).



Move the selected subwindow downward (modifies sequence).

3.1.7.3 Load view

Dialog window: **Workplace / Database / Configuration ▶ View ▶ Load view... ▶ Load view**

With the symbol  or the menu item **View ► Load view...** the dialog window **Load view** is opened.

Name

Name of the view that should be loaded.

[Rename]

Rename the selected view.

[Delete]

Delete the selected view.

[Load]

Load the selected view.

3.1.7.4 Save view

Dialog window: **Workplace / Database / Configuration ▶ View ▶ Save view... ▶ Save view**

With the symbol  or the menu item **View ► Save view...** the dialog window **Save view** is opened.

Name

Name under which the view is to be saved.

[Rename]

Rename the selected view.

[Delete]

Delete the selected view.

[Save]

Saves the view under given name. The saved views are globally valid and available for client/server systems.

3.1.7.5 Rename view

Dialog window: **Workplace / Database / Configuration ▶ View ▶ Rename view... ▶ Rename view**

To be able to rename a view, either open the dialog window **Load View** or **Save View** and press the **[Rename]** button. The **Rename View** window is opened.

Rename view to

Enter a new name for the view.

Input	50 characters

3.1.7.6 Delete view

Function: **Workplace / Database / Configuration ▶ View ▶ Load/Save view... ▶ [Delete]**

To be able to delete a view, either open the dialog window **Load view** or **Save view** and press the **[Delete]** button. The delete procedure must then be confirmed.

3.2 Workplaces

3.2.1 Create new workplace

Dialog window: **Workplace** ▶ **File** ▶ **Workplace** ▶ **New...** ▶ **New workplace**

The properties of the new workplace can be defined in this dialog window.

Name

Entry of a name for the new workplace or selection from the list of the 10 names most recently used.

Input	50 characters

Color

Selection of the color for the title bar of the subwindow and the status symbol for the new workplace in the status bar.

Selection	yellow blue green brown
Default value	yellow

3.2.2 Edit workplace

Dialog window: **Workplace ► File ► Workplace ► Properties... ► Workplace properties**

The properties of the selected workplace can be defined in this dialog window.

Name

Entry of a name for the selected workplace or selection from the list of the 10 names most recently used.

Input	50 characters

Color

Selection of the color for the title bar of the subwindow and the status symbol for the selected workplace in the status bar

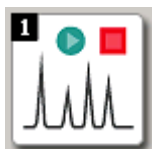
Selection	yellow blue green brown
Default value	yellow

3.2.3 Displaying workplaces

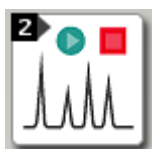
3.2.3.1 Selecting workplace

Program part: **Workplace**

The number of the currently opened workplaces is displayed in the left upper corner of the workplace symbol. If 2 or more workplaces are opened, then these two workplaces, which can be displayed next to one another or one above the other, can be selected with the aid of the workplace symbol.



One workplace is opened and is displayed in the main window.



Two workplaces are opened. Normally only one workplace is displayed in the main window but the option exists of displaying two workplaces at once, either next to one another or one below the other.



A menu with the currently opened workplaces is displayed by clicking with either the left or right mouse button on the workplace symbol. The workplaces displayed in the main window are marked with a checkmark. Clicking on the desired workplace will cause it to be displayed in the main window in place of the previously selected one.

3.2.3.2 Displaying single workplaces

Menu item: **Workplace ► View ► Unsplit**

In the default settings, the most recently opened workplace is displayed alone in the main window. If the display of two windows is enabled, then the symbol  or the menu item **View ► Unsplit** can be used to switch back to the display of just one single workplace.

3.2.3.3 Displaying workplaces next to one another

Menu item: **Workplace ► View ► Split vertically**

With the symbol  or the menu item **View ► Split vertically** two workplaces are displayed next to one another in the main window.

Comment

Comment on the sample table that was entered on the tab **Comment** as comment concerning the sample table (*see Chapter 3.3.2.6, page 129*).

Opening the sample table

Name

Name of the sample table that is to be opened. If a sample table from the table is selected, the name will be entered automatically in this field. It can however also be entered manually.

Input	50 characters

[Open]

Open selected sample table.

3.3.1.3 Editing sample table

Dialog window: **Workplace** ▶ **Tools** ▶ **Sample table** ▶ **Open...** ▶ **[Open]** ▶ **Sample table 'Name'**

A newly created sample table or one that has been opened can be edited and saved in this dialog window.

Toolbar

 Save the sample table	Saves sample table.
 PDF output	Outputs sample table as PDF file.
 Reset sample table	Resets lines that have been run, i.e. they can be edited again.
 Duplicate	Duplicates selected line(s). The new lines are inserted underneath the selected range.
 Increment	Automatically increments selected lines.
 Filling	Automatically fills selected lines.
 Test sample table	Check whether or not all sample data in the sample table is correct.

Sample data table

This table contains sample data lines that have already been saved in the sample data table and a line for entering new data that contains a star instead of a line number. The table cannot be edited or sorted directly.

For the meaning of the columns, see *Editing sample data*.

Window menus

[Edit] contains the following menu items:

 Edit line	Edits selected line.
 Insert new line	Inserts a new empty line above the line selected.
 Cut lines	Cuts selected lines and transfers them to the clipboard.
 Copy lines	Copies selected lines to the clipboard.
 Insert lines	Inserts lines from the clipboard above the selected line.
 Delete lines	Deletes the selected lines.
 Increment	Using the cursor, which takes on the form  , the region which is to be automatically incremented can be selected from a column in the table. The number standing at the end of the expression will thereby be automatically increased by 1 in the selected cells of a column, starting from the first selected cell. This works with pure numbers as well as with character strings ending with a number (e.g. ABC10 → ABC11 → ABC12 ...).
 Filling	Automatically fill selected lines.
 Duplicate	Duplicates selected line(s). The new lines are inserted underneath the selected range.
 Mark lines	Marks selected lines with a red background for the line number. Before the start of such a line the corresponding actions defined under Properties on the tab Process (see <i>Chapter 3.3.2.4, page 127</i>) will be triggered.
 Unmark lines	Removes the line marking for the selected lines.
 Set lines inexecutable	Sets the selected lines to "inexecutable", i.e. these lines will not be carried out in the method run. Such lines are crossed through with a red line.
 Set lines executable	Sets the selected lines to "executable", i.e. they will be carried out in the run.

[Sample table] contains the following menu items:

 Save	Saves the current sample table under the same name.
Save as...	Saves the current sample table under a new name.

[illegible]

Moving lines with Drag&Drop

The lines selected in the sample table can be moved into the working sample table per Drag&Drop.

Copying lines with Drag&Drop

The lines selected in the sample table can be copied into the working sample table with Drag&Drop by pressing the **Ctrl/Strg** key.

3.3.1.4 Editing sample data

Dialog window: **Workplace** ▶ **Tools** ▶ **Sample**
table ▶ **Open...** ▶ **[Open]** ▶ **[Edit]** ▶ **Edit line** ▶ **Edit line - Sample table 'Name'**

Method

Entry or selection of the method from the current method group with which the determination is to be carried out. By typing in the first characters, the method selection is continuously restricted and allows fast selecting of the method required.

Input	50 characters
Selection	Method selection



Open the dialog window **Open method** for the extended method selection. If a method is selected in this window from a method group other than the current one, then this group will henceforth be the current method group for the quick selection of methods in the **Method** field. This button is active only if more than one method group is present.



Note

If a method is changed and saved in the method editor or during reprocessing, then the latest method version will be loaded when a new determination is started.



Note

The following sample data fields can no longer be edited if they were defined as **Fixed value** in the method (see *Chapter 5.3.1, page 354*).

Ident

Entry of an identification or selection of a defined text template for identifying the chromatogram (see *Chapter 3.6.1, page 138*).

Input	64 characters
Selection	Selection of text templates

Sample type

Selection of the sample type. **Sample** and **Blank** can always be selected, the remaining types can only be selected if they are defined in the method.

Selection	'empty' Sample Standard 1...n Spiking 1...n Check standard 1...n Blank
Default value	'empty'

Position

Position of the sample on the rack. Input as character string. Enter numbers for sample changers with numerically designated positions. Enter a corresponding character string with letter(s) and number(s) for sample changers with alphanumerically designated positions. The value is used to move to the sample position with the corresponding sample changer command.

Input	100 characters

Injections

Number of injections per sample line. The determinations of this kind of multiple injection are linked statistically with one another.

Range	1 ... 99 (Increment: 1)
Default value	'empty'

Volume

Volume of the sample in µL.

Range	0.01 ... 1000000.00 µL
Default value	'empty' µL

Dilution

Dilution factor for the sample.

Range	0.001 ... 10000.000
Default value	'empty'

Sample amount

The parameter **Sample amount** is a correction factor for taking into account various initial weights for different samples. It indicates the ratio of the initial weight of the current sample to the normal initial weight or to the basic unit. The end result thus achieved is divided by this factor.

- *Example 1*

Basic initial weight = 2.0 g

Sample initial weight = 2.1 g

Sample amount = $2.1 / 2.0 = 1.05$

The result is divided by 1.05 and indicates how high the content is in relation to the defined basic initial weight of 2 g.

- *Example 2*

Basic unit = 1.0 mg

Initial sample size = 2.1 mg

Sample amount = $2.1 / 1.0 = 2.1$

The result is divided by 2.1 and indicates how high the content per mg of sample is.

Range	0.00001 ... 1000000.00000
Default value	'empty'

Info 1...4

Entering of additional information concerning the sample. If text templates are defined for this parameter, then they can be selected here (see *Chapter 3.6.1, page 138*).

Input	100 characters
Selection	Selection of text templates

Value 1...4

Input of additional values for the sample.

Input	Number

Navigation

Zeile   5    von 5

Display of the currently selected line in the sample table with the following functions:



Jump to the first line in the sample table.



Jump to the previous line in the sample table.

5

Option of entering the desired line number to which the program jumps when the **[Enter]** is actuated.



Jump to the next line in the sample table. If the end of the table has been reached, then a new line will be inserted automatically and the program will jump to it.

The same function can also be triggered by pressing the **[Enter]** key.



Jump to the last line in the sample table.



Jump to a new, empty line.

Functions

[Apply]

Apply the sample data entered in the respective line of the sample table. If the end of the table has been reached, then a new line will be generated automatically. The same function can also be triggered by pressing the **[Enter]** key. The next line will in addition however also be marked automatically when the **[Enter]** is used.

[Exit]

Closes the input window. The current sample data will not be applied in the sample table thereby (this needs to be triggered beforehand with **[Apply]**).

3.3.1.5 Duplicate sample data

Dialog window: **Workplace** ▶ **Sample table / Determination series** ▶ **[Edit]** ▶ **Duplicate** ▶ **Duplicate**

Number

Request as to how often the selected lines are to be duplicated. The new lines are inserted underneath the selected range.

Range	1 ... 999
Default value	1

3.3.1.6 Importing sample data

Dialog window: **Workplace** ▶ **Sample table / Determination series** ▶ **[Sample table]** ▶ **Import data...** ▶ **Select files to import**

Select a ***.csv** file in this dialog window with the sample data to be imported.

File name

Input or selection of the file that is to be imported.

Selection	File name

File type

Selection of the import format for the import of data from a file (only ***.csv** is possible).

Selection	*.csv *.csv (Unicode)
Default value	*.csv

[Open]

The sample data from the selected file is inserted at the end of the sample table.



Note

No matter the number of data fields defined on the **Display** tab, the import file must always contain for each line the entirety of the sample data in the format **Method name;Ident;Sample type;Position;Injections;Volume;Dilution;Sample amount**.

3.3.1.7 Exporting sample data

Dialog window: Workplace ► Tools ► Sample
table ► Open... ► [Open] ► [Sample table] ► Export data... ► Save
file under..

Dialog window:Workplace ▶ Run ▶ Determination series ▶ [Sample table] ▶ Export data... ▶ Save file as..

In this dialog window, you determine the file into which the sample data is to be exported.

File name

Input or selection of the file into which the export is to be made.

Selection	File name

File type

Prescribed format ***.csv**.

Selection	[*.csv]
Default value	[*.csv]

[Save]

The sample data will be written to the export file.

3.3.1.8 Sample table test

Dialog window: **Workplace** ▶ **Sample table / Determination series** ▶ **[Sample table]** ▶ **Sample table test...** ▶ **Sample table test -Sample table name**

The menu item **[Sample table] ► Sample table test...** or the symbol  is used to perform the sample table test. At the same time, the dialog window **Sample table test - 'Sample table name'** in which the information concerning the test is displayed opens.



Note

The **Sample table test** is only used to check whether or not all sample data is correct (in contrast to the **Run test** (see *Chapter 3.7.2, page 140*), which also checks the required hardware).

Line

Displays the line number of the currently tested sample data line.

Status displays

One of the following status displays appears underneath the line number:

Sample table test running...

This display appears during the test run. A progress bar also appears; the test can be interrupted thereby by means of the [x] next to the bar.

Sample table test stopped manually

This display appears if the sample table test was canceled manually by the user.

Sample table test finished without errors

This display appears at the end of a sample table test that has been completed without errors.

Sample table test finished with errors

This display appears if an error has occurred during the sample table test. The errors that occurred are listed in the **Test report** field.

Display of errors that occurred during the sample table test, together with line numbers.

Dialog window: **Workplace** ▶ **Sample table / Determination series** ▶ **[Sample table]** ▶ **Save as...** ▶ **Save sample table**

A name for the working sample table to be saved can be entered or selected in this dialog window.

The list of sample tables contains information about all the saved sample tables.

Name of the sample table.

Date and time when the sample table was saved.

Short name of the user who saved the sample table.

Number of lines in the sample table.

Comment

Comment on the sample table that was entered on the tab **Comment** as comment concerning the sample table (*see Chapter 3.3.2.6, page 129*).

Saving sample table

Name

Name under which the sample table is to be saved.



Note

The name of the sample table must be unique throughout the entire client/server system.

Input	50 characters

[Save]

Save the sample table under the desired name.

3.3.1.10 Print sample table (PDF)

Dialog window: **Workplace** ▶ **Sample table / Determination series** ▶ [Sample table] ▶ **Print (PDF)...** ▶ **Print sample table (PDF)**

The output format for the PDF output can be selected in this dialog window.

Orientation

Selection	Portrait Landscape
Default value	Portrait

Portrait

Output in portrait format.

Landscape

Output in landscape format.

3.3.2 Sample table - Properties

3.3.2.1 Properties - Overview

Dialog window: **Workplace** ▶ **Tools** ▶ **Sample table** ▶ **New...** ▶ **[Sample table]** ▶ **Properties...** ▶ **Properties - Sample table 'Name'**

The properties for a sample table are set on the following tabs:

- *Properties - Display*
Definition of the columns that are to be displayed in the sample table.

- ### 3.3.2.2 Properties - Display

Dialog window:Workplace ▶ Run ▶ Determination series ▶ Properties Run window ▶ Properties - Determination series

Sample data

on | off (Default value: **on**)

Sample type

on | off (Default value: **on**)

Position

on | off (Default value: **on**)

Enable/disable the display of the column **Position** in the sample table.

on | off (Default value: **on**)

Enable/disable the display of the column **Injections** in the sample table.

on | off (Default value: **on**)

Enable/disable the display of the column **Volume** in the sample table.



Dilution

on | off (Default value: **on**)

Enable/disable the display of the column **Dilution** in the sample table.

Sample amount

on | off (Default value: **on**)

Enable/disable the display of the column **Sample amount** in the sample table.

Info 1

on | off (Default value: **on**)

Enable/disable the display of the column **Info 1** in the sample table.

Info 2 ... Info 4

on | off (Default value: **off**)

Enable/disable the display of the columns **Info 2 ... Info 4** in the sample table.

Value 1 ... Value 4

on | off (Default value: **off**)

Enable/disable the display of the columns **Value 1 ... Value 4** in the sample table

3.3.2.3 Properties - Edit

Dialog window: Workplace ► Tools ► Sample
table ► New... ► [Sample table] ► Properties... ► Properties -
Sample table 'Name'

Dialog window:Workplace ▶ Run ▶ Determination series ▶ Properties Run window ▶ Properties - Determination series

Options for the editing of the sample table.

Apply data with

on | off (Default value: **off**)

Selection of the data field which must be filled in connection with automatic data import via balance, barcode reader or file in order to apply the data for the line in the sample data storage and to switch onward to the next line. If the relevant column is empty, then additional imported data will be written into the same line. This means that it is possible, for example, to fill a line first with sample identifications per barcode reader and then later to apply the sample size from a balance for the same line.



Selection	Method Ident Volume Sample amount Info 1 Info 2 Info 3 Info 4 Value 1 Value 2 Value 3 Value 4
Default value	Method

on | off (Default value: **off**)

Copy automatically into next line

on | off (Default value: **on**)

on | off (Default value: **on**)

Sample type

on | off (Default value: **on**)

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Sample position + 1

on | off (Default value: **on**)

If this option is enabled, then the content of this field will automatically be incremented by **+1** when a new sample data line is created.



Injections

on | off (Default value: **on**)

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Volume

on | off (Default value: **on**)

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Dilution

on | off (Default value: **on**)

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Sample amount

on | off (Default value: **on**)

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Info 1

on | off (Default value: **on**)

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Info 2 ... Info 4

on | off (Default value: **off**)

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

Value 1 ... Value 4

on | off (Default value: **off**)

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.



Stop series ([Stop])

If this option is selected, then the series is stopped before the start of the marked line (equivalent to [Stop]).



Start the Text editor with which the message can be entered and edited.

3.3.2.5 Properties - Data import

Dialog window: Workplace ► Tools ► Sample
table ► New... ► [Sample table] ► Properties... ► Properties -
Sample table 'Name'

Dialog window:Workplace ▶ Run ▶ Determination series ▶ Properties Run window ▶ Properties - Determination series

Enabling/disabling the import of external data for sample table fields.



Note

The successful conclusion of the data import during the run will be signaled by an acoustic signal (beep).

Importing from barcode reader

on | off (Default value: **off**)

If this option is enabled, then external data from the selected barcode reading device will be imported into the opened sample table. The device properties of the barcode reader will define the field into which the data is imported (*see Chapter 7.18.4, page 1025*).

Barcode reader

Selection of the barcode reader from which data is to be imported.

Selection	Device name
Selection	Always accept data Accept data only for active window
Default value	Always accept data

Always accept data

If this option is selected, then the data sent from the barcode reader is imported into the open sample table for which this barcode reader is defined as data source.

Accept data only for active window

If this option is selected, then the data sent from the barcode reader is only imported into the open sample table if this is actively selected (i.e. when the window has the focus).

Comment on sample table

Entering a comment on the sample table. This comment will be displayed in the column of the same name in the dialog windows **Open sample table** and **Sample table manager**.

Input	1000 characters

3.3.3 Sample table manager

3.3.3.1 Sample table manager

Dialog window: **Workplace ▶ Tools ▶ Sample table ▶ Manager... ▶ Sample table manager**

With the symbol  or the menu item **Tools ▶ Sample table ▶ Manager...**, the saved sample tables can be managed.

List of sample tables

The list of sample tables contains information about all the saved sample tables. The table cannot be edited. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing order.

Name	Name of the sample table.
Saved	Date and time when the sample table was saved.
Saved by	Short name of the user who saved the sample table.
Lines	Number of lines in the sample table.
Comment	Comment on the sample table that was entered on the tab Comment as comment concerning the sample table (<i>see Chapter 3.3.2.6, page 129</i>).

Window menus

The menu **[Edit]** below the list of sample tables contains the following menu items:

Rename...	Renames the selected sample table (<i>see Chapter 3.3.3.2, page 131</i>).
Copy	Copies the selected sample table(s) (<i>see Chapter 3.3.3.3, page 131</i>).

3.3.3.6 Importing sample table

Dialog window: **Workplace** ▶ **Tools** ▶ **Sample table** ▶ **Manager...** ▶ **[Edit]** ▶ **Import** ▶ **Select files for import**

The dialog window **Select files for import**, in which the sample table (file format ***.mstab**) to be imported needs to be selected, is opened by means of the menu item **[Edit] ► Import....**

3.3.3.7 Renaming imported sample tables

Rename imported sample table 'Name' to

Entry of the new name for the sample table.



Note

The name of the sample table must be unique throughout the entire client/server system.

Input

50 characters

3.4 Timer

3.4.1 Timer - General

Dialog window: **Workplace** ► **Tools** ► **Timer...** ► **Timer**

With the menu item **Tools ► Timer...** or the symbol the window **Timer** opens, in which one-time or recurrent tasks can be defined which are to be carried out automatically at a particular time.

Timer table

The timer table shows all the defined tasks and cannot itself be edited directly. The first tasks to appear in the table are the recurrent ones, which are sorted according to day of the week and time of day. These are followed by one-time tasks sorted according to date/time.

Date/Time

Displays the date on which the action is to be performed.

Time

Displays the time at which the action is to be performed.

Action

Displays the action which is to be performed.

Displays the parameters or method for the action.

Displays whether the action is active or not.

Activating the **[Edit]** button or clicking on the right-hand mouse button opens the following menu for editing the timer table:

3.4.2 Editing single task

Dialog window: **Workplace** ▶ **Tools** ▶ **Timer...** ▶ **Timer** ▶ **[Edit]** ▶ **Edit** ▶ **Edit single task**

Activating the menu item **[Edit] ► New task ► One-time task** or **[Edit] ► Edit** opens the window **Edit one-time task**, in which a new one-time task or one selected from those in the table can be edited.

on | off (Default value: **on**)

If this option is enabled, then the action is enabled for the workplace.

Date on which the task is to be carried out. This date can be selected by clicking on in the dialog window **Select date**.

Time in hours and minutes at which the task is to be carried out.

■■■■■■■ 133

Active task

on | off (Default value: **on**)

If this option is enabled, then the action is enabled for the workplace.

Day

Selection of the day of the week on which the task is to be carried out.

Time

Time in hours and minutes at which the task is to be carried out.

Range	00:00 ... 23:59

Action

Action that is to be started automatically.

Selection	Start equilibration Start sample table Stop devices

Start equilibration

The equilibration for the active workplace is started with the method selected under **Parameters**.

Start sample table

The selected sample table is loaded and started on the active workplace.

Stop devices

The devices defined under **Parameter** are stopped.

Parameters**Method**

Selection of the method which is to be loaded for the equilibration. With  the **Select method** window opens for extended method selection. This parameter appears only for **Action = Start equilibration**.

Selection	Methods from method groups

Sample table

Selection of the sample table that is to be loaded. This parameter appears only for **Action = Start sample table**.

Selection	Sample tables

Devices

Selection of the devices that are to be stopped. This parameter appears only for **Action = Stop devices**.

Selection	Devices of the method All devices

Devices of the method

Only the devices of the method loaded will be stopped.

All devices

All devices are stopped.

3.5 Sample assignment table

3.5.1 Sample assignment table

Dialog window: **Workplace** ▶ **Tools** ▶ **Sample assignment table...** ▶ **Sample assignment table**

The **Sample assignment table** causes the samples to be processed automatically with the **correct method**. A particular method will be assigned thereby to a sample identification (**Assignment ID**). In order to make sure this functions as intended, the option **Method selection by assignment ID** must be enabled in the properties of the **Individual determination** or **Determination series** on the tab **Process** and one of the sample identifications needs to have been selected as Assignment ID. The respective method will be loaded automatically as soon as an **Assignment ID** has been recognized during the processing of the sample data. The **Method** is then no longer available for editing and will be displayed in gray.



Note

The sample assignment table is valid for all opened workplaces and is saved per client.

The overview table shows all the defined assignment IDS and cannot itself be edited directly. With a click on the column title **Assignment ID** or **Method**, the table can be sorted according to the selected column in either increasing or decreasing sequence.

Assignment ID

Identification on the basis of which the method is assigned.

Method

Method which is loaded for the Assignment ID.

[New]

Add new sample assignment.

[Properties]

Edit selected sample assignment.

3.5.3 Enter assignment ID

Dialog window: **Workplace ▶ Sample assignment**

Assignment ID

Request for the assignment ID on the basis of which the method will be assigned or selection of a definite text template.

Input	50 characters
Selection	Selection of text templates

3.6 Text templates

3.6.1 List of text templates

Dialog window: **Workplace** ▶ **Tools** ▶ **Text templates...** ▶ **Text templates**

Text templates can be defined for the fields **Ident**, **Info 1...4** and **Remark** which can be applied for inclusion in these fields on the tab **Single determination**, in the **Sample table** and in the **Working sample table**. The text templates are saved per client.

Text templates for

selection of the field for which the text templates are to be defined.

Selection	Ident	Info 1	Info 2	Info 3	Info 4	Remarks
Default value	Ident					

List of the text templates

All defined text templates for the selected field are displayed in the list of the text templates. The table cannot be edited. With a click on the column title **Text** the table can be sorted according in either increasing or decreasing sequence.

Text

Shows the text templates defined for the selected field.

[New]

Add new text template (see Chapter 3.6.2, page 139).

[Properties]

Edit selected text template (see Chapter 3.6.2, page 139).

[Delete]

Delete the selected text template.

3.6.2 Edit text template

Dialog window: **Workplace** ▶ **Tools** ▶ **Text templates...** ▶ **Text templates** ▶ **[New]** / **[Properties]** ▶ **Text templates**

The text templates can be edited in the dialog window **Text templates**.

Text

Text template entry.

Input	100 characters

3.7 Subwindow Run

3.7.1 Run - General

Subwindow: **Workplace**

Subwindow Run

The subwindow **Run** contains the operating elements for controlling method sequences and for administering sample data. It is always displayed in the program part **Workplace**, i.e. it can not be removed from the Workplace display. The subwindow can be enlarged and reduced as required; it can also be maximized.

Tabs

The subwindow **Run** is comprised of the following three tabs:

- *Equilibration*
Control of equilibration.
- *Single determination*
Control of single determinations.
- *Determination series*
Control of determination series.



Note

If a run has been started on the tab **Single determination (Status = BUSY)**, then the tab **Determination series** is no longer accessible (disabled). The same holds true for the tab **Single determination** in the event that a run has started on the tab **Determination series**.

This display appears if an error has occurred during the run test. During a determination series, the user can determine, on the basis of the line number displayed, the line to which the the error message belongs that appeared at the time of the error and that is currently displayed in the usual message window.

This display appears at the end of a run test that has been completed without errors.

Tab: **Workplace** ▶ **Run** ▶ **Equilibration**

Note

The following operating elements and parameters are located on the tab **Equilibration**:

Sends all basic parameters of the loaded **Method** to the hardware and starts it. If the start can be triggered, then the button will be green, otherwise light gray.

Stops the hardware of the loaded method.

Entry or selection of the method from the current method group with which the equilibration is to be carried out.

Open the dialog window **Open method** for the extended method selection. If a method is selected in this window from a method group other than the current one, then this group will henceforth be the current

method group for the quick selection of methods in the **Method** field. This button is active only if more than one method group is present.



Note

If a method is changed and saved in the method editor or during reprocessing, then the latest method version will be loaded when a new equilibration is started.

3.7.4 Single determination

3.7.4.1 Single determination - Overview

Tab: **Workplace** ▶ **Run** ▶ **Single determination**

Parameters and sample data for single determinations can be edited and run functions can be triggered on the tab **Single determination**. It contains the following tools and functions:

- *Single determination - Operating elements*
Buttons for starting, stopping, interrupting and resuming determinations.
- *Single determination - Status display*
Shows the current status of the workplace.
- *Single determination - Sample data*
Entry of method and sample identification for the next determination.
- *Properties - Overview*
Definition of the properties for the tab **Single determination**.

3.7.4.2 Single determination - Operating elements

Tab: **Workplace** ▶ **Run** ▶ **Single determination**

The following operating elements are located on the tab **Single determination**:



Start single determinations (Abbreviation: **Ctrl G**)

The button is disabled as soon as determination begins running. If the start can be triggered, then it will be green, otherwise light gray.



Stop single determination (Abbreviation: **Ctrl S**)

The button is enabled as soon as the determination begins running. If the stop can be triggered, then it will be red, otherwise light gray.

3.7.4.3 Single determination - Status display

Tab: **Workplace ▶ Run ▶ Single determination**

The current status of the workplace will be displayed on the tab **Single determination**:

Status

Selection	READY BUSY ERROR
READY	Ready for the start of a determination.
BUSY	Determination running.
ERROR	Error.

3.7.4.4 Single determination - Sample data

Tab:Workplace ▶ Run ▶ Single determination

Method

Entry or selection of the method from the current method group with which the determination is to be carried out. By typing in the first characters, the method selection is continuously restricted and allows fast selecting of the method required.

Input	50 characters
Selection	Method selection



Open the dialog window **Open method** for the extended method selection. If a method is selected in this window from a method group other than the current one, then this group will henceforth be the current method group for the quick selection of methods in the **Method** field. This button is active only if more than one method group is present.



Note

If a method is changed and saved in the method editor or during reprocessing, then the latest method version will be loaded when a new determination is started.



Note

The following sample data fields can no longer be edited if they were defined as **Fixed value** in the method (see Chapter 5.3.1, page 354).

Remark

Freely definable remarks concerning the determination, that are saved together with the determination. Prepared sample texts can also be selected instead of making manual entries (*see Chapter 3.6.1, page 138*).



Note

The field **Remarks** can also be modified live while determinations are running. The context-sensitive menu item **Modify remarks** is used to open the dialog window **Live modifications** (see Chapter 3.7.4.5, page 146).

Input	100 characters

Ident

Entry of an identification or selection of a defined text template for identifying the chromatogram (see Chapter 3.6.1, page 138).

Input	64 characters
Selection	Selection of text templates

Sample type

Selection of the sample type. **Sample** and **Blank** can always be selected, the remaining types can only be selected if they are defined in the method.

Selection	'empty' Sample Standard 1...n Spiking 1...n Check standard 1...n Blank
Default value	'empty'

Position

Position of the sample on the rack. Input as character string. Enter numbers for sample changers with numerically designated positions. Enter a corresponding character string with letter(s) and number(s) for sample changers with alphanumerically designated positions. The value is used to move to the sample position with the corresponding sample changer command.

Input	100 characters

Volume

Volume of the sample in µL.

Range	0.01 ... 1000000.00 µL
Default value	'empty' µL

Dilution

Dilution factor for the sample.

Range	0.001 ... 10000.000
Default value	'empty'

Sample amount

The parameter **Sample amount** is a correction factor for taking into account various initial weights for different samples. It indicates the ratio of the initial weight of the current sample to the normal initial weight or to the basic unit. The end result thus achieved is divided by this factor.

- *Example 1*

Basic initial weight = 2.0 g

Sample initial weight = 2.1 g

Sample amount = $2.1 / 2.0 = 1.05$

The result is divided by 1.05 and indicates how high the content is in relation to the defined basic initial weight of 2 g.

- *Example 2*

Basic unit = 1.0 mg

Initial sample size = 2.1 mg

Sample amount = $2.1 / 1.0 = 2.1$

The result is divided by 2.1 and indicates how high the content per mg of sample is.

Range	0.00001 ... 1000000.00000
Default value	'empty'

Info 1...4

Entering of additional information concerning the sample. If text templates are defined for this parameter, then they can be selected here (see *Chapter 3.6.1, page 138*).

Input	100 characters
Selection	Selection of text templates

Value 1...4

Input of additional values for the sample.

Input	Number



Note

Ident, Volume, Dilution, Sample amount, Info 1...Info 4 and **Value 1...Value 4** can be modified live for a running determination (see Chapter 3.7.4.6, page 146). Generally speaking, no formula input is possible in these fields.

3.7.4.5 Modify remark

Dialog window: **Workplace ▶ Run ▶ Single determination ▶ Modify remark ▶ Live modifications**

The dialog window **Live modifications**, in which the remarks can be modified in a determination while it is running, opens with the context-sensitive menu **Modify remark**.

Remarks

Freely definable remarks concerning the determination, that are saved together with the determination. Prepared sample texts can also be selected instead of making manual entries (*see Chapter 3.6.1, page 138*).

Input	100 characters

3.7.4.6 Live modifications

Dialog window: **Workplace ▶ Run ▶ Single determination ▶ Live modifications ▶ Live modifications**

Certain sample data can be modified live in this dialog window while a determination is running.

Ident

Entry of an identification or selection of a defined text template for identifying the chromatogram (*see Chapter 3.6.1, page 138*).

Input	64 characters
Selection	Selection of text templates

Volume

Volume of the sample in μL .

Range	0.01 ... 1000000.00 µL
Default value	'empty' µL

Dilution

Dilution factor for the sample.

Range	0.001 ... 10000.000
Default value	'empty'

The parameter **Sample amount** is a correction factor for taking into account various initial weights for different samples. It indicates the ratio of the initial weight of the current sample to the normal initial weight or to the basic unit. The end result thus achieved is divided by this factor.

3.7.4.7 Single determination - Determination run

Tab: **Workplace** ▶ **Run** ▶ **Single determination**

A determination that is started on the tab **Single determination** in the subwindow **Run** runs through as follows:

1 - Loading the sample data

The sample data entered for the determination is loaded.

2 - Method selection

The following actions are triggered with method selection:

- **Method selection without Assignment ID**
The method selected in the field **Method** is loaded.
- **Method selection by assignment ID**
If the option **Method selection by assignment ID** is enabled in the properties of the single determination on the tab **Process** (see Chapter 3.7.4.8.2, page 150), then the method defined in the sample assignment table will be loaded (see Chapter 3.5, page 136).

3 - Start test

The following checks and actions are triggered with start test:

- **Authorization for carrying out the method?**
Check whether the registered user is authorized to carry out the method required (*see Chapter 5.5.2.3, page 370*).
- **Method executable?**
Check whether the required method is executable. For methods which are not executable, a request appears to perform the method check and to modify the method accordingly (*see Chapter 5.2.5, page 348*).
- **Hardware present?**
Check whether the hardware (devices, modules, columns, solutions...) defined in the device group for the method loaded is present and available.
- **Method settings ok?**
Check whether the method settings (e.g. pump head-dependent parameters) fit the hardware that is ready for use.



Note

When it is in the status **READY**, the start test can also be triggered manually with the symbol  or the menu items **Tools ► Run test** or **[Sample table] ► Run test....** In addition, the sample data test will also still be carried out afterwards.

4 - Sample data test

The following checks and actions are triggered with the sample data test:

- **Check fixed values**
Check whether the sample data entered corresponds to the **Fixed values** defined in the properties of the method (*see Chapter 5.3.1, page 354*).
- **Check sample data**
Check whether the sample data is monitored in the method and whether the entered values lie within the defined limits.

5 - Determination run

The following actions are triggered during processing of the method loaded:

- **Start the determination**
The start parameters defined in the method are sent to the devices (modules) and the devices are started.
- **Assign determination ID**
A unique determination ID is assigned for the determination.
- **Reserve devices (modules)**
The devices and/or their function units used in the method are reserved for the duration of the determination, i.e. they can neither be used in other workplaces nor can they be operated outside of the workplace.
- **Process time program**
The status switches to **BUSY** after the start of the determination. The time program commands are processed in sequence. A determination that is running can be interrupted at any time with **[Stop]**. If an error occurs while a determination is running, that causes the determination to be interrupted, then the determination will also be ended.
- **Evaluate determination**
The determination will be evaluated with the evaluation parameters of the method.
- **End determination**
The status switches to **READY** after the end of the determination. The devices (modules) that were reserved are released once again.

3.7.4.8 Single determination - Properties

3.7.4.8.1 Properties - Overview

Dialog window: **Workplace ▶ Run ▶ Single determination ▶ Properties Run window ▶ Properties - Single determination**

The properties for the tab **Single determination** are set on the following tabs:

- *Process*
Options for the processing of single determinations.



- *Data import*
Enabling/disabling the import of external data for fields on tab **Single determination**.

3.7.4.8.2 Properties - Process

Tab: **Workplace ▶ Run ▶ Single determination ▶ Properties Run window ▶ Properties - Single determination ▶ Process**

Options for the processing of single determinations.

Method selection by assignment ID

on | off (Default value: **off**)

If this option is enabled, then the selected sample identification will be used for the method selection in the working sample table. This identification receives the designation **Assignment ID**, which can then no longer be changed; if this ID matches one of the Assignment IDs from the sample assignment table (*see Chapter 3.5.1, page 136*), then the respective method will be loaded.

Selection	Ident Info 1 Info 2 Info 3 Info 4 Value 1 Value 2 Value 3 Value 4
Default value	Ident

Request assignment ID

on | off (Default value: **off**)

If this option is enabled, the **Assignment ID** will be queried immediately after the start of the determination.

Autorepeat determination

on | off (Default value: **off**)

If this option is enabled, then the next determination will be started with the same method automatically after the completion of a determination. The determination must be canceled with **[Stop]** in order to cancel the automatic repetition.

3.7.4.8.3 Properties - Data import

Tab: **Workplace ▶ Run ▶ Single determination ▶ Properties Run window ▶ Properties - Single determination ▶ Data import**

Enabling/disabling the import of external data for fields on tab **Single determination**.



Import from barcode reader

If this option is enabled, then external data from the selected barcode reader will be imported into the fields on the tab **Single determination**. The device properties of the barcode reader will define the field into which the data is imported (*see Chapter 7.18.4, page 1025*).

Selection of the barcode reader from which data is to be imported.

Always accept data

Accept data only for active window

If this option is selected, then the data sent from the barcode reader is imported only into the **Single determination** tab of the workplace that is actively selected.

Dialog window: Workplace ▶ Run ▶ Single determination ▶ Live modifications ▶ Live modifications ▶ Modification comments sample data

If the option **Comment on modification of sample data (live)** is enabled in the security settings, then this window must be opened before saving. A reason and a comment on the modification must be entered here (*see Chapter 6.2.2.4, page 496*).

Reason

Selection from the standard reasons for the category **Modifications of sample data** (see Chapter 6.2.2.6, page 498) that are defined in the security settings.

Selection	Selection from default reasons

Comment

Entry of remarks about the modifications to the sample data.

Input	1000 characters

3.7.5 Determination series

3.7.5.1 Determination series - Overview

Tab: **Workplace** ▶ **Run** ▶ **Determination series**

Parameters and sample data for determination series can be edited and run functions can be triggered on the tab **Determination series** in the subwindow **Run**. It contains the following tools and functions:

- *Operating elements*
Buttons for starting, stopping, interrupting and resuming determinations and series.
- *Status display*
Shows the current status of the workplace.
- *Sample data*
Entry of sample data for the next determinations.
- *Properties*
Definition of the properties for the tab **Determination series**.

3.7.5.2 Determination series - Operating elements

Tab: **Workplace** ▶ **Run** ▶ **Determination series**

The following operating elements are located on the tab **Determination series**:



Start series (abbreviation: **Ctrl G**)

Start of the first determination of a sample series. The button is disabled as soon as determination begins running. If the start can be triggered, then it will be green, otherwise light gray.



Stop series (abbreviation: **Ctrl S**)



► Cont

Continue series

3.7.5.3 Determination series - Status display

The current status of the workplace will be displayed on the tab **Determination series**:

Selection	READY	BUSY	PAUSE	ERROR
	READY Ready for the start of a determination.			
	BUSY Determination running.			
	PAUSE Series interrupted.			
	ERROR Error.			

Tab: **Workplace** ▶ **Run** ▶ **Determination series**

Freely definable remarks concerning the determination, that are saved together with the determination. Prepared sample texts can also be selected instead of making manual entries (*see Chapter 3.6.1, page 138*).



Note

The field **Remarks** can also be modified live while determinations are running. The context-sensitive menu item **Modify remarks** is used to open the dialog window **Live modifications** (see Chapter 3.7.4.5, page 146).

Input

100 characters

The current working sample table, which contains the sample data for determination series in tabular form, is displayed under **Sample data**. Each line corresponds to a single determination.

This table contains sample data lines that have already been saved in the sample data table and a line for entering new data that contains a star instead of a line number. The table cannot be edited or sorted directly.

For the meaning of the columns, see *Edit sample data*.

The lines in the working sample table can exhibit different **background colors**:

- **Light gray background**

Line already processed. Data in this line can no longer be modified.
These lines only appear if the option **Delete processed lines** on the tab **Process** has been disabled (see Chapter 3.3.2.4, page 127).

- **Dark gray background**

Selected, already processed line.

- **Light orange background**

Line currently running.

- **Dark orange background**

Selected line currently running. If sample data is not to be modified until after the start of the determination (in the status **BUSY**), then this is considered a live modification.

- **White background**

Lines that have not yet been processed. These lines can be edited.

- **Yellow background**

Selected line not yet processed.

Loaded

Display of the sample table, the data of which has been loaded into the working sample table. If no sample table was loaded or if all lines were deleted, then this field is empty. If data for a loaded sample table are modified retroactively or expanded to include new lines, then the term **(modified)** will be added to the display of the name.

Stop hardware when sample table has finished

on | off (Default value: **off**)

If this option is enabled, then the hardware will be stopped automatically after the sample table run.

Toolbar

 Save the sample table	Saves sample table.
 PDF output	Outputs sample table as PDF file.
 Reset sample table	Resets lines that have been run, i.e. they can be edited again.
 Duplicate	Duplicates selected line(s). The new lines are inserted underneath the selected range.
 Increment	Automatically increments selected lines.
 Filling	Automatically fills selected lines.
 Test sample table	Check whether or not all sample data in the sample table is correct.

Window menus

[Edit] contains the following menu items:

Edit line	Edits selected line.
Insert new line	Inserts a new empty line above the line selected.
 Cut lines	Cuts selected lines and transfers them to the clipboard.
 Copy lines	Copies selected lines to the clipboard.
 Insert lines	Inserts lines from the clipboard above the selected line.
 Delete lines	Deletes the selected lines.
 Increment	Using the cursor, which takes on the form  , the region which is to be automatically incremented can be selected from a column in the table. The number standing at the end of the expression will thereby be automatically increased by 1 in the selected cells of a column, starting from the first selected cell. This

 Filling	works not only with pure numbers but also with text extracts which end with a number (e.g. ABC10→ ABC11→ ABC12...). Automatically fill selected lines.
 Duplicate	Duplicates selected line(s). The new lines are inserted underneath the selected range.
Mark lines Unmark lines	Marks selected lines with a red background for the line number. Before the start of such a line the corresponding actions defined under Properties on the tab Process(see <i>Chapter 3.3.2.4, page 127</i>) will be triggered. Removes the line marking for the selected lines.
Set lines inexecutable Set lines executable	Sets the selected lines to "inexecutable", i.e. these lines will not be carried out in the method run. Such lines are crossed through with a red line. Sets the selected lines to "executable", i.e. they will be carried out in the run.

[Sample table] contains the following menu items:

New	Loads new empty sample table.
Load...	Loads saved sample table into the working sample table.
 Save	Saves the current sample table under the same name.
Save as...	Saves the current sample table under a new name.
 Sample table test...	Check whether or not all sample data in the working sample table is correct.
 Run test...	Carries out run test for the lines in the working sample table (<i>see Chapter 3.7.2, page 140</i>).
 Print (PDF)...	Outputs working sample table as PDF file.
Properties...	Edits properties of the working sample table.
Import data...	Imports sample table in a file with the format *.CSV .
Export data...	Exports sample table in a file with the format *.CSV .
 Reset	Resets lines that have been run, i.e. they can be edited again.

The lines selected in the working sample table can be moved into an opened sample table per Drag&Drop.

The lines selected in the working sample table can be copied into an opened sample table with Drag&Drop by pressing the **Ctrl/Strg** key.

Dialog window: **Workplace ▶ Run ▶ Single determination ▶ Modify remark ▶ Live modifications**

Remarks

Freely definable remarks concerning the determination, that are saved together with the determination. Prepared sample texts can also be selected instead of making manual entries (*see Chapter 3.6.1, page 138*).

Input	100 characters

Tab: **Workplace** ▶ **Run** ▶ **Determination series**

For a series of determinations that is started on the tab **Determination series** in the subwindow **Run**, each determination proceeds as follows:

The sample data for the determination entered on the current line in the **Working sample table** is loaded.

The following actions are triggered with method selection:

- **Method selection without Assignment ID**
The method selected in the column **Method** is loaded.
- **Method selection by assignment ID**
If the option **Method selection by assignment ID** is enabled in the properties of the determination series on the tab **Process** (see Chapter 3.3.2.4, page 127), then the method defined in the sample assignment table will be loaded (see Chapter 3.5, page 136).

The following checks and actions are triggered with the start test:



- **Authorization for carrying out the method?**
Check whether the registered user is authorized to carry out the method required (*see Chapter 5.5.2.3, page 370*).
- **Method executable?**
Check whether the required method is executable. For methods which are not executable, a prompt appears to perform the method check and to modify the method accordingly (*see Chapter 5.2.5, page 348*).
- **Hardware present?**
Check whether the hardware (devices, modules, columns, solutions...) defined in the device group for the method loaded is present and available.
- **Method settings ok?**
Check whether the method settings (e.g. pump head-dependent parameters) fit the hardware that is ready for use.



Note

When it is in the status **READY**, the start test can also be triggered manually with the symbol  or the menu items **Tools ► Run test** or **[Sample table] ► Run test....** In addition, the sample data test will also still be carried out afterwards.

4 - Starting hardware

- **Reserve devices**
The devices and/or their function units used in the method are reserved for the duration of the determination, i.e. they can neither be used in other workplaces nor can they be operated manually.
- **Send start parameters to devices**
The start parameters defined in the method are sent to the devices (modules) and the devices are started.

5 - Sample data test

The following checks and actions are triggered with the sample data test:

- **Check fixed values**
Check whether the sample data entered corresponds to the **Fixed values** defined in the properties of the method (*see Chapter 5.3.1, page 354*).
- **Check sample data**
Check whether the sample data is monitored in the method and whether the entered values lie within the defined limits.



Note

When it is in the status **READY**, the sample table can also be checked manually by means of the symbol  or the menu item **[Sample table] ▶ Sample table test...**

6 - Determination run

The following actions are triggered during processing of the method loaded:

- **Start determination**
The determination is started and receives a unique determination ID; after the determination starts, the status switches to **BUSY**.
- **Process time program**
The time program commands are processed in sequence. A determination that is running can be interrupted at any time with **[Stop]**. If an error occurs while a determination is running, that causes the determination to be interrupted, then the determination will also be ended. With **[Pause]**, the ongoing determination of a sample series will still be carried out to completion, but no new determination will be started. The next determination of the interrupted sample series can be started with **[Cont]**.
- **Evaluate determination**
The determination will be evaluated with the evaluation parameters of the method.
- **End determination**
The reserved devices (modules) are released again after the completion of the determination and the next determination starts. A distinction is made here between two different situations:
 - The same sample line is processed one more time as part of a multiple determination, the procedure now starts at **Point 3**.
 - The next sample line is processed, the procedure begins at **Point 1** again.

The status switches to **READY** after the end of the last determination.



Note

If the **Stop hardware when sample table has finished** option is enabled, then the hardware will be stopped automatically after the sample table run.

3.7.5.7 Working sample table

3.7.5.7.1 Loading new working sample table

Menu item: **Workplace ▶ Run ▶ Determination series ▶ [Sample table] ▶ New**

A new, empty sample table is loaded as working sample table with the menu item **[Sample table] ► New** on the tab **Determination series**, i.e. all existing sample table lines will be deleted.

3.7.5.7.2 Loading sample table

Dialog window: **Workplace** ▶ **Run** ▶ **Determination series** ▶ [Sample table] ▶ **Load as...** ▶ **Load sample table**

One of the globally available sample tables can be selected in this dialog window for loading as working sample table.

List of sample tables

The list of sample tables contains information about all the saved sample tables. The table cannot be edited. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing order.

Name

Name of the sample table.

Saved

Date and time when the sample table was saved.

Saved by

Short name of the user who saved the sample table.

Lines

Number of lines in the sample table.

Comment

Comment on the sample table that was entered on the tab **Comment** as comment concerning the sample table (see Chapter 3.3.2.6, page 129).

Loading sample table

Name

Name of the sample table that is to be loaded. If a sample table from the table is selected, the name will be entered automatically in this field. It can however also be entered manually.

Input	50 characters

[Load]

Loads the data of the selected sample table into the working sample table. In addition, all properties of the sample table, with the exception of the settings for **Import from file** and **Import format** for the working sample table, are applied.

3.7.5.7.3 Editing sample data

Menu item: **Workplace ▶ Run ▶ Determination series ▶ [Edit] ▶ Edit line ▶ Edit line - Working sample table - Workplace 'Name'**

The fields in this dialog window exhibit the same background colors as the lines in the working sample table:

- **Light gray background**
Line already processed, the data of which can no longer be modified.
- **Orange background**
Line currently running. If sample data is not to be modified until after the start of the determination (in the status **BUSY**), then this is considered a live modification.
- **White background**
A line that has not yet been processed and which can still be edited.



Note

Generally speaking, no formula input is possible in the fields of this dialog window.

Method

Entry or selection of the method from the current method group with which the determination is to be carried out. By typing in the first characters, the method selection is continuously restricted and allows fast selecting of the method required.

Input	50 characters
Selection	Method selection



Open the dialog window **Open method** for the extended method selection. If a method is selected in this window from a method group other than the current one, then this group will henceforth be the current method group for the quick selection of methods in the **Method** field. This button is active only if more than one method group is present.



Note

If a method is changed and saved in the method editor or during reprocessing, then the latest method version will be loaded when a new determination is started.



Note

The following sample data fields can no longer be edited if they were defined as **Fixed value** in the method (see Chapter 5.3.1, page 354).

Ident

Entry of an identification or selection of a defined text template for identifying the chromatogram (*see Chapter 3.6.1, page 138*).

Input	64 characters
Selection	Selection of text templates

Sample type

Selection of the sample type. **Sample** and **Blank** can always be selected, the remaining types can only be selected if they are defined in the method.

Selection	'empty' Sample Standard 1...n Spiking 1...n Check standard 1...n Blank
Default value	'empty'

Position

Position of the sample on the rack. Input as character string. Enter numbers for sample changers with numerically designated positions. Enter a corresponding character string with letter(s) and number(s) for sample changers with alphanumerically designated positions. The value is used to move to the sample position with the corresponding sample changer command.

Input	100 characters

Injections

Number of injections per sample line. The determinations of this kind of multiple injection are linked statistically with one another.

Range	1 ... 99 (Increment: 1)
Default value	'empty'

Volume

Volume of the sample in µL.

Range	0.01 ... 1000000.00 µL
Default value	'empty' µL

Dilution

Dilution factor for the sample.

Range	0.001 ... 10000.000
Default value	'empty'

Sample amount

The parameter **Sample amount** is a correction factor for taking into account various initial weights for different samples. It indicates the ratio of the initial weight of the current sample to the normal initial weight or to the basic unit. The end result thus achieved is divided by this factor.

- *Example 1*

Basic initial weight = 2.0 g

Sample initial weight = 2.1 g

Sample amount = $2.1 / 2.0 = 1.05$

The result is divided by 1.05 and indicates how high the content is in relation to the defined basic initial weight of 2 g.

- *Example 2*

Basic unit = 1.0 mg

Initial sample size = 2.1 mg

Sample amount = $2.1 / 1.0 = 2.1$

The result is divided by 2.1 and indicates how high the content per mg of sample is.

Range	0.00001 ... 1000000.00000
Default value	'empty'

Info 1...4

Entering of additional information concerning the sample. If text templates are defined for this parameter, then they can be selected here (see *Chapter 3.6.1, page 138*).

Input	100 characters
Selection	Selection of text templates

Value 1...4

Input of additional values for the sample.

Input	Number



Note

If data from the current sample data line is modified for the ongoing determination, then this is regarded as a live modification. If the option **Comment on modification of sample data (live)** is enabled in the security settings, then a reason and a comment on the modification must be entered before saving (*see Chapter 6.2.2.4, page 496*).

Navigation

Zeile   5    von 5

Display of the currently selected line in the working sample table with the following functions:



Jump to the first line in the working sample table.



Jump to the previous line in the working sample table.

5

Option of entering the desired line number to which the program jumps when the **[Enter]** is actuated.



Jump to the next line in the working sample table. If the end of the table has been reached, then a new line will be inserted automatically and the program will jump to it.



Jump to the last line in the working sample table.



Jump to a new, empty line.

Displaying application note

on | off (Default value: **off**)

If this check box is activated, then the application note defined in the method will be displayed during the editing of the sample data.

[Apply]

[Exit]

3.7.5.7.4 Duplicate sample data

Number

Range	1 ... 999
Default value	1

3.7.5.7.5 Importing sample data

File name

Selection	File name

File type

Selection	*.csv *.csv (Unicode)
Default value	*.csv

[Open]

The sample data from the selected file is inserted at the end of the sample table.



Note

No matter the number of data fields defined on the **Display** tab, the import file must always contain for each line the entirety of the sample data in the format **Method name;Ident;Sample type;Position;Injections;Volume;Dilution;Sample amount**.

3.7.5.7.6 Exporting sample data

**Dialog window: Workplace ► Tools ► Sample
table ► Open... ► [Open] ► [Sample table] ► Export data... ► Save
file under..**

Dialog window:Workplace ▶ Run ▶ Determination series ▶ [Sample table] ▶ Export data... ▶ Save file as..

In this dialog window, you determine the file into which the sample data is to be exported.

File name

Input or selection of the file into which the export is to be made.

Selection	File name

File type

Prescribed format ***.csv**.

Selection	[*.csv]
Default value	[*.csv]

[Save]

The sample data will be written to the export file.

3.7.5.7.7 Sample table test

Dialog window: **Workplace** ▶ **Sample table / Determination series** ▶ **[Sample table]** ▶ **Sample table test...** ▶ **Sample table test -Sample table name**

The menu item **[Sample table] ► Sample table test...** or the symbol  is used to perform the sample table test. At the same time, the dialog window **Sample table test - 'Sample table name'** in which the information concerning the test is displayed opens.



Displays the line number of the currently tested sample data line.

Status displays

Selection	Sample table test running... Sample table test stopped manually Sample table test finished without errors Sample table test finished with errors

This display appears during the test run. A progress bar also appears; the test can be interrupted thereby by means of the [x] next to the bar.

This display appears if the sample table test was canceled manually by the user.

This display appears at the end of a sample table test that has been completed without errors.

This display appears if an error has occurred during the sample table test. The errors that occurred are listed in the **Test report** field.

Display of errors that occurred during the sample table test, together with line numbers.

Dialog window: **Workplace** ▶ **Sample table / Determination series** ▶ **[Sample table]** ▶ **Save as...** ▶ **Save sample table**

List of sample tables

167

Name

Name of the sample table.

Saved

Date and time when the sample table was saved.

Saved by

Short name of the user who saved the sample table.

Lines

Number of lines in the sample table.

Comment

Comment on the sample table that was entered on the tab **Comment** as comment concerning the sample table (see Chapter 3.3.2.6, page 129).

Saving sample table

Name

Name under which the sample table is to be saved.



Note

The name of the sample table must be unique throughout the entire client/server system.

Input	50 characters

[Save]

Save the sample table under the desired name.

3.7.5.7.9 Run test

Menu item: **Workplace** ▶ **Tools** ▶ **Run test**



Note

In contrast to the **Sample table test**, which is only used to check whether or not all sample data is correct, the **Run test** also checks the required hardware.

Single determination

The menu item **Tools ► Run test** or the symbol  is used to perform the start test for the selected method. The precondition for this is that the workplace is in **READY** status.

Method

Determination series

Line

Status displays

Selection **Run test running...** | **Run test error** | **Run test finished without errors**

This display appears during the test run. A progress bar also appears; the test can be interrupted thereby by means of the [x] next to the bar.

This display appears if an error has occurred during the run test. During a determination series, the user can determine, on the basis of the line number displayed, the line to which the error message belongs that appeared at the time of the error and that is currently displayed in the usual message window.

This display appears at the end of a run test that has been completed without errors.

The output format for the PDF output can be selected in this dialog window.

Orientation

Selection	Portrait Landscape
Default value	Portrait

Portrait

Output in portrait format.

Landscape

Output in landscape format.

3.7.5.8 Determination series - Properties

3.7.5.8.1 Properties - Overview

Dialog window: Workplace ► Run ► Determination series ► [Sample table] ► Properties... ► Properties - Determination series

Dialog window:Workplace ▶ View ▶ Properties ▶ Properties Run window ▶ Properties - Determination series

The properties for the tab **Determination series** are set on the following tabs:

- *Display*
Definition of the columns that are to be displayed in the working sample table.
- *Edit*
Options for editing the working sample table on the tab **Determination series** and in the the dialog window **Edit line**.
- *Process*
Options for processing the working sample table on the tab **Determination series**.
- *Data import*
Enabling/disabling the import of external data for working sample table fields.
- *Comment*
Entry of comment on the working sample table.

3.7.5.8.2 Properties - Display

Dialog window: Workplace ► Tools ► Sample
table ► New... ► [Sample table] ► Properties... ► Properties -
Sample table 'Name'

Dialog window:Workplace ▶ Run ▶ Determination series ▶ Properties Run window ▶ Properties - Determination series

Definition of the operating elements and columns that are to be displayed in the sample table.

Ident

Enable/disable the display of the column **Ident** in the sample table.

Enable/disable the display of the column **Sample type** in the sample table.

Enable/disable the display of the column **Position** in the sample table.

Enable/disable the display of the column **Injections** in the sample table.

Enable/disable the display of the column **Volume** in the sample table.

Enable/disable the display of the column **Dilution** in the sample table.

Enable/disable the display of the column **Sample amount** in the sample table.

Enable/disable the display of the column **Info 1** in the sample table.

Enable/disable the display of the columns **Info 2 ... Info 4** in the sample table.

Value 1 ... Value 4

on | off (Default value: **off**)

Enable/disable the display of the columns **Value 1 ... Value 4** in the sample table

3.7.5.8.3 Properties - Edit

Dialog window: Workplace ► Tools ► Sample
table ► New... ► [Sample table] ► Properties... ► Properties -
Sample table 'Name'

Dialog window:Workplace ▶ Run ▶ Determination series ▶ Properties Run window ▶ Properties - Determination series

Options for the editing of the sample table.

Apply data with

on | off (Default value: **off**)

Selection of the data field which must be filled in connection with automatic data import via balance, barcode reader or file in order to apply the data for the line in the sample data storage and to switch onward to the next line. If the relevant column is empty, then additional imported data will be written into the same line. This means that it is possible, for example, to fill a line first with sample identifications per barcode reader and then later to apply the sample size from a balance for the same line.



Note

This option has no relevance when entering data manually.

Selection	Method Ident Volume Sample amount Info 1 Info 2 Info 3 Info 4 Value 1 Value 2 Value 3 Value 4
Default value	Method

Lock editing in working sample table

on | off (Default value: **off**)

If this option is enabled, then it is not possible to edit lines in the sample table that is loaded in the working sample table.

Method

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

If this option is enabled, then the content of this field will automatically be incremented by **+1** when a new sample data line is created.

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

If this option is enabled, then the content of this field will automatically be filled with the content of the previous line when a new sample data line is created.

on | off (Default value: **off**)

Selection	Ident Info 1 Info 2 Info 3 Info 4 Value 1 Value 2 Value 3 Value 4
Default value	Ident

on | off (Default value: **off**)

Actions for marked sample table lines

Selection	Pause series ([Pause]) and show message Stop series ([Stop])
Default value	Pause series ([Pause]) and show message

Pause series ([Pause]) and show message

If this option is selected, then the series is interrupted before the start of the marked line (equivalent to [Pause]). At the same time a message will appear which also contains the text defined in the message box.

Stop series ([Stop])

If this option is selected, then the series is stopped before the start of the marked line (equivalent to [Stop]).



Start the Text editor with which the message can be entered and edited.

3.7.5.8.5 Properties - Data import

Dialog window:Workplace ▶ Tools ▶ Sample
table ▶ New... ▶ [Sample table] ▶ Properties... ▶ Properties -
Sample table 'Name'

Dialog window:Workplace ▶ Run ▶ Determination series ▶ Properties Run window ▶ Properties - Determination series

Enabling/disabling the import of external data for sample table fields.



Note

The successful conclusion of the data import during the run will be signaled by an acoustic signal (beep).

Importing from barcode reader

on | off (Default value: **off**)

If this option is enabled, then external data from the selected barcode reading device will be imported into the opened sample table. The device properties of the barcode reader will define the field into which the data is imported (*see Chapter 7.18.4, page 1025*).

Barcode reader

Selection of the barcode reader from which data is to be imported.

Selection	Device name
Selection	Always accept data Accept data only for active window
Default value	Always accept data

Always accept data

If this option is selected, then the data sent from the barcode reader is imported into the open sample table for which this barcode reader is defined as data source.

Accept data only for active window

If this option is selected, then the data sent from the barcode reader is only imported into the open sample table if this is actively selected (i.e. when the window has the focus).

Import from file

on | off (Default value: **off**)

If this option is enabled, then external data from a file (e.g. via LIMS) will be imported into a sample table. When this is the case, a check is made to determine whether the specified import file is available when the sample table is opened, when the sample table is loaded into the working sample table and also periodically (every 10 s) when the sample table is open (although not when the dialog window **Edit line** is open). If the import file is available, then the data from this file is automatically inserted at the end of the sample table. The import file is deleted after each import.



tion; Injections; Volume; Dilution; Sample amount.

Import file

File that is to be imported. With  the file can be selected in the dialog window **Select files for import**.

Input	File name

Import format

Selection of the import format for the import of data from a file.

Selection	*.csv *.csv (Unicode)
Default value	*.csv

*_CSV

Format for the import of CSV files with Western European ASCII character sets.

***.csv (Unicode)**

Format for the import of CSV files with Unicode character sets.

3.7.5.8.6 Properties - Comment

Dialog window: Workplace ► Tools ► Sample table ► New... ► Sample table ► Properties... ► Properties - Sample table 'Name'

Dialog window: Workplace ► Run ► Determination series ► Properties Run window ► Properties - Determination series

Entering a comment on the sample table.

Comment on sample table

Entering a comment on the sample table. This comment will be displayed in the column of the same name in the dialog windows **Open sample table** and **Sample table manager**.

Input	1000 characters



3.7.5.9 Modification comment for sample data

Dialog window: Workplace ▶ Run ▶ Single determination ▶ Live modifications ▶ Live modifications ▶ Modification comments sample data

Dialog window: Workplace ▶ Sequence ▶ Determination series ▶ [Edit] ▶ Edit line ▶ Edit line - Working sample table - Workplace 'Name' ▶ Modification comment sample data

If the option **Comment on modification of sample data (live)** is enabled in the security settings, then this window must be opened before saving. A reason and a comment on the modification must be entered here (*see Chapter 6.2.2.4, page 496*).

Reason

Selection from the standard reasons for the category **Modifications of sample data** (see Chapter 6.2.2.6, page 498) that are defined in the security settings.

Selection	Selection from default reasons

Comment

Entry of remarks about the modifications to the sample data.

Input	1000 characters

3.8 Subwindow Live display

3.8.1 Live display - General

Subwindow: **Workplace** ▶ **Live display**

Subwindow live display

Chromograms of analyses of the determination currently running are displayed in the two subwindows **Live display 1** and **Live display 2**. The subwindows can be switched on in the program part **Workplace** during the definition of the Layout and thus made visible (*see Chapter 3.1.7.2, page 107*). They can be enlarged and reduced as required; they can also be maximized.

Tabs

The subwindows **Live display 1** and **Live display 2** are comprised of the following tabs:

- *Analyses*
A tab is displayed for each analysis which is lettered with the name of the analysis.

- *Application note*
Display of the application note defined in the method properties.

3.8.2 Live display - Analyses

Tab: **Workplace** ► **Live display** ► 'Analysis name'

A tab lettered with the name of the analysis is displayed in the subwindow **Live display** for each analysis defined in the method. The measurement signal of this analysis is shown here live for the currently running determination.

Current measuring value

Display of the current measured value of the X axis (time) and Y axis (measured value).

Cursor

Display of the current position of the cursor on the X axis (time) and Y axis (measured value).

[Evaluate]

Trigger evaluation of the chromatogram currently running during the recording process. The measuring points recorded at this time are evaluated with the current method parameters (including parameters modified live). This evaluation is temporary and is used only for visualizing initial results during the recording. They are discarded when the recording has finished and the chromatogram receives final evaluation.

[Evaluation parameters]

The dialog window **Live modifications – Evaluation** opens in which the evaluation parameters of the method can be changed live (see Chapter 3.8.3, page 180).

[Recording time]

The dialog window **Change recording time** opens in which the recording time can be changed live (see Chapter 3.8.4, page 180).

The additional functions and properties of the subwindow **Live display 1** and **Live display 2** are described in the *Graphics window* chapter in the following subchapters:

- *Elements*
- *Chromatogram view*
- *Zooming*
- *Move curve*
- *Work with cursor*
- *Set Zoom*
- *Properties*
- *Change calibration*
- *Choose color*

3.9.5 Properties report overview

Dialog window: **Workplace** ▶ **Report** ▶ **Report overview** ▶ **[Properties]** ▶ **Properties - Report overview**

Maximum number of reports

Maximum number of reports that can be saved in the report overview table. If this number is exceeded, then the oldest report will be deleted automatically.

Range	1 ... 100
Default value	20

3.10 Subwindow Watch window

3.10.1 Watch window - Overview

Subwindow: **Workplace ▶ Watch window - 'Method name'**

The **Watch window** is a subwindow in the program part **Workplace** which is for the purpose of providing the user clearly and quickly with the most important information concerning his method and the devices associated with it. It consists of the following parts:

- *Device information*
Display of the selected, current device information.
- *Messages*
Display of the messages occurring during the method run.

3.10.2 Watch window - Device information

Subwindow: **Workplace** ► **Watch window - 'Method name'**

The device information display is located in the upper part of the **Watch window**. The user can configure which information is shown there (*see Chapter 3.10.4, page 184*).



Note

The properties of the Watch window are method-specific and client-specific.

The device information displayed is for the method that is loaded in the workplace. Each user can structure the Watch window on his or her own computer according to his or her needs, even for methods that are used throughout the company in a client/server system. The properties remain in effect, the Watch window of a newly loaded method will always be shown with the most recent settings.



The display of the device information itself is however not configurable. As a general rule, the following applies:

- A simple status for the device/module will be shown in **black on gray** in an display field.
- Device values that are monitored are shown **black on gray** when the values fall within the limit values and **white on red** when the values fall outside them.

3.10.3 Watch window - Messages

Subwindow: **Workplace** ▶ **Watch window - 'Method name'**

A scrollable message field is located in the lower section of the **Watch window** which contains all messages concerning events occurring during the run of the current determination. Entries consist of messages that generate a database entry in the determination but which are not significant enough to result in the run being interrupted pending confirmation by the user.

Each message consists of **Date**, **Time** and **Message text**.

3.10.4 Watch window - Properties

Dialog window: **Workplace** ▶ **View** ▶ **Properties** ▶ **Properties Watch window** ▶ **Watch window - 'Method name'**

The dialog window **Watch window - 'Method name'** is opened by means of **View ► Properties ► Properties Watch window**. Here the instrument properties can be selected for the method which is to be displayed in the Watch window.

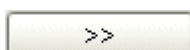
Available properties

The instrument properties available for the display are shown in tree-form for each instrument and can be selected with the cursor. Properties that are already displayed are disabled.

A **separator** is available at the end of the tree selection of the available properties with which the properties displayed can be structured in the Watch Window.

Displayed properties

Display of the instrument properties that are to be displayed in the **Watch Window**.



Adds selected property to the table.



Removes the selected property from the table.



Modifies the sequence of the properties displayed by moving the selected property up.



Modifies the sequence of the properties displayed by moving the selected property down.

[Decimal places]

Opens the dialog window **Decimal places - 'Property'** in which the number of decimal places shown can be selected for the selected property.

3.11 Subwindow time program

Subwindow: **Workplace ▶ Time program**

The subwindow Time program is identical with the window of the same name in the method (see *Chapter 5.7, page 385*); it can however be edited.

The run of the time program is presented graphically by the colored marking of the command lines:

- When a command line is being carried out, it is marked in **red**. It will remain marked until the next command is executed.
- Command lines that have been processed are shown in **gray**.
- The tabs of (sub)programs in which commands are presently being executed, are marked with **red lettering**.
- The tabs of (sub)programs in which all commands have been executed, are marked with **gray lettering**.

Elements

The desktop of the program part **Database** comprises the following elements:

- Database-specific menu bar.
- Database-specific toolbar.
- Main window in which up to 6 subwindows can be displayed.

4.1.3 Database - Menu bar

4.1.3.1 Database - Main menu

Program part: **Database**

The menu bar in the program part **Database** includes the following main menu items:

- *File*
Open and close databases, database management, printing.
- *Edit*
Copy selected lines in the determination overview onto the clipboard, mark all lines.
- *View*
Change layout, load view, save view, modify properties in the subwindows.
- *Determinations*
Search, filter, sign, delete determinations; overlay curves, calibration curves, reprocess, etc.
- *Tools*
Report templates, further templates.
- *Help*
Open program help, display program information.

4.1.3.2 Database - Menu File

Program part: **Database**

 Open...	Open database (<i>see Chapter 4.2.1, page 197</i>).
Close all	Close all open databases (<i>see Chapter 4.2.6, page 199</i>).
 Close	Close database (<i>see Chapter 4.2.6, page 199</i>).
 Database manager...	Manage determination databases (<i>see Chapter 4.3.1, page 200</i>).
Print ►	
Determination overview...	PDF file output of the determination overview (<i>see Chapter 4.7.11, page 285</i>).

4.1.3.5 Database - Menu Determinations

Program part: **Database**

 Comment...	Enter comment on the selected determination (<i>see Chapter 4.7.3, page 267</i>).
 Search	Open the window Search for searching for determinations (<i>see Chapter 4.7.4, page 268</i>).
Filter ►	
 Last filter	Use last quick or special filter again (<i>see Chapter 4.7.6.2, page 273</i>).
 Quick filter	Use quick filter with the content of the selected table cell (<i>see Chapter 4.7.6.3, page 273</i>).
 Special filter...	Open the window Special filter for the definition of user-specific filters (<i>see Chapter 4.7.6.4, page 274</i>).
 Remove filter	Removes current filter (<i>see Chapter 4.7.6.5, page 275</i>).
Batch ►	
New batch...	Create new batch (<i>see Chapter 4.7.5.2, page 272</i>).
Delete batch...	Delete batch (<i>see Chapter 4.7.5.3, page 272</i>).
Append to batch...	Attach selected determinations to current batch (<i>see Chapter 4.7.5.4, page 272</i>).
Remove from batch...	Remove selected determinations from current batch (<i>see Chapter 4.7.5.5, page 273</i>).
Sign ►	
 Signature 1...	Sign selected determinations on level 1 (<i>see Chapter 2.3.3, page 24</i>).
 Signature 2...	Sign selected determinations on level 2 (<i>see Chapter 2.3.4, page 25</i>).
Show signatures...	Show all signatures for the focused determination (<i>see Chapter 4.7.7.4, page 282</i>).
Delete signatures 2...	Delete signatures at level 2 of the focused determination (<i>see Chapter 2.3.5, page 27</i>).
Send to...	Send selected determinations per E-mail (<i>see Chapter 4.7.8, page 284</i>).
Export...	Export selected determinations (<i>see Chapter 4.7.9, page 285</i>).

 Import...	Import selected determinations (<i>see Chapter 4.7.10, page 285</i>).
 Show method...	Show the method used for the focused determination (<i>see Chapter 4.7.13, page 288</i>).
 Show history	Show all versions of the focused determination in the determination overview (<i>see Chapter 4.7.14, page 288</i>).
 Make current	Make the old version selected in the history view the current version again (<i>see Chapter 4.7.15, page 288</i>).
 Detail overview...	Show detail overview of results for the selected determinations (<i>see Chapter 4.7.16.2, page 289</i>).
 Overlay curves...	Overlay curves of the selected determinations (<i>see Chapter 4.7.17, page 297</i>).
 Reprocess...	Reprocess selected determinations (<i>see Chapter 4.7.18.1, page 301</i>).
Complete...	Complete selected determinations (<i>see Chapter 4.7.19, page 320</i>).
 Delete	Delete selected determinations (<i>see Chapter 4.7.20, page 320</i>).

4.1.3.6 Database - Menu Tools

Program part: **Database**

Report templates ►	
New ►	
Form report	Open the window Report template with an empty form report (<i>see Chapter 4.4.3, page 210</i>). This menu item is disabled as long as the database is empty.
Tabular report	Open then window Report template with an empty tabular report (<i>see Chapter 4.4.3, page 210</i>).
 Open...	Open report template to edit (<i>see Chapter 4.4.3, page 210</i>). This menu item is disabled as long as the database is empty.
Manager...	Manage report templates (<i>see Chapter 4.4.1.1, page 208</i>).
Templates ►	
Control chart templates...	Manage templates for control charts (<i>see Chapter 4.5, page 249</i>).
Export templates...	Manage export templates (<i>see Chapter 4.6.1, page 254</i>).

4.1.3.7 Help Menu

Program part: **Workplace / Database / Method / Configuration**

 MagIC Net Help	Open MagIC Net Help.
About	Displays information about the program and the installation.

4.1.4 Database - Toolbar

Program part: **Database**

 Open...	Open database (<i>see Chapter 4.2.1, page 197</i>).
 Close	Close database (<i>see Chapter 4.2.6, page 199</i>).
 Database manager...	Manage determination databases (<i>see Chapter 4.3.1, page 200</i>).
 Logout...	Logout user (<i>see Chapter 2.2.3, page 21</i>).
 Copy	Copy the selected lines in the determination overview to the clipboard.
 Update	Update determination overview.
 Change layout...	Modify layout of loaded database view (<i>see Chapter 3.1.7.2, page 107</i>).
 Load view...	Load a saved database view (<i>see Chapter 3.1.7.3, page 108</i>).
 Save view...	Save the loaded database view (<i>see Chapter 3.1.7.4, page 109</i>).
 Split vertically	Split database window vertically and display two databases side by side (<i>see Chapter 4.2.4, page 199</i>).
 Split horizontally	Split database window horizontally and display two databases, one above the other (<i>see Chapter 4.2.5, page 199</i>).
 Unsplit	Undo the splitting of the database window (<i>see Chapter 4.2.3, page 199</i>).
 Comment	Enter comment on the selected determination (<i>see Chapter 4.7.3, page 267</i>).
 Search	Open the window Search for searching for determinations (<i>see Chapter 4.7.4, page 268</i>).
 Filter/Last filter	Use last quick or special filter again (<i>see Chapter 4.7.6.2, page 273</i>).

- *Information*
Display of information for focused determination.
- *Results*
Display of results for focused determination.
- *Curves 1...5*
Display of curves for focused determination.

Presentation

The subwindows can be enlarged or made smaller to suit by dragging the separating bar between the windows.

By clicking on the button  above at the right, the subwindows can be maximized so that only one subwindow is displayed in the main window. The original view of all subwindows is restored when the  button in the maximized subwindow is clicked on again.

If you change the view in the subwindows, these changes will remain in effect after the database is closed and reopened.

4.1.6 Database - Functions

Program part: **Database**

In the program part **Database**, the following functions can be carried out:

Views

- *Modify the layout of the database view*
- *Load database view*
- *Save database view*
- *Rename database view*
- *Delete database view*

Database manager

- *Create new database*
- *Rename database*
- *Edit database properties*
- *Save database*
- *Restore database*
- *Delete database*

Determinations

- *Overview of functions*

Templates

- *Edit report template*
- *Edit templates for control charts*
- *Edit export templates*

4.1.7 Views

4.1.7.1 Views - General

Program parts: **Workplace / Database / Configuration**

Definition

The term **View** defines the contents and design of the main window in the program parts **Workplace**, **Database** and **Configuration**. The following elements belong to a view:

- Number, arrangement, sequence and size of the subwindows.
- Representation within the individual subwindows, i.e. column sequence, column width, sorting and filter.

Functions

The following functions are possible for views:

- *Change layout*
Defines the number, arrangement and sequence of the subwindows for the current view.
- *Save view*
Save current view.
- *Load view*
Load view saved.
- *Rename view*
Rename view saved.
- *Delete view*
Delete view saved.

Automatic save

If in the programm part Configuration under **Tools ► Options** on the **Save** tab, the respective point under **Save on closing** is enabled, then the current view of the program will be saved automatically.

Automatic load

The standard procedure is that the view saved when the program is terminated will be loaded automatically the next time that the program is opened. As an alternative a standard view can be defined for each user group that is loaded automatically the first time that the program part is opened.

The standard procedure is that the view with the following subwindow is opened with the very first program start:

- **Workplace**
Run, Live window 1, Report, Watch window, Time program
- **Database**
Determination overview, Curves 1, Information, Results

4.1.7.3 Load view

Dialog window: **Workplace / Database / Configuration ▶ View ▶ Load view... ▶ Load view**

With the symbol  or the menu item **View ► Load view...** the dialog window **Load view** is opened.

Name

Name of the view that should be loaded.

[Rename]

Rename the selected view.

[Delete]

Delete the selected view.

[Load]

Load the selected view.

4.1.7.4 Save view

Dialog window: **Workplace / Database / Configuration ▶ View ▶ Save view... ▶ Save view**

With the symbol  or the menu item **View ► Save view...** the dialog window **Save view** is opened.

Name

Name under which the view is to be saved.

[Rename]

Rename the selected view.

[Delete]

Delete the selected view.

[Save]

Saves the view under given name. The saved views are globally valid and available for client/server systems.

4.1.7.5 Rename view

Dialog window: **Workplace / Database / Configuration ▶ View ▶ Rename view... ▶ Rename view**

To be able to rename a view, either open the dialog window **Load View** or **Save View** and press the **[Rename]** button. The **Rename View** window is opened.

Editable

Shows whether or not the database can be edited by the user currently logged in.

Comment

Shows remarks about the database.

Opening the database

Database name

Name of the method to be opened. If a database is selected from the table, the name of the database will be entered automatically in this field. It can however also be entered manually.

Input	50 characters

[Open]

Opens the selected database and shows its data sets in the Determination overview. The database name is displayed in the title bar of the program, the number of currently opened databases is displayed in the left upper corner of the database symbol.



Note

A maximum of 4 databases can be opened, but only 2 can be displayed at the same time. Databases that are open at the time the program is ended will be automatically opened the next time the program is started.

4.2.2 Select database

Program part: **Database**

The number of the currently opened databases is displayed in the left upper corner of the database symbol. If 2 or more databases are opened, then these databases, which can be displayed either next to one another or one below the other, can be selected with the aid of the database symbol.



No database is opened. **No database loaded** is displayed in the main window.



One database is opened and is displayed in the main window.



Two databases are opened. Normally only one database is displayed in the main window but the option exists of displaying two databases at once, either next to the another or one below the other.



A menu with the currently opened databases is displayed by clicking with either the left or right mouse button on the database symbol. The databases displayed in the main window are marked with a checkmark. Clicking on the desired database displays it in the main window in the place of the previously selected one.

4.2.3 Display single database

Menu item: **Database ► View ► Unsplit**

In the default settings, the most recently opened database is displayed singularly in the main window. If the display of two windows is enabled, then the symbol  or the menu item **View ► Unsplit** can be used to switch back to the display of just one single database.

4.2.4 Display databases next to one another

Menu item: **Database ► View ► Split vertically**

With the symbol  or the menu item **View ► Split vertically** two databases are displayed next to one another in the main window.

4.2.5 Display databases one below the other

Menu item: **Database ► View ► Split horizontally**

With the symbol  or the menu item **View ► Split horizontally** two databases can be displayed one below the other in the main window.

4.2.6 Close database

Menu items: **Database ► File ► Close / Close all**

Close single database

With the symbol  or the menu item **File ► Close** can be used to close the focused database.

Close all databases

All the opened databases are closed with the menu item **File ► Close all**.

4.3 Manage databases

4.3.1 Manage databases

Dialog window: **Database ► File ► Database manager... ► Database manager**

The symbol  or the menu item **File ► Database manager...** is used to open the window **Database manager**, in which one user with corresponding access rights can administer databases.

Database table

The database table contains information concerning all determination databases. The table cannot be edited. With a click on the column title (Columns **Name**, **Number of records**, **Size**, **Last backup**, **Next backup**, **Comment**), the table can be sorted according to the selected column in increasing or decreasing sequence.

Name

Name of the database.

Number of records

Shows the number of data sets in the database.

Size

Shows the size of the database in KB.

Last backup

Shows the date and time of the last database backup.

Next backup

Shows the date and the time at which the next backup is to be carried out.

Comment

Shows remarks about the database.

Window menus and functions

The menu **Edit** beneath the database table contains the following menu items:

New...	Create new database (see Chapter 4.3.2, page 201).

Delete	Delete the selected database (<i>see Chapter 4.3.4, page 202</i>).
Rename...	Rename the selected database (<i>see Chapter 4.3.3, page 202</i>).

[Properties]

Opens the window **Database manager** for editing the database selected in the table (*see Chapter 4.3.5.1, page 202*).

[Backup]

Opens the window **Backup the database** for backing up the database selected in the table (*see Chapter 4.3.6, page 206*).

[Restore:]

Opens the window **Restoration of databases** for restoring backed-up databases (*see Chapter 4.3.7, page 207*).

[Exit]

Closes the window **Database manager**.

4.3.2 Create new database

Dialog window: **Database ► File ► Database manager... ► Database manager ► [Edit] ► New... ► New database**

The menu item **[Edit] ► New...** can be used to open the window **New database**, in which a name for the new database must be entered.

Name

Name of the new database.

Input	50 characters
Default value	New database #

**Note**

The database name must be unambiguous in the whole Client/Server system.

Clicking on **[OK]** will open the window **Database properties** for editing the database properties.



4.3.3 Rename database

Dialog window: **Database** ▶ **File** ▶ **Database manager...** ▶ **Database manager** ▶ **[Edit]** ▶ **Rename...** ▶ **Rename database**

The menu item **[Edit] ► Rename...** is used to open the window **Rename database** for renaming the selected database.

Rename database 'Name' to

Entry of the new database name.

Input	50 characters



Note

The database name must be unambiguous in the whole Client/Server system.

4.3.4 Delete database

Menu item: **Database ▶ File ▶ Database manager... ▶ Database manager ▶ [Edit] ▶ Delete**

The menu item **[Edit] ► Delete** is used to delete the selected database.



Note

Databases that are open cannot be deleted.

4.3.5 Database properties

4.3.5.1 Database properties - Overview

Dialog window: **Database** ▶ **File** ▶ **Database manager...** ▶ **Database manager** ▶ **[Properties]** ▶ **Properties - Database - 'Database name'**

The properties for a database are set on the following tabs:

- *General*
General information about the database.
- *Access rights*
Access rights to the database for user groups.
- *Backup*
Definition of backup monitoring and automatic backups.
- *Monitoring*
Defines database monitoring.

4.3.5.2 Database properties - General

Tab: Database ▶ File ▶ Database manager... ▶ Database manager ▶ [Properties] ▶ Properties - Database - 'Database name' ▶ General

General information about the database.

Comment

Freely definable remarks about the database.

Input	250 characters

Number of records

Shows the number of data sets in the database.

Size

Shows the size of the database in KB.

Created

Shows the date and time of the creation of the database.

Created by

Full name of the user who created the database.

Modified

Shows the date and time of the last modification of the database properties.

Modified by

Shows the name of the user (abbreviation) who carried out the modifications.

4.3.5.3 Database properties - Access rights

Tab: **Database ▶ File ▶ Database manager... ▶ Database manager ▶ [Edit] ▶ Properties - Database - 'Database name' ▶ Access rights**

Access rights to the database for user groups.

User group

Shows the user groups defined in the user manager.

Read

on | off (Default value: **on**)

Enables/disables the right to open the database. The database can only be displayed, but not modified (records cannot be deleted or reprocessed).

Edit

on | off (Default value: **off**)

Enables/disables the right to edit the database. Records can be revised or deleted.



Note

If access for editing is enabled, then access rights for reading will also automatically be enabled. If access for editing is disabled, then access rights for reading will also automatically be disabled.

4.3.5.4 Database properties - Backup

Tab: Database ▶ File ▶ Database manager... ▶ Database manager ▶ [Properties] ▶ Properties - Database - 'Database name' ▶ Backup

Definition of backup monitoring and automatic backups.

Backup monitoring

on | off (Default value: **off**)

Enables/disables the backup monitoring for the selected database. If the check box **Backup monitoring** is enabled, then the field **Next backup** in the database table will be marked in **red** when the interval time elapses.

Last backup

Shows the date and time of the last database backup.

Next backup

Date at which the next backup must take place. The date can be selected by pressing  in the dialog window **Select date**.

Input	Date selection
Default value	Last backup + 1 month

Interval

Entry of the interval for the backup monitoring. After each automatically or manually triggered backup, the interval entered here will be added automatically to the **Last backup** and the field **Next backup** will be automatically adjusted accordingly.

Range	1 ... 999
Default value	1
Selection	day(s) week(s) month(s) year(s)
Default value	month(s)

Maximum number

Maximum permitted number of data sets for database.

Range	1 ... 2147483647
Default value	1000

4.3.6 Backup database manually

Dialog window: **Database ► File ► Database manager... ► Database manager ► [Backup] ► Database backup**

[Backup] is used to open the dialog window **Backup database**:

Backup target

Backup directory

Selection of a folder predefined in **Program administration** for the backup.

Selection	Selection of the backup directory Default backup directory
Default value	Default backup directory



Note

Make sure that you have read and write access rights on the selected directory.

Backup name

Selection of an existing name for the backup file or entry of a new name.
If an existing backup file is selected it will be overwritten.

Input	50 characters
Default value	Backup-##



Note

If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** because the backup date information is not available when the directory is restored.

[Start]

Starts manual database backup.

4.3.7 Restore database

Dialog window: **Database ► File ► Database manager... ► Database manager ► [Restore] ► Restoring databases**

[Restore] is used to open the dialog window **Restore databases:**

Backup directory

Selection of a directory predefined in the **Program administration** that contains the backed up databases.

Selection	Selection of the backup directory Default backup directory
Default value	Default backup directory

Backup name

Selection of a backup file.

Selection	Select backup files

Backup date

Shows the time at which the database was backed up. If the backup file is located on a network drive, this information is not available.

Database name

Shows the name of the database. If the backup file is located on a network drive, this information is not available.

Number of records

Shows the number of data sets in the database. If the backup file is located on a network drive, this information is not available.

Size

Shows the size of the database in KB.

Save as

Name under which the database is to be restored.

Input	50 characters
Default value	New database ##

[Start]

Start database recovery. After the start, a progress bar appears in the window. When the backup has been completed the dialog window closes automatically.



Note

Existing databases cannot be overwritten, i.e. they must first be deleted so that the database can be recovered under its old name.

4.4 Report templates

4.4.1 Manage report templates

4.4.1.1 Report template manager

Dialog window: **Database ► Tools ► Report templates ► Manager... ► Report template manager**

The menu item **Tools ▶ Report templates ▶ Manager...** is used to open the window **Report template manager**.

List of report templates

The list of report templates contains information about all the saved report templates. The table cannot be edited. With a click on the column title (Column **Name**, **Saved**, **Saved by**, **Comment**) the table can be sorted according to the selected column in increasing or decreasing sequence.

Name

Name of report template.

Saved

Date and time when the report template was saved.

Saved by

Short name of the user who saved the report template.

Comment

Comment on the report template.

Window menus

The menu **[Edit]** below the list of report templates contains the following menu items:

Rename...	Rename the selected report template (<i>see Chapter 4.4.1.2, page 209</i>).
Copy	Copy the selected report template(s) (<i>see Chapter 4.4.1.3, page 209</i>).
Delete...	Delete the selected report template(s) (<i>see Chapter 4.4.1.4, page 209</i>).

Date and time when the report template was saved.

Short name of the user who saved the report template.

Comment on the report template.

Name of the report template to be opened. If a report template is selected from the table, the name will be entered automatically in this field. It can however also be entered manually.

Input	50 characters

Opens the program window **Report template**, in which the selected report template is shown and can be edited.

- **Form report**
In the Form report the report section always includes the whole area between the header and the footer. This means that for each determination at least one page will always be produced.
- **Tabular report**
In the Tabular report the report section can be set with the mouse. For each data set one such report section will be filled with data and placed on the page row by row. In this way tabular reports can be created from several determinations.

4.4.4.1.3.3 Report template - Menu Edit

Program window: **Database ► Report template**

 Undo:	Undo the last action.
 Restore:	Restore the undone action.
 Cut	Cut selected items and copy them to the clipboard (see Chapter 4.4.4.2.6, page 220).
 Copy	Copy the selected items to the clipboard (see Chapter 4.4.4.2.6, page 220).
 Insert	Insert marked items from the clipboard (see Chapter 4.4.4.2.6, page 220).
 Delete	Delete the marked items (see Chapter 4.4.4.2.6, page 220).
 Comment	Enter comments on the report template (see Chapter 4.4.4.2.9, page 222).

4.4.4.1.3.4 Report template - Menu View

Program window: **Database ► Report template**

Update	Update the view.
First page	Show the first page of the report template (see Chapter 4.4.4.2.4, page 219).
Previous page	Show the previous page of the report template (see Chapter 4.4.4.2.4, page 219).
Next page	Show the next page of the report template (see Chapter 4.4.4.2.4, page 219).
Last page	Shows the last page of the report template (see Chapter 4.4.4.2.4, page 219).

4.4.4.1.3.5 Report template - Menu Insert

Program window: **Database ► Report template**

Page before	Insert a new page in front of the shown page (see Chapter 4.4.4.2.4, page 219).
Page after	Inserts a new page after the shown page (see Chapter 4.4.4.2.4, page 219).

4.4.4.1.3.6 Report template - Menu Tools

Program window: **Database ► Report template**

Options...	Set options for the report template (see Chapter 4.4.4.2.10, page 223).

4.4.4.1.3.7 Report template - Menu Help

Program window: **Database** ▶ **Report template**

 **MagIC Net Help** Open MagIC Net Help.

4.4.4.1.4 Report template - General toolbar

Program window: **Database** ► **Report template**

 Save	Save an opened report template (<i>see Chapter 4.4.4.2.11, page 224</i>).
 Page preview	Set up the layout for the report template (<i>see Chapter 4.4.4.2.8, page 221</i>).
 Print (PDF)...	Show the report template with the data of the selected determination as a PDF-file.
 Undo:	Undo the last action.
 Restore	Restore the undone action.
 Cut	Cut selected items and copy them to the clipboard (<i>see Chapter 4.4.4.2.6, page 220</i>).
 Copy	Copy the selected items to the clipboard (<i>see Chapter 4.4.4.2.6, page 220</i>).
 Insert	Insert marked items from the clipboard (<i>see Chapter 4.4.4.2.6, page 220</i>).
 Delete	Delete the marked items (<i>see Chapter 4.4.4.2.6, page 220</i>).
	Select zoom level (<i>see Chapter 4.4.4.2.7, page 221</i>).
 Grid	Switch the grid display on and off (<i>see Chapter 4.4.4.2.10, page 223</i>).
 Snap to grid	Switch snap at grid on and off (<i>see Chapter 4.4.4.2.10, page 223</i>).

4.4.4.1.5 Report template - Module-specific toolbar

Program window: **Database ► Report template**

Depending on the module selected in the report template, other symbols and input fields are shown below the general toolbar, with which the properties of these modules can be directly edited (*see Chapter 4.4.4.1.6, page 215*).

4.4.4.1.6 Report template - Module bar

Program window: **Database ► Report template**

 Select modules	If this option is enabled then modules in the report template can be selected, reduced/enlarged and moved (<i>see Chapter 4.4.4.2.6, page 220</i>).
 Text field	If this option is enabled then text fields can be inserted in the report template (<i>see Chapter 4.4.4.3.1, page 225</i>).
 Data field	If this option is enabled then data fields can be inserted in the report template (<i>see Chapter 4.4.4.3.2, page 226</i>).
 Date field	If this option is enabled then date fields can be inserted in the report template in which the actual date is entered (<i>see Chapter 4.4.4.3.3, page 228</i>).
 Time field	If this option is enabled then time fields can be inserted in the report template in which the actual time is entered (<i>see Chapter 4.4.4.3.4, page 230</i>).
 Page number	If this option is enabled then fields can be inserted in the report template in which the page number is entered (<i>see Chapter 4.4.4.3.5, page 231</i>).
 Number of pages	If this option is enabled then fields can be inserted in the report template in which the number of pages is entered (<i>see Chapter 4.4.4.3.6, page 233</i>).
 Fixed report	If this option is enabled then fixed reports can be inserted in the report template (<i>see Chapter 4.4.4.3.7, page 235</i>).
 Group field	If this option is enabled then group fields can be inserted in the report template (<i>see Chapter 4.4.4.3.8, page 236</i>).
 Result table	If this option is enabled then result tables can be inserted in the report template (<i>see Chapter 4.4.4.3.9, page 237</i>).
 Single result	If this option is enabled then single results can be inserted in the report template (<i>see Chapter 4.4.4.3.10, page 239</i>).
 Curve and result table	If this option is enabled then curves and result tables can be inserted in the report template (<i>see Chapter 4.4.4.3.11, page 240</i>).
 Image	If this option is enabled then images can be inserted in the report template (<i>see Chapter 4.4.4.3.12, page 241</i>).



 Line	If this option is enabled then lines can be inserted in the report template (see Chapter 4.4.4.3.13, page 243).
 Rectangle	If this option is enabled then rectangles can be inserted in the report template (see Chapter 4.4.4.3.14, page 244).
 Curve	If this option is enabled then curves can be inserted in the report template (see Chapter 4.4.4.3.15, page 245).
 Calibration curve	If this option is enabled then calibration curves can be inserted in the report template (see Chapter 4.4.4.3.16, page 246).

4.4.4.2 Report template - Functions

4.4.4.2.1 Report template - Function overview

Program window: **Database** ► **Report template**

In the program window **Report template** the following functions can be executed:

- *Page setup*
- *Define sections in main window*
- *Insert report pages*
- *Insert modules*
- *Edit modules*
- *Zooming*
- *Show page preview*
- *Enter comment on report template*
- *Define options for report template*
- *Save report template*

4.4.4.2.2 Report template - Page setup

Dialog window: **Report template** ▶ **File** ▶ **Page setup...** ▶ **Page setup**

With the menu item **File ► Page setup...** in the window **Report template** the dialog window **Page setup** opens in which the report format settings can be made.

General

Preferences

Selection	Apply to current page Apply to all pages
Default value	Apply to current page

Apply to current page

The page settings are only applied for the currently selected report page.

Apply to all pages

The page settings are applied for all report pages.

Paper format**Paper format**

Selection of the page format. The width and height of the paper can be defined with **User-defined**.

Selection	A4 Letter Legal User-defined
Default value	A4

Width

Width of the page format. This parameter can only be edited for **Page format= User-defined**

Range	0.0 ... 499.0 mm
Default value	210.0 mm

Height

Height of the page format. This parameter can only be edited for **Page format= User-defined**

Range	0.0 ... 499.0 mm
Default value	297.0 mm

Orientation

Selection of the page format.

Selection	Portrait Landscape
Default value	Portrait

Page margins**Top**

Upper page margin.

Range	0.0 ... 499.0 mm
Default value	15.0 mm

Bottom

Lower page margin.

Range	0.0 ... 499.0 mm
Default value	15.0 mm

Left

Left-hand page margin.

4.4.4.2.4 Report template - Inserting pages

Menu item: **Report template ▶ Insert ▶ Page before/Page after**

Inserting page before

With the menu item **Insert ▶ Page before** in the program window **Report template** a new empty report page is inserted before the report page shown.

Inserting page after

With the menu item **Insert ▶ Page after** in the program window **Report template** a new empty report page is inserted after the report page shown.

Navigating

In report templates with several pages the navigation bar can be used to switch to the required page.



Jumps to first page.



Jumps to previous page.



Jumps to next page.



Jumps to last page.

4.4.4.2.5 Report template - Inserting modules

Program window: **Database ▶ Report template**

In order to insert a module in a report template the corresponding symbol must be selected on the module bar and then placed on the report template by creating a field with the left mouse button. The Properties window of the corresponding module then opens automatically.

Form report

The following modules can be inserted in a form report:

- **Header**

Text field, Data field, Date field, Time field, Page number, Number of pages, Image, Line, Rectangle, Curve, Calibration curve

- **Report section**

Text field, Data field, Date field, Time field, Fixed report, Group field, Image, Line, Rectangle, Result table, Single result, Curve + Result table, Curve, Calibration curve, Group Calibration curve



- **Footer**

Text field, Data field, Date field, Time field, Page number, Number of pages, Image, Line, Rectangle, Curve, Calibration curve

Tabular report

The following modules can be inserted in a tabular report:

- **Header**

*Text field, Date field, Time field, Page number, Number of pages,
Image, Line, Rectangle*

- **Report section**

Text field, Data field, Date field, Time field, Group field, Image, Line, Rectangle,

- **Footer**

*Text field, Date field, Time field, Page number, Number of pages,
Image, Line, Rectangle*

4.4.4.2.6 Report template - Editing modules

Program window: **Database** ► **Report template**

Enable selection



This symbol in the Module bar must be switched on in order to be able to select modules in a report template for editing.

Select a single module

Single modules are selected with a click of the left mouse button. This automatically shows the corresponding properties of the module below the toolbar.

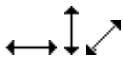
Select several modules

Several modules are selected by drawing a frame around the required modules with the left mouse button.

Moving, reducing, enlarging modules



When this cursor symbol appears then the selected modules can be moved about on the report template with the left mouse button pressed down.



When one of these cursor symbols appears then the selected modules can be reduced and enlarged respectively on the report template with the left mouse button pressed down.



Cutting, copying, pasting, deleting modules

Cut the selected modules and copy them to the clipboard.



Copy the selected modules to the clipboard.



Paste modules from the clipboard.



Deletes the selected module.

Edit module properties



Open the properties window for the selected module. Alternatively the properties can also be edited directly below the toolbar.

4.4.4.2.7 Report template - Zoom

Program window: **Database ▶ Report template**



With this list box on the toolbar the required zoom step for showing the report template can be selected in steps of **25%** from **25%** to **400%**.

4.4.4.2.8 Report template - Page preview

Preview window: **Report template ▶ File ▶ Page preview ▶ Report preview**

With the symbol  or the menu item **File ▶ Page preview** in the program window **Report template** the window **Report preview** opens in which a page preview of the report template is shown with the data of the determinations selected in the determination overview.

Functions



Produces displayed report as PDF-file.



Selects the required zoom step for displaying the report preview, range **25%** to **400%** in steps of **25%**.

Select report page

In report templates with several pages the navigation bar **Page** can be used to switch to the required page.

Report template - Options

Dialog window: **Report template** ▶ **Tools** ▶ **Options...**

With the menu item **Tools, Options** in the program window **Report templates** the window **Options for report templates** opens in which various settings for the report template can be defined.

Unit

Unit

Select the size unit for the report template.

Selection	mm cm inch
Default value	mm

Grid

X distance

Grid distance in X-direction.

Range	1.0 ... 100.0 mm
Default value	5.0 mm

Y distance

Grid distance in Y-direction.

Range	1.0 ... 100.0 mm
Default value	5.0 mm

Display grid

on | off (Default value: **off**)

Enable/Disable the grid display on the report template.

Snap at grid

on | off (Default value: **off**)

Enable/Disable snapping at grid on the report template.

Default font

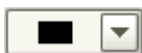
Font

Select the default font for the report templates.

Selection	Arial Windows fonts
Default value	Arial

4.4.4.3.1 Report template - Text field

Text fields are used for showing any texts in the report.





Italic.



Underlined.



Left-justified.



Centered.



Right-justified.



Switches line break on/off for multi-line text fields.



Fills the field with dots.

Text

Entry of text for the text field.

4.4.4.3.2 Report template - Data field

Program window: **Database ▶ Report template**

Data fields are used for showing determination data in a report.

Insert



In order to insert a data field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Range	0.0000 ... (max. page width) mm

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Width

Width of data field.

Range	0.0000 ... (max. page width) mm

Height

Height of data field.

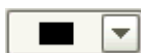
Range	0.0000 ... (max. page height) mm



Selection of the available Windows fonts.



Font size in pt.



Color selection.



Bold.



Italic.



Underlined.



Left-justified.



Centered.



Right-justified.



Switches line break on/off for multi-line data fields.



Fills the field with dots.

Prefix

Text placed in front of the data field contents.

Input	50 characters

Data field

Shows path and name of selected data field (the field cannot be edited directly). With  a window opens for selecting the data field in which all the available fields for the determination overview are shown in a tree structure. With a double-click on the required field the path and name of the data field are entered.

Suffix

Text placed after the data field contents.

Input	50 characters

Preview

Shows a formatted example of text.

4.4.4.3.3 Report template - Date field

Program window: **Database ► Report template**

Date fields are used for showing the current date in a report.

Insert



In order to insert a date field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Range	0.0000 ... (max. page width) mm

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Width

Width of date field.

Range	0.0000 ... (max. page width) mm

Height

Height of date field.

Range	0.0000 ... (max. page height) mm



Selection of the available Windows fonts.



Font size in pt.



Color selection.



Bold.



Italic.



Underlined.



Left-justified.



Centered.



Right-justified.



Fills the field with dots.

Prefix

Text placed in front of the date field contents.

Input	50 characters

Suffix

Text placed after the date field contents.

Input	50 characters



Sample

Shows the formatted date.

4.4.4.3.4 Report template - Time field

Program window: Database ▶ Report template

Time fields are used for showing the actual time in the report.

Insert



In order to insert a time field in a report template the corresponding symbol must be selected on the Module bar and then placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Range	0.0000 ... (max. page width) mm

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Width

Width of time field.

Range	0.0000 ... (max. page width) mm

Height

Height of time field.

Range	0.0000 ... (max. page height) mm



Selection of the available Windows fonts.



Font size in pt.



Color selection.



Bold.



Italic.



Underlined.



Left-justified.



Centered.



Right-justified.



Fills the field with dots.

Prefix

Text placed in front of the contents of the time field.

Input	50 characters

Suffix

Text to be placed after the contents of the time field.

Input	50 characters

Preview

Shows the formatted time.

4.4.4.3.5 Report template - Page number

Program window: **Database ► Report template**

The actual page number in the report is produced in a page number field.

Insert



In order to insert page number field into a report template the corresponding symbol must be selected on the Module bar and then placed in the header or footer of the report template by creating a field with the left-hand mouse key.



Properties

X pos.

x-position within the permitted section.

Range	0.0000 ... (max. page width) mm

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Width

Width of the page number field.

Range	0.0000 ... (max. page width) mm

Height

Height of the page number field.

Range	0.0000 ... (max. page height) mm



Selection of the available Windows fonts.



Font size in pt.



Color selection.



Bold.



Italic.



Underlined.



Left-justified.



Centered.





Right-justified.



Fills the field with dots.

Prefix

Text placed in front of the page number field.

Input	50 characters

Suffix

Text placed after the page number field.

Input	50 characters

Preview

Shows the formatted page number.

4.4.4.3.6 Report template - Number of pages

Program window: **Database ▶ Report template**

This field shows the total number of pages in the report.

Insert



In order to insert a number of pages field into a report template, the corresponding symbol must be selected on the Module bar and then placed in the header or footer of the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Range	0.0000 ... (max. page width) mm

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Width

Width of the field.

Range	0.0000 ... (max. page width) mm



Height

Height of the field.

Range	0.0000 ... (max. page height) mm



Selection of the available Windows fonts.



Font size in pt.



Color selection.



Bold.



Italic.



Underlined.



Left-justified.



Centered.



Right-justified.



Fills the field with dots.

Prefix

Text placed in front of the field contents.

Input	50 characters

Suffix

Text placed after the field contents.

Input	50 characters

Shows the formatted number of pages.

Program window: **Database ► Report template**



Shows the predefined x-position for the fixed report.

y-position within the permitted section.

Shows the predefined width of the fixed report.

Height of fixed report.

Selection of a predefined fixed report.

4.4.4.3.8 Report template - Group field

Program window: **Database** ► **Report template**

A group field is for the purpose of grouping together a variety of fields in the report template. All of the fields gathered together in a group field can be moved together as a group. The group field prevents a page break inside the group field.

The group field always extends across the entire width of a page; only the upper edge (Y value) and the height of the field can be configured.



Note

The following fields, which do not permit page break controls, cannot be inserted into a group field.

- Fixed report
- Result table
- Curve
- Calibration curve

Insert



In order to insert group field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

Shows the predefined x-position for the field.

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Width

Shows the predefined width of the fixed report.

Height

Height of the field

Range	0.0000 ... (max. page height) mm

Report template - Result table

Program window: **Database** ► **Report template**

Result tables are used for producing determination results in tabular format in the report.

Inserting



In order to insert a result table in a report template the corresponding symbol must be selected on the Module bar and then placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

Shows the predefined x position for the field.

Y pos.

Y position within the permitted section.

Range	0.0000 ... (max. page height) mm

Width

Shows the predefined width of the field.

Height

Height of the field.

Range	0.0000 ... (max. page height) mm



Selection of the available Windows fonts.



Font size in pt.



Color selection.

Analysis

Name of the analysis for which the results are to be produced.

Input	40 characters
Selection	All
Default value	All

All

Result tables are produced for all analyses.

Available results

Shows all the results that can be shown as columns in the result table.

Displayed results

Result

Shows all the results that will be shown as columns in the result table.

Decimal places

Number of decimal places for displaying the results.

[Decimal places]

Opens the dialog window **Decimal places**, in which the number of decimal places for the result can be selected.



Adds the selected column to the table.



Removes the selected column from the table.



Modifies the sequence of displayed columns by moving the selected column up.



Modifies the sequence of displayed columns by moving the selected column down.

Unidentified peaks

Show unidentified peaks

on | off (Default value: **off**)

Selection as to whether non-identified peaks are to be displayed in the result table or not.

Report template - Single result

Program window: **Database** ► **Report template**

Single result fields are used for producing user-defined single results in the report.

Insert



In order to insert a single-result field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

Shows the predefined x-position for the field.

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Width

Shows the predefined width of the field.

Height

Height of the field.

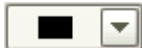
Range	0.0000 ... (max. page height) mm



Selection of the available Windows fonts.



Font size in pt.



Color selection.



Bold.



Italic.



Underlined.



Fills the field with dots.

Prefix

Text placed in front of the single result field contents.

Input	50 characters

Single result

Enters the name of the user-defined single result that is to be produced.

Input	50 characters
Selection	All
Default value	All

All

All user-defined single results will be produced one above the other.

Suffix

Text placed after the single result field contents.

Input	50 characters

Sample

Shows a formatted example of text.

4.4.4.3.11 Report template - Curves + Result table

Program window: **Database ► Report template**

Insert



In order to insert a curve and result table field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

General properties

X pos.

Shows the predefined x-position for the field.

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Shows the predefined width of the fixed report.

Height of the field

Font size in pt.

Color selection.

Name of the analysis for which the curves and results are to be produced.

Input	40 characters
Selection	All
Default value	All

All

Curves and result tables are produced for all analyses.

Properties for curve display

The properties for the curve display are selected with this symbol (parameter description *see Report template - Curve field*).

Properties for result display

The properties for the display of the result tables are selected with this symbol (parameter description *see Report template - Result table*).

Program window: **Database** ► **Report template**

An image field is used for including any external graphics on the report template. The file formats ***.jpg** and ***.gif** are supported.



Insert

In order to insert an image into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Range	0.0000 ... (max. page width) mm

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Width

Width of image field.

Range	0.0000 ... (max. page width) mm

Height

Height of image field.

Range	0.0000 ... (max. page height) mm

Graphics file

Shows path and name of the selected graphics file (the field cannot be edited directly). With  a window opens for selecting the graphics file. The path and name of the graphics file are then entered.

Size

Entry how the image is to be displayed.

Selection	original proportional non-proportional
Default value	original

original

Original size.

proportional

Proportional enlargement or diminishment.

non-proportional

Non-proportional enlargement or diminishment.

Report template - Line

Program window: **Database ► Report template**

Any line can be inserted in the report template.

Insert



In order to insert a line in a report template the corresponding symbol must be selected on the Module bar and then placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Range	0.0000 ... (max. page width) mm

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Length

Length of the line.

Range	0.0 ... (max. page width) mm

Angle

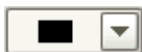
Angle of the line.

Range	0 ... 360.000 °

Thickness

Thickness of the line.

Range	0.1 ... 10.0 mm
Default value	0.5 mm



Selection of the line color.



Selection of the type of line.

4.4.4.3.14 Report template - Rectangle

Program window: **Database** ► **Report template**

Any rectangle can be inserted in the report template.

Insert



In order to insert a rectangle into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

x-position within the permitted section.

Range	0.0000 ... (max. page width) mm

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Width

Width of the rectangle.

Range	0.0000 ... (max. page width) mm

Height

Height of the rectangle.

Range	0.0000 ... (max. page height) mm

Thickness

Thickness of the line for the rectangle.

Range	0.1 ... 10.0 mm
Default value	0.5 mm



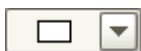
Selection of the line color.



Selection of the type of line for the rectangle.



Switches the fill color on and off.



Selection of the fill color.

4.4.4.3.15 Report template - Curve field

Program window: **Database ► Report template**

Insert



In order to insert a curve in a report template the corresponding symbol must be selected on the Module bar and then placed on the report template by creating a field with the left-hand mouse key.

Properties

X pos.

Shows the predefined x-position for the curve field.

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Width

Shows the predefined width of the curve field.

Height

Height of curve field.

Range	0.0000 ... (max. page height) mm

Analysis

Name of the analysis for which the curve is to be produced.

Input	40 characters
Selection	All
Default value	All

All

Curves are produced for all analyses.

Curve display

Definition of the curve display.

Selection	from database user-defined
Default value	from database

from database

The curve is displayed using the settings that have been placed in the database (with the exception of the background color, which is always white). The tabs for configuring the display are disabled.

user-defined

The display of the curve in the report can be configured by the user.

Axes

Parameters *see Properties - Axes*.

Chromatogram

Parameters *see Properties - Chromatogram*.

Display

Parameters *see Properties - Display*.

4.4.4.3.16 Report template - Calibration curve field

Program window: **Database ► Report template**

Insert



In order to insert calibration curve field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left-hand mouse key.

General properties

X pos.

Shows the predefined x-position for the field.

Y pos.

y-position within the permitted section.

Range	0.0000 ... (max. page height) mm

Width

Shows the predefined width of the fixed report.

Height

Height of the field

Range	0.0000 ... (max. page height) mm



Selection of the available Windows fonts.



Font size in pt.



Color selection.

Analysis

Entry of the name of the analysis for which the calibration curve is to be produced.

Input	40 characters
Selection	All
Default value	All

All

Calibration curves are produced for all analyses.

Components

Entry of the name of the component for which the calibration curve is to be produced.

Input	40 characters
Selection	All
Default value	All

All

Calibration curves are produced for all components.

Curve display

Parameter description *see Report template - Curve field*.

4.4.4.3.17 Report template - Spectrum + Maxima table

Program window: **Database ▶ Report template**

4.4.4.3.17.1 General properties

Program window: **Database ▶ Report template**

Insert



In order to insert a spectrum and maxima table field into a report template the corresponding symbol must be selected on the Module bar and placed on the report template by creating a field with the left mouse button.

General properties

The parameters **X pos.**, **Y pos.**, **Width** and **Height** as well as the parameters for font, font size and color are described in the report module *Report template - Curves + Result table*, s. 240.

Analysis

Selection **All** or manual entry of the analysis name.

Input	40 characters Out of all analyses of the determination which have the entered name, the spectra are to be put out.
Selection	All
Default value	All

All

Out of all analyses of the determination the spectra are to be put out.

Spectrum

Selection **All** or manual entry of a spectrum name.

Input	40 characters Out of the selected analyses all spectra which have the entered name are put out.
Selection	All
Default value	All

All

Out of the selected analyses all spectra are put out.

The parameter **Curve display** is described in the report module *Report template - Curve field*, p. 245.

Properties for the display of spectra

Spectra

The properties for the display of spectra are selected with this symbol (parameter description see *Properties for the display of spectra*).

Properties for the display of maxima

Maxima

The properties for the display of the maxima table are selected with this symbol (parameter description *see Properties for the display of maxima tables*).

4.4.4.3.17.2

Properties for the display of spectra

Program window: **Database ► Report template**

Axes

Parameters *see Properties - Axes*.

Spectrum

Parameters *see Properties - Spectrum*.

Parameters *see Properties - Display.*

Program window: **Database** ► **Report template**

Shows all the results that can be shown as columns in the maxima table.

Parameters *see Displayed results.*

4.5.1 Managing control chart templates

With the menu item **Tools ▶ Templates ▶ Control chart templates...**, the dialog window **Control chart templates** opens in which the globally available templates for control charts can be managed.

The table with the defined templates cannot be edited, although it can be sorted according to the selected column in increasing or decreasing sequence by clicking on the column title

Shows the name of the template.

Shows the comments about the template.

[New]

[Properties]

The dialog window **Properties - Control chart template** opens, in which the properties of the template selected in the table can be edited.

Delete template.

[Copy]

Copies the template and saves it under the name **Copy of...**

4.5.2 **Editing control chart templates**

4.5.2.1 **Control chart template - Properties**

Dialog window: **Database ▶ Tools ▶ Templates ▶ Control chart templates... ▶ Control chart templates ▶ [Properties] ▶ Properties - Control chart templates**

Template name

Name for the control chart template which is saved in the configuration database per client.

Input	50 characters

Result table

Table with the results for which a control chart is defined.
The most important properties of the control chart of the selected result are displayed next to the table on the right.

[Edit]

Opens the menu for editing the control charts of the single results.

New	Add new result to the template.
Properties	Edit properties of the selected result.
Delete	Delete the selected result.

Result properties overview

Displays the most important properties of the control chart of the selected result in the table.

Warning limits

Displays the defined warning limits.

Intervention limits

Displays the defined intervention limits.

Statistics

Displays the defined statistics data.

Comment

Entry of comment on the control chart template.

Input	1000 characters

Input	50 characters
Default value	empty

Selection	Automatically Manual
Default value	Automatically

Range	$-1 \cdot 10^{99} \dots 1 \cdot 10^{99}$
Default value	0

Lower intervention limit.

Upper intervention limit.

4.6 Export templates

4.6.1 Export templates manager

Dialog window: **Database ▶ Tools ▶ Templates ▶ Export templates... ▶ Export templates**

With the menu item **Tools ► Templates ► Export templates**, the dialog window **Export templates** opens in which the globally available templates for manual or automatic export of determination data can be managed.

Template table

The table with the defined templates cannot be edited, although it can be sorted according to the selected column in increasing or decreasing sequence by clicking on the column title

Name

Shows the name of the export template.

File type

Shows the file format of the export template for data export.

Comment

Shows the comment on the export template.

functions

[New]

Creates a new export template. The dialog window **Export template** opens in which the properties for the new template can be defined.

[Properties]

The dialog window **Export template** opens, in which the properties of the template selected in the table can be edited.

[Delete]

Delete the selected export template.

[Copy]

Copies the selected export template and saves under the name **Copy of....**



***.cdf (AIA format)**

Data exchange format for AIA chromatogram data that can be imported into corresponding PC programs.

***.txt (measuring point list)**

Data exchange format for measuring point lists that can be imported into corresponding PC programs. The text file contains a header with date/time of the determination, Ident and determination ID, then the measuring point lists of the analyses will be listed one after the other. The analysis name, the number of measuring points and the units of time and measurement value will be placed at the head of each measuring point list. If the determination contains analyses using the (*see Chapter 7.10, page 882*), UV/VIS spectra may additionally be defined. In this case the spectrum data is output afterwards: the name of the spectrum has the format **Analysis name/Spectrum name**. The output of spectra is alphabetically sorted according to the spectrum name.

[Select fields]

Opens the dialog window **Select fields** in which the required fields for export can be selected, arranged in the required sequence and renamed.



Note

Field selection is only possible for the file types ***.csv** and ***.slk**. With ***.idet** and ***.xml** always all fields will be exported.

[Options]

Opens the dialog window **Options**, in which the separators can be defined.



Note

The options can only be set for the data types ***.csv** and ***.txt**.

File name

One of the following options can be selected for the definition of the name of the export file:

Selection	Determination ID Sample ident. Request on each export Fixed file name (append data)
Default value	Determination ID

Determination ID

If this option is selected then the name of the export file will be formed from the unambiguous **Determination ID**, the **Computer name**, the date stamp **-YYYYMMDD-HHMMSS** and the suffix for the format.

Sample ident.

If this option is selected then the name of the export file will be formed from the selected sample identification (**Ident**, **Info 1...4** or **Value 1...4**), the **Computer name**, the date stamp **-YYYYMMDD-HHMMSS** and the suffix for the format. If the generated name already exists in the folder then a version number will additionally be appended to the date.

Request on each export

If this option is selected then the name of the export file will be requested at each export. In addition to the entered name the **Computer name** and the date stamp **-YYYYMMDD-HHMMSS** will be added automatically.

Fixed file name (append data)

If this option is selected then the name of the export file will be formed from the name entered here and the suffix for the format. If the file is already present in the folder then the data will be appended to this file.



Note

The option **Fixed file name** can only be selected for the file type ***.csv (comma separated)** or ***.slk (SLK format)**.

4.6.2.2 Export template - Select fields

Dialog window: **Database** ▶ **Tools** ▶ **Templates** ▶ **Export templates...** ▶ **Export templates** ▶ **[Properties]** ▶ **Export template** ▶ **[Select fields]** ▶ **Select fields**

With **[Select fields]** in the Properties window for export templates the dialog window **Select fields** opens in which the fields for data export for the file types ***.csv** and ***.slk** can be selected.

Available fields

Shows all the fields that can be exported.

Selected fields

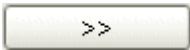
Shows all the fields that will be exported.

Default name

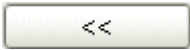
Non-editable name of the field to be exported.

Displayed name

Field name that can be edited by the user for the exported field. The **Default name** is entered as default. If the field name is deleted then the **Default name** appears again.



Add selected field.



Remove selected field.



Modifies the sequence of the exported fields by moving the selected field up.



Modifies the sequence of the exported fields by moving the selected field down.

4.6.2.3 **Export template - Options for CSV format**

Dialog window: **Database** ▶ **Tools** ▶ **Templates** ▶ **Export templates...** ▶ **Export templates** ▶ **[Properties]** ▶ **Export template** ▶ **[Options]** ▶ **Options for CSV format**

With **[Options]** in the Properties window for export templates the dialog window **Options for CSV format** opens in which the separators can be defined.

Field separator

Selection of the field separator.

Selection	; , Tab
Default value	;

Record separator

Selection of the data set separator (**CR** = Carriage return, **LF** = Line feed).

Selection	CR/LF CR LF
Default value	CR/LF

Header

on | off (Default value: **on**)

If this check box is activated, the column headers are exported at the beginning of the export file.

4.6.2.4 Export template - Options for measurement point list

Dialog window: **Database ▶ Tools ▶ Templates ▶ Export templates... ▶ Export templates ▶ [Properties] ▶ Export template ▶ [Options] ▶ Options for measurement point list**

With **[Options]** in the Properties window for export templates the dialog window **Options for measurement point list** opens in which the separators can be defined.

Field separator

Selection of the field separator.

Selection	; , Tab
Default value	;

4.6.2.5 Export template - Request at file export

Dialog window: **Database ▶ Tools ▶ Templates ▶ Export templates... ▶ Export templates ▶ [Properties] ▶ Export template**

If in the properties of the export template under **File name** the option **Request on each export** has been selected (*see Chapter 4.6.2.1, page 255*), then before the export of a determination the dialog **File export** is displayed.

Target directory

Shows the target directory for the export file, which has been defined in the properties of the export templates (see *Chapter 4.6.2.1, page 255*) used.

File name

Name under which the export file is to be saved in the **Target directory**. During creating the file the user name as well as the current time stamp are automatically attached to the name entered.

[OK]

The export of the corresponding determination is carried out to the indicated file.

[Cancel]

The export of *the corresponding determination* is canceled. If several determinations have been selected to be exported, then the dialog **File export** will be displayed for the next determination.

[Cancel all]

The export of *all selected determinations* is canceled.

</DeterminationReport>



Note

Lines that contain red entries will also show the line number with a red background.

Updating

As long as the program part **Database** remains open modifications in the determination table, caused by running determinations or by other users (addition, editing or deletion of data sets), will not be shown automatically. The table must either be updated with **View ► Update** or newly sorted or filtered. Each switch from a different program part to the program part **Database** automatically updates the determination table.

Table view

With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the border between column titles:**
Sets the column width.
- **Double-click on the border between column titles**
Sets the optimal column width.
- **Drag the column title**
Moves the column to the required location.

Data record selection and table navigation

The determinations selected in the table are shown in **yellow**, the focused determination whose data is shown in the other Subwindows is indicated by an arrow in front of the line number. There are various opportunities for data set selection in the table.

In the determination table it is not possible to show more than 200 determinations at once. If more than 200 data sets are present in the database then the Navigation bar must be used to switch to further sets of determinations.

4.7.1.3 Determination overview - Column display

Dialog window: **Database** ▶ **View** ▶ **Properties** ▶ **Column display...** ▶ **Column display**

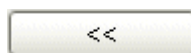
View ► Properties ► Column display... opens the dialog window **Column display**. Here you can define the columns that are to be shown in the determination table.

Available columns

Shows all the fields that can be shown as columns in the determination table.

Default name

Displayed name



4.7.1.4

Filter

Selection	All determinations All determinations of a multiple injection Quick filter Temporary filter Filter name
Default value	All determinations

Temporary filter

The table is filtered according to the last defined, not saved **Special filter**.

Filter name

The table is filtered according to the selected and saved **Special filter**.

4.7.1.5 Determination overview - Batch selection

Subwindow:Database ▶ Determination overview

Batch

Selection of the batch, the determinations of which are to appear in the determination table.

Selection	No batch selected Batch name
Default value	No batch selected

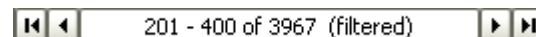
No batch selected

The table is shown unfiltered.

Batch name

The table is filtered according to the selected and saved **batch**.

4.7.1.6 Determination overview - Navigation bar

Subwindow: **Database ▶ Determination overview**

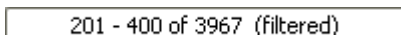
The navigation bar shown below the determination table is used for navigation in extensive tables in which all the determinations cannot be shown at once. It contains the following tools:



Jump to the first set of determinations in the table.



Jump back to the previous set of determinations in the table.



Display the selected set ##### - ##### of determinations in the table. If the table has not been filtered then the total number of all determinations will be shown. If the table has been filtered the total number of filtered determinations is shown with **(filtered)**.



Jump further to the next set of determination in the table.



Jump to the last set of determinations in the table.

4.7.1.7 Determination overview - Table navigation

Subwindow: **Database ▶ Determination overview**

In the determination table navigation can be carried out with the mouse and the vertical and horizontal scroll bars. The following possibilities are also provided by the keyboard:

[↑]

Moves the line cursor up by one field.

[↓]

Moves the line cursor down by one field.

[Ctrl] [End]

Jumps to the last determination in the current set.

[Ctrl] [Home]

Jumps to the first determination in the current set.

[Page Up]

Pages backward within the current set.

[Page Down]

Pages forward within the current set.

[Alt] [End]

Jumps to last determination (of all).

[Alt] [Home]

Jumps to first determination (of all).

[Alt] [↑]

Jumps to first data set of previous set.

[Alt] [↓]

Jumps to first data set of next set.

In the determination table it is not possible to show more than 200 determinations at once. If more than 200 determinations are present in the database then the Navigation bar must be used to switch to further sets of determinations.

4.7.1.8 Determination overview - Data record selection

Subwindow: **Database ▶ Determination overview**

The determinations selected in the table are shown in **yellow**, the focused determination whose data is shown in the other Subwindows is indicated by an arrow in front of the line number. When a database is opened the first determination is always selected and focused.

The following possibilities are available for the selection of determinations in the determination table:

- **Single determinations**

Single determinations are selected by clicking on them with the mouse within the line (including line number). This determination, whose data is shown in the other opened subwindows, is now focused and receives an arrow in front of the line number.

- **Several determinations in sequence**

In order to select several determinations in sequence the required range can be selected with the left mouse button pressed down. It is also possible to select a range with a click on the first determination and **[Shift] & click** on the last determination. The last determination to be selected receives the focus.

- **Several determinations not in sequence**

In order to select several determinations not in sequence the individual determinations must be selected with the **Ctrl key** and the left mouse button. The last determination to be selected receives the focus.

- All determinations

With **[Ctrl] [A]** or by clicking on the uppermost left-hand table field all the filtered determinations within the current set of determinations are selected. The focus is retained.

4.7.1.9 Determination overview - Functions

Subwindow: **Database ▶ Determination overview**

With the determinations selected in the Determination table the following functions can be carried out:

Editing determinations

- *Enter determination comment*
- *Sign determinations*
- *Export determinations*
- *Import determinations*
- *Send determinations to*
- *Reprocess determinations*
- *Complete determinations*
- *Delete determinations*

Search and filter determinations

- *Search determinations*
- *Filter determinations*
- *Create determination batch*

Other functions

- *Update determination overview*
- *Display determinations method*
- *Determinations - Display history*
- *Display detailed overview*
- *Overlay curves*
- *Print determination overview*
- *Print determination report*

4.7.2 Update determination overview

Menu item: **Database ► View ► Update**

The menu item **View ► Update** or the symbol  is used to update the determination table.



Note

The determination table is updated automatically when the database is opened and when a change is made from another program part to the program part **Database**, but afterwards only when the table is newly sorted or filtered.

4.7.3 Determination comment

Dialog window: **Database ► Determinations ► Comment... ► Determination comment**

With the menu item **Determinations ► Comment...** or the symbol  the dialog window **Determination comment** opens in which new comments on the selected determination can be entered an existing comment can be edited.

Comments entered this way appear automatically as a Tooltip text when the cursor line is kept on the number field of a line in the determination table for more than 1 second. In addition, it is also displayed in the sub-window **Information**.

4.7.4 Searching for determinations

Dialog window: **Database ► Determinations ► Search... ► Search - Database**

With the menu item **Determinations ► Search...** or the symbol  the dialog window **Search - Database** for searching for determinations is opened.

Search in

Selection of the data field to be searched in.

Selection **All fields** | 'Field name'

All fields

It is being searched in all fields of the database.

'Field name'

It is being searched in the selected field only. Available are always the 10 most recently selected fields.

[More...]

Open the dialog window **Search – Field selection**. All fields are listed in tree-form. A field can be included in the search by marking it and then closing the dialog with **[OK]**.

Details

Analysis

Selection of the analysis to be searched in. This field is only displayed for **Search in = component result** .

Input	64 characters
Selection	All 'Analysis name'

All

It is being searched in all analyses.

'Analysis name'

It is being searched in the selected analysis only. Available are always the 10 most recently selected analyses.

Component

Selection of the component to be searched in. This field is only displayed for **Search in = component result** .

Input	64 characters
Selection	All 'Component name'

All

It is being searched in all components.

'Component name'

It is being searched in the selected component only. Available are always the 10 most recently selected components.

Result name

Selection of the result field to be searched in. This field is only displayed for **Search in = component result** or **Search in = single result**.

Input	64 characters By entering the result name it can be searched in user-defined results.
Selection	'Result name'

'Result name'

It is being searched in the selected result field only. Available are always the 10 most recently selected results as well as the component results calculated by default.

Search options**Type**

Selection of the format type for the fields for which several types are possible. With fields with a fixed type only this one will be displayed.

Selection	Text Date Number
Default value	Text

Operator

Selection of the relational operator for the search condition.

for fields of the type = Text

Selection	= <> empty not empty
Default value	=

for fields of the type = Date

Selection	= <> < <= > >= empty not empty invalid outside limits Today
Default value	=

invalid

It is being searched for values with the entry **invalid**.

outside limits

It is being searched for values which exceed the limit values defined for the selected fields (values presented in red).

Today

It is being searched for the current date. In addition, a range of days can also be defined in the field **Search word** in which, starting from the current date, the search is to be carried out.

Input	all possible numerical values Definition of a numerical value as search word. The last 10 search words are saved and can be selected.

Selection of the search direction.

Selection	Total Downward Upward
Default value	Total

It is being searched down to the end of the database and then again from above down to the selected data record.

It is being searched to the end of the databse.

It is being searched to the beginning of the database.

on | off (Default value: **off**)

If this option is enabled, then differentiation will be made between upper and lower case letters during searches in **Text**-type fields.

on | off (Default value: **off**)

If this option is enabled, then the field contents must be identical with the search word during searches in **Text**-type fields (no part-search).

Search next occurrence of the search word.

4.7.5.1 Batch - Overview

Subwindow: **Database ▶ Determination overview**

A **Batch** is a selection of determinations that can be combined at will and that can be saved under a single name and also selected again under this name. A batch can include a maximum of 500 determinations.

The following possibilities exist for loading and managing batches in the Determination table:

- *Select batch*
- *Create batch*
- *Delete batch*

- *Attach determinations to batch*
- *Remove determinations from batch*

4.7.5.2 Creating batch

Dialog window: **Database ► Determinations ► Batch ► New batch... ► New batch**

The dialog window **New batch** for the creation of a new batch is opened with the menu item **Determinations ► Batch ► New batch**.

Batch name

Name of the batch.

Input	64 characters

4.7.5.3 Deleting batch

Dialog window: **Database ► Determinations ► Batch ► Delete batch... ► Delete batch**

The dialog window **Delete batch** is opened with the menu item **Determinations ► Batch ► Delete batch...** for the deletion of a batch.

Batch name

Selection of the batch that is to be deleted.

Selection	'Batch name'

4.7.5.4 Attaching determinations to batch

Dialog window: **Database ► Determinations ► Batch ► Attach to batch... ► Attach to batch**

The dialog window **Attach to batch** opens with the menu item **Determinations ► Batch ► Attach to batch...** for the inclusion of determinations to an existing batch

Batch name

Selection of the batch to which the determinations are to be attached.

Selection	'Batch name'

Selection

Selection of the determinations that are to be added to the batch.

Selection **Selected determinations | All filtered determinations**

Selected determinations

The data sets selected in the Determination overview are added to the batch.

All filtered determinations

The data sets filtered in the Determination overview are added to the batch.

4.7.5.5 Removing determinations from batch

Dialog window: **Database ► Determinations ► Batch ► Remove from batch**

The determinations selected in the determination table are removed from the loaded batch by means of the menu item **Determinations ► Batch ► Remove from batch**.

4.7.6 Filter determinations

4.7.6.1 Filter determinations - Overview

Subwindow: **Database ► Determination overview**

The following possibilities exist for filtering determinations in the Determination table:

- *Search filter selection in the filter list*
- *Quick filter*
- *Special filter*
- *Last filter*
- *Remove filter*

4.7.6.2 Determinations - Last filter

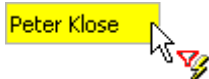
Menu item: **Database ► Determinations ► Filter ► Last filter**

With the menu item **Determinations ► Filter ► Last filter** or the symbol  the most recently used filter will be activated.

4.7.6.3 Determinations - Quick filter

Menu item: **Database ► Determinations ► Filter ► Quick filter**

With the menu item **Determinations ► Filter ► Quick filter** or the symbol  a quick filtering for the content of the selected tabular field can be carried out. After this function has been selected the field in the determination table in which the cursor is located will be shown with a colored background during navigation. At the same time the following special filter symbol appears:



By double-clicking with the left mouse button set the content of the selected field as filter criterion and apply directly on the table.



Note

The quick filter can be used again within the filtered table, so that the number of entries can be limited step by step.

4.7.6.4 Determinations - Special filter

Dialog window: **Database ▶ Determinations ▶ Filter ▶ Special filter... ▶ Special filter - Database "Database name"**

With the menu item **Determinations ► Filter ► Special filter...** or the symbol  the dialog window **Special filter - Database** opens for defining user-specific filters.

Filter

Selects the filter to be loaded for processing.

Selection	'Filter name' New filter
Default value	New filter

'Filter name'

The saved filter is loaded.

New filter

An empty table with the name **New filter** is loaded.

[Save filter]

Opens the dialog window **Save filter** in which the filter criteria entered in the table can be saved as a special filter under the required name.

[Delete filter]

Deletes the special filter that is currently loaded.

Table view

The overview table shows all the defined filter criteria and cannot be directly edited. The filter conditions will be numbered automatically in sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the border between column titles:**
Sets the column width
- **Double-click on the border between column titles**
Sets the optimal column width

If the contents of a field is larger than the column width then the whole contents will be shown as a **tooltip** if the mouse cursor is kept on the field.

For the meaning of the columns, see *Edit filter criterion*.

Functions

The menu **[Edit]** beneath the filter table contains the following menu items:

Edit line	Open the dialog window Edit filter criterion in which the filter criterion of the line selected in the table can be edited.
Insert new line	Inserts a new empty line above the line selected in the table. The dialog window Edit filter criterion opens automatically.
Cut lines	Transfer selected lines to clipboard.
Copy lines	Copies selected lines to the clipboard.
Paste lines	Insert lines from the clipboard above the selected line.
Delete lines	Deletes the selected lines.

[Apply filter]

Applies filter criteria to Determination table.

4.7.6.5 Determinations - Delete filter

Menu item: **Database ▶ Determinations ▶ Filter ▶ Remove filter**

With the menu item **Determinations ► Filter ► Delete filter** or the symbol  the most recently used filter will be deleted and all determinations will be displayed.

4.7.6.6 Determinations - Save filter

Dialog window: **Database ▶ Determinations ▶ Filter ▶ Special filter... ▶ Special filter - Database "Database name" ▶ [Save filter] ▶ Save filter**

With the button **[Save filter]** in the dialog window **Special filter - Database "Database name"** the dialog window **Save filter** opens for saving a special filter.

All the saved special filters are shown in the upper field.

Filter name

Name under which the special filter is to be saved.

Input	50 characters

[Save]

Saves filter under given name.



Note

The filters are saved globally in the configuration database and are therefore available for all clients.

4.7.6.7 Determinations - Edit filter condition

Dialog window: **Database ► Determinations ► Filter ► Special filter ► Special filter**
- Database "Database name" ► [Edit] ► Edit line ► Edit filter criterion 'Filter name'

With the command **Edit ► Edit line** in the dialog window **Special filter - Database "Database name"** the dialog window **Edit filter criterion #** opens, in which the filter criterion selected in the filter table can be edited.

Link

Selection of the logic operator with the previous filter criterion.

Selection	AND OR
Default value	AND

AND

Logical "AND" link

OR

Logical "OR" link

Field

Selection of a data field for which a condition is to be formulated.

Selection	'Field name' Filtering is carried out only for the selected field. The 10 most recently selected fields are always available for selection.

[Other...]

Open the dialog window **Filter - Field selection**. Herein all fields that can be used for filtering are listed in tree-form. A field can be adopted by marking it and then closing the dialog with **[OK]**.

Details

Analysis

Selects the analysis for which filtering is to be carried out.

Only for field = component result.

Input	64 characters
Selection	All 'Analysis name'

All

Filtering is performed for all analyses.

'Analysis name'

Filtering is done only for the analysis selected. The 10 most recently selected fields are always available for selection.

Component

Selects the component for which filtering is to be carried out.

Only for field = component result.

Input	64 characters
Selection	All 'Component name'

All

Filtering is done for all components.

'Component name'

Filtering is done only for the components selected. The 10 most recently selected fields are always available for selection.

Result name

Selects the result field for which the filtering is to be carried out.

Only for field = "component result" or "single result"

Input	64 characters
	Filtering can be carried out for user-defined results by entering the result name.
Selection	'Result name'

'Result name'

Filtering is carried out only for the selected result field. The 10 most recently selected fields are always available for selection, as are all component results calculated in the default settings.

Condition**Type**

Selection of the type of format for fields in which several types are possible. For fields with a fixed type only this type will be shown.

Selection	Text Number Date
Default value	Text

Operator

Selection of the comparison operator for the filter criterion.

Only for fields of the type = text

Selection	= <>
Default value	=

Match case

on | off (Default value: **off**)

If this check box is activated then upper/lower case will be differentiated when filtering **Text**-type fields.

Use asterisk (*) as wildcard

on | off (Default value: **off**)

If this check box is activated then when filtering **Text**-type fields the asterisk * can be used as a wildcard for any character strings.

4.7.7 Sign determinations

4.7.7.1 Rules for electronic signatures

Program parts: **Method / Database**

In MagIC Net, methods and determination can be **electronically signed** at two levels. The following rules apply for this:

- **Signature levels**
Signature levels for methods and determinations can be signed at two levels (Signature Level 1 and Signature Level 2) by entering the user name and password.
- **Multiple signing**
Methods and determinations can be signed several times at each level. All signatures are saved and documented in the Audit Trail.
- **Sign at Level 1**
If Level 2 has been signed then no more signatures are possible at Level 1.
- **Sign at Level 2**
Level 2 can only be signed if signatures already exist at Level 1.
- **Different users**
The same user may only sign on either Level 1 or Level 2.
- **Reason and comment**
Each signature must be accompanied by a reason selected from predefined default reasons. A further comment can also be entered.
- **Saved data**
The signature date, user name, full name, reason and comments are saved for each signature.
- **Deleting signatures 1**
Signatures at Level 1 are automatically deleted again when compiling a new version.
- **Deleting signatures 2**
Signatures at Level 2 can only be deleted by users who have the appropriate rights.
- **Sign methods**
Methods can only be signed individually.

- **Signature options**

The options for electronic signatures are set in the **Signatures** tab in the **Security settings** dialog window.

4.7.7.2 Signature Level 1

Dialog window:Database ▶ Determinations ▶ Sign ▶ Signature
1... ▶ Signature Level 1

or

Dialog window:Method ▶ File ▶ Method Manager... ▶ Method Manager ▶ [Sign] ▶ Signature 1... ▶ Signature Level 1

Methods or determinations can be signed at Level 1 in the **Signature Level 1** window.



Note

Methods or determinations which have been signed at Level 1 can be changed and deleted. If the altered method or determination is saved as a new version then all existing signatures will be deleted automatically, i.e. the method or determination must be signed again.

Info

Information display for signing and deleting signatures. The following messages are possible:

Selection	Signature possible (signature 2 exists)	Signature 1 not possible (accessed by other client)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		
82		
83		
84		
85		
86		
87		
88		
89		
90		
91		
92		
93		
94		
95		
96		
97		
98		
99		
100		

Signature possible

The selected method or determination can be signed.

Signature 1 not possible (signature 2 exists)

The selected method or determination can no longer be signed at Level 1 as it has already been signed at Level 2.

Signature not possible (accessed by other client)

The selected method or determination cannot be signed as it is already marked to be signed on a different client.

User

Entry of the user name (short name).

Input	24 characters

Password

Password entry.

Reason

Selection	Selection from the Default reasons

Input	1000 characters

Sign method or determination. The window remains open.



4.7.7.3 Signature Level 2

or

Note

Selection	Signature possible Signature 2 not possible (signature 1 missing) Signature not possible (accessed by other client)
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
70	
71	
72	
73	
74	
75	
76	
77	
78	
79	
80	
81	
82	
83	
84	
85	
86	
87	
88	
89	
90	
91	
92	
93	
94	
95	
96	
97	
98	
99	
100	



Signature possible

The selected method or determination can be signed.

Signature 2 not possible (signature 1 missing)

The selected method or determination cannot be signed at Level 2 as it has not yet been signed at Level 1.

Signature not possible (accessed by other client)

The selected method or determination cannot be signed as it is already marked to be signed on a different client.

User

Entry of the user name (short name).

Input	24 characters

Password

Password entry.

Input	24 characters

Reason

Selection from the **Default reasons** defined in the **Security Settings** dialog window for the category **Signature level 2**.

Selection	Selection from the Default reasons

Comment

Entry of comment on the signature.

Input	1000 characters

[Sign]

Sign method or determination. The window remains open.



Note

Methods or determinations can only be signed at Level 2 if the user belongs to a user group with the corresponding authorization.

4.7.7.4 Display determination signatures

Dialog window: **Database ▶ Determinations ▶ Sign ▶ Display signatures... ▶ Signatures - Determination 'Determination ID'**

With the menu item **Determinations ▶ Sign ▶ Show signatures...** the window **Signatures - Determination 'Determination ID'** opens with a table in which information about all the signatures for the selected determination is shown.

Signature

Shows at which level the determination has been signed (**Level 1** or **Level 2**).

Signature date

Date and time at which the determination was signed.

User

Short name of the user who signed the determination.

Full name

Full name of the user who signed the determination.

Reason

Reason for signature.

Signature comment

Comment on the signature.

4.7.7.5 Delete Signature Level 2

Dialog window:Method ▶ File ▶ Method manager... ▶ Method manager ▶ [Sign] ▶ Delete signatures 2... ▶ Delete Signatures Level 2

or

Dialog window:Database ▶ Determinations ▶ Sign ▶ Delete signatures 2... ▶ Delete Signatures Level 2

The **Delete Level 2 signatures** window allows you to delete all signatures on Level 2 for the selected methods or determination.

User

Entry of the user name (short name).

Input	24 characters

Password

Password entry.

Input	24 characters

Reason

Selection from the **Default reasons** defined in the **Security Settings** dialog window for the category **Signature level 2**.

Selection	Selection from the Default reasons
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

Comment

Entry of comment on the signature.

Input	1000 characters

[Delete]

Delete Signatures 2.



Note

Signatures 2 can only be deleted if the user belongs to a user group with the corresponding authorization.

4.7.8 Sending determinations to

Dialog window: **Database ► Determinations ► Send to...**

The menu item **Determinations ► Send to...** opens the dialog window **Send determinations per E-mail**.

Selection	Determination ID Sample identification
Default value	Name
	Determination ID

Determination ID

The name of the export file is formed out of an unambiguous determination ID, the computer name, the date stamp **-YYYYMMDD-HHMMSS** and the suffix for the format.

Sample identification

Selection of the sample identification. The name of the export file is formed out of this ID, the computer name, the date stamp **YYYYMMDD-HHMMSS** and the suffix for the format. If the created name exists already in the directory, a version number will be appended additionally to the date.

Name

Name under which the export file of a determination is saved as an attachment to the E-mail message. If more than one determination is selected, then a sequential number will be added to this name for each determination.

After confirmation of the file name with **[OK]**, the standard Windows E-mail Client will open with an empty message and the export files of the selected determinations will automatically be added as an attachment in the format ***.idet**.

4.7.9 Exporting determinations

Dialog window: **Database ▶ Determinations ▶ Export... ▶ Export determinations**

Click on menu item **Determinations ► Export...** to open the dialog window **Export determinations** for exporting the selected determinations.

Selection

Selection of determinations for export.

Selection	All selected data records All filtered data records
Default value	All selected data records

All selected data records

All those determinations are exported that have been selected (marked) in the determination table.

All filtered data records

All those determinations from the whole determination table are exported that correspond to the set filter.

Export template

Selection of the Export template for data export.

Selection	'Export template'

4.7.10 Importing determinations

Dialog window: **Database ► Determinations ► Import... ► Import determinations**

With the menu item **Determinations ► Import...** the dialog window **Import determination** opens, in which the determinations to be imported must be selected. These determinations are then imported into the open Database.



Note

Exported determinations can be imported in the file format ***.idet** and ***.cdf**.

4.7.11 Determination overview - Print

Dialog window: **Database ▶ File ▶ Print ▶ Determination overview... ▶ Print determination overview (PDF)**

The Menu item **File ▶ Print ▶ Determination overview...** opens the dialog window **Print determination overview (PDF)**.

Selection	Original report(s) Report template
Default value	Original report(s)

If this option is selected then the reports produced during the determination will appear at the **Output target** defined below.

If this option is selected then reports according to the selected Report template will be produced at the **Output target** defined below.



Original report is used to refer to a report, which has been automatically generated at the creation of the **determination version**. If a determination is being reprocessed, a new determination version and therefore also a new original report is created.

In order to print the report of the non-reprocessed determination the determination 1 must be selected.

Printer

If this check box is activated, the reports are printed on the selected printer.

If this check box is activated the reports are put out as PDF files under the entered file name.



If several reports are produced simultaneously as a PDF file then an index will be automatically appended to the file name.

4.7.13 Determinations - Show method

Menu item: **Database ▶ Determinations ▶ Show method...**

With the menu item **Determinations ► Display method...** or the symbol  the dialog window **Determination method 'Method name'** opens in which the method with the four subwindows **Devices**, **Time program**, **Evaluation** and **Chromatograms** that is used for the selected determination is displayed. A difference between this and the program part **Method** however is this no parameters are available for editing here.

Saving method

[Save as...]

With this button the determination method can be saved in a method group. The window **Save method** opens in which the method group can be selected and a method name entered or selected.

See also

- 5.1.1 Method - Definition
- 5.2.8 Saving method

4.7.14 Determinations - Displaying history

Menu item: **Database ▶ Determinations ▶ Show history**

Switch history view on/off

With the menu item **Determinations ► Display history...** or the symbol  only the currently focused determination in the Determination table as well as all the previous versions of this determination will be shown.

If the History view with the menu item **Determinations ► Display history...** or the symbol  is disabled again, then the original selection of determinations in the Determination table will appear again.

4.7.15 Determinations - Make current

Menu item: **Database ► Determinations ► Make current**

Make old version current

With the menu item **Determinations ► Make current...** or the symbol  the determination version selected in the determination table will again be made the current determination version. This creates a new determination whose version number is increased by **+1** compared with the last version to have been saved.

Result

Selection of the result that is to be displayed for all components in the graphic and in the table.

Selection	Concentration	Additional component results
Default value	Concentration	

Graphics presentation

The selected result is displayed graphically through several determinations for each component. Each component has its own tab, which is marked with the name of the component.

The y axis is scaled automatically in the unit of the selected result; the selected determinations are displayed on the x axis at identical intervals and numbered sequentially from **1** to **n** according to the date of their recording. The statistical mean value is marked in the graphic as a blue line.

The result values are presented with the following symbols:



Result of a determination that is taken into account for the statistical calculations. A mouse click on the symbol will also cause the associated determination to be marked in the table.



Result of a determination that is taken into account for the statistical calculations and which is also marked in the table.



Result of a determination that is not taken into account for the statistical calculations.

The following context-sensitive menu opens with a right-hand mouse click inside the graphics frame:

Show all	Shows the entire graphics. This menu item is always enabled.
Default view	This menu item is disabled.
Zoom	Opens dialog window for setting the zoom range (<i>see Chapter 4.7.16.5, page 295</i>).
Unzoom	Undoes the last zoom action.
Copy	Copy graph

Table

Table with information concerning the selected determinations. It contains the following columns:

Date

Date the determination was recorded.

Number

Number of the determination (sorted chronologically).

Ident

Identification for the sample data of the determination.

Sample type

Type of standard that was used in the determination.

Method

Name of the method used for the determination.

Analysis

Name of the analysis with which the result was generated.

'Result name'

Result value for each result.

Statistics

Indicates whether a result was used for calculation of the statistics or not.

The graphic of the results values is synchronized with the determinations table. A point can be selected in either the graphic or in the table. The point is then highlighted in **blue** and the corresponding line in the table in **yellow**. Points that were deleted manually from the statistics, appear as a **black cross** in the graphic.

With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the border between column titles:**
Sets the column width.
- **Double-click on the border between column titles**
Sets the optimal column width.
- **Drag the column title**
Moves the column to the required location.

Clicking on the Determinations table with the right-hand mouse causes a context-sensitive menu to appear with the following menu items:

On	Switch on check box Statistics for the selected determinations.
Off	Switch off check box Statistics for the selected determinations.
Invert selection	Invert setting of check box Statistics for the selected determinations.



Note

Highlighted lines in the table can be applied to other programs with CTRL+C and CTRL+V. The context menu for the table is not permitted to be open while this is carried out!

4.7.16.4 Detail overview - Control chart

Dialog window: **Database ▶ Determinations ▶ Detail overview... ▶ Open detail overview ▶ [OK] ▶ [Control chart] ▶ Detail overview - Control chart**

The dialog window **Detail overview - Control chart** displays a control chart of the results for the selected determinations in graphics and tabular form, in addition to the associated statistical evaluations.

Template

Selection of the saved template for showing control charts. When the dialog window is opened, the last template to have been loaded will be shown. If a new template is selected then the display will be updated automatically.

Selection	Saved templates

[Templates]

Opens dialog window **Control chart templates** for the creation and editing of control chart templates (see *Chapter 4.5.1, page 249*).

Graphics presentation

Each result has its own tab, which is marked with the name of the result.

The y axis is scaled automatically according to the template; the selected determinations are displayed on the x axis at identical intervals and numbered sequentially from **1** to **n** according to the date of their recording. The intervention limits are displayed in the graphic with orange lines, the warning limits with red lines, the statistical mean value with a blue line and the standard deviation ranges with black lines.

The result values are presented with the following symbols:



Result of a determination that is taken into account for the statistical calculations. A mouse click on the symbol will also cause the associated determination to be marked in the table.



Result of a determination that is taken into account for the statistical calculations and which is also marked in the table.



Result of a determination that is taken into account for the statistical calculations and that lies outside the warning limits defined in the template.



Result of a determination that is taken into account for the statistical calculations and that lies outside the intervention limits defined in the template.



Result of a determination that is not taken into account for the statistical calculations.

The following context-sensitive menu opens with a right-hand mouse click inside the graphics frame:

Show all	Shows the entire graphics. This menu item is always enabled.
Default view	This menu item is disabled.
Zoom	Opens dialog window for setting the zoom range (<i>see Chapter 2.6.8, page 90</i>).
Unzoom	Undoes the last zoom action.
Copy	Copy graph

Table

Table with information concerning the selected determinations. It contains the following columns:

Date

Date the determination was recorded.

Number

Number of the determination (sorted chronologically).

Ident

Identification for the sample data of the determination.

Sample type

Type of standard that was used in the determination.

Method

Name of the method used for the determination.

'Result name'

Result value. Values that lie within the intervention limits are displayed in **green**; values that lie outside the intervention limits are displayed in **orange**; and values that lie outside the warning limits are displayed in **red**.

Statistics

Indicates whether a result was used for calculation of the statistics or not.

The graphic of the results values is synchronized with the determinations table. A point can be selected in either the graphic or in the table. The point is then highlighted in **blue** and the corresponding line in the table in **yellow**. Points that were deleted manually from the statistics, appear as a **black cross** in the graphic.

With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the border between column titles:**
Sets the column width.
- **Double-click on the border between column titles**
Sets the optimal column width.
- **Drag the column title**
Moves the column to the required location.

Clicking on the Determinations table with the right-hand mouse causes a context-sensitive menu to appear with the following menu items:

On	Switch on check box Statistics for the selected determinations.
Off	Switch off check box Statistics for the selected determinations.
Invert selection	Invert setting of check box Statistics for the selected determinations.



Note

Highlighted lines in the table can be applied to other programs with CTRL+C and CTRL+V. The context menu for the table is not permitted to be open while this is carried out!

Detail overview - Zooming

Dialog window: **Database ▶ Determinations ▶ Detail overview... ▶ Open detail overview ▶ [OK] ▶ [Results] / [Control chart] ▶ Detail overview - Results / Detail overview - Control chart ▶ Zoom... ▶ Zoom**

Specifies the displayed area, which is always spanned over the whole size of the graphics window.

X axis

Visible range in X direction.

from

Starting point in x direction.

Range	0 ... 10 ¹² Number

to

Endpoint in x direction

Range	0 ... 10 ¹² Number

Y axis

Visible range in Y direction.

from

Starting point in y direction.

Range	$-10^{12} \dots 10^{12}$

to

Endpoint in y direction

Range	$-10^{12} \dots 10^{12}$

4.7.16.6 Printing results overview

Dialog window: **Database ▶ Determinations ▶ Detail overview... ▶ Open detail overview ▶ [OK] ▶ [Results] ▶ Detail overview - Results ▶ [Print (PDF)] ▶ Print result overview (PDF)**

The dialog window **[Print result overview (PDF)]** opens with **Print (PDF)**.

Selection

Selection	All components Selected component
Default value	All components

All components

Produces result overview for all components.

Selected component

Produces result overview only for the selected component.

Orientation

Selection	Portrait Landscape
Default value	Portrait

Portrait

Produces result overview in portrait format.

Landscape

Produces result overview in landscape format

Comment

Possibility of entering comments on the result overview which will be produced together with the result overview.

Input	1000 characters

[OK]

The result overview is produced in the required format as a PDF file and can be opened directly with Acrobat Reader; it can then be printed and/or saved.

4.7.16.7 Print control chart

**Dialog window:Database ▶ Determinations ▶ Detail over-
view... ▶ Open detail overview ▶ [OK] ▶ [Control chart] ▶ Detail
overview - Control chart ▶ [Print (PDF)] ▶ Print control chart (PDF)**

In the dialog window **Print control chart (PDF)** the format for the print-out of the control chart is indicated.

Orientation

Selection	Portrait Landscape
Default value	Landscape

Portrait

Produces control chart in portrait format.

Landscape

Produces control chart in landscape format.

Comment

Possibility of entering comments on the control chart which will be produced together with the control chart.

Input	1000 characters

[OK]

The control chart is shown in the required format as a PDF file and opened directly with the Acrobat Reader; it can then be printed out and/or saved.

-



Clicking on the Determinations table with the right-hand mouse causes a context-sensitive menu to appear with the following menu items:

On	Switches on check box Display for the selected determinations.
Off	Switches off check box Display for the selected determinations.
Invert selection	Inverts setting of check box Display for the selected determinations.

Dialog window: **Database ▶ Determinations ▶ Overlay curves.. ▶ Overlay curves ▶ [OK] ▶ Overlay of curves ▶ Zoom... ▶ Zoom**

X axis

from

Range 0.0 ... 10¹² min

Endpoint in x direction

Range 0.0 ... 10¹² min

Visible range in Y direction.

Starting point in y direction.

Range $-10^{12} \dots 10^{12}$

Endpoint in y direction

Range	$-10^{12} \dots 10^{12}$

4.7.17.4 Overlaying curves - Properties

Dialog window: **Database ▶ Determinations ▶ Overlay curves.. ▶ Overlay curves ▶ [OK] ▶ Overlay of curves ▶ Properties... ▶ Overlay curves - Properties**

Reference point

The point at which all of the displayed curves coincide with one another before the curve offset is applied.

Time

Time point in which the Y value of all curves lies above one another.

Range	0.00 ... 1000.00 min
Default value	0.00 min

Curve offset

The offset based on the reference point that is used to display the curves for clear comprehension.

X axis

Offset on the X axis (time axis). The curves are moved towards one another by the amount of the specified percentage of the length of the selected curve.

Range	0.0 ... 100.0 %
Default value	0.0 %

Y axis

Offset on the Y axis (measurement value axis). The curves are moved towards one another by the amount of the specified percentage of the height of the selected curve.

Range	0.0 ... 100.0 %
Default value	5.0 %

4.7.17.5 Print overlay curves

Dialog window: **Database ▶ Determinations ▶ Overlay curves.. ▶ Overlay curves ▶ [OK] ▶ Overlay of curves ▶ [Print (PDF)] ▶ Print curve overview (PDF)**

The dialog window **[Print curve overview (PDF)]** opens with **Print (PDF)**.

Orientation

Selection	Portrait Landscape
Default value	Portrait

Portrait

Produces curve overview in portrait format.

Landscape

Produces curve overview in landscape format.

Comment

Possibility of entering comments on the curve overview which will be produced along with it.

Input	1000 characters

[OK]

The curve overview is produced in the required format as a PDF file and can be opened directly with Acrobat Reader; it can then be printed out and/or saved.

4.7.18 Determinations - Reprocessing

4.7.18.1 Reprocessing - General

Dialog window: **Reprocess**

Reprocessing determinations

Completed determinations that are saved in the database can be reprocessed at any time. Sample data, integration, evaluation parameters, calibration and result definitions can all be modified and the determinations can be reevaluated when this is done. The reprocessed determination can then be saved in the database as a new version.



Note

Determinations that have a signature at level 2 cannot be reprocessed.



Note

Determinations that are not yet completed, e.g. because their calibration is not yet complete or because not all injections have been accomplished for a multiple determination, cannot be reprocessed.

Opening the reprocessing window

The reprocessing of determinations that have been selected in the sub-window **Determination overview** takes place in the independent dialog window **Reprocessing** which is opened with **Determinations ► Reprocess...** or the symbol . It contains the button for closing in the Windows title bar. When the window is opened the first of the selected determinations is always shown as standard.

Closing the reprocessing window

The dialog window **Reprocessing** is closed with **[OK]**, **[Cancel]** or the Windows button for closing.



Note

The reprocessing window cannot be closed while recalculations are still running.

4.7.18.2 Reprocessing - Rules

Dialog window: **Reprocess**

Selecting determinations

The following rules apply for the selection of determinations that are reprocessed:

- **Completed determination**
Only completed determinations can be reprocessed.
- **Signed determination**
Determinations that have a Signature at level 1 can be reprocessed.
Determinations that have a signature at level 2 cannot be reprocessed.
- **Multiple determinations**
Multiple determinations can only be reprocessed as a group.
- **Number of determ.**
Only a maximum of 200 determinations can be selected for reprocessing.

Reprocessing several determinations

In order for more than one determination to be reprocessed together at the same time, the analyses for these determinations must fulfill additional rules.

- **No determination contains an analysis with evaluation**
There is no limitation.
- **Each determination contains only one analysis with evaluation**
The **Data channel** of this analysis must be identical for all of the determinations; the analysis names need not match.
- **The determinations contain several analyses with evaluation**
The number of analyses with evaluation must be identical in all of the determinations and **Name** and **Data channel** must match for each of these analyses.

Run

The following rules apply for reprocessing the selected and modified determinations:

- **Recalc**

All of the determinations are reprocessed that are located in the **Reprocessing table**. If one determination is not to be reprocessed, then the respective line must be deleted.

- **Sequence**

The determinations are reprocessed in the same sequence in which they are to be found in the reprocessing table. Reprocessing proceeds in analogous fashion to a sample table. This is particularly important for the sequence of the standards when the calibration is recalculated.

4.7.18.3 Reprocessing window

Dialog window: **Reprocess**

Subwindow

The dialog window **Reprocessing** contains the following two subwindows that can be enlarged and reduced by dragging the split bar between them:

- *Reprocessing table*
Selects determination, edits sample data and defines sequence in which the determinations are to be reprocessed.
- *Result*
Displays results.
- *Evaluation parameters*
Edits evaluation parameters.
- *Chromatograms*
Integrates chromatograms manually, displays measurement and calibration curves.

Functions

If determinations have been edited, then the following functions can be triggered:

[Method... ► Save as...]

Opens the dialog window **Save method**, in order to save the method of the selected determination (see Chapter 5.2.8, page 350).

[Method... ► Change column]

Opens the dialog window **Modify column**. The columns which are assigned to analyses can be modified for all determinations during reprocessing in this window (see Chapter 4.7.18.5.1, page 312).

[Method... ► Change eluent]

Opens the dialog window **Modify eluent**. The eluents which are assigned to analyses can be modified for all determinations during reprocessing in this window (see Chapter 4.7.18.5.3, page 314).



[Method...► Importing calibration points]

Opens the dialog window **Import calibration points**. An *.ical file can be selected in this window for the purpose of importing it into an analysis of the currently selected determination (*see Chapter 4.7.18.5.5, page 315*).

[Method...► Exporting calibration points]

Opens the dialog window **Export calibration points**. The calibration points of an analysis of the currently selected determination can be exported into an ***.ical** file in this window (see Chapter 4.7.18.5.6, page 316).

[Reprocess]

Opens the dialog window **Reprocessing**. Calibration and integration options for reprocessing are set and reprocessing is triggered in this window (see Chapter 4.7.18.5.7, page 317).

[Update]

Applies the (modified) evaluation parameters to the selected determination.



Note

Reprocessing behaves as though only one determination were in the table and this were being reprocessed with the option **From marked determination**.

The function is used for optimization of the evaluation parameters. The effect of a modification of the parameters can be checked without having to reprocess the entire table.



Note

The determination itself is not reprocessed during this process!

Modifications of the determination that were generated by the **[Update]** function cannot be saved. If the dialog window **Reprocessing** is exited without reprocessing, then all modifications will be discarded.

[Reset]

This button causes all modifications that were carried out during reprocessing to be reset. The original data and results are once again available. This button is inactive for as long as reprocessing has not yet been triggered.

[OK]

With this button each determination that has been modified by reprocessing will be saved as a new version with a version number increased by **+1** and the subwindow **Reprocessing** will be closed. This button is inactive for as long as reprocessing has not yet been triggered and if not all of the selected determinations could have been reprocessed.

[Cancel]

The reprocessing is discarded with this button and the **Reprocessing** dialog window is closed.

4.7.18.4 Reprocessing - Subwindow**4.7.18.4.1 Reprocessing table subwindow**

Subwindow: **Reprocessing** ► **Reprocessing table**

The determinations to be reprocessed are listed in the **Reprocessing table** subwindow. The sample data of the individual determinations can be modified here and the sequence that the determinations are to be processed is established here.

Table

The table contains all of the determinations that are to be reprocessed.

The table has a fixed number of columns; the **determination type**, **all sample data** and the type of **integration** are displayed in separate columns for each determination.

The table is sorted in ascending order according to type of determination in the default settings. The sequence can however be modified with the arrow keys on the right-hand margin.

Clicking on a line will cause it to be marked with a **yellow background**; this determination is selected. This has the following consequences:

- The subwindows **Results**, **Evaluation parameters** and **Chromatograms** display the properties of the selected determination.
- The selected determination can be shifted upwards or downwards with the arrow keys in the reprocessing table.
- The selected determination can be edited or deleted from the reprocessing list.

Arrow keys



Note

The sequence of the determinations in the reprocessing table establishes the sequence in which the determinations will be reprocessed. This is particularly important when the calibration is recalculated according to standards to be found in reprocessing.



Moves the selected determination one line upwards.



Moves the selected determination one line downwards.

Menu Edit

[Edit] contains the following menu items:

Edit line	Open the dialog window Edit line - Reprocessing to edit the sample date of the selected determination (<i>see Chapter 4.7.18.4.5, page 310</i>).
Delete line	Remove the selected determination from reprocessing.
Increment	Using the cursor, which takes on the form  , the region which is to be automatically incremented can be selected from a column in the table. The number standing at the end of the expression will thereby be automatically increased by 1 in the selected cells of a column, starting from the first selected cell. This works not only with pure numbers but also with text extracts which end with a number (e.g. ABC10 → ABC11 → ABC12...).
Filling	Automatically fill selected lines.

4.7.18.4.2 Subwindow Results

Subwindow: **Reprocessing** ► **Results**

The results of the selected determination are displayed in the subwindow **Results**.

Structure and properties correspond to the **Results** subwindow in the **Database** program sector (see Chapter 4.9, page 336).

Tabs

The results of the determination are shown on the following tabs:

- *Result*
Display of the automatically generated and user-defined results for determination.

- *Statistics*
Display of the statistics data concerning the statistically evaluated results of multiple determinations.
- *Monitoring*
Display of monitored results for determination.

4.7.18.4.3 Subwindow Evaluation parameters

Subwindow: **Reprocessing** ► **Evaluation parameters**

The evaluation parameters of the selected determination are displayed in the subwindow **Evaluation parameters**. One can see in the header of the subwindow the determination from which the evaluation parameters originate. The evaluation parameters can be edited in order to reprocess the determinations.

Structure and properties correspond to the **Evaluation parameters** subwindow in the **Method** program sector (see Chapter 5.8, page 398).



Note

Even though the entire evaluation of the method is visible, not all of the sectors can be edited in reprocessing. The sectors that cannot be edited are not executed in reprocessing.

Overview evaluation parameters

Evaluation parameters that can be edited are incorporated into the calculations made during reprocessing. As a basic rule, all evaluation parameters behave the same way in **Reprocessing** and **Method**.

The evaluation sectors that behave differently during reprocessing than they do in the method are shown in **boldface**. Their behavior is described in detail in the space after the table.

Range		Can be edited
<i>Evaluation - Integration</i>		Yes
<i>Evaluation - Components</i>		Yes
<i>Evaluation - Standards</i>		Yes
<i>Evaluation - Calibration</i>		Yes
<i>Evaluation - Results</i>		
	<i>Results - Report</i>	Partially
	<i>Results - Database</i>	No
	<i>Results - Statistics</i>	Yes

Range		Can be edited
	<i>Results - Monitoring</i>	Yes
	<i>Results - User-defined results</i>	Yes
	<i>Results - Common Variable</i>	Yes

Report

- **Report template**
Cannot be edited, no new report will be generated after reprocessing.
- **Pharmacopoeia**
Can be edited, is incorporated into reprocessing.
- **Decimal places of the results**
Can be edited, the reprocessed results are displayed with the number of decimal places specified in the settings.

Database

- **Database**
Cannot be edited, no new database entry is generated, the reprocessed determination is saved as a new version.
- **Automatic export**
Cannot be edited, no export takes place after reprocessing.

Common variable

Can be edited, the common variables are used during reprocessing, their values will however not be written into the configuration.

4.7.18.4.4 Subwindow Chromatograms

Subwindow: **Reprocessing** ▶ **Chromatograms**

The measurement and calibration curves of the selected determination are displayed in the subwindow **Chromatograms**. Chromatograms can also be integrated here manually.

Tabs

A tab is displayed for every analysis that is defined in a method; these tabs are lettered with the name of the analysis and they show the associated chromatograms and calibration curves.

Graphics window

The interface, functions and properties of the subwindow **Chromatograms** are described in the *Graphics window* chapter in the following subchapters:

- *Elements*
- *Chromatogram view*
- *Calibration curve view*
- *Zooming*
- *Move curve*
- *Work with cursor*
- *Set Zoom*
- *Properties*
- *Change calibration*
- *Select color*

Integrating manually

The chromatograms of the **selected** determination can be integrated manually during reprocessing. The only measurement curves that can be integrated manually are those that have an evaluation; auxiliary curves of analyses lacking evaluation cannot be integrated manually.



Note

Chromatograms belonging to the calibration data set of the selected determination cannot be integrated manually. The associated determination must be selected for this purpose.

Manual integration functions

The functions of manual integration can be called up with the **context-sensitive menu** of the Chromatogram view by using the right-hand mouse button (*Functions Manual Integration*).

The following functions are available:

- Add peak
- Add valley
- Remove peak
- Divide peak
- Link peaks



Note

A manually integrated determination is marked with the entry **Manual** in the field **Integration**.

This field is displayed in **Reprocessing** in the subwindow **Reprocessing ► Reprocessing table** and in the **Database** on the tabs **Database ► Information ► Determination** and **Database ► Information ► Analyses**.

4.7.18.4.5 Editing lines - Reprocessing

Dialog window: **Reprocessing** ► **Reprocessing table** ► **[Edit]** ► **Edit lines** ► **Edit lines**
- **Reprocessing**



Note

Except for **Method** and **Injections**, all displayed sample data for a determination can be edited in reprocessing. It makes no difference in this context whether or not had been used at all in the original method, or whether or not it was defined as **Fixed values**.

Sample data that was defined as fixed values at the start of the determination are presented in the dialog window **Editing lines - Reprocessing** in *italics*.

Method

Display of the method with which the determination was recorded; no longer available for editing in reprocessing.

Ident

Entry of an identification or selection of a defined text template for identifying the chromatogram (*see Chapter 3.6.1, page 138*).

Input	64 characters
Selection	Selection of text templates

Sample type

Selection of the sample type. **Sample** and **Blank** can always be selected, the remaining types can only be selected if they are defined in the method.

Selection	'empty' Sample Standard 1...n Spiking 1...n Check standard 1...n Blank
Default value	'empty'

Injections

The value **n/m** indicates whether or not the determination is part of a multiple determination. No longer available for editing in reprocessing.

- **n**: Injection number of the determination.
- **m**: Number of injections in the multiple determination.

The determinations of a multiple injection are linked statistically with one another.

Volume

Volume of the sample in μL .

Range	0.01 ... 1000000.00 µL
Default value	'empty' µL

Dilution

Dilution factor for the sample.

Range	0.001 ... 10000.000
Default value	'empty'

Sample amount

The parameter **Sample amount** is a correction factor for taking into account various initial weights for different samples. It indicates the ratio of the initial weight of the current sample to the normal initial weight or to the basic unit. The end result thus achieved is divided by this factor.

- *Example 1*
 Basic initial weight = 2.0 g
 Sample initial weight = 2.1 g
Sample amount = $2.1 / 2.0 = 1.05$
 The result is divided by 1.05 and indicates how high the content is in relation to the defined basic initial weight of 2 g.
- *Example 2*
 Basic unit = 1.0 mg
 Initial sample size = 2.1 mg
Sample amount = $2.1 / 1.0 = 2.1$
 The result is divided by 2.1 and indicates how high the content per mg of sample is.

Range	0.00001 ... 1000000.00000
Default value	'empty'

Info 1...4

Entering of additional information concerning the sample. If text templates are defined for this parameter, then they can be selected here (see *Chapter 3.6.1, page 138*).

Input	100 characters
Selection	Selection of text templates

Value 1...4

Input of additional values for the sample.

Input	Number

Navigation



Jumps to the first line in the table.



Jumps to the previous line in the table.



Option of entering the desired line number to which the program jumps when the **[Enter]** is actuated.



Jumps to the next line in the table. If the end of the table has been reached, then a new line will be inserted automatically and the program will jump to it.

The same function can also be triggered by pressing the **[Enter]** key.



Jumps to the last line in the table.

Functions

[Apply]

Applies the sample data entered in the respective line of the table. If the end of the table has been reached, then a new line will be generated automatically.

[Exit]

Closes the input window. The current sample data will not be applied in the table thereby (this needs to be triggered beforehand with **[Apply]**).

4.7.18.5 Reprocessing - Functions

4.7.18.5.1 Changing column

Dialog window: **Reprocessing** ► **[Method...]** ► **Change column** ► **Change column**

The columns of the selected determination are displayed and can be replaced by other columns from the configuration. The settings made in the dialog **Change column** can then be applied to all determinations in reprocessing.

Elements

'Analysis name'



Note

All analyses with evaluation that are present in the selected determination are each listed in their own section.

Display of the column that is assigned to the analysis 'Analysis name'.

Note

If the analysis has had a gradient pump assigned to it, then up to four eluents (**Eluent A...B**) will be displayed.

Opens the dialog window **Select column from configuration**, in order to assign another column (see *Chapter 4.7.18.5.2, page 313*).

The settings are applied to **all** determinations in the reprocessing table.

The settings are discarded.

The assigning of the columns to the determinations depends on the type of determinations that are to be found in the reprocessing. The following rules apply:

- **Each determination contains only one analysis with evaluation**
The columns are assigned with evaluations in all determinations of the analysis, it makes no difference whether the analysis names of the determinations match the analysis names of the selected determination.
- **The determinations contain several analyses with evaluation**
The number of analyses with evaluation and their name is identical in all determinations, the columns are assigned in the other determinations according to the settings in the **Change column** dialog.
-

Dialog window: **Reprocessing** ▶ **[Method...]** ▶ **Change column** ▶ **Change column** ▶ **Selecting columns from configuration**

Selection	Columns from column table
[...]	[...]

4.7.18.5.3 Changing eluent

Dialog window: **Reprocessing** ► **[Method...]** ► **Change eluent** ► **Change eluent**

The eluents of the selected determination are displayed and can be replaced by other eluents from the configuration. The settings made in the dialog **Change eluent** can then be applied to all determinations in reprocessing.

Elements

'Analysis name'



Note

All analyses that are present in the selected determination are each listed in their own section.

Eluent / Eluent #

Display of the eluent that is assigned to the analysis 'Analysis name'.



Note

The eluent is specified in the instrument window of the method in the start parameters of the high pressure (gradient) pump; this pump — and with it the eluent — are linked with the analysis in the hardware assignment of the analysis.

If the analysis has had a gradient pump assigned to it, then up to four eluents (**Eluent A...B**) will be displayed.



Opens the dialog window **Select eluent from configuration**, in order to assign another eluent (see Chapter 4.7.18.5.4, page 315).

[OK]

The settings are applied to **all** determinations in the reprocessing table.

[Cancel]

The settings are discarded.

Assigning the eluents

The assigning of the eluents to the determinations depends on the type of determinations that are to be found in the reprocessing. The following rules apply:



- Change eluent contains fewer eluents than the determination in reprocessing.

- **Change eluent contains more eluents than one determination in reprocessing.**

■

Dialog window: **Reprocessing** ▶ **[Method...]** ▶ **Change eluent** ▶ **Change eluent** ▶ **Selecting eluents from configuration**

Selection	Eluent from eluent table

Dialog window: **Reprocessing** ► **[Method...]** ► **Import calibration points** ► **Import calibration points**

List of the analyses (sorted alphabetically) in the selected determination.
Select here the analysis (target analysis) into which you wish to import calibration points from an ***.ical** file.

Display of the name (including path) of the ***.ical** file selected for the import.



Opens a dialog for the selection of an ***.ical** file for import.

[OK]

Starts the import of the calibration points from the selected *.ical file into the selected analysis. The dialog **Import calibration points** will close after the import has been successfully completed.

[Cancel]

Discards any user inputs and closes the dialog **Import calibration points.**

What happens when calibration points are imported into an analysis?

- All of the calibration points of the target analysis are deleted.
- For every component for which calibration points are available in the ***.ical** file, these will be copied into the target analysis. The *names* of the components will be compared at this time.
- After the import of the calibration points into the target analysis, the display of their calibration will be updated in the **Chromatograms**(see Chapter 4.7.18.4.4, page 308) subwindow.
- The determination will *not* be automatically recalculated after the import.

4.7.18.5.6 Exporting calibration points

Dialog window: **Reprocessing** ▶ **[Method...]** ▶ **Export calibration points** ▶ **Export calibration points**

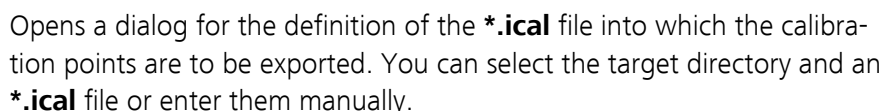
The function **Export calibration points** refers to the currently selected determination in the Reprocessing table (see Chapter 4.7.18.4.1, page 305). This function can be used as an aid for selecting an analysis of this determination and to export its calibration points (if available) into an ***.ical** file.

Select analysis

List of the analyses (sorted alphabetically) in the selected determination. Select here the analysis whose calibration points you wish to export into an ***.ical** file. If the selected analysis contains no calibration points, then you will be prompted to select a different analysis when you press **[OK]**.

Export file

Display of the name (including path) of the ***.ical** file determined for the export.



Starts the export of the calibration points from the selected analysis into the *.ical file. The dialog **Export calibration points** will close after the export has been successfully completed.

Discards any user inputs and closes the dialog **Export calibration points.**

Dialog window: **Reprocessing** ▶ **[Reprocessing]** ▶ **Reprocessing**

All modifications that were made in the subwindows **Reprocessing table**, **Evaluation parameters** and **Chromatograms** are incorporated in the reprocessing of the determinations.

Defines whether a new calibration is generated during reprocessing or whether an existing calibration will be used.

Selection	From marked determination From reprocessing table standards
Default value	From reprocessing table standards

The calibration data set (standard chromatograms, calibration points and calibration curves) of the marked determination are used during reprocessing for the calibration of all determinations in the table.

New calibration data sets and with them new calibration curves are generated from the standards in reprocessing with the aid of the evaluation parameters of the marked determination. The run is the same as when a sample table is processed.

Establishes whether manual integration is taken into account during reprocessing or whether new integrations are carried out.

- 317



- **off:** Manual integrations are discarded, all determinations are reintegrated with the current evaluation parameters.

[OK]

Triggers reprocessing. As long as the reprocessing is running, all subwindows and buttons are disabled; a progress bar is displayed in the lower area of the window.



Note

All determinations are reprocessed with the evaluation parameters of the **selected** determination.

It is not until this point in time that all the modifications that were made in the reprocessing are incorporated into the determinations. The modified results and chromatograms are displayed in the subwindows **Results** and **Chromatograms**.

[Cancel]

The procedure will be canceled.

What happens during reprocessing?

- **Columns and eluents**
Modified columns and eluents are written into **all** determinations and taken into account for the calculations (e.g. theoretical plates).
- **Sample data**
All determinations are reprocessed one after the other with the evaluation parameters of the selected determination.

All determinations are reprocessed one after the other with the evaluation parameters of the selected determination. The reprocessing table is run through from top to bottom during this process. The calculations and results behave the same way as when a determination series is being processed. The chromatograms of the determinations are reintegrated, the peaks of the components that are discovered are assigned and the results are calculated with the current calibration. Depending on the calibration mode, the calibration changes thereby with each standard, in a fashion analogous to a determination series.

- When the **Retain manual operation** parameter is set to **on**, then manually integrated chromatograms will not be reintegrated. All other chromatograms will be integrated with the integration parameters of the selected determination.
- When the **Calibration** parameter has the value **From marked determination**, then the evaluation parameters of the selected method will be used solely for integrating chromatograms and assigning the peaks to the components. No calibration curves will be recalculated, however.

4.7.18.6 Modification comment for determinations

If the option **Comment on modification** of determinations is switched on in the security settings then before the modified sample data is accepted the window **Modification comment determination** first appears in which a **Reason** must be selected and a **Comment** on the modification must be entered.

Selection from the default reasons defined for the category **Modifications of determinations** in the **Security settings** dialog window.

Entry of a comment on the modification of the determinations.

■■■■■■■ 319

4.7.19 Completing determinations

Menu item: **Database ▶ Determinations ▶ Complete...**

All incomplete determinations marked in the determination overview which are not complete due to an incident of global error (e.g. interrupted contact with the server, electrical power failure, program crash) or which were not finished after a reprocessing error will be made complete by means of the menu item **Determinations ► Complete....**



Note

Incomplete determinations can only be made complete if they were generated by the same client as the one that is to complete them, and only if no determinations are running in any of that client's workplaces.

4.7.20 Deleting determinations

Menu item: **Database ► Determinations ► Delete**

With the symbol  or the menu item **Determinations ► Delete**, the selected determinations are deleted after the confirmation request.



Note

If a database is opened simultaneously on several clients and if determinations are deleted on a client then these will still be shown in the determination table of the other clients until the table is updated. All the fields of these determinations will then have the entry **deleted**.



Note

If the check box **Comment on modification of determinations** in the **Security settings** is activated, then the window **Modification comment determination** will appear before the modification is saved.

4.8 Subwindow Information

4.8.1 Information - Overview

Subwindow: **Database ► Information**

General

In the subwindow **Information** general information about the focused determination in the determination table is shown. The subwindow can be switched on in the program part **Database** during the definition of the layout and thus made visible. It can be enlarged and reduced as required; it can also be maximized.

Tabs

Information about the determination is shown on the following tabs:

- *Determination*
Display of general information about determination.
- *Method*
Shows general information about the method used.
- *Sample*
Shows general information about the sample used.
- *Devices*
Shows general information about the devices used.
- *Analyses*
Display of general information concerning the analyses present in the determination.
- *Messages*
Shows messages about the determination.
- *Determination comment*
Shows the comment on the determination.

4.8.2 Information - Determination

Tab: **Database ► Information ► Determination**

Display of general information about determination.

Identification

Information about the identification of the determination.

Determination ID:

Unambiguous and unmistakable identification for the determination.

Server name:

Computer name of the server to which the client was connected when the determination was recorded.

Client name:

Computer name of the client the determination was recorded with.

Start counter:

Shows the start counter which is increased by +1 at the start of each determination. The start counter is saved for each client and cannot be reset.

Source format:

Displays the source format (e.g. ***.cdf**) for imported determinations.

Recording

Information about recording the determination.

Determination start:

Date and time at start of determination.

Determination duration:

Duration of the determination from its start to its end or termination in min.

Determination run:

Way in which the determination was ended:

Selection	Regular without remarks Regular with remarks Stop Stop by error
Regular without remarks	The determination was finished automatically after the method was processed normally and without any remarks.
Regular with remarks	The determination was finished automatically after the method was processed normally but with remarks.
Stop	The determination was canceled manually with [Stop] .
Stop by error	Due to an error, the determination was canceled automatically.

User (short name):

Short name of the user.



Active	User who started the determination.
Inactive	User logged in when finishing determination.

Full name of the user.



Active	User who started the determination.
Inactive	User logged in when finishing determination.

Shows the **Remarks** about the determination entered in the run window of the workplace.

Display of program version and build number of **MagIC Net** with which the determination was recorded.

Display of the license serial number with which the determination was recorded.

Information about the determination version.

Selection	original	modified

Determination data unaltered.

Determination data modified.



Determination version:

Version of the determination. The unaltered original determination has the version number **1**, reprocessed determinations have a version number **>1**.

Reprocessing date:

Date and time when the reprocessed determination version was saved.

Reprocessed by (short name):

Short name of user logged in when determination was reprocessed.

Reprocessed by (full name):

Full name of user logged in when determination was reprocessed.

Integration:

Information as to how the integration was accomplished.

Selection	Automatically Manual
Automatically	Automatic integration.
Manual	Manual integration.

Modification reason determination:

Reason for the determination modification.

Modification comment determination:

User comment on the determination modification.

Signature Level #

Information about the signatures at Level 1 or Level 2 in chronological order.

Signature date:

Date and time at which the determination was signed.

Signed by (short name):

Short name of user who signed the determination.

Signed by (full name):

Full name of user who signed the determination.

Signature reason:

Reason for signature selected by user.

User comments on signing the determination.

Tab: **Database** ▶ **Information** ▶ **Method**

Shows general information about the method used.

Information about the identification of the method.

Name of the method.

Name of method group to which the method belonged when the determination was carried out.

Unambiguous and unmistakable identification for the method.

Comment on the method that was defined in the dialog window **Properties - Method**.

Information about method version.

Selection	original modified
original	Determination method unaltered.
modified	Determination method modified by Reprocessing .

Version of the method the determination was created with.

Date and time when the modified method version was saved.

Short name of user logged in when modified method was saved.

Method saved by (full name):

Full name of user logged in when modified method was saved.

Modification reason method:

Reason for the method modification.

Modification comment method:

User comment on the method modification.

Signature Level #

Information about the signatures at Level 1 or Level 2 in chronological order.

Signature date:

Date and time at which the method was signed.

Signed by (short name):

Short name of the user who signed the method.

Signed by (full name):

Full name of user who signed the method.

Signature reason:

Reason for signature selected by user.

Signature comment:

User comments on signing the method.

4.8.4 Information - Sample

Tab: **Database** ▶ **Information** ▶ **Sample**

Shows general information about the sample used.

Sample data

Information about the sample. The only sample data shown is that for which a value is available.

Ident:

Identification of the sample.

Sample type:

Sample type of the sample.

Position:

Position of the sample.

Injection counter:

Specification of the injection counter **n/m** (**n** = Injection number of a multiple determination; **m** = Nominal number of injections of a multiple determination).

Volume:

Volume of the sample μL .

Dilution:

Dilution factor for the sample.

Sample amount:

Amount of the sample.

Identification

Information about the sample identifications. These will only be shown when a value is present.

Info1...Info4:

Display of the text information entered as identification for the sample.

Value1 ... Value4:

Display of the numerical values entered as identification for the sample.

Live modification

Information on the last live modification of sample data.

Modification reason sample data:

Reason for the sample data modification.

Modification comment sample data:

User comment on modification of sample data.

4.8.5 Information - Devices**Tab:Database ► Information ► Devices**

Shows general information about the devices and common variables used.

Device 'Device name'

Information about the device used (only the existing device information will be shown). If a device has modules, then the respective module designation and module name will be displayed in boldface.



Device type:

Type of device.

Program version:

Device program version.

Device serial number:

Serial number of the instrument.

Leak sensor:

Status of the leak sensor.

High-pressure pump:

Name of the high-pressure pump.

Material:

Material of the pump head.

Serial number:

Serial number of the pump head.

Maximum pressure:

Maximum pressure of the pump head.

Correction factor:

Correction factor of the pump head.

Eluent name:

Name of the eluent.

Order number:

Order number for the eluent.

Manufacturer:

Manufacturer of the eluent.

Batch number:

Batch number of the eluent.

Composition:

Composition of the eluent

Set to work:

Date at which the eluent was used for the first time.

Expiry date:

Expiry date of the eluent.

Detector:

Name of the detector.

Detector type:

Type of detector

Connection:

Designation of the detector connection to the device.

Serial number:

Serial number of the detector.

Cell constant:

Cell constant of the detector.

Thermostat:

Thermostat setting of the detector.

Peristaltic pump:

Name of the peristaltic pump.

Solution name:

Name of the solution conveyed with the pump.

Concentration:

Concentration of the solution.

Production date:

Date of production for the solution.

Expiry date:

Expiry date of the solution.



Injector:

Name of the injection valve.

MSM:

Name of the suppressor.

Degasser:

Name of the degasser.

Column thermostat:

Name of the column thermostat.

MCS:

Name of the CO₂ Suppressor.

10-port valve:

Name of the 10-port valve.

Analog Out:

Name of the 891 Professional Analog Out

Device type

Device type of the 891 Professional Analog Out

Device serial number

Device serial number of the 891 Professional Analog Out

Rack name:

Name of the rack on the sample changer.

Number of positions:

Number of sample positions on the rack.

Work position:

Work position of the rack.

Rinse position:

Rinse position of the rack.

Shift position:

Shift position of the rack.

Special position:

Special position of the rack.

Ext. Pump #:

Name of the external pump.

Solution name:

Name of the solution conveyed with the pump.

Production date:

Date of production for the solution.

Expiry date:

Expiry date of the solution.

Device type:

Dosing device type.

Serial number:

Serial number of the Dosino.

Connection:

Dosing connection at device.

Solution name:

Name of the solution.

Concentration:

Concentration value and unit of the solution.

Production date:

Date at which the solution was produced.

Expiry date:

Expiry date of the solution.

Exchange/Dosing unit:

Exchange or dosing unit type.



Name:

Designation of the exchange or dosing unit.

Order number:

Order number of exchange or dosing unit.

Serial number:

Serial number of exchange or dosing unit.

Cylinder volume:

Cylinder volume of the exchange or dosing unit.

Cylinder serial number:

Serial number of cylinder.

Device type:

Type of stirrer.

Serial number:

Serial number of stirrer.

Connection:

Stirrer connection at device.

Remote Box:

Connection to device.

Number of eluents:

Number of eluents for the high pressure gradient pump.

Analysis 'Analysis name'

Information concerning the hardware assigned to an analysis.

Data source:

Alias name of the detector.

Channel:

Data channel.

Injection valve:

Alias name of the injection valve.

Column:

Alias name of the column.

Pump:

Alias name of the pump.

Accessories:

Name of the accessories.

Manufacturer:

Manufacturer of the accessories.

Order number:

Order number of accessories.

Set to work:

Date at which the accessories was used for the first time.

Expiry date:

Expiry date of the accessories.

Column 'Column name'

Information about the separation column used.

Column type:

Type of column.

Order number:

Order number of the column.

Serial number:

Serial number of the column.

Batch number:

Batch number of the column.

Set to work:

Date at which the column was used for the first time.



Length:

Length of the column in mm.

Inner diameter precolumn:

Inner diameter of the column in mm.

Particle size:

Particle size of the column in μm .

Determinations:

Number of determinations of the column at the end of the determination.

Working hours:

Number of operating hours of the column at the end of the determination.

Precolumn type:

Type of guard column used.

Order number precolumn:

Order number for the precolumn.

Serial number precolumn:

Serial number of the precolumn.

Batch number precolumn:

Batch number of the precolumn

Set to work precolumn:

Date at which the guard column was used for the first time.

Length:

Length of the guard column in mm.

Inner diameter precolumn:

Inner diameter of the guard column in mm.

Determinations precolumn:

Number of guard column determinations at the end of the determination.

Working hours precolumn:

Number of guard column working hours at the end of the determination.

Common variable 'Name'

Information about the common variable used.

Value:

Value and unit of the common variables at the start of the determination.

Assignment date:

Date and time of last value assignment.

Assignment method:

Method with which the value was assigned.

4.8.6 Information - Analyses**Tab:Database ► Information ► Analyses**

Display of the most important chromatographic information concerning the analyses.

'Analysis name'

Information concerning an analysis.

Data source:

Type of detector with which the analysis was recorded.

Channel:

Data channel.

Recording time:

Recording time of the analysis in min.

Integration:

Information as to how the integration was accomplished.

Column type:

Type of column.

Eluent composition:

Composition of the eluent

Flow:

Flow at the pump that is assigned to the analysis at **Start data recording** (in mL/min).

Pressure:

Pressure at the pump that is assigned to the analysis at **Start data recording**.

Temperature:

Temperature at the pump that is assigned to the analysis at **Start data recording**.

4.8.7 Information - Messages

Tab: **Database** ▶ **Information** ▶ **Messages**

Shows messages generated during the determination run.

'Time'

Shows the time at which the message was generated in the run (date, time, UTC in the format **YYYY-MM-DD hh:mm:ss UTC.....**).

Message title:

Shows the message title and number.

Message text:

Shows the message.

4.8.8 Information - Determination comment

Tab: **Database** ▶ **Information** ▶ **Determination comment**

Shows the comment on the determination.

Determination comment:

Shows the comment entered for the determination.

4.9 Subwindow Results

4.9.1 Results - Overview

Subwindow: **Database ▶ Results**

General

In the subwindow **Results**, the results calculated according to the method are shown for the determination focused in the Determination table. The subwindow can be switched on in the program part **Database** during the definition of the layout and thus made visible. It can be enlarged and reduced as required; it can also be maximized.

Tabs

The results of the determination are shown on the following tabs:

- *Results*
Display of the automatically generated and user-defined results for determination.
- *Statistics*
Display of the statistics data concerning the statistically evaluated results of multiple determinations.
- *Monitoring*
Display of monitored results for determination.

4.9.2 Results - Results

Tab: Database ► Results ► Results

Display of the automatically generated and user-defined results for determination.

'Analysis name'

Each analysis defined in the method has its own peak table on display in which both the automatically calculated and the user-defined component results are listed. The user can define which columns are displayed (*see Chapter 4.9.5, page 338*). Components to which no peak is assigned are **not** listed in the Results table.

Single results

The user-defined single results are displayed here. Each single result consists of **Result name**, **Result value** and **Result unit**.

Result definitions

The definitions of all user-defined results (single and component results) are displayed here. The result name, formula and the variables used in the formula, together with the name and value of the variable, are displayed for each user-defined result.

4.9.3 Results - Statistics

Tab: Database ► Results ► Statistics



Note

This tab is displayed only when a statistic for results has been defined in the method and the determination concerns a multiple injection.

'Analysis name' - 'Result name'

The component result and the associated statistical results defined in the method are displayed for each component for every statistically evaluated result of an analysis.

Single results

The single result and the associated statistical results defined in the method are displayed for every statistically evaluated user-defined single result.

4.9.4 Results - Monitoring

Tab: **Database** ▶ **Results** ▶ **Monitoring**

Note

This tab is displayed only when results monitoring has been defined in the method.

'Analysis name' - 'Result name'

For every analysis that contains the monitored component results, the component result and the associated limit values are displayed for each component. If the result falls within the limit values, then it will be displayed in **green**; in **red** if it lies outside them. In such cases, the **message** and the **action** defined for this monitoring will also be displayed.

Single results

The single result and the associated limit values are displayed for every monitored single result. If the result falls within the limit values, then it will be displayed in **green**; in **red** if it lies outside them. In such cases, the **message** and the **action** defined for this monitoring will also be displayed.

4.9.5 Results - Properties

Dialog window: **Database** ▶ **View** ▶ **Properties** ▶ **Properties Results** ▶ **Properties result window**

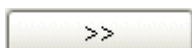
The dialog window **Properties Results**, in which the elements can be selected that are to be displayed in the peak table of the result window, is opened with the menu item **View ► Properties ► Properties Result window**.

Available columns

Displays all the columns that can be shown in the peak table.

Displayed columns

Displays all the columns that will be shown in the peak table. In the default settings, the columns **Component name**, **Retention time**, **Height**, **Surface area** and **Concentration** are displayed.



Adds the selected column to the table.



Removes the selected column from the table.



Modifies the sequence of displayed columns by moving the selected column up.



Modifies the sequence of displayed columns by moving the selected column down.

Show unidentified peaks

on | off (Default value: **off**)

If this option is enabled, then even the unidentified peaks in the peak table will be displayed.

4.10 Curves subwindow

4.10.1 Curves - Overview

Subwindow: **Database ► Curves #**

General

The chromatograms and calibration curves for the the determination focused in the Determination table are displayed in the subwindows **Curves 1...5**. When navigating in the determination overview, these curves will be updated automatically (with a certain delay).

The subwindows **Curves 1...5** can be switched on in the program part **Database** during the definition of the layout and thus made visible. They can be enlarged and reduced as required; they can also be maximized.

Tabs

A tab is displayed for every analysis that is defined in a method; these tabs are lettered with the name of the analysis and they show the associated chromatograms and calibration curves.

Graphics window

The interface, functions and properties of the subwindow **Curves #** are described in the *Graphics window* chapter in the following subchapters:

- *Elements*
- *Chromatogram view*



- *Calibration curve view*
- *Zooming*
- *Move curve*
- *Work with cursor*
- *Set Zoom*
- *Properties*
- *Change calibration*
- *Choose color*

5 Method

5.1 Method - General

5.1.1 Method - Definition

Program part: **Method**

Definition

In **MagIC Net** a **method** is an instruction for processing a sample, which can be created in the program part **Method** and be started in the program part **Workplace**.

Structure

The main window of the program part **Method** is divided into four sub-windows:

- *Devices*
- *Time program*
- *Evaluation*
- *Chromatograms*

Management

Methods are organized in **Method groups** and are always automatically assigned a new version i.e. each time a method is stored a new **version** is created. Methods can also be **signed at two levels** and be locked against further modifications. Methods are stored in the **configuration database** and globally accessible for all clients.

5.1.2 Method - Desktop

Program part: **Method**

Method Symbol



Clicking on the method symbol in the vertical bar on the left opens the program part **Method** while, at the same time the method symbol is shown in color. The upper left corner of the symbol contains a black field displaying the number of methods currently opened (*see Chapter 5.2.3, page 347*).

 Method groups...	Opens the method groups manager (<i>see Chapter 5.5.1, page 369</i>).
 Print (PDF)...	PDF file output of the method report (<i>see Chapter 5.2.10, page 352</i>).
 Logout...	Logs out the user. The dialog window Login opens (<i>see Chapter 2.2.3, page 21</i>).
Exit	End program.
1 'Method name'	Opens the selected method

5.1.3.3 Method - Menu Edit

Program part: **Method**

 Properties...	Opens the dialog window Method properties (<i>see Chapter 5.3, page 354</i>).
 Calculate	Recalculates calibration data (<i>see Chapter 5.2.6, page 349</i>).
 Update	Updates calibration data and chromatograms (<i>see Chapter 5.2.7, page 349</i>).

5.1.3.4 Method - Menu View

Program part: **Method**

Toolbar	Switches toolbar display on/off.

5.1.3.5 Help Menu

Program part: **Workplace / Database / Method / Configuration**

 MagIC Net Help	Open MagIC Net Help.
About	Displays information about the program and the installation.

5.1.4 Method - Toolbar

Program part: **Method**

 New...	Create a new method (<i>see Chapter 5.2.1, page 345</i>).
 Open...	Opens an existing method (<i>see Chapter 5.2.2, page 345</i>).
 Save	Save the selected method (<i>see Chapter 5.2.8, page 350</i>).
 Exit	Close the selected method (<i>see Chapter 5.2.11, page 353</i>).

Managing method groups

- *Managing methods*
- *Edit method groups*

5.2 Method editor

5.2.1 Creating new method

Menu item: **Method** ▶ **File** ▶ **New...**

With the symbol  or with the menu item **File ► New...** the window **New method** is opened in which a method template can be selected for the new method.

Templates

Selecting the template with which the new report is to be generated.

Selection	Method templates Blank method
Default value	Blank method

Method templates

Selecting a method template as a basis for creating a new method.

Blank method

An empty template is loaded (the four subwindows of the program part method).

Description

Description of the selected method template.

[OK]

Opens the selected method to edit.

5.2.2 Opening method

Menu item: **Method** ▶ **File** ▶ **Open...**

With the symbol  or the menu item **File ► Open** the window **Open method** is opened. One of the globally available methods can be selected and opened.

Method group

Method group

Selection of the Method group whose methods will be displayed in the method table (see *Chapter 5.5.1, page 369*).

Selection	Method groups Main group
Default value	Main group

Method name

Input	50 characters

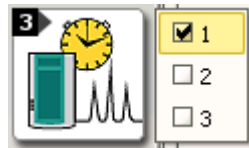
Opens the selected method in the main window in the place of the method that is already opened. The method name is displayed in the title bar of the program; the number of currently opened methods is displayed in the left upper corner of the method symbol.



A maximum of 9 methods can be opened but only one can be displayed.

Program part: **Method**

Two methods are opened. Only one method is displayed in the main window.



A menu with the currently opened methods is displayed by clicking with either the left or right mouse button on the method symbol. The visible method is marked with a checkmark. Clicking on the desired method displays it in the place of the previously selected one.

5.2.4 Editing method

Subwindow: **Method** ▶ **Devices** / Time program / Evaluation

Methods can only be edited if they are not signed at **Level 2**.

The method is edited directly via **[Edit]** in the subwindows **Devices**, **Time program** or **Evaluation**. General settings are edited under the menu item **Edit ► Properties....**

5.2.5 Checking method

Menu item: **Method ▶ File ▶ Method check**

With the symbol  or menu item **File ► Method check** a method check for the method in focus is triggered. The following points are checked:

- **Variables**
Are the variables defined in calculation formulas available?
- **Common variables**
Are the common variables in the method also available in the configuration and are they valid?
- **E-mail templates**
Are the E-Mail templates used in the method also available in the configuration?
- **Database**
Is a database named in the method?
- **Time program**
Are all the devices, modules and analyses in the device group available and are all the modules used active?
Are the requested sub-programs available and are all the times correct?
- **Data source**
Has a data source been assigned to an analysis?
- **Devices**
Are all devices and device modules used available and active?

A message is displayed for each error found. The method check has to be started again afterwards. When the method check has been completed successfully, it is confirmed with a message.

5.2.6 Recalculating calibration data

Menu item: **Method ► Edit ► Calculate**

The menu item **Edit ► Calculate** or the symbol  on the toolbar triggers the following actions:



Note

The calibration is recalculated with the **currently loaded determinations** of the calibration data set (Standard chromatograms, blank) and the **latest method settings**.

Later determinations are not reloaded from the database.

- All standard chromatograms are reevaluated with the current settings of the method and the calibration points are redefined.
- All calibration curves are recalculated.
- If there is a sample chromatogram in the method view, it is also re-integrated and evaluated with new calibration curves.
- The representation in the graphics window (settings, zoom) remains the same.

5.2.7 Update calibration data and chromatograms

Menu item: **Method ► Edit ► Update**

The menu item **Edit ► Update** or the symbol  on the toolbar triggers the following actions:



Note

The calibration is recalculated with the **current determinations** of the calibration data set (Standard chromatograms, blank) and the **latest method settings**.

The latest determinations for the method are reloaded from the database.

- The temporary calibration data set of the method is updated, i.e. determinations of standards and blanks that may have been added are loaded into the method and displayed. Outdated standards and blanks are removed.
- All standard chromatograms are reevaluated with the current settings of the method and the calibration points are redefined.
- All calibration curves are recalculated.



- If there is a sample chromatogram in the method view, it is also re-integrated and evaluated with new calibration curves.
- The display in the graphics window (settings, zoom) is reloaded. Changes that were not saved are discarded.

5.2.8 Saving method

Menu item: **Method ▶ File ▶ Save / Save as...**

With the symbol  or the menu item **File ► Save** an existing focused method is saved again under its name without the window **Save method** being opened.

When saving a **newly** created method with **File ► Save** or when saving an existing method with **File ► Save as...** the dialog window **Save method** is opened, in which the method group can be selected and a method name can be entered or selected.

Method group

Method group

Selection of the method group where the method is to be stored (see *Chapter 5.5.1, page 369*).

Selection	Method groups Main group
Default value	Main group

Method table

The method table contains information about all methods of the selected method group. The table cannot be edited. With a click on the column title (columns **Name**, **Saved**, **User**, **Full name**, **Version**, **Signed**, **Method comment**) the table can be sorted according to the selected column in increasing or decreasing order.

Name	Name of the method.
Saved	Date and time when the method was saved.
User	Short name of the user who saved the method.
Full name	Full name of the user who saved the method.
Version	Version number of the method.

Display if and at which level the method has been signed.

Selection	no	Level 1	Level 2
no	The method has not been signed. It can be opened for editing and also deleted.		
Level 1	The method has been signed electronically at level 1. It can be opened for editing and also deleted. If the method is edited and saved again, a new version is created and all the signatures will be deleted.		
Level 2	The method has been signed electronically at level 2. The method is locked now and it can neither be edited nor deleted.		

Method comment

Comment on the method defined in method properties (see Chapter 5.3.3, page 355).

Saving method

Method name

Name under which the Method is to be saved.

Input	50 characters



Note

The method name must be unique in the whole Client/Server system.

[Save]

Save the selected method under the desired method name in the selected method group.

The **method check** is automatically carried out before saving the method - it can also be started manually at any time (*see Chapter 5.2.5, page 348*). The method is checked as thoroughly as possible. Checks for devices, columns and eluents are carried out not until the start of the method in order to ensure that methods for devices can be created which are not yet configured in the system. If an error is detected during the method check, a message is displayed asking whether the method should be saved nevertheless. Faulty methods cannot be started.

A new method version with a new identification is created each time a modified method is saved (*see Chapter 5.4.11, page 368*). If the option

Comment on modification of methods is activated in the **Security settings** ► **Audit Trail** ► **Changes** in the program part **Configuration** (see Chapter 6.2.2.4, page 496), then the window **Modification comment method** (see Chapter 5.2.9, page 352) is displayed before the method is saved.

5.2.9 Modification comment on method

Menu item: **Method ▶ File ▶ Save / Save as...**

If the option **Comment on modification of methods** is activated in the **Security settings ► Audit Trail ► Modifications** in the program part **Configuration** (see *Chapter 6.2.2.4, page 496*) when saving a modified method or when deleting methods, the dialog window **Modification comment method** is opened, in which a reason and a comment on the modification must be entered.

Reason

Selection from the **Default reasons** defined for the category **Modification of methods** in the **Security settings** dialog window (see Chapter 6.2.2.6, page 498).

Selection	Selection from the Default reasons

Comment

Entry of a comment for modifying the method.

Input	1000 characters

5.2.10 Print method report

Menu item: **Method** ▶ **File** ▶ **Print (PDF)...**

With menu item **File ► Print (PDF)...** or the symbol  the window **Print method reports (PDF)** is opened in which the desired report for the selected method can be selected and output as PDF file.

Report selection

Selection of the part reports to be output for the method report.

Hardware

on | off (Default value: **on**)

Output of device group with all the start parameters of the devices used and the settings and links of the analysis. This part report covers the fixed report **Start parameter** (see Chapter 4.4.4.3.7, page 235).

Time program

on | off (Default value: **on**)

Output of the complete time program together with all sub programs. This part report covers the fixed report **Time program** (see Chapter 4.4.4.3.7, page 235).

Evaluation parameters

on | off (Default value: **on**)

All evaluation parameters are output including the components and standard table. This part report covers the fixed reports **Integration, Components, Standards, Calibration parameters** and **Result definition** (see Chapter 4.4.4.3.7, page 235).

Properties

on | off (Default value: **on**)

All settings of the menu item **Settings** are output. This part report covers the fixed report **Method properties** (see Chapter 4.4.4.3.7, page 235).

5.2.11 Closing method

Menu item: **Method ► File ► Close / Close all**

Closing single method

The focused method is closed with the symbol  or the menu item **File ► Close**. If the method has been modified, there will be a prompt asking whether or not to save the method as a new version.

Closing all methods

All the opened methods are closed with the menu item **File ► Close all**. A prompt asking whether or not to save the method as a new version will appear for each method that has been modified.

Live window 1

Selection	'Analysis name'

Selection	'Analysis name'

Tab: **Method** ▶ **Edit** ▶ **Properties...** ▶ **Properties - Method** ▶ **Method comment**

Input	1000 characters

Tab: **Method** ▶ **Edit** ▶ **Properties...** ▶ **Properties - Method** ▶ **Application note**

Application note for the method displayed in the **Workplace** program part in the subwindow **Live display** on its own tab (see *Chapter 3.8, page 178*). This tab opens automatically when the method is loaded.

Selection	Text (unlimited)

If this option is enabled, the sample data variable is used in the method.



Note

The sample data variables **Ident**, **sample type**, **position**, **injections**, **volume**, **dilution** and **sample volume** are always used in a method, i.e. their use cannot be disabled.

Fixed value

on | off (Default value: **off**)

If this option is enabled, a fixed value can be defined for the sample data variable. This value is displayed and used in the run for the sample data variable and can no longer be edited there.

The input of the fixed value (text, number, input range) depends on the sample data variable selected (see Chapter 3.7.4.4, page 143). If text templates are defined for the sample data variables **Ident** and **Info 1...4** (see Chapter 3.6.1, page 138), they can be selected in the input field.

Type

Displays the data type (**Number** or **Text**). The field cannot be edited.

Comment

Optional comment on sample data variable.

Monitoring



Note

For the sample data variable **Position** no monitoring is possible.

on | off (Default value: **off**)

If this option is enabled then sample data variable will be monitored at the start test. The monitoring cannot be activated for sample data variables of the type **Text**.

Lower limit

Lower limit for the variable.

The input of the limit value depends on the sample data variable selected (see Chapter 3.7.4.4, page 143).

Upper limit

Upper limit for the variable.

Message

The Text editor for entering or changing the message is opened with  or by double-clicking into the text field.



Selection	Text (unlimited)

on | off (Default value: **off**)

[E-mail]

[E-Mail] opens the **Send E-mail** window (see Chapter 2.7.1, page 99).

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If at the start test it is found that the limit values have been exceeded, then one of the following actions will be triggered automatically:

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the limit value has been exceeded will be saved automatically in the determination.

Display message

A message is displayed and you can select whether you want to continue the run or cancel it. If the run is continued, then the message that the limit value has been exceeded will be saved automatically in the determination.

Stop determination

The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

Signed

Display if and at which level the method has been signed.

Selection	no Level 1 Level 2
no	The method has not been signed. It can be opened for editing and also deleted.
Level 1	The method has been signed electronically at level 1. It can be opened for editing and also deleted. If the method is edited and saved again, a new version is created and all the signatures will be deleted.
Level 2	The method has been signed electronically at level 2. The method is locked now and it can neither be edited nor deleted.

Method comment

Comment on the method defined in method properties (*see Chapter 5.3.3, page 355*).

Window menus

The menu **[Edit]** below the method table contains the following menu items:

Rename...	Renames selected method (<i>see Chapter 5.4.2, page 360</i>).
Copy	Copies selected method(s) in the same method group (<i>see Chapter 5.4.3, page 360</i>).
Move...	Moves selected method(s) to a different method group (<i>see Chapter 5.4.4, page 360</i>).
Delete...	Deletes selected method(s) (<i>see Chapter 5.4.5, page 361</i>).
Send to...	Exports the selected method(s) and attaches it(them) to an E-mail (<i>see Chapter 5.4.6, page 361</i>).
Export...	Exports selected method(s) (<i>see Chapter 5.4.7, page 362</i>).
Import...	Imports selected method(s) (<i>see Chapter 5.4.8, page 362</i>).

The menu **[Sign]** below the method table contains the following menu items:

Signature 1...	Sign selected method on level 1 (<i>see Chapter 2.3.3, page 24</i>).
Signature 2...	Sign selected method on level 2 (<i>see Chapter 2.3.4, page 25</i>).

Show signatures...	Show all signatures of the selected method (<i>see Chapter 5.4.10.4, page 366</i>).
Delete signatures 2...	Delete all signatures at level 2 of the selected method (<i>see Chapter 2.3.5, page 27</i>).

[History]

Opens the dialog window **Method history** of the selected method (see *Chapter 5.4.11, page 368*).

[Exit]

Closes the dialog window and saves entries.

5.4.2 Renaming method

Dialog window: **Method ▶ File ▶ Manage method... ▶ Method manager ▶ [Edit] ▶ Rename... ▶ Rename method**

The dialog window **Rename method** for renaming the selected method is opened with the menu item **Edit ► Rename...**

Rename method 'Method name' after

entering the new method name.

Input	50 characters



Note

The method name must be unique in the whole Client/Server system. Locked methods cannot be renamed. Renaming the method is not regarded as modification i.e. the method version does not change.

5.4.3 Copying method

Menu item: **Method** ▶ **File** ▶ **Manage method...** ▶ **Method manager** ▶ **[Edit]** ▶ **Copy**

With menu item **[Edit] ► Copy** the selected methods are saved in the same method group under the name **Copy of 'Method name'**.

5.4.4 Moving method

Dialog window: **Method** ▶ **File** ▶ **Manage method...** ▶ **Method manager** ▶ **[Edit]** ▶ **Move...** ▶ **Move method(s)**

The selected methods are moved to the desired method group with the menu item **Edit ► Move...**. The method group can be selected in the window **Move method(s)**.

Method group

Selection of the method group to which the selected methods should be moved.

Selection	Method groups



Note

Locked methods (methods signed at **Level 2**) cannot be moved.

5.4.5 Deleting method

Menu item: **Method** ▶ **File** ▶ **Method manager...** ▶ **Method manager** ▶ **[Edit]** ▶ **Delete**

The selected methods and all method versions are deleted with the menu item **[Edit] ► Delete....**

If the option **Comment on modification of methods** is activated in the **Security settings** (see Chapter 6.2.2.4, page 496), then the dialog window **Modification comment method** (see Chapter 5.2.9, page 352) is displayed when methods are deleted.



Note

Locked methods (methods signed at **Level 2**) cannot be deleted.

5.4.6 Sending method to

Menu item: **Method** ▶ **File** ▶ **Method manager...** ▶ **Method manager** ▶ **[Edit]** ▶ **Send to...**

The selected methods are each exported as a file with the name '**Method name**'.imet with the menu item **Edit ► Send to....**

Afterwards, the Windows Standard E-mail Client will open with an empty message. The export files of the highlighted objects will automatically be added as an attachment. The user can complete the E-mail himself/herself and send it on. The exported methods are stored only temporarily on the computer and will be deleted automatically after the E-mail has been sent.



Note

The exported methods are stored uncoded but with a checksum. If a file stored in this manner is manipulated, then it cannot be imported again.

5.4.7 Exporting a method

Menu item: **Method ▶ File ▶ Method manager... ▶ Method manager ▶ [Edit] ▶ Export...**

The selected methods can each be exported as a file named '**Method name**'.imet with the menu item **Edit ► Export....** The window **Select directory for export** opens in which the directory for export must be selected.



Note

The exported methods are stored uncoded but with a checksum. If a file stored in this manner is manipulated, then it cannot be imported again.

5.4.8 Importing method

Menu item: **Method** ▶ **File** ▶ **Method manager...** ▶ **Method manager** ▶ **[Edit]** ▶ **Import...**

With the menu item **Edit ► Import...** the dialog window **Select files for import** opens. Here you must select the methods to be imported and the method groups into which the methods are to be imported. These methods are imported into the opened method table.

5.4.9 Renaming imported method

Menu item: **Method** ▶ **File** ▶ **Method manager...** ▶ **Method manager** ▶ **[Edit]** ▶ **Import...**

Methods with the same name as methods already imported can only be imported under a new name. The window **Import method** opens for renaming the method.

Rename imported method 'Method name' after

entering the new method name.

Input	50 characters



Note

The method name must be unique in the whole Client/Server system. Locked methods cannot be renamed. Renaming the method is not regarded as modification i.e. the method version does not change.

5.4.10 Signing methods

5.4.10.1 Rules for electronic signatures

Program parts: **Method / Database**

In MagIC Net, methods and determinations can be **electronically signed** at two levels. The following rules apply for this:

- **Signature levels**
Signature levels for methods and determinations can be signed at two levels (Signature Level 1 and Signature Level 2) by entering the user name and password.
- **Multiple signing**
Methods and determinations can be signed several times at each level. All signatures are saved and documented in the Audit Trail.
- **Sign at Level 1**
If Level 2 has been signed then no more signatures are possible at Level 1.
- **Sign at Level 2**
Level 2 can only be signed if signatures already exist at Level 1.
- **Different users**
The same user may only sign on either Level 1 or Level 2.
- **Reason and comment**
Each signature must be accompanied by a reason selected from predefined default reasons. A further comment can also be entered.
- **Saved data**
The signature date, user name, full name, reason and comments are saved for each signature.
- **Deleting signatures 1**
Signatures at Level 1 are automatically deleted again when compiling a new version.
- **Deleting signatures 2**
Signatures at Level 2 can only be deleted by users who have the appropriate rights.
- **Sign methods**
Methods can only be signed individually.
- **Signature options**
The options for electronic signatures are set in the **Signatures** tab in the **Security settings** dialog window.

5.4.10.2 Signature Level 1

Dialog window:Database ▶ Determinations ▶ Sign ▶ Signature 1... ▶ Signature Level 1

or

Dialog window:Method ▶ File ▶ Method Manager... ▶ Method Manager ▶ [Sign] ▶ Signature 1... ▶ Signature Level 1

Methods or determinations can be signed at Level 1 in the **Signature Level 1** window.



Note

Methods or determinations which have been signed at Level 1 can be changed and deleted. If the altered method or determination is saved as a new version then all existing signatures will be deleted automatically, i.e. the method or determination must be signed again.

Info

Information display for signing and deleting signatures. The following messages are possible:

Selection	Signature possible (signature 2 exists)	Signature 1 not possible (accessed by other client)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		
82		
83		
84		
85		
86		
87		
88		
89		
90		
91		
92		
93		
94		
95		
96		
97		
98		
99		
100		

Signature possible

The selected method or determination can be signed.

Signature 1 not possible (signature 2 exists)

The selected method or determination can no longer be signed at Level 1 as it has already been signed at Level 2.

Signature not possible (accessed by other client)

The selected method or determination cannot be signed as it is already marked to be signed on a different client.

User

Entry of the user name (short name).

Input	24 characters

Password

Password entry.

Input	24 characters

Reason

Selection from the **Default reasons** defined in the **Security Settings** dialog window for the category **Signature level 1**.

Selection	Selection from the Default reasons

Comment

Entry of comment on the signature.

Input	1000 characters

[Sign]

Sign method or determination. The window remains open.



Note

Methods or determinations can only be signed at Level 1 if the user belongs to a user group with the corresponding authorization.

5.4.10.3 Signature Level 2

Dialog window:Method ▶ File ▶ Method Manager... ▶ Method Manager ▶ [Sign] ▶ Signature 2... ▶ Signature Level 2

or

**Dialog window:Database ▶ Determinations ▶ Sign ▶ Signature
2... ▶ Signature Level 2**

Methods or determinations can be signed at Level 2 in the **Signature Level 2** window.



Note

Methods or determinations signed at level 2 are **locked**, i.e. they can neither be edited nor deleted. In order to be able to edit such methods or determinations again, the signatures on Level 2 must first be deleted.

Info

Information for signing and deleting signatures is displayed in this box. The following messages are possible:

Selection	Signature possible Signature 2 not possible (signature 1 missing) Signature not possible (accessed by other client)
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
70	
71	
72	
73	
74	
75	
76	
77	
78	
79	
80	
81	
82	
83	
84	
85	
86	
87	
88	
89	
90	
91	
92	
93	
94	
95	
96	
97	
98	
99	

Signature possible

The selected method or determination can be signed.

Signature 2 not possible (signature 1 missing)

The selected method or determination cannot be signed at Level 2 as it has not yet been signed at Level 1.

Signature not possible (accessed by other client)

The selected method or determination cannot be signed as it is already marked to be signed on a different client.

User

Entry of the user name (short name).

	Input	24 characters
Password	Password entry.	
	Input	24 characters
Reason	Selection from the Default reasons defined in the Security Settings dialog window for the category Signature level 2 .	
	Selection	Selection from the Default reasons
Comment	Entry of comment on the signature.	
	Input	1000 characters
[Sign]	Sign method or determination. The window remains open.	



Note

Methods or determinations can only be signed at Level 2 if the user belongs to a user group with the corresponding authorization.

5.4.10.4 Show method signatures

Dialog window: **Method ▶ File ▶ Method Manager... ▶ Method Manager ▶ [Sign] ▶ Show signatures...**

The dialog window **Signatures - Method 'Method name'** opens by means of the menu item **[Sign] ► Show signatures...** with a table in which the information for all of the signatures for the selected method is given.

Signature	Shows at which level the method has been signed (Level 1 or Level 2).
Signature date	Date and time at which the method was signed.
User	Short name of the user who signed the method.
Full name	Full name of the user who signed the method.

Reason for signature.

Comment on the signature.

Dialog window:Method ▶ File ▶ Method manager... ▶ Method manager ▶ [Sign] ▶ Delete signatures 2... ▶ Delete Signatures Level 2

or

Dialog window:Database ▶ Determinations ▶ Sign ▶ Delete signatures 2... ▶ Delete Signatures Level 2

The **Delete Level 2 signatures** window allows you to delete all signatures on Level 2 for the selected methods or determination.

Entry of the user name (short name).

Input	24 characters

Password entry.

Input	24 characters

Selection from the **Default reasons** defined in the **Security Settings** dialog window for the category **Signature level 2**.

Selection	Selection from the Default reasons
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

Entry of comment on the signature.

Input	1000 characters

Delete Signatures 2.



Signatures 2 can only be deleted if the user belongs to a user group with the corresponding authorization.

5.5.1 Manage method groups

With the symbol  or with the menu item **File ► Method groups...** the dialog window **Method groups** is opened in which the user can manage the method groups provided he has the necessary access rights. The information on the existing method groups is shown in a table. The table cannot be edited and is not automatically updated. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing order.

Name of the method group.

Number of methods in the method group.

Date and time when the method group was saved

Short name of the user who has saved the method group.

Full name of the user who saved the method group.

Comment on the method group.

Opens the dialog window **Properties - Method group - 'New Group'** opens for defining a new method group (see *Chapter 5.5.2, page 370*).

Opens the dialog window **Properties - Method group 'Name'**, in which the method group selected in the table can be edited (*see Chapter 5.5.2, page 370*).

Deleting the selected method group.

5.5.2 Edit method groups

5.5.2.1 Method groups - Properties

Dialog window: **Method ▶ File ▶ Method groups... ▶ Method groups ▶ Properties**
- Method group 'Name'

The properties window **[Properties - Method group 'Name']** for the selected method group is opened with the button **Properties** or by double-clicking on the line in the table.

The parameters for the method groups are configured on the following tabs:

- *General*
General parameters
- *Access rights*
Access rights for method groups and their methods.

5.5.2.2 Method groups - General

Tab: **Method** ▶ **File** ▶ **Method groups...** ▶ **Method groups** ▶ **[Properties]** ▶ **Properties - Method group 'Name'** ▶ **General**

Name

Name of the method group. The name has to be entered when creating a new method group.

Input	50 characters

Number

Number of methods in the method group.

Comment

Freely definable remarks about the user group.

Input	1000 characters

5.5.2.3 Method groups - Access rights

Tab: **Method** ▶ **File** ▶ **Method groups...** ▶ **Method groups** ▶ **[Properties]** ▶ **Properties - Method group 'Name'** ▶ **Access rights**

Access rights for method groups and their methods can be assigned per user group.



Note

The user group **Administrators** always has both access rights, i.e. they cannot be disabled.

Names of the user groups

on | off (Default value: **on**)

on | off (Default value: **on**)

Authorization to edit methods from a method group. Methods in this group can be opened, started, edited and deleted. New methods can be added as well.

Subwindow: **Method ▶ Devices**

Subwindow Devices

The subwindow **Devices** shows the devices in the group. This is where devices and analyses are assigned to the method and their start parameters and/or properties are defined.

Desktop

The assigned devices and analyses are displayed in the upper part of the subwindow **Devices**

The start parameters (see Chapter 5.6.4, page 379) for the devices and the properties (see Chapter 5.6.6, page 381) for the analyses can be defined in the bottom part of the subwindow **Devices**.

Note

Both parts of the window are synchronized with each other. If a device, module or analysis is selected in the upper part, the corresponding start parameters/properties are displayed in the lower part.

5.6.2 Devices - Menu Edit

Subwindow **Method ▶ Devices ▶ [Edit]**

Add ►	
Device	Add a device to the method (<i>see Chapter 5.6.3.1, page 372</i>).
Analysis	Add an analysis to the method (<i>see Chapter 5.6.5.1, page 380</i>).
Gradient pump	Add a gradient pump to the method (<i>see Chapter 5.6.3.6, page 377</i>).
Edit	Opens the editing window of the element (device, analysis or gradient pump) selected in the upper part of the subwindow Devices: ▪ Edit device(<i>see Chapter 5.6.3.2, page 375</i>) ▪ Edit analysis(<i>see Chapter 5.6.5.2, page 381</i>) ▪ Edit gradient pump(<i>see Chapter 5.6.3.7, page 378</i>)
Remove	Removes the element (device, analysis or gradient pump) selected in the upper part of the subwindow Devices from the method:

5.6.3 Devices - Functions

5.6.3.1 Adding device

Dialog window: **Method ▶ Devices ▶ [Edit] ▶ Add ▶ Device ▶ Add device**

Selecting device

Selecting the device to be added.

Selection	From device table New device
Default value	From device table

From device table

Adds known device from the device table to the list of devices of the method.

New device

Adds a new device, which is not connected and not configured in the device table, to the device group for the method.

The rest of the dialog window modifies its appearance, depending on the selection.

Adding device from the device table

The option **From device table** must be selected in order for a known device to be able to be added to the method from the device table.

Name

Device to be added



Connectors



Note

Which of the following parameters are displayed depends on the selected device type.

Detector 1

Indicates the detector to be used at detector connector **Detector 1**.

Only for devices with detector connector

Selection	not defined All detector types known to MagIC Net
Default value	not defined

Detector 2

Indicates the second detector to be used on detector connector **Detector 2**.

Only for devices with detector connector

Selection	not defined All detector types known to MagIC Net
Default value	not defined

Analog Out connected

on | off (Default value: **off**)

Selecting whether a device is to be connected to the 891 Professional Analog Out.

Only with devices of the Professional IC and Compact IC type.

MSB

Displays the MSB connector this device is connected to.

Only for MSB devices

Selection	not defined Number of the MSB connector and name of the device (in parentheses)
Default value	not defined



Open window '**MSB device**' - **Select connection** (see Chapter 5.6.3.4, page 376).

Number of towers

Number of towers of the sample changer to be added.

Only with the 814 USB Sample Processor or the 815 Robotic USB Sample Processor XL

Selection	1 2
Default value	1

With cooling

on | off (Default value: **off**)

Selecting whether the device is to be added with or without cooling.

Only with the 889 IC Sample Center

5.6.3.2 Editing device

Dialog window: **Method ► Devices ► [Edit] ► Edit ► Edit device**

If a device is selected in the list of devices, then the menu item **[Edit] ► Edit** opens the dialog window **Edit device** in which a device can be replaced by a different one and the module designations of a device can be changed.

Replacing device

A device can be replaced by another one of the same type from the device table. If the device is already used in the time program, the new name is entered automatically in the time program.

Device

Selects the new device of the same device type as the device to be replaced.

Selection	Devices of the same type from the device table

Device type

Displays the device type of the device to be replaced.

Module designations

This section is structured dynamically depending on the device type and contains all the modules of a device. Each module can be given its own application-specific name.

'Module name'

Freely definable designation for the selected module. These alias names are only used within the method used and are intended to allow the user

to give 'descriptive' names for a special application. They need not be unique.

Input	24 characters
Default value	Standard designation proposed by MagIC Net.

5.6.3.3 Entering name for MSB device

Dialog window: **Method ▶ Devices ▶ [Edit] ▶ Add ▶ Device ▶ Add device**

If a device to which an MSB device is connected is added, you are asked if you also want to add the MSB device to the method. If this is confirmed with **[Yes]**, then the dialog window **Enter name for 'MSB device type' on MSB 'No.'** will appear.

Name

Name of the MSB device connected to a newly added device. This name must be unique within the method.

Input	40 characters

5.6.3.4 Selecting MSB connector

Dialog window: **Method ▶ Devices ▶ [Edit] ▶ Add ▶ Device ▶ Add device ▶ 'MSB device' - Select connection**

In the window '**MSB Device - Select connection**', the devices added to the method are listed with their MSB connectors. Select the connection to which the MSB device is connected.

5.6.3.5 Editing name for MSB device

Dialog window: **Method ▶ Devices ▶ [Edit] ▶ Edit ▶ Edit device**

If an MSB device is selected in the list of devices, the menu item **[Edit] ► Edit** opens the dialog window **Edit device** in which its name can be changed.

Device

Name of the MSB device. This name must be unique within the method.

Input	40 characters

Device type

Displays the device type of the MSB device for which the name is to be changed.

Connector

Displays the connector to which the MSB device is connected.

5.6.3.6 Adding gradient pump

Dialog window: **Method ▶ Devices ▶ [Edit] ▶ Add ▶ Gradient pump ▶ Add gradient pump**

With menu item **[Edit] ▶ Add ▶ Gradient pump**, the dialog window **Add gradient pump** opens, in which a gradient pump consisting of individual high pressure pumps can be defined.

Name

Name of the gradient pump.

Input	40 characters

Number of pumps

Number of pump modules that are to be combined to form a gradient pump.

Selection	2	3	4

Default value	2

Pump selection

The pump modules for the gradient pumps are selected in this area. It is not possible to edit more fields than were defined in **Number of pumps**.



Note

- A pump module can only be assigned once to the same gradient pump.
- Only pump modules controlled by the same 850 Professional IC can be grouped together to a gradient pump, i.e. they must either be installed in the same 850 Professional IC or be in an extension module connected to the device.
- All pump heads of the gradient pump must have the same order number.

Pump A

Pump A for gradient pump.

Pump B

Pump B for gradient pump.

Pump C

Pump C for gradient pump.

Pump D

Pump D for gradient pump.



Open dialog window **Pump 'X' - Assign pump**, in which the pump modules for the gradient pump can be selected (*see Chapter 5.6.3.8, page 379*).

5.6.3.7 Editing gradient pump

Dialog window: **Method** ▶ **Devices** ▶ **[Edit]** ▶ **Edit** ▶ **Edit gradient pump**

If a gradient pump is selected in the list of devices, menu item **[Edit] ► Edit** opens the dialog window **Edit gradient pump** in which the gradient pump can be changed.

Name

Name of the gradient pump.

Input	40 characters



Note

If a gradient pump already used in the time program is renamed, the new name is entered automatically there.

Number of pumps

Number of pump modules that are to be combined to form a gradient pump.

Selection	2 3 4
Default value	2

Pump selection

The pump modules for the gradient pumps are selected in this area. It is not possible to edit more fields than were defined in **Number of pumps**.

**Note**

- A pump module can only be assigned once to the same gradient pump.
- Only pump modules controlled by the same 850 Professional IC can be grouped together to a gradient pump, i.e. they must either be installed in the same 850 Professional IC or be in an extension module connected to the device.
- All pump heads of the gradient pump must have the same order number.

Pump A

Pump A for gradient pump.

Pump B

Pump B for gradient pump.

Pump C

Pump C for gradient pump.

Pump D

Pump D for gradient pump.



Open dialog window **Pump 'X' - Assign pump**, in which the pump modules for the gradient pump can be selected (*see Chapter 5.6.3.8, page 379*).

5.6.3.8 Assigning pumps for gradient pump

Dialog window: **Method ▶ Devices ▶ [Edit] ▶ Add ▶ Gradient pump ▶ Add gradient pump ▶ Pump 'X' - Assign pump**

The dialog window **Pump 'X' - Assign pump** is for selecting a high pressure pump module for the gradient pump. The window is structured dynamically and contains only those high pressure pumps that are not already assigned to another gradient pump. Each pick tree is grouped according to devices. Extension modules are shown as top-level devices.

5.6.4 Devices - Start parameter

Subwindow: **Method ▶ Devices**

The start parameters for the devices can be defined in the bottom part of the subwindow **Devices**. If you click on a device in the top part of the window, the tabs of the modules in the device appear in the bottom part

of the subwindow. The start parameters for the various modules to be sent to the devices when the method is started can be defined on these tabs.

Device-specific start parameters

- 850 Professional IC - Start parameters
- 881 Compact IC pro - Start parameters
- 882 Compact IC plus - Start parameters
- 883 Basic IC plus - Start parameters
- 814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Start parameters
- 858 Professional Sample Processor - Start parameters
- 863 Compact Autosampler - Start parameters
- 889 IC Sample Center - Start parameters
- 886 Professional Thermostat / Reactor - Start parameters
- 887 Professional UV/VIS Detector - Start parameters
- 872 Extension Module IC Pump - Start parameters
- 872 Extension Module IC Module - Start parameters
- 872 Extension Module Sample Prep - Start parameters
- 872 Extension Module Liquid Handling - Start parameters
- 872 Extension Module Suppression - Start parameters
- 872 Extension Module Suppression – MCS - Start parameters
- 771 IC Compact Interface - Start parameters
- 800 Dosino - Start parameters
- Stirrer - Start parameters
- Remote Box MSB - Start parameters
- RS-232 device - Start parameters
- RS-232 device - Start parameters

The start parameters of the **891 Professional Analog Out** (see *Chapter 7.1.3.1.12, page 621*) are assigned to the main device it is connected to.

5.6.5 Analyses - Functions

5.6.5.1 Adding analysis

Dialog window: **Method** ▶ **Devices** ▶ **[Edit]** ▶ **Add** ▶ **Add analysis**

With menu item **[Edit] ▶ Add ▶ Analysis**, the dialog window **Add analysis** is opened and the name for the new analysis can be entered.

Analysis name

Name of the analysis.

Input	40 characters
Default value	New analysis

Editing analysis

Dialog window: **Method** ▶ **Devices** ▶ **[Edit]** ▶ **Edit** ▶ **Edit analysis**

In this dialog window, you can change the name of the selected analysis and its modules.

Name

Name of the analysis.

Input	40 characters

Module designations

Hardware assignment

Name of the module "Hardware assignment".

Input	25 characters

Data acquisition

Name of the module "Data acquisition".

Input	25 characters

Accessories

Name of the module "Accessories".

Input	25 characters



Note

If an analysis already used in the time program is renamed, the new name is entered automatically there.

5.6.6 Analyses - Properties

Subwindow: **Method ▶ Devices**

The properties of the selected analysis are defined in the bottom part of the device window. They are grouped on the tabs **Hardware assignment**, **Data acquisition** and **Accessories**.

The analysis covers all the chromatographically relevant hardware components (data source, column, pump,...) that generate a measurement signal and links these with the evaluation parameters.

5.6.6.1 Analysis - Hardware assignment

Tab: **Method** ▶ **Devices** ▶ **Hardware assignment**

Modules from the list of devices for the method can be assigned to the analysis on this tab. This assignment makes it possible to see in the report which chromatograms were recorded with which device modules.



Note

To run a method, it is not necessary that modules are assigned to the analysis. But for a sensible analysis, at least the data source should be assigned.

Data source

Data source that provides the raw data.

The symbol  opens the pick window for selecting the data source (see Chapter 5.6.6.4, page 384).

Channel

Channel of the data source assigned to the analysis. This optional selection list is only active if the data source selected has more than one data channel. The same channel can be assigned to more than one analysis, so that the same signal can be evaluated with different evaluation parameters (e.g. to determine the analytes and impurities; content/purity).

Selection

All the channels of a module



Note

Not all the data channels provide signals that can be evaluated. You will find more details on this with the individual devices.

- 850 Professional IC - Data channels
- 771 IC Compact Interface - Data channels
- High-pressure gradient pump - Data channels

Injection valve

Injection valve assigned to the analysis.

The symbol  opens the pick window for selecting the injection valve (see Chapter 5.6.6.5, page 384).

Column

Column from the column table assigned to the analysis (see Chapter 6.6.2, page 541).

The symbol  opens the pick window for selecting the separation column (see Chapter 5.6.6.6, page 384).

Pump

High pressure pump assigned to the analysis.

The symbol  opens the pick window for selecting the high pressure pump (see Chapter 5.6.6.7, page 385).

5.6.6.2 Analysis - Data acquisition

Tab: **Method ▶ Devices ▶ Data acquisition**

The recording duration for a chromatogram is defined on this tab.

Duration of recording

Time during which the signal of the **Data source** defined under **Hardware assignment** is recorded. The value can be entered manually or defined with the formula editor (). Recording starts with the command **Start data acquisition** in the time program.

Range	0.5 ... 1000.0 min
Default value	15.0 min

5.6.6.3 Analysis - Accessories

Tab: **Method ▶ Devices ▶ Accessories**

Accessories can be assigned to the analysis on this tab. Monitoring and GLP data of the accessories are checked at method start by means of the assignment (see Chapter 6.9.3, page 576). These accessories parts are also indicated in the report.

Table

The accessories assigned to the analysis are shown in the table. The table is in alphabetical order.

Name

Designation of the accessories part.

[Add]

Opens dialog window **Add accessories** (see Chapter 5.6.6.8, page 385).



[Remove]

Removes selected accessories parts from the accessories table of the analysis.

5.6.6.4 Assigning data source

Dialog window: **Method** ▶ **Devices** ▶ **Hardware assignment** ▶ **'Analysis name' - assign data source**

The dialog window '**Analysis name**' - **assign data source** is for selecting the data source to be assigned to the analysis. The window is structured dynamically and contains only those data sources for selection that are already part of the method due to the main device. The pick tree is grouped according to devices. The modules of the device are sorted according to alias names.

Data sources

The following devices can provide data that can be recorded in **MagIC Net**:

- 850 Professional IC - Data channels
- 881 Compact IC pro - Data channels
- 882 Compact IC plus - Data channels
- 883 Basic IC plus - Data channels
- 886 Professional Thermostat / Reactor - Data channels
- 887 Professional UV/VIS Detector - Data channels
- 872 Extension Module IC Pump - Data channels
- 872 Extension Module IC Module - Data channels
- 771 IC Compact Interface - Data channels
- High-pressure gradient pump - Data channels

5.6.6.5 Assigning injection valve

Dialog window: **Method** ▶ **Devices** ▶ **Hardware assignment** ▶ 'Analysis name' - assign injection valve

The dialog window **'Analysis name' - assign injection valve** is for selecting the injection valves to be assigned to the analysis. The window is structured dynamically and contains only those injection valves that are already part of the method as a result of the main device. Each pick tree is grouped according to devices. The modules of the device are sorted according to alias names.

5.6.6.6 Assigning column

Dialog window: **Method ▶ Devices ▶ Hardware assignment ▶ 'Analysis name' - assign column**

The dialog window **'Analysis name' - assign column** is for selecting the separation column to be assigned to the analysis. The window is structured dynamically and contains only those columns already part of the

5.6.6.7 Assigning pump

The dialog window **'Analysis name' - Assign pump** is for selecting the high pressure pump to be assigned to the analysis. The window is structured dynamically and contains only those pumps already part of the method due to the main device. Each pick tree is grouped according to devices. The modules of the device are sorted according to alias names.

Dialog window: **Method** ▶ **Devices** ▶ **Accessories** ▶ **[Add]** ▶ **Add accessories**

Accessories

Accessories parts from the accessories table

5.7.1 Time program - General

Definition

- ## Main program

- ## Subprograms

- 385



- A subprogram can only be **deleted** when no command exists in the entire time program that calls up this subprogram.

Commands

- Main and subprograms consist of a sequence of **commands**. We distinguish between **device-dependent commands** and **device-independent commands**.
- The time program allows a mixture of commands that are carried out at a defined point (known as **command without feedback**) and commands that are executed after the last command has been carried out (known as **command with feedback**).
- **Commands without feedback** are commands with a predictable and relatively short run time (e.g. switching over the injection valve).
- **Commands with feedback** with a longer and often unpredictable run time (e.g. moving the robotic arm to a certain sample position).



Note

You can find further information on commands under *5.7.4.1 Commands - General*.

5.7.2 Time program - Desktop

Subwindow: **Method ▶ Time program**

Structure of the time program table

- The **main program** is displayed in its own tab, which is always available.
- Every **subprogram** can be found on its own tab, which is labeled respectively with the name of the subprogram.
- One line corresponds to a **command**.

Columns of the time program table

time

Time the command is executed in relation to the current time basis. A **command with feedback** contains no time specification.



Note

After the execution of a **command with feedback**, the time basis is reset to **0**.

Device

Name of the device to which the command is sent.



Module

Note

Command

Parameters

Comment

No.

Editing the time program table

- Via the **[Edit]** menu (see Chapter 5.7.3, page 387).
- Via the context menu that can be called up with the right mouse button.
- Via a double click in a command line, whereby the dialog window for editing this command opens.
- By copy & paste from other time programs.

5.7.3 Editing time program

5.7.3.1 Time program - Editing menu

The menu **[Edit]** can also be called up via a right click on the time program table and contains the following menu items:

New	Inserts new row above the selected row in the time program table and opens the dialog window Insert new line (see Chapter 5.7.3.2, page 388).
Edit	Opens window ' Device ' - ' Command ' to edit the selected row (see Chapter 5.7.3.3, page 389).
Copy	Copies selected row from the time program table to the clipboard (the command keeps its number).
Insert	Inserts all lines from the clipboard above the selected line in the time program table.
Cut	Copies selected rows to the clipboard and delete them.
Delete	Deletes selected rows in the time program table.
Change time	Opens the Change time window (see Chapter 5.7.3.4, page 389). The time of the selected commands can be changed.
Insert subprogram	Opens dialog window Insert subprogram (see Chapter 5.7.3.5, page 389). After a new name is entered, a new subprogram is created, which can be selected via a new tab.
Rename subprogram	Opens the dialog window Rename subprogram (see Chapter 5.7.3.6, page 389). The name of the selected subprogram can be changed.
Delete subprogram	Deletes the subprogram that was selected with the tab. This menu item is only active if a subprogram is selected. The main program cannot be deleted.

5.7.3.2 Inserting new line

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ New ▶ Insert new line**

With menu item **[Edit] ▶ New** the dialog window **Paste new line** opens and lists all the commands that can be pasted in tree-form.

Commands

Selection of the new command. All device-independent commands and device-dependent commands are available for the active assemblies of the devices that are in the list of devices for the loaded method.

Description

Description of the selected command.

The **[OK]** button opens the dialog window **'Device type - 'Module' - 'Command'** for device-dependent commands; for commands for an MSB device, it opens the dialog window **'MSB device name - 'Command'**; for device-independent commands, it opens the dialog window **'Command'**.

Editing line

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ Edit ▶ 'Device' - 'Module' - 'Command'**

Menu item **[Edit] ► Edit** opens the dialog window **'Device' - 'Module' - 'Command'**, in which the command selected in the time program can be edited.

Which parameters in the dialog window can be edited depends on the command selected.

Changing time

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ Change time ▶ Change time**

Menu item **[Edit] ▶ Change time** opens the dialog window **Change time**.

Time offset

Time value by which the current time of the commands selected is corrected. The resulting time must be within the permitted range of **0 ... 10000 min**.

Range	-9999.99 ... 9999.99 min
Default value	0 min

Inserting subprogram

Dialog window: **Method** ▶ **Time program** ▶ **[Edit]** ▶ **Insert subprogram** ▶ **Insert subprogram**

Menu item **[Edit] ► Insert subprogram** opens the dialog window **Insert subprogram**.

Name

Name of the subprogram to be inserted.

Input	50 characters

Renaming subprogram

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ Insert subprogram ▶ Rename subprogram**

Menu item **[Edit] ► Rename subprogram** opens the dialog window **Rename subprogram**.

Name

Name of the subprogram to be renamed.

Input	50 characters

5.7.4 Time program - Commands

5.7.4.1 Commands - General

Subwindow: **Method ▶ Time program**

Definitions

- Main and subprograms consist of a sequence of **commands**. We distinguish between **device-dependent commands** and **device-independent commands**.
- The time program allows a mixture of commands that are carried out at a defined point (known as **command without feedback**) and commands that are executed after the last command has been carried out (known as **command with feedback**).
- At the start of the main program, the time begins running with the starting time of **0**. The starting point of the time measurement is subsequently also designated the **time basis**. The times specified with the commands are in reference to this time basis. When carrying out a **command with feedback**, the time basis is automatically reset to **0**. The times specified with the following commands are in reference to this time basis.

Device-dependent commands

- Device-dependent commands serve to trigger and control the functions of devices and device modules.
- The device-dependent commands that can be selected depend on the devices assigned to the method.
- Device-dependent commands lock access to the device or device module in the program sequence until the command has been completed.

Device-independent commands

- Device-independent commands serve to control the time program sequence.
- The device-independent commands that can be selected are always the same and do not depend on the devices assigned to the method.

Commands without feedback

- The command lines for commands without feedback are displayed in the time program table in **white**.
- Commands without feedback are commands with a relatively short and **predictable run time** (e.g. switching over the injection valve).
- Commands without feedback are executed at a defined time.
- The run in the time program is not interrupted when commands are executed without feedback. The time basis remains the same.
- Commands without feedback are processed parallel with the same time indication in the program sequence.



Note

With a **command without feedback** that immediately follows a **command with feedback**, it is mandatory that **0** be defined as **time**. Other time indications are invalid and are displayed in the time program table in **red**.

Commands with feedback

- The command lines for commands with feedback are displayed in the time program table in **blue**.
- Commands with feedback are commands with a longer and often **unpredictable run time** (e.g. moving the robotic arm to a certain sample position).
- Commands with feedback are executed after the previous command has been ended.
- The time sequence in the time program is interrupted by the execution of commands with feedback and the time is reset to **0**. The time after the completion of the command is then the new time basis for the subsequent commands.
- Consecutive commands with feedback are processed sequentially in the program sequence.

Copying commands

- Commands can be copied to the clipboard and from there inserted anywhere in the time program, even in other methods.
- Copy/Paste can be used to adopt complete sections of programs from other time programs.

5.7.4.2 Device-independent commands

Subwindow: **Method ▶ Time program**

Device-independent commands are instructions for controlling the time program sequence. These commands are executed by the software and are available in every time program. The following commands are available:

5.7.4.2.1 Waiting

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ New / Edit ▶ Wait**

The device-independent command **Wait** serves to interrupt a targeted program sequence and to send a message.

Wait

Buttons for selecting how to stop the Wait function.

5.7.4.2.2 Parallel

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ New / Edit ▶ Parallel**

The device-independent command **Parallel** serves to call up a subprogram running parallel to the program.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Subprogram

Name of the subprogram to be started.

Selection	All the subprograms saved in the method

Condition

on | off (Default value: **off**)

If this option is enabled, the subprogram is only started if the condition defined with the aid of the formula editor  (see Chapter 2.4, page 28) is fulfilled.

Comment

Optional comment on the time program command.

Input	64 characters

5.7.4.2.3 Sequence

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ New / Edit ▶ Sequence**

The device-independent command **Sequence** serves to call up a subprogram that must be processed before the calling-up program continues.

Subprogram

Name of the subprogram to be started.

Selection	All the subprograms saved in the method

Condition

on | off (Default value: **off**)

If this option is enabled, the subprogram is only started if the condition defined with the aid of the formula editor  (see Chapter 2.4, page 28) is fulfilled.

System

System file to be started in IC Net. The symbol  opens the dialog window **Open file** to select the system file.

Comment

Optional comment on the time program command.

Input	64 characters

5.7.4.2.6 Waiting for IC Net

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ New / Edit ▶ Wait for IC Net**

The device-independent command **Wait for IC Net** serves to make the time program of **MagIC Net** wait until an **IC Net 2.3** determination has been completed.

Max. waiting time

on | off (Default value: **off**)

If this option is enabled, the time program will always be continued after expiry of the waiting time even if the IC Net 2.3 determination is not yet completed.

Waiting time

Range	0 ... 9999 min s
Default value	10 min s

Comment

Optional comment on the time program command.

Input	64 characters

5.7.4.2.7 Start data acquisition

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ New / Edit ▶ Start data acquisition**

The device-independent command **Start data acquisition** serves to start data recording for an analysis.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

5.7.4.2.8 Calculation

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ New / Edit ▶ Calculation**

The device-independent command **Calculation** permits the calculation of results while determinations are running. Up to 25 single results can be calculated for each **Calculation** command. The single results are listed in a table and can be edited.

5.7.4.2.8.1 Table of single results

Dialog window: **Method ▶ Time program ▶ [Edit] ▶ New / Edit ▶ Calculation**

Results

The **Results** table lists the single results defined for the calculation. It contains the following columns, which are described in detail in *Editing result*:

Result

Name of the result.

Formula

Formula for calculation of the result. The result value calculated with the formula is saved in the variable **TP.'#'.Result name'.VAL**.

Unit

Unit of the result. The unit is saved in the variable **TP. '#'.Result name'.UNI**.

Decimal places

Number of decimal places for the output of the result in the report and in the display of results in the database.

The **[Edit]** menu is available for editing the table. It contains the following menu items:

New	Adds new line to the result table and opens separate dialog (<i>see Chapter 5.7.4.2.8.2, page 397</i>) to edit it (is also triggered by a double-click on an empty line).
Edit	Edits selected line in separate dialog (<i>see Chapter 5.7.4.2.8.2, page 397</i>) (is also triggered by a double-click on a non-empty line).
Copy	Copy selected line to the clipboard.
Insert	Insert line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.

Delete

Deletes the selected line.

Comment

Optional comment on the time program command.

Input

64 characters**5.7.4.2.8.2****Editing result**Dialog window: **Method** ▶ **Time program** ▶ **[Edit]** ▶ **New / Edit** ▶ **Calculation** ▶ **Edit result**When selecting the function **[New]** or **[Edit]** for a **Calculation** command (see *Table of single results*) the dialog '**Calculation - Result #**' will open.**Name**

Name of the result. The standard value is '**Result #**', whereby # is the number of the result in the command. A different name can be assigned. This will however need to be unique within the same **Calculation** command of the same method.

Input

40 characters**Formula**

The input and editing of the formula according to which the result will be calculated is accomplished by means of the formula editor. This is called up by means of the symbol  (see *Chapter 2.4, page 28*). The calculated result value is saved in the variable **TP.'#'. 'Result name'.VAL**.

Unit

Unit of the result for the output (text only). The unit can be selected from the list or entered manually. The unit selected or entered is saved in the variable **TP.'#'. 'Result name'.UNI**.

Input

60 characters

Selection

ppm | ppb | ppt | g/L | mg/L | µg/L | ng/L | g/kg | mg/kg | µg/kg | ng/kg

Default value

ppm**Decimal places**

Number of decimal places for the output of the calculated result. This parameter is ignored for results of the type **text** or **date/time**.

Range

0 ... 6

Default value

3**Description**

Optional description of the result.



5.7.4.3 Device-dependent commands

Subwindow: **Method ▶ Time program**

Device-dependent commands serve to trigger and control the functions of devices and device modules. The following commands are available:

- 850 Professional IC - Commands
- 881 Compact IC pro - Commands
- 882 Compact IC plus - Commands
- 883 Basic IC plus - Commands
- 814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Commands
- 858 Professional Sample Processor - Commands
- 889 IC Sample Center - Commands
- 886 Professional Thermostat / Reactor - Commands
- 887 Professional UV/VIS Detector - Commands
- 872 Extension Module IC Pump - Commands
- 872 Extension Module Sample Prep - Commands
- 872 Extension Module Liquid Handling - Commands
- 872 Extension Module IC Module - Commands
- 872 Extension Module Suppression - Commands
- 872 Extension Module Suppression – MCS - Commands
- 771 IC Compact Interface - Commands
- High-pressure gradient pump - Commands
- 800 Dosino - Commands
- Stirrer - Commands
- Remote Box MSB - Commands
- RS-232 device - Commands

The commands of the **891 Professional Analog Out** (see *Chapter 7.1.3.3.12, page 646*) are assigned to the main device it is connected to.

5.8 Subwindow Evaluation

5.8.1 Evaluation - General

Subwindow Evaluation

In the subwindow **Evaluation**, you can define how the retention times, concentrations and other parameters of the individual ions are to be calculated from the measured raw data. The procedure can be subdivided into **Integration** and **Calibration**. Every analysis with a detector as data source has its own evaluation.

Sections of evaluation

The subwindow **evaluation** covers five sections that can be selected with the following symbols on the left-hand toolbar:



The section **Integration** includes parameters for the integration of the measuring point list and determination of the peak data. It also contains criteria as to which signals of the measuring point list are recognized as peaks (see Chapter 5.8.2.1, page 399).



The components to be determined are defined in the section **Components**. The criteria defined here are used for assigning to the recognized and integrated peaks (see Chapter 5.8.3.1, page 405).



In the section **Standards**, the standard solutions for calibrating the sample and the check standards and standard addition solutions for calculating recovery are defined (see Chapter 5.8.4.1, page 409).



The calibration methods and the calibration parameters for calculating the calibration curves are defined in the section **Calibration** (see Chapter 5.8.5.1, page 415).



The output and export of results are defined in the **Results** section. Additional results can also be defined by the user, results can be evaluated statistically and can be monitored (see Chapter 5.8.6.1, page 427).



This section is only present with UV/VIS analyses. Here you can define whether and when UV/VIS spectra should be recorded; for each spectrum the evaluation of absorbance maxima can be defined (see Chapter 5.8.8, page 468).

5.8.2 Evaluation - Integration

5.8.2.1 Integration - General

Subwindow section: **Method ▶ Evaluation ▶ Integration**

Application

The section **Integration** includes parameters for the integration of the measuring point list and determination of the peak data. It also contains criteria on which signals of the measuring point list are recognized as peaks.

Selecting the analysis

Analysis

Selecting the analysis. Only analyses with data sources that can be evaluated can be selected. Details can be found with the individual devices (see Chapter 7, page 596).

Selection	Analyses of the method

Tabs

- *Settings*

- *Peak detection*
- *Events*

5.8.2.2 Integration - Settings

Tab: **Method** ▶ **Evaluation** ▶ **Integration** ▶ **Settings**

Smoothing

Smoothing value. The greater the value, the more the data are smoothed before integration.

Range	1 ... 100
Default value	30

Sensitivity

Sensitivity value. The higher the value, the better smaller peaks are detected.

Range	1 ... 100
Default value	50

[Basic setting]

Reset **Smoothing** and **Sensitivity** to default values.

5.8.2.3 Integration - Peak detection

Tab: **Method** ▶ **Evaluation** ▶ **Integration** ▶ **Peak detection**

Minimum height

Minimum height which is still detected as a peak.

Range	0.0000 ... 10000.0000 µS/cm
Default value	0.01 µS/cm

Minimum area

Minimum area which is still detected as a peak.

Range	0.00000 ... 100000.00000 (µS/cm) x min
Default value	0.001 (µS/cm) x min

Integration start

Time from the start of a determination to the start of integration.

Range	0.00 ... 1000.00 min
Default value	1.00 min

Polarity

Polarity for representing the measuring signal. The measured conductivity is always positive. Peaks from cation chromatograms point downward and those of anion chromatograms upward. The polarity makes it possible to display the cation chromatograms with the peaks pointing upward.

Selection	+ -

[Filter]

Opens the **Filter** dialog window to define the filtering of the measuring point list of an analysis (see Chapter 5.8.2.5, page 403).

Negative peaks

on | off (Default value: **off**)

If this option is enabled, negative peaks are evaluated. Otherwise they are ignored.

Subtract blank

on | off (Default value: **off**)

If this option is enabled, all the determinations of the same method measured in a run after a blank are corrected with this blank. The measuring point list of the blank is subtracted from the measuring point list of the determination (regardless of whether it is a sample, standard, check standard or standard addition solution). This subtraction is a continuous process whenever a chromatogram is recorded.

**Note**

- The chromatogram of the blank is saved with the corrected curve so that the correction can be undone during reprocessing.
- Only curves of analyses with an evaluation are corrected (i.e. not pump pressure, etc.).
- A determination of sample type **Blank** is not evaluated. The determination includes only chromatogram and the sample data, but no results.

Drift compensation

on | off (Default value: **off**)

If this option is enabled, the drift is compensated, i.e. a drift curve is calculated for the baseline, which is subtracted from the measuring point list. It is this measuring point list that is integrated and evaluated.



Note

In the subwindow **Live display**, the drift is not displayed and the chromatogram is displayed without correction. If you press **Evaluate**, the drift compensation is included in the evaluation and the corrected chromatogram is displayed with the determined peaks. The chromatogram is always displayed in its corrected version in the **database**.

Ignore overflow

on | off (Default value: **off**)

If this option is enabled, peaks that are higher than the overflow value are evaluated. Otherwise there is no evaluation.

5.8.2.4 Integration - Events

Tab: **Method** ▶ **Evaluation** ▶ **Integration** ▶ **Events**

Definition

Integration events are time-controlled integration parameters. The time indication refers to the time axis of the chromatogram.

Table

The event table contains an overview of the programmed integration events. It is always displayed sorted according to times and cannot be edited directly. When selecting an integration event, the graphics window is switched to the chromatogram view and the corresponding analysis. A vertical mouse pointer appears in the displayed chromatogram of the graphics window. One or two lines of the mouse pointer appear, depending on whether the integration event has a start and end or only a start time. The mouse pointer can be moved but the end time cannot be moved ahead of the start time.

Menu Edit

New	Inserts a new empty line above the selected line and open the Integration event dialog window.
Edit	Edits selected line.
Copy	Copies selected lines to the clipboard.
Insert	Inserts all lines from the clipboard above the selected line in the event table.
Cut	Cuts selected lines and copy them to the clipboard.

Delete

Deletes the selected lines.

Activate events**on | off** (Default value: **on**)

If this option is enabled, the integration events are applied.

[Update event time]

The cursor position(s) for a selected event of the event table are adopted. One or two lines of the cursor appear, depending on whether the selected peak event has a start and end or only a start time. The cursor can be moved. The end time cannot however be shifted ahead of the start time. The cursor lines for the start and end time are differentiated with different colors.

5.8.2.5 Editing filter

Dialog window: **Method ► Evaluation ► Integration ► Peak detection ► [Filter] ► Filter**

The measuring point list (chromatogram) is displayed with these settings and passed on to the evaluation algorithm in the same state.

The chromatogram is displayed with filtering.

Savitzky-Golay**on | off** (Default value: **off**)

If this option is enabled, the noise of the signal is filtered with a Savitzky-Golay filter.

Filter length

Range of measuring points in which filtering is to be carried out. The input refers to half the filter length. Since the filter must have an odd number of points over which filtering takes place, the overall filter length is **2 x input +1**.

Range	1 ... 30
Default value	1

5.8.2.6 Editing integration event

Dialog window: **Method ► Evaluation ► Integration ► Events ► [Edit] ► New / Edit ► Integration event**

Start

Start time for the integration event.

Range	0.00 ... 1000.00 min
Default value	0.00 min



End

End time for the integration event.

Range	0.00 ... 1000.00 min
Default value	1.00 min



Note

Absolute times must always be entered for **Start** and **End**. The time basis is the time of the command **Start data acquisition** of the analysis of the time program.

Event

Integration event to be executed.

Selection	Deactivate peak detection Peak start Peak end Valley - Valley Common baseline Rider peak Horizontal baseline Horizontal baseline back Smoothing Minimum height Minimum area

Deactivate peak detection

The peak detection is deactivated in this interval.

Peak start

The start point of the peak is set to this value. The event **Peak start** is ignored if the set value is before the end of the previous peak or after the first turning point of the peak in question.

Peak end

The endpoint of the peak is set to this value. The event **Peak end** is ignored if the set value is after the start of the following peak or before the second turning point of the peak in question.

Valley - Valley

Peaks that are not separated by the baseline are each given their own baseline.

Common baseline

Peaks that are not separated by the baseline are given a common baseline.

Rider peak

Peaks that are not separated by the baseline are interpreted such that the smaller peaks are evaluated as riders on the highest peak.

Horizontal baseline

The baseline is drawn horizontally from left to right from the start point of the peak. The intersection point with the curve or the end of the event is the endpoint.

Horizontal baseline back

The baseline is drawn horizontally from left to right from the endpoint of the peak. The intersection point with the curve or the start value of the event is the start point.

Smoothing

New value for the smoothing

Minimum height

New value for the minimum height

Minimum area

New value for minimum area.

Parameters

Extra parameters for **Event = Smoothing**.

Smoothing value. The greater the value, the more the data are smoothed before integration.

Range	1 ... 100
Default value	30

Parameters

Extra parameters for **Event = Minimum height**.

Minimum height which is still detected as a peak.

Range	0.0000 ... 10000.0000 $\mu\text{S/cm}$
Default value	0.01 $\mu\text{S/cm}$

Parameters

Extra parameters for **Event = Minimum area**.

Minimum area which is still detected as a peak.

Range	0.00000 ... 100000.00000 ($\mu\text{S/cm}$) x min
Default value	0.001 ($\mu\text{S/cm}$) x min

5.8.3 Evaluation - Components**5.8.3.1 Components - General**

Subwindow section: **Method ▶ Evaluation ▶ Components**

Application

The components to be determined are defined the section **Components**. The criteria defined here are used for assigning to the recognized and integrated peaks.

Selecting the analysis

Analysis

Selecting the analysis. Only analyses with data sources that can be evaluated can be selected. Details can be found with the individual devices (*see Chapter 7, page 596*).

Selection	Analyses of the method

Tabs

- *Component table*
- *Identification*

5.8.3.2 Components - Component table

Tab: **Method** ▶ **Evaluation** ▶ **Components** ▶ **Component table**

Table

The component table contains the components of an analysis and the criteria for how to assign this to the peaks of a chromatogram. The table cannot be edited and contains the following columns:

Name

Name of the component.

Time (Retention time)

Expected retention time of the component.

Window %

Identification window of the peak.

Reference

Reference peak with which the expected retention time is defined.

Editing menu

New	Inserts a new empty line above the selected line in the component table and open the Component dialog window (see Chapter 5.8.3.4, page 408).
Edit	Edits selected line (see Chapter 5.8.3.4, page 408).
Copy	Copies selected lines to the clipboard.
Insert	Inserts all lines from the clipboard above the selected line.
Cut	Cuts selected lines and copy them to the clipboard.

Delete

Deletes the selected lines.

Functions and parameters

[Update retention time]

Adopts the time of the cursor position in the graph frame as the retention time for a selected component. Any existing retention time is overwritten.

Void time

Time required by a component of the sample not retained by the column to reach the detector. The void time is required to calculate the net retention time of a component and its retention factor.

Selection	Manual 1st peak

Manual

With this setting, the void time can be entered manually in the adjacent field.

1st peak

With this setting, the retention time found for the first detected peak (regardless of whether it is detected as a peak or not) is used as void time.

Time indication

Time indication given for the void time if the option **Manual** was selected.

Range	0.01 ... 1000.00 min

5.8.3.3 Components - Identification

Tab: **Method** ▶ **Evaluation** ▶ **Components** ▶ **Identification**

Reference components

Criterion for the assigning of a peak to a reference component if there is more than one peak in the time slot of the reference component.

Selection	Height Area Time
Default value	Height

Height

The peak with the greatest height is assigned to the reference component.

Area

The peak with the greatest area is assigned to the reference component.

Time

The peak with the closest retention time is assigned to the reference component.

ponent, whereby the properties of the separation column and the eluents also have an effect.

Range	0.000 ... Duration of recording min

Window

Identification window for assigning a peak to the component. The window size is given as a percentage of the expected retention time.

Range	1 ... 50 %
Default value	5 %

Reference components

Reference components with which the retention time is corrected. The expected retention time of a component is corrected with the factor $t_{\text{reference}}(\text{found})/t_{\text{reference}}(\text{expected})$. A reference component may not have any reference components itself.

Selection	none Components of the analysis
Default value	none

5.8.4 Evaluation - Standards

5.8.4.1 Standards - General

Subwindow section: **Method ▶ Evaluation ▶ Standards**

Application

The standard solutions for calibrating the sample and the check standards and the standard addition solutions for calculating recovery are defined in the **Standards** section. The solutions defined here are defined globally for the whole method. They are not specifically for a particular analysis.

Selecting the unit of concentration

Concentration unit

Unit of concentration used for calculations in the method. It applies for **Standards, Check standards, standard addition solutions** and the **Internal standard**. The result concentrations are also output in this unit.

Input	60 characters
Selection	ppm ppb ppt g/L mg/L µg/L ng/L g/kg mg/kg µg/kg ng/kg
Default value	ppm

Tabs

- *Standards*
- *Check standards*
- *Standard addition solutions*

5.8.4.2 Standards - Standards

Tab: **Method** ▶ **Evaluation** ▶ **Standards** ▶ **Standards**

Table

The table of standard solutions contains the standards defined for the method with the corresponding concentrations for the components. If a component is defined in more than one analysis, it is only listed once.

The table cannot be edited and contains the following columns:

Name

Name of the component.

Standard #

Concentrations of the components for the corresponding standard.

Editing menu

New	Opens the New Standard dialog window to create a new standard (<i>see Chapter 5.8.4.5, page 412</i>).
Edit	Edits selected standard (<i>see Chapter 5.8.4.6, page 413</i>).
Copy	Copies selected standard to the clipboard.
Insert	Inserts new standard from the clipboard. Opens the New Standard dialog window to create a new standard. The dialog will be completed automatically and needs to be closed with [OK] .
Cut	Cuts selected standard and copy it to the clipboard.
Delete	Deletes the selected standard.

5.8.4.3 Standards - Check standards

Tab: **Method** ▶ **Evaluation** ▶ **Standards** ▶ **Check standards**

Table

The table of check standards contains the check standards defined for the methods with the corresponding concentrations for the components. If a component is defined in more than one analysis, it is only listed once.

The table cannot be edited and contains the following columns:

Name

Name of the component.

Check standard

Concentrations of the components for the corresponding check standard.

Editing menu

New	Opens the New check standard dialog window to create a new check standard (see Chapter 5.8.4.7, page 413).
Edit	Edits selected check standard (see Chapter 5.8.4.8, page 414).
Copy	Copies selected check standard to the clipboard.
Insert	Inserts new check standard from the clipboard. Opens the New check standard dialog window to create a new check standard. The dialog will be completed automatically and needs to be closed with [OK] .
Cut	Cuts selected check standard and copies it to the clipboard.
Delete	Deletes the selected check standard.

5.8.4.4 Standards - Standard addition solutions

Tab: **Method ▶ Evaluation ▶ Standards ▶ Standard addition solutions**

Table

The table of standard addition solutions contains the standard addition solutions defined for the methods with the corresponding concentrations for the components. If a component is defined in more than one analysis, it is only listed once.

The table cannot be edited and contains the following columns:

Name

Name of the component.

Standard addition solution

Concentrations of the components for the corresponding standard addition solution

Editing menu

New	Opens dialog window New standard addition solution to create a new standard addition solution (see Chapter 5.8.4.7, page 413).
Edit	Edits selected standard addition solution (see Chapter 5.8.4.8, page 414).
Copy	Copies selected standard addition solution to the clipboard.
Insert	Inserts new standard addition solution from the clipboard. Opens the New standard addition solution dialog window in order to create a new standard



	addition solution. The dialog will be completed automatically and needs to be closed with [OK] .
Cut	Cuts selected standard addition solution and copy it to the clipboard.
Delete	Deletes the selected standard addition solution.

Spiking

This is the section where the volumes are specified for the sample and standard addition solutions which define the mixing ratio in the spiking.

Sample

Percentage of volume of the sample in the spiking.

Range	0.000 ... 100.000 mL
Default value	1.000 mL

Standard addition solution

Percentage of volume of the standard addition solution in the spiking.

Range	0.000 ... 100.000 mL
Default value	9.000 mL

5.8.4.5 Creating new standard

Dialog window: **Method** ▶ **Evaluation** ▶ **Standards** ▶ **Standards** ▶ **[Edit]** ▶ **New** ▶ **New standard**

A new standard is defined in the **New standard** dialog window and is inserted in the standard table according to its name.

Standard

Number of the standard.

Range	1 ... 1000
Default value	Smallest number not assigned

'Components'

Concentration of the components in the selected standard.

Range	0.0 ... 1000000.0 'Concentration unit' (Increment: 0.000001)
Default value	0.0 'Concentration unit'

[Filling]

Apply concentration for the selected components for all components.

5.8.4.6 Editing standard

Dialog window: **Method ▶ Evaluation ▶ Standards ▶ Standards ▶ [Edit] ▶ Edit ▶ Edit standard**

The standard selected in the table can be edited in the **Edit standard** dialog window.

Standard

Number of the standard.

Range	1 ... 1000
Default value	Smallest number not assigned

'Components'

Concentration of the components in the selected standard.

Range	0.0 ... 1000000.0 'Concentration unit' (Increment: 0.000001)
Default value	0.0 'Concentration unit'

[Filling]

Apply concentration for the selected components for all components.

5.8.4.7 Creating new check standard

Dialog window: **Method ▶ Evaluation ▶ Standards ▶ Check standards ▶ [Edit] ▶ New ▶ New check standard**

A new check standard is defined in the **New check standard** dialog window and is inserted in the table of the check standards in accordance with its name.

Check standard

Number of the check standard

Range	1 ... 1000
Default value	Smallest number not assigned

'Components'

Concentration of the components in the selected check standard.

Range	0.0 ... 1000000.0 'Concentration unit' (Increment: 0.000001)
Default value	0.0 'Concentration unit'

[Filling]

Apply concentration for the selected components for all components.

5.8.4.10 Editing standard addition solution

Dialog window: **Method ▶ Evaluation ▶ Standards ▶ Standard addition solutions ▶ [Edit] ▶ Edit ▶ Edit standard addition solution**

The standard addition solution selected in the table can be edited in the **Edit standard addition solution** dialog window.

Standard addition solution

Number of the standard addition solution.

Range	1 ... 1000
Default value	Smallest number not assigned

'Components'

Concentration of the components in the selected standard addition solution.

Range	0.0 ... 1000000.0 'Concentration unit' (Increment: 0.000001)
Default value	0.0 'Concentration unit'

[Filling]

Apply concentration for the selected components for all components.

5.8.5 Evaluation - Calibration

5.8.5.1 Calibration - General

Subwindow section: **Method ▶ Evaluation ▶ Calibration**

Application

In the section **Calibration**, the calibration methods and the calibration parameters for calculating the calibration curves are defined for the components.

Tabs

- *Calibration curves*
- *Properties Calibration*
- *Monitoring*

5.8.5.2 Calibration - Calibration curves

Tab: **Method ▶ Evaluation ▶ Calibration ▶ Calibration curves**

Selecting the analysis

Analysis

Selecting the analysis. Only analyses with data sources that can be evaluated can be selected. Details can be found with the individual devices (*see Chapter 7, page 596*).

Selection	Analyses of the method

Table

The type of calibration curve is defined in the table of calibration curves for each component. The table cannot be edited and contains the following columns:

Component

Name of the component. Components can neither be added nor deleted here; this must be done in the component table (see *Chapter 5.8.3.2, page 406*).

Response

Measured quantity for the evaluation of the calibration curve.

Curve type

Curve type for the evaluation of the calibration curve.

Weighting

Information as to how the points of the calibration curve are to be weighted.

Menu Edit

Edit	Opens the dialog window Calibration curve 'Component name' to edit the data of the selected line.
Copy	Copies all selected lines to the clipboard.
Insert	Lines from the clipboard inserted in the lines above the selected line. The copied lines cannot be inserted into the same method.
Apply settings for all components	Settings of the selected line will be set for all components.

5.8.5.3 Calibration - Properties Calibration

Tab: **Method** ▶ **Evaluation** ▶ **Calibration** ▶ **Properties Calibration**

Calibration method

Selecting the method with which calibration is to take place.

Selection	External standard Internal standard
Default value	External standard

External standard

When calibrating with external standard, calibration curves are recorded for all components to be determined. The concentrations of the components in the sample are calculated with the aid of these calibration curves (*see Chapter 5.8.7.3.1, page 449*).

Internal standard

When calibrating with the internal standard, an internal standard is injected along with each sample and each standard. The signal ratios and volume ratios of component and internal standard are taken into account for calculating the calibration curves and the concentrations of the components in the sample (*see Chapter 5.8.7.3.2, page 452*).

[Internal standard...]

Opens the **Internal standard** dialog window in which each analysis can be assigned an internal standard and its concentration (*see Chapter 5.8.5.6, page 423*).

Calibration mode

The calibration mode determines which standard measurements are used for determining the calibration curve.



Note

The exact behavior of the calibration modes is described under *5.8.5.7 Calibration mode*.

Selection	Replace Average Moving average Bracketing Total
Default value	Replace

Replace

In this calibration mode, only the last determination is included in the calibration of the sample for each standard.

Average

In this calibration mode, the average of the selected number of determinations is incorporated into the calibration of the sample for each standard. All standards are weighted equally thereby.

Moving average

In this calibration mode, the average of the selected number of determinations of standard is incorporated into the calibration of the sample for each standard. The standards are weighted differently. If this mode is selected, only one weighting **1** is allowed.

**Note**

This setting is only visible for the calibration modes **Bracketing** and **Total**. For the other calibration modes always one calibration point per standard is created.

Selection	Single calibration points Mean values for every standard
Default value	Single calibration points

Single calibration points

Each measurement with the same standard contributes equally to the calibration curve; they will be adjusted to all calibration points. I.e. if standard 3 is measured 5 times, then 5 calibration points of standard 3 will contribute to the calibration curve.

Mean values for every standard

For all standards, the mean value is derived from the calibration points of the same standard. Then the calibration curve is adjusted to the mean values of the standards. I.e. if standard 3 is measured 5-times, then the mean value of the 5 measurements of standard 3 will contribute to the calibration curve.

5.8.5.4 Calibration - Monitoring

Tab: **Method ▶ Evaluation ▶ Calibration ▶ Monitoring**

Validity of calibration

Selection	Unlimited Same day x days
Default value	Unlimited

Unlimited

The calibration data set is valid indefinitely, i.e. an unknown sample will be calibrated with this calibration data set no matter how old it is.

Same day

All standards that are included in the calculation of the calibration data set must be determined on the same day.

x days

All standards that are included in the calculation of the calibration data set need to have been determined within the specified number of days (**1 ... 999**).

Message

The message options can only be edited if monitoring is switched on.



Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the E-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail...]

[E-mail...] opens the window **Send E-mail** (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on. Regardless of which action is selected, the particular message is also displayed in the message window of the **Watch Window**.

If it has been discovered while monitoring that the time interval for the validity of the calibration has expired, then one of the following actions will be triggered automatically with the Start test:

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the time interval for the validity of the calibration has expired will be saved automatically in the determination.

Display message

A message is displayed and you can select whether you want to continue the run or cancel it. If the run is continued then the message that the calibration is no longer valid will be automatically saved with the determination.

Stop determination

The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

5.8.5.5 Editing calibration curves

Dialog window: **Method** ▶ **Evaluation** ▶ **Calibration** ▶ **Calibration curves** ▶ **[Edit]** ▶ **Edit** ▶ **Calibration curve 'Component'**

The calibration curve parameters for the components selected in the table can be edited in the **Calibration curve 'Component'** dialog window.

Response

Measured quantity for the evaluation of the calibration curve.

Selection	Area Height
Default value	Area

Curve type

Curve type for the evaluation of the calibration curve. Specifies how the calibration curve is to be fitted. A minimum number **p** of different calibration points must exist for the different curve types (the number of calibration points corresponds to the number of different standards) for the fit of the calibration curve to make sense. The minimum number **p** corresponds to the number of terms in the calibration equation.

Selection	Linear through 0 Linear Quadratic through 0 Quadratic Cubic through 0 Cubic Point to Point
Default value	Linear

Linear through 0

Linear calibration curve that crosses the zero point.

Linear

Linear calibration curve

Quadratic through 0

Quadratic calibration curve that crosses the zero point.

Quadratic

Quadratic calibration curve.

Cubic through 0

Cubic calibration curve that crosses the zero point.

Cubic

Cubic calibration curve.

Point to Point

The individual calibration points are linked together in a linear form.



Note

If the minimum number of calibration points for the selected curve type in the calibration data set is not achieved, a different curve type will be selected to fit the curve during the calculation of the calibration curve.

Selected curve type	p	Curve type used

Linear through 0	≥ 1	Linear through 0
Linear	≥ 2	Linear
	1	Linear through 0
Quadratic through 0	≥ 2	Quadratic through 0
	1	Linear through 0
Quadratic	≥ 3	Quadratic
	2	Linear
	1	Linear through 0
Cubic through 0	≥ 3	Cubic through 0
	2	Linear
	1	Linear through 0
Cubic	≥ 4	Cubic
	3	Quadratic
	2	Linear
	1	Linear through 0
Point to Point	≥ 3	Point to Point
	2	Linear
	1	Linear through 0

Weighting

Information as to how the points of the calibration curve are to be weighted.

Selection	1 1/Concentration 1/Concentration² 1/Area 1/Area²
Default value	1



Note

If **Moving average** is selected on the tab **Properties calibration** for the **Calibration mode**, then only weighting **1** is permitted.

5.8.5.6 Editing internal standard

Dialog window: **Method ▶ Evaluation ▶ Calibration ▶ Properties Calibration ▶ [Internal standard] ▶ Internal standard**

The dialog window **Internal standard** contains a line for each analysis, in which the internal standard and its concentration can be entered. No calibration points are created if the peak of the internal standard is not found in a determination.

'Analysis'

Selecting the components to be defined as internal standard for the selected analysis.

Selection	not defined Components from the component table of the analysis
Default value	not defined

Concentration

Range	0.000 ... 1000000.000 'Concentration unit'
Default value	not defined 'Concentration unit'
Selection	Value 1...4

Value 1...4

Value 1...4 can be selected from the **sample data** of the determination as concentration value of the internal standard.

5.8.5.7 Calibration mode

The calibration mode determines which standard measurements are used for calculating the calibration curve. It is specified in the evaluation dialog **Calibration** on the tab **Properties calibration**.

In the calibration modes **Replace**, **Average** and **Moving average** only standards that were measured **before the sample** are included in the calibration of the sample. A sample determined with these calibration modes can therefore immediately be calibrated, evaluated and fully completed.

In contrast to this, with **Bracketing** and **Total**, standards that were measured **after the sample** are also included in the calibration of the sample. In these calibration modes, a sample is first provisionally evaluated with the available standards and saved as an incomplete determination. When all the relevant standards have been measured, the sample is automatically evaluated with the full calibration and completed. These calibration modes are therefore only possible in a sample table.

5.8.5.7.1 Calibration mode - Replace

With **Replace**, only the **last determination** from each **standard m** is incorporated into the calibration of the sample.

- In the case of the multiple determination of a standard, only the result of the last determination is included in the calibration, since the calibration points are always replaced immediately.
- Only standards measured **before the sample** are used for calibration. A sample can immediately be evaluated and fully completed.

5.8.5.7.2 Calibration mode - Average

With **Average**, the average from the **last n determinations** from **Standard m** is included in the calibration of the sample. All the determinations of standard m are **weighted equally** thereby.

- In this mode, a full calibration is always generated. It merely indicates the maximum no. of determinations of a **Standard m** that are included in the calibration.
- Only standards measured **before the sample** are used for calibration. A sample can immediately be evaluated and fully completed.

5.8.5.7.3 Calibration mode - Moving average

With **Moving average**, the average from the **last n determinations** from **Standard m** is included in the calibration of the sample. All the determinations of a standard m are **weighted differently**. A standard always carries double the weight of the next older and half the weight of the next younger standard.

- In this mode, a full calibration is always generated. It merely indicates the maximum no. of determinations of a **Standard m** that are included in the calibration.
- Only standards measured **before the sample** are used for calibration. A sample can immediately be evaluated and fully completed.

5.8.5.7.4 Calibration mode - Bracketing

In the case of **Bracketing**, all standards surrounding a sample in the sample table are included in the calibration of the sample.



Note

This mode is only possible within a sample table. Methods with this calibration mode cannot be executed in a single determination.

- If a **Standard m** is subjected to multiple determinations, all the measurement points are included in the calculation of the calibration curve without averaging. It makes no difference whether the multiple determination results from a multiple injection of a sample or from several samples from the sample table.
- A sequence of samples is always surrounded by two sequences of standards before and after that must be taken into account. Final calculation of the calibration curves is therefore not possible until after the second sequence of standards.
- Samples with the standards measured so far (Standard sequence before the sample) are determined in a sample table, marked as incomplete and stored in the database. After the last standard of the standard sequence following the samples has been determined, the incomplete determination is reprocessed automatically. The valid calibration data set is calculated and final determination of the sample is made. It is not until now that the data sets of the sample can be marked as complete.

5.8.5.7.5 Calibration mode - Total

With **Total**, every sample of a sample table is completely calibrated with **all the standards** in this **sample table**.



Note

This mode is only possible within a sample table. Methods with this calibration mode cannot be executed in a single determination.

- To calculate the calibration curve, all standards are included for all samples within a sample table. If a **Standard m** is subjected to multiple injections, all the measurement points are included in the calculation of the calibration curve without averaging.
- Before the sample table is completely processed, samples with the standards measured so far are determined, marked as incomplete and stored in the database. After the entire table has been processed, the incomplete determinations are automatically reprocessed. It is not until now that the data sets of the sample can be marked as complete.

Further columns	Each column shows a calibration mode. All the standards that belong to the calibration of a sample are visualized according to the calibration mode.
Black square	Marks a sample.
Colored background	A different color is assigned to each sample. The samples and the standards that generate the associated calibration curve are marked with the same color.

5.8.6 Evaluation - Results

5.8.6.1 Results - General

Subwindow section: **Method** ▶ **Evaluation** ▶ **Results**

Application

The output and export of results are defined in the **Results** section. Additional results can also be defined by the user, and results can be both evaluated statistically and monitored.

Tabs

- *Report*
- *Database*
- *Statistics*
- *Monitoring*
- *User-defined results*
- *Common variable*

5.8.6.2 Results - Report

Tab: **Method** ▶ **Evaluation** ▶ **Results** ▶ **Report**

Table

Definition is made in the report table as to which report template is used to generate the reports for the determinations in this method and whether they are to be saved as PDF file or printed. The report is output as soon as the determination is complete (in the case of multiple determination, for example, all the single determinations must be carried out and the common statistics calculated). The table cannot be edited and is comprised of the following columns:

Report template

Displaying the names of the report templates for the reports.

Output

Displaying the output target for the reports.

Editing menu

New	Inserts a new empty line above the selected line and open the dialog window Define report (see Chapter 5.8.6.8, page 432).
Edit	Edits selected line (see Chapter 5.8.6.8, page 432).
Copy	Copies selected lines to the clipboard.
Insert	Inserts all lines from the clipboard above the selected line in the report table.
Cut	Cuts selected lines and copy them to the clipboard.
Delete	Deletes the selected lines.

Pharmacopoeia

Selecting the calculation regulation for certain peak parameters that are calculated differently depending on the country/region.

Selection	EP JP USP
Default value	USP

EP

European pharmacopoeia.

JP

Japanese pharmacopoeia.

USP

US pharmacopoeia.

Decimal places of the results

[Edit]

Opens the window **Define decimal places** in which definition is made as to with which level of accuracy the results are to be output (*see Chapter 5.8.6.9, page 433*).

5.8.6.3 Results - Database

Tab: **Method** ▶ **Evaluation** ▶ **Results** ▶ **Database**

Database

This table defines which database the determination data is to be saved in.

Database name

Name of the database in which the determination is to be stored.

Editing menu

New	Opens the Select database dialog window (see Chapter 5.8.6.10, page 433).
Edit	Opens the Select database dialog window (see Chapter 5.8.6.10, page 433).
Delete	Deletes the selected lines.

Automatic export

This table defines whether and how an automatic export of the determination data should take place.

Export settings

Name of the export template with which the determination is to be exported.

Editing menu

New	Opens the Select export settings dialog window (see Chapter 5.8.6.11, page 433).
Edit	Opens the Select export settings dialog window (see Chapter 5.8.6.11, page 433).
Delete	Deletes the selected lines.

5.8.6.4 Results - Statistics

Tab: **Method** ► **Evaluation** ► **Results** ► **Statistics**

Statistically covered results

This table defines which results of multiple determinations are to be statistically evaluated automatically. The table cannot be edited and contains the following columns:

Result name

Name of the result being statistically evaluated.

Statistical function

Statistical function with which the result is evaluated.

Editing menu

New	Opens Define statistics dialog window (see Chapter 5.8.6.12, page 434).
Edit	Opens Define statistics dialog window (see Chapter 5.8.6.12, page 434).
Delete	Deletes the selected lines.

5.8.6.5 Results - Monitoring

Tab: **Method** ▶ **Evaluation** ▶ **Results** ▶ **Monitoring**

Rules for monitoring results

- Each result can only be monitored once.
- Only results of type **number** can be monitored.
- The results are always monitored after evaluation. The determination need not be complete. As soon as the results of a determination are recalculated in a run (e.g. due to altered calibration), the newly calculated results are monitored.

Table

This table defines which results are to be monitored. The monitoring settings of a marked result are displayed in the right-hand part of the tab.

Editing menu

New	Opens Define monitoring dialog window (see Chapter 5.8.6.14, page 435).
Edit	Opens Define monitoring dialog window (see Chapter 5.8.6.14, page 435).
Delete	Deletes the selected lines.

Limit

Lower limit

Displays the bottom limit value for the selected result.

Upper limit

Displays the top limit value for the selected result.

Message

Displays the message to be sent when the limit values for the selected result are exceeded.

Action

Displays the action to be triggered automatically when the limit values for the selected result are exceeded.

5.8.6.6 Results - User-defined results

Tab: **Method** ▶ **Evaluation** ▶ **Results** ▶ **User-defined results**

Table

Additional user-defined results can be defined in this table and are automatically included in the calculation. The main properties of a marked result are displayed in the right-hand part of the tab. The results are calcu-

lated in the order in which they appear in the table. They can be moved with the arrow key in order to change the sequence in which they appear.

The table cannot be edited and contains the following columns:

Result name

Name of the user-defined result.

Editing menu

New	Opens dialog window Define result (see Chapter 5.8.6.15, page 437).
Edit	Opens dialog window Define result (see Chapter 5.8.6.15, page 437).
Delete	Deletes the selected lines.

Result type

Displays the result type for the selected result.

Formula

Displays the formula for the selected result.

Description

Displays the description for the selected result.



Modifies the sequence of displayed lines by moving the selected line upward.



Modifies the sequence of displayed lines by moving the selected line downward.

5.8.6.7 Results - Common Variable

Tab: **Method** ► **Evaluation** ► **Results** ► **Common Variable**

Table

In this table you can assign **Common Variables**, to be able to use them in the following determinations. Assigned result and description of a marked result are displayed in the right-hand part of the tab. The common variables are calculated in the order in which they appear in the table. The common variables are saved in the data set of the determination and can be output in a report but will not be displayed in the result overview.

The table cannot be edited and contains the following columns:

Name

Name of the Common Variable.

Editing menu

New	Opens dialog window Assign common variable (see Chapter 5.8.6.16, page 438).
Edit	Opens dialog window Assign common variable (see Chapter 5.8.6.16, page 438).
Delete	Deletes the selected lines.

Assigned result

Displays the result assigned to the common variable.

Description

Displays the description for the common variable.

5.8.6.8 Defining report

Dialog window: **Method** ▶ **Evaluation** ▶ **Results** ▶ **Report** ▶ **[Edit]** ▶ **New / Edit**

Report template

Report template

Selecting the predefined Report template with which the report is to be generated.

Selection	Report templates

Report output

Definition of targets for report output.

Printer

on | off (Default value: **off**)

The report is printed on the selected printer when this option is activated.

Selection	Default printer All of the printers configured in Windows
Default value	Default printer

Default printer

Printout on the printer defined as standard printer in Windows.

PDF file**on | off** (Default value: **off**)

The report is stored as PDF file when this option is activated.

The desired directory can be selected and a name for the PDF file can be entered by means of the symbol .

Send E-mail**on | off** (Default value: **off**)

If this option is enabled, then the report is produced not only as a PDF file but also as an attachment to the address defined under **[E-mail]**.

[E-mail]

[E-Mail] opens the **Send E-mail** window (see Chapter 2.7.1, page 99).

5.8.6.9 Define decimal places

Dialog window: **Method ▶ Evaluation ▶ Results ▶ Report ▶ [Edit] ▶ Define decimal places**

The dialog window contains all results calculated by default in **MagIC Net** which are not whole numbers. The fields can be edited directly.

[OK]

Apply new entries for decimal places.

[Basic setting]

Restore default values for decimal places.

5.8.6.10 Selecting database

Dialog window: **Method ▶ Evaluation ▶ Results ▶ Database ▶ [Edit] ▶ New / Edit ▶ Select database**

Database

Name of the database in which the determination is to be stored.

Selection	All databases in MagIC Net

5.8.6.11 Selecting export settings

Dialog window: **Method ▶ Evaluation ▶ Results ▶ Database ▶ [Edit] ▶ New / Edit ▶ Select export settings**

Export settings

Name of the export template with which the determination is to be exported.

Description

Description of the result variables selected under **Variables**.

5.8.6.14 Defining monitoring

Dialog window: **Method** ▶ **Evaluation** ▶ **Results** ▶ **Monitoring** ▶ **[Edit]** ▶ **New / Edit** ▶ **Define monitoring**

Result

Name of the result to be monitored.

With the symbol  you open the dialog window **Select result**, in which the desired result can be selected (*see Chapter 5.8.6.13, page 434*).

Validity

In this section, the type of determinations to be monitored are defined and how the monitoring should react if a result to be monitored is not at all present.

Sample

on | off (Default value: **on**)

If this option is enabled, all the determinations with sample type **Sample** are monitored.

Check standard

on | off (Default value: **off**)

If this option is enabled, all the determinations with sample type **Check standard** are monitored.

Standard

on | off (Default value: **off**)

If this option is enabled, all the determinations with sample type **Standard** are monitored.

Monitor unavailable results

on | off (Default value: **on**)

If this option is enabled, the result is always monitored even if it is not available (it is then automatically outside the limits). If this option is disabled, an unavailable result will be ignored by the monitoring.



Note

Monitoring only affects unavailable results which have been generated but which are without content (e.g. no peak was found for a component). It does not affect results that have not been generated (e.g. no analysis has been started). These are never monitored.

Limit

Lower limit

Lower limit for the result. It is possible to enter a formula with .

Range	-1.000E99 ... 1.000E99

Upper limit

Upper limit for the result. It is possible to enter a formula with .

Range	-1.000E99 ... 1.000E99

Message

The Text editor for entering or changing the message is opened with  or by double-clicking into the text field. The message defined here is output in the message window of the **Watch Window** if the lower limit value is not reached or if the upper limit value is exceeded. This is in the program part **Workplace**.

Selection	Text (unlimited)

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the E-mail address defined under **[E-mail]** when this option is activated. The message is sent in text format.

[E-mail...]

[E-mail...] opens the window **Send E-mail** (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted in addition to the message defined above

Action

If the lower limit value is not achieved or if the upper limit value is exceeded for the monitored result, then one of the following actions will be executed automatically:

Selection	Record message Display message Finish determination and shut down devices
Default value	Display message

Record message

The message that the result is outside the limit values is saved automatically in the determination.

Display message

After the determination has finished a message is displayed and you can choose whether you want to continue the run or cancel it. The message that the result is outside the limit values is saved automatically in the determination.

Finish determination and shut down devices

After the determination has finished a message is displayed and the used devices will be shut down. The message that the result is outside the limit values is saved automatically in the determination.

5.8.6.15 Defining result

Dialog window: **Method ▶ Evaluation ▶ Results ▶ User-defined results ▶ [Edit] ▶ New / Edit ▶ Define result**

Result type**Result type**

Selecting the type of user-defined result.

Selection	Single result Component result
Default value	Single result

Single result

User-defined single result that is automatically calculated.

Component result

User-defined component result that is calculated from an automatically generated result with the help of the specified formula for all components of the selected analysis.

for

selecting the analysis for user-defined component results.

Selection	Analyses

Assigned result

Name of the result to be assigned to the common variables.

With the symbol  you open the dialog window **Select result**, in which the desired result can be selected (*see Chapter 5.8.6.13, page 434*).

Description

Optional description of the common variables.

Input	1000 characters

5.8.7 Evaluation - Calculations

5.8.7.1 Peak results

The following peak results are automatically calculated/defined for each component and are available as variable:

5.8.7.1.1 Peak number

Variable name: RS.'Analysis name'.'Component name'.NUM

Number of the peak. The peaks found at integration are numbered consecutively. It is of no importance whether they can be assigned to a component or not.

5.8.7.1.2 Component name

Variable name: RS.'Analysis name'.'Component name'.COMP

Name of the components contained in the sample or standard.

5.8.7.1.3 Retention time

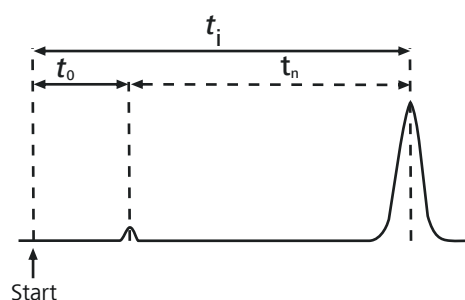
Variable name: RS.'Analysis name'.'Component name'.RET

The dwell time of a component in the column is referred to as the overall retention time or **gross retention time** t_i . The gross retention time is defined as **net retention time** t_n plus **void time** t_0 .

$$t_i = t_n + t_0$$

The time during which a component does not move is referred to as **net retention time** (corrected retention time).

The time required by a component to travel through the column without interacting with the stationary phase is referred to as **void time**.



5.8.7.1.4 Full width at half maximum

Variable name: RS.'Analysis name'.'Component name'.FWHM

Width of a peak at half height.

5.8.7.1.5 Height

Variable name: RS.'Analysis name'.'Component name'.HGT

Height of a peak.

5.8.7.1.6 Height ratio

Variable name: RS.'Analysis name'.'Component name'.HGT%

Normalization of the peak height for all peaks to 100%.

The formula for standardizing is:

$$H_i \% = \frac{100 \cdot H_i}{\sum |H_i|}$$

5.8.7.1.7 Area

Variable name: RS.'Analysis name'.'Component name'.AREA

Area of a peak

5.8.7.1.8 Area ratio

Variable name: RS.'Analysis name'.'Component name'.AREA%

Normalization of the peak area for all peaks to 100%.

$$A_i \% = \frac{100 \cdot A_i}{\sum |A_i|}$$

5.8.7.1.9 Capacity factor

Variable name: RS.'Analysis name'.'Component name'.CAP

The capacity factor is a parameter for evaluating the quality of a chromatographic separation. The **capacity factor** k_i' (also referred to as retention factor) indicates how much longer a component remains at or in the stationary phase compared to the mobile phase. The capacity factor is equal to the quotient of the **corrected retention time** $t_i - t_0$ and the **void time** t_0 .

$$k'_i = \frac{(t_i - t_0)}{t_0}$$

5.8.7.1.10 Resolution

Variable name: RS.'Analysis name'.'Component name'.RES

The aim of an analysis is to separate the components into individual signals. The resolution R between two neighboring peaks is a parameter for evaluating the quality of a chromatographic separation. It is defined as the quotient of the distance of two peak maxima (difference of the two gross retention times) and the arithmetic mean of the two associated base widths.

EP

(European pharmacopoeia)

$$R = 1.18 \frac{(t_{i+1} - t_i)}{W_{0.5i} + W_{0.5i+1}}$$

USP

(US pharmacopoeia)

$$R = 2 \frac{(t_{i+1} - t_i)}{W_b + W_{bi+1}}$$

JP

(Japanese pharmacopoeia)

$$R = 1.18 \frac{(t_{i+1} - t_i)}{W_{0.5i} + W_{0.5i+1}}$$

Variable symbol	Variable name	Unit	Description
R	Resolution	—	Resolution of two neighboring peaks
t_i	Gross retention time	min	Gross retention time of signal i
t_{i+1}	Gross retention time	min	Gross retention time of signal $i+1$
$W_{0.5i}$	Peak width	min	Width of the peak i at half height
$W_{0.5i+1}$	Peak width	min	Width of the peak $i+1$ at half height

5.8.7.1.11 Theoretical plates

Variable name: RS.'Analysis name'.'Component name'.PLA

The theoretical plates describes the separating capacity of a column. It is calculated from the peak width and the associated retention time.

EP

(European pharmacopoeia)

EP
(European pharmacopoeia)

$$N_i = 5.54 \left(\frac{t_i}{W_{0.5i}} \right)^2$$

USP

(US pharmacopoeia)

USP
(US pharmacopoeia)

$$N_i = 16 \left(\frac{t_i}{W_{bi}} \right)^2$$

JP

(Japanese pharmacopoeia)

JP
(Japanese pharmacopoeia)

$$N_i = 5.55 \left(\frac{t_i}{W_{0.5i}} \right)^2$$

Variable symbol	Variable name	Unit	Description
N_i	Theoretical plates	—	The theoretical plates describes the separating capacity of a column
t_i	Gross retention time	min	Gross retention time of signal i
$W_{0.5i}$	Peak width	min	Width of the peak i at half height
W_{bi}	Peak base width	min	Width of the peak i between the inflection tangents as a section on the baseline.

5.8.7.1.12 Theoretical plates per meter

Variable name: RS.'Analysis name'.'Component name'.PLAM

Theoretical plates per meter of the column for the corresponding peak (theoretical plates divided by the length of the separation column).

$$N'_i = \frac{N_i \cdot 1000}{L_{Column}}$$

Variable symbol	Variable name	Unit	Description
N'_i	Theoretical plates per meter	1/m	The theoretical plates per meter describes the separating capacity of a column
N_i	Theoretical plates	—	The theoretical plates describes the separating capacity of a column
L_{Column}	Length	mm	Length of the column

5.8.7.1.13 Gauss factor

Variable name: RS.'Analysis name'.'Component name'.PGF

The peak Gauss factor PGF is the ratio of the peak width at half signal height $W_{0.5i}$ to the peak width at a tenth of the signal height $W_{0.1i}$ multiplied by a reciprocal value of the ratio for a peak with ideal Gauss profile. The formula in acc. with EPA is:

$$PGF = 1.83 \frac{W_{0.5i}}{W_{0.1i}}$$

Variable symbol	Variable name	Unit	Description
PGF	Peak-Gauss factor	—	
$W_{0.5i}$	Peak width	min	Width of the peak i at half height
$W_{0.1i}$	Peak width	min	Width of a peak i at a tenth of the signal height

A good separation column has an asymmetry factor A_s between 0.9 and 1.2.

5.8.7.2 Further peak results

The following further peak results are automatically calculated/defined for each component and are available as variables:

5.8.7.2.1 Peak start

Variable name: RS.'Analysis name'. 'Component name'.START

Time of the peak start.

5.8.7.2.2 Peak end

Variable name: RS.'Analysis name'. 'Component name'.END

Time of the peak end.

5.8.7.2.3 $a(0.x)$

Variable name	Variable	Description
RS.'Analysis name'. 'Component name'.A044	$a_{0.044}$	Width of the peak between peak start and peak maximum at 4.4% peak height.
RS.'Analysis name'. 'Component name'.A05	$a_{0.05}$	Width of the peak between peak start and peak maximum at 5% peak height.
RS.'Analysis name'. 'Component name'.A10	$a_{0.10}$	Width of the peak between peak start and peak maximum at 10% peak height.
RS.'Analysis name'. 'Component name'.A134	$a_{0.134}$	Width of the peak between peak start and peak maximum at 13.4% peak height.
RS.'Analysis name'. 'Component name'.A324	$a_{0.324}$	Width of the peak between peak start and peak maximum at 32.4% peak height.
RS.'Analysis name'. 'Component name'.A50	$a_{0.5}$	Width of the peak between peak start and peak maximum at 50% peak height.
RS.'Analysis name'. 'Component name'.A61	$a_{0.61}$	Width of the peak between peak start and peak maximum at 61% peak height.

5.8.7.2.8 P/V ratio A**Variable name:** RS.'Analysis name'. 'Component name'.PVA

Peak to valley ratio of the peak height of the foot point at peak start over the baseline of the chromatogram.

This ratio serves for quality assessment if two peaks are not divided by a baseline. If a peak is divided by a baseline, this variable is invalid (division by zero).

$$R_{PVa} = \frac{H_P}{H_{Va}}$$

Variable symbol	Description
R_{PVa}	Ratio of the peak height to the height of the foot point over the baseline at peak start.
H_P	Peak height.
H_{Va}	Height of the foot point over the baseline at peak start.

5.8.7.2.9 P/V ratio B**Variable name:** RS.'Analysis name'. 'Component name'.PVB

Peak to valley ratio of the peak height to the height of the foot point at peak end over the baseline of the chromatogram.

This ratio serves for quality assessment if two peaks are not divided by a baseline. If a peak is divided by a baseline, this variable is invalid (division by zero).

$$R_{PVb} = \frac{H_P}{H_{Vb}}$$

Variable symbol	Description
R_{PVb}	Ratio of the peak height to the height of the foot point over the baseline at peak end.
H_P	Peak height.
H_{Vb}	Height of the foot point over the baseline at peak end.

The **following positions** are optional and describe other **peak properties**.

5.8.7.3 Concentration results

The following concentration results are automatically calculated/defined for each component and are available as variable:

5.8.7.3.1 Concentration with calibration with external standards

Variable name: RS.'Analysis name'. 'Component name'.CONC

Concentration with calibration with external standard

With external calibration, calibration curves are recorded for all ions to be determined. A calibration curve is applied to calculate the concentration for a sample. The signal of the detector correlates to the injected amount of an ion and not to that of its concentration. Since the injected volume can vary, it is necessary to calculate with the amount of substance.

Calculation of the amount of substance for standards

The quantity of substances Q_i is calculated for all components for all standards used in the calibration:

$$Q_i = C_i \cdot V'$$

with

$$V' = \frac{V}{D} A$$

Variable symbol	Variable name	Unit	Description
Q_i	Amount of substance	mol	Amount of substance in the component i , used for calculating the calibration curve.
C_i	Concentration	mol/L	Concentration of the component i in the standard.
V'	Volume, corrected	μL	Corrected volume of injected standard. The injected volume is corrected by the dilution coefficient D .
V	Volume	μL	Injected volume of the standard. Volume from the sample data.

Variable symbol	Variable name	Unit	Description
D	Dilution coefficient		The dilution coefficient indicates by what factor the standard was diluted before injection. Dilution from the sample data.
A	Sample amount	mol	Correction factor to account for any differences in initial weight. Sample amount from the sample data,

Calculation of the calibration curve

Calculation of the calibration curve depends on the function type:

Function type (1):

The amount of substance Q_i of the n th ion as a function of the response R_i (surface or height) of the n th ion.

$$Q_i = f(R_i)$$

Function type (2):

The response R_i (surface or height) of the n th ion as a function of the amount of substance Q_i of the n th ion.

$$R_i = f(Q_i)$$

The calibration parameters **Response**, **Curve type** and **Weighting** are taken into account.

If **Blank value correction for Inline calibration** is enabled, the blank value Q_{bi} is calculated from the calibration curve. The blank value is the negative value on the x-axis (x-axis = amount of substance).

Function type (1):

$$Q_i = f(R_i) + Q_{bi}$$

Function type (2):

$$Q_i = \frac{1}{f}(R_i) + Q_{bi}$$

The **Correlation coefficient**(see Chapter 5.8.7.4.2, page 464) and the **percentage standard deviation**(see Chapter 5.8.7.4.3, page 465) are calculated for each calibration curve:

Calculation of the amount of substance for samples

Function type (1):

The amount of substance can be calculated directly from the calibration curve.

$$Q_i = f(R_i)$$

Function type (2):

The amount of substance must be calculated using the inverse function.

$$Q_i = \frac{1}{f}(R_i)$$

If **Blank value correction for Inline calibration** is enabled, then the blank value Q_{bi} is added.

Function type (1):

$$Q_i = f(R_i) + Q_{bi}$$

Function type (2):

$$Q_i = \frac{1}{f}(R_i) + Q_{bi}$$

Calculation of the concentration for samples

Variable name: RS.'Analysis name'.'Component name'.CONC

For the concentration calculation, the amount of substance must be divided by the corrected volume V' :

$$C_i = \frac{Q_i}{V'} = Q_i \frac{D}{V \cdot A}$$

with

$$V' = \frac{V}{D} A$$

Variable symbol	Variable name	Unit	Description
C_i	Concentration	mol/L	Calculated concentration, components i in the sample

Variable symbol	Variable name	Unit	Description
Q_i	Amount of substance	mol	Amount of substance of the component / in the sample.
V'	Volume, corrected	μL	Corrected volume of the injected sample. The injected sample volume is corrected by the dilution coefficient D .
V	Volume	μL	Injected sample volume. Volume from the sample data.
D	Dilution coefficient		The dilution coefficient indicate by what factor the standard was diluted before injection. Dilution from the sample data.
A	Sample amount	mol	Correction factor to account for any differences in initial weight. Sample amount from the sample data,

5.8.7.3.2 Calibration with calibration with internal standard

Variable name: RS.'Analysis name'.'Component name'.CONC

Concentration with calibration with internal standard

With internal calibration, a standard substance of known concentration is injected with every sample and every standard. The standard substance does not show in the analysis sample. To calculate the calibration curve and the concentration of samples, the signal and quantity ratios of the sample ion and of the standard are compared.

Calculation of the amount of substance for standards

Analog to the external calibration, the quantities of substances of the standards are calculated for every component Q_i and for the internal standard Q_s .

$$Q_i = C_i \cdot V'$$

with

$$V' = \frac{V}{D} A$$

$$Q_s = C_s \cdot V'$$

with

$$V' = \frac{V}{D} A$$

Variable symbol	Variable name	Unit	Description
Q_i	Amount of substance	mol	Amount of substance in the component i , used for calculating the calibration curve.
C_i	Concentration	mol/L	Concentration of the component i in the standard.
Q_s	Amount of substance, internal standard	mol	Amount of substance of the internal standard.
C_s	Concentration, internal standard	mol/L	Concentration of the internal standard.
V'	Volume, corrected	μL	Corrected volume of injected standard. The injected volume is corrected by the dilution coefficient D .
V	Volume	μL	Injected volume of the standard. Volume from the sample data.
D	Dilution coefficient		The dilution coefficient indicates by what factor the standard was diluted before injection. Dilution from the sample data.

Variable symbol	Variable name	Unit	Description
A	Sample amount	mol	Correction factor to account for any differences in initial weight. Sample amount from the sample data,

Calculation of the calibration curve

Function type (1):

$$Q_i = f\left(Q_s \frac{R_i}{R_s}\right)$$

Function type (2):

$$Q_s \frac{R_i}{R_s} = f(Q_i)$$

Variable symbol	Description
Q_i	Amount of substance of the nth ion used to formulate the calibration function.
$Q_S = C_S \cdot V$	Amount of substance of the standard ion
R_i	Response of the nth ion
R_s	Response of the standard ion

When calibration curves are calculated, account is taken of the calibration parameters **Response**, **Curve type** and **Weighting**.

If **Blank correction for inline calibration** is enabled, the blank value is calculated from the calibration curve Q_{bi} analog to the external calibration.

Calculation of the amount of substance for samples

Function type (1):

$$Q_i = f\left(Q_s \frac{R_i}{R_s}\right)$$

The amount of substance can be calculated directly from the calibration curve.

Function type (2):

The amount of substance must be calculated using the inverse function.

$$Q_i = \frac{1}{f} \left(Q_s \frac{R_i}{R_s} \right)$$

If **Blank value correction for Inline calibration** is enabled, then the blank value Q_{bi} is added.

Function type (1):

$$Q_i = f \left(Q_s \frac{R_i}{R_s} \right) + Q_{bi}$$

Function type (2):

$$Q_i = \frac{1}{f} \left(Q_s \frac{R_i}{R_s} \right) + Q_{bi}$$

Calculation of the concentration for samples

Variable name: RS.'Analysis name'.'Component name'.CONC

For the concentration calculation, the amount of substance must be divided by the corrected volume V' :

$$C_i = \frac{Q_i}{V'} = Q_i \frac{D}{V \cdot A}$$

with

$$V' = \frac{V}{D} A$$

Variable symbol	Variable name	Unit	Description
C_i	Concentration	mol/L	Calculated concentration, components i in the sample
Q_i	Amount of substance	mol	Amount of substance of the component / in the sample.
V'	Volume, corrected	μL	Corrected volume of the injected sample. The injected sample volume is corrected by the dilution coefficient D .

Variable symbol	Variable name	Unit	Description
V	Volume	μL	Injected sample volume. Volume from the sample data.
D	Dilution coefficient		The dilution coefficient indicate by what factor the standard was diluted before injection. Dilution from the sample data.
A	Sample amount	mol	Correction factor to account for any differences in initial weight. Sample amount from the sample data,

5.8.7.3.3 Concentration ratio

Variable name: RS.'Analysis name'.'Component name'.CONC%

Normalization of the concentrations for all peaks to 100%.

$$C_i = \frac{100 \cdot C_i}{\sum C_i}$$



Note

For normalization, only those peaks are used to which a component has been assigned.

5.8.7.3.4 Standard concentration

Variable name: RS.'Analysis name'.'Component name'.STDCONC

Concentration of the components in acc. with the standard table. It is not a calculated result and is only output for standards.

5.8.7.3.5 Mean value of the concentrations

Variable name: RS.'Analysis name'.'Component name'.CON-CMEAN

Concentration mean value from a single or multiple determination

$$\overline{C}_{sa} = \sum C_{sa,i} / m$$

Variable symbol	Description
$\overline{C}_{sa}$	Concentration mean value from a single or multiple determination, RS.' Analysis name'. Component name'. CONCMEAN.
$C_{sa,i}$	Concentration of the nth sample.
m	Number of injections carried out for a single or multiple determination, RS.' Analysis name'. Component name'. INJCOUNT-FIN.

5.8.7.3.6 Standard deviation of the concentration mean value

Variable name: **RS.'****Analysis name'.****Component name'.****CONCMEANSD**

Standard deviation of the concentration mean value, including calibration errors. The calculation is in accordance with DIN 38402 Part 51 (1986).



Note

The standard deviation **RS.'****Analysis name'.****Component name'.****CONC.ASA** (if the statistic for concentration is activated) does not take into account the additional uncertainty of the calibration function. It is therefore *less* than **RS.'****Analysis name'.****Component name'.****CONCMEANSD.**

Calculation of the standard deviation of the mean value of the amount of substance, with the use of function type (1)

The calculation of the standard deviation of the mean value of the amount of substance proceeds as follows when the **Concentration = f(measured quantity)** function type has been selected (*see Chapter 5.8.5.3, page 416*) in the properties of the calibration:

It is assumed for this that:

- Only the *amounts of substance* Q_i are affected by normal-distribution errors.

- These variances are *homogenous* in the area of the calibration points used (i.e. they are also the same for standards and samples).

$$\bar{x}_{sa} = \left(\bar{C}_{sa} \times \frac{V \times A}{D} - k_0 \right) / k_1$$

$$s_{\overline{Q}_{sa}} = s_y \times \sqrt{\frac{1}{n} + \frac{1}{m} + \frac{(\bar{x}_{sa} - \bar{x})^2}{(n-1) \times s_x^2}}$$

Variable symbol	Description
$\bar{x}_{sa}$	Mean value of the x values of the sample measurements.
$\bar{C}_{sa}$	Mean value of the sample concentration found, RS.'Analysis name'.'Component name'.CON-CMEAN .
V	Injection volume from the sample data, SD.VOLUME
A	Sample amount from the sample data, SD.AMOUNT .
D	Dilution according to the sample table, SD.DILUTION .
k_0	Axis intercept of the calibration lines, RS.'Analysis name'.'Component name'.CALK0
k_1	Slope of the calibration lines, RS.'Analysis name'.'Component name'.CALK1 .
$s_{\bar{Q}_{sa}}^-$	Standard deviation of the mean value of the amounts of substance found.
s_y	Residual standard deviation of the y values of the calibration points used, RS.'Analysis name'.'Component name'.CALYRSD (see Chapter 5.8.7.4.9, page 466).
n	Number of standards used, RS.'Analysis name'.'Component name'.CALNUM .
m	Number of injections carried out for a single or multiple determination, RS.'Analysis name'.'Component name'.INJCOUNTFIN .
$\bar{x}$	Mean value of the x values of the calibration points RS.'Analysis name'.'Component name'.CALX-MEAN .
s_x	Standard deviation of the x values of the calibration points used, RS.'Analysis name'.'Component name'.CALXSD .

Calculation of the standard deviation of the mean value of the amount of substance, with the use of function type (2)

The calculation of the standard deviation of the mean value of the amount of substance proceeds as follows when the **Response= f(concentration)** function type has been selected (see Chapter 5.8.5.3, page 416) in the properties of the calibration:

It is assumed for this that:

- Only the *Response values* R_i are affected by normal-distribution errors.
- These variances are *homogenous* in the area of the calibration points used (i.e. they are also the same for standards and samples).

$$\bar{y}_{sa} = k_0 + \bar{C}_{sa} \times \frac{V \times A}{D} \times k_1$$

$$s_{\bar{Q}_{sa}} = \frac{s_y}{k_1} \times \sqrt{\frac{1}{n} + \frac{1}{m} + \frac{(\bar{y}_{sa} - \bar{y})^2}{(n-1) \times k_1^2 \times s_x^2}}$$

Variable symbol	Description
$\bar{y}_{sa}$	Mean value of the y values of the sample measurements.
k_0	Axis intercept of the calibration lines, RS.'Analysis name'.'Component name'.CALK0 .
$\bar{C}_{sa}$	Mean value of the sample concentration found, RS.'Analysis name'.'Component name'.CON-CMEAN .
V	Injection volume from the sample data, SD.VOLUME
A	Sample amount from the sample data, SD.AMOUNT .
D	Dilution according to the sample table, SD.DILUTION .
k_1	Slope of the calibration lines, RS.'Analysis name'.'Component name'.CALK1 .
$s_{\bar{Q}_{sa}}$	Standard deviation of the mean value of the amounts of substance found.
s_y	Residual standard deviation of the y values of the calibration points used, RS.'Analysis name'.'Component name'.CALYRSD (see Chapter 5.8.7.4.9, page 466).
n	Number of standards used, RS.'Analysis name'.'Component name'.CALNUM .

Variable symbol	Description
m	Number of injections carried out for a single or multiple determination, RS.' Analysis name' .' Component name' .' INJCOUNTFIN .
$\bar{y}_{sa}$	Mean value of the y values of the sample measurements.
$\bar{y}$	Mean value of the y values of the calibration points
s_x	Standard deviation of the x values of the calibration points used, RS.' Analysis name' .' Component name' .' CALXSD .

Calculation of the result

$$s_{\bar{C}_{sa}} = s_{\bar{Q}_{sa}} \times \frac{1}{V'} = s_{\bar{Q}_{sa}} \times \frac{D}{V \times A}$$

Variable symbol	Description
$S_{\overline{C}_{sa}}$	Standard deviation of the mean value of the sample concentration with calibration error, RS.'Analysis name'.'Component name'.CONCMEANSD .
$S_{\overline{Q}_{sa}}$	Standard deviation of the mean value of the amounts of substance found.
V'	Standardized volume
D	Dilution according to the sample table, SD.DILUTION .
V	Injection volume from the sample data, SD.VOLUME
A	Sample amount from the sample data, SD.AMOUNT .



Note

The calculation takes place only when the following conditions have been fulfilled:

1. The calibration function **Linear** is used.
2. At least 3 valid (used) calibration points exist.
3. The weighting is **unweighted**.
4. The calibration mode is **Replace**.
5. The blank value correction is *not* activated.
6. The determinations have been included with MagIC Net 2.0 or newer.

5.8.7.3.7 Confidence range for the concentration mean value

Variable name: RS.'Analysis name'.'Component name'.CONCMEANCONF95

Half width of the confidence interval for the concentration mean value, at 95% confidence.

Calculation

$$\Delta \bar{C}_{sa}(95\%) = s_{\bar{C}_{sa}} \times \text{tquantile}(0.95, p = n - 2)$$

whereby $\text{tquantile}(0.95, p = n - 2)$ is the inverse function of the *Student's t-distribution* (see Chapter 2.4.4.5.10, page 62).

Variable symbol	Description
$\Delta \bar{C}_{sa}(95\%)$	Half width of the confidence interval for the concentration mean value, at 95% confidence, RS.'Analysis name'.'Component name'.CONCMEANCONF95 .
$s_{\bar{C}_{sa}}$	Standard deviation of the concentration mean value, including calibration errors, RS.'Analysis name'.'Component name'.CONCMEANSD .
p	Number of degrees of freedom
n	Number of independent standards used, RS.'Analysis name'.'Component name'.CALNUM .

5.8.7.3.8 Detection limit from linear calibration function

Variable name: RS.'Analysis name'.'Component name'.LDTCCONF95

Detection limit from linear calibration function, at 95% confidence.

Calculation with the use of function type (1)

The calculation proceeds as follows when the **Concentration = f(response)** function type has been selected (see Chapter 5.8.5.3, page 416) in the properties of the calibration:

It is assumed for this that:

- Only the *amounts of substance* Q_i are affected by normal-distribution errors.
- These variances are *homogenous* in the area of the calibration points used (i.e. they are also the same for standards and samples).

The expected response from regression with sample concentration 0:

$$x_0 = -k_0/k_1$$

$$s_{Q=0} = \frac{s_y}{k_1} \times \sqrt{\frac{1}{n} + \frac{1}{m} + \frac{(y_0 - \bar{y})^2}{(n-1) \times k_1^2 \times s_x^2}}$$

where:

$$\frac{(\bar{y}_0 - \bar{y})^2}{k_1^2} = (x_0 - \bar{x})^2$$

Variable symbol	Description
y_0	The expected response from regression with sample concentration 0
k_0	Axis intercept of the calibration lines, RS.' Analysis name' .'Component name' .CALK0
$s_{Q=0}$	Standard deviation at amount of substance 0
k_1	Slope of the calibration lines, RS.' Analysis name' .'Component name' .CALK1 .
s_y	Standard deviation of the y values of the calibration points used. RS.' Analysis name' .'Component name' .CALYRSD
n	Number of standards used, RS.' Analysis name' .'Component name' .CALNUM .
m	Number of injections carried out for a single or multiple determination, RS.' Analysis name' .'Component name' .INJCOUNTFIN .
$\bar{y}$	Mean value of the y values of the calibration points
s_x	Standard deviation of the x values of the calibration points used, RS.' Analysis name' .'Component name' .CALXSD .

Calculation of the result

$$s_{C=0} = s_{Q=0} \times \frac{1}{V'} = s_{Q=0} \times \frac{D}{V \times A}$$

$$NG(95\%) = s_{C=0} \times \text{tquantile}(0.90, p = n - 2)$$

$$\text{where: } t_{\text{oneside}}(0.95, p) = t_{\text{twoside}}(0.90, p).$$

Variable symbol	Description
$s_{C=0}$	Standard deviation at sample concentration 0

Variable symbol	Description
$NG(95\%)$	Detection limit from linear calibration function, at 95% confidence, RS.' Analysis name'. 'Component name'.LDTCCONF95.
V'	Standardized volume
D	Dilution according to the sample table, SD.DILUTION.
V	Injection volume from the sample data, SD.VOLUME
A	Sample amount from the sample data, SD.AMOUNT.

5.8.7.4 Calibration curves results

The following calibration curve results are automatically calculated/defined for each component and are available as variables:

5.8.7.4.1 k(0) - k(3)

Variable name: RS.'Analysis name'.'Component name'.CALK# (#=0...3)

Variable symbol	Description
k_0	Coefficient of zeroth-order of the calibration curve
k_1	Coefficient of first order of the calibration curve
k_2	Coefficient of second order of the calibration curve
k_3	Coefficient of third order of the calibration curve

5.8.7.4.2 Correlation coefficient

Variable name: RS.'Analysis name'.'Component name'.CALCORR

$$r = \sqrt{\frac{\sum_{i=1}^n (y_i - \bar{y})^2 - \sum_{i=1}^n (y_i - \hat{y}_i)^2}{\sum_{i=1}^n (y_i - \bar{y})^2}}$$

Variable symbol	Description
r	Correlation coefficient.
y_i	y value of calibration point i
$\bar{y}$	Mean value of all y values of the calibration points
$\hat{y}_i$	The y value of calibration point i calculated with the calibration curve

5.8.7.4.3 Percentage standard deviation**Variable name:** RS.'Analysis name'.'Component name'.CALPSD

$$\%RSD = 100 \times \frac{1}{\bar{y}} \times \sqrt{\frac{\sum_{i=1}^n (y_i - \hat{y}_i)^2}{n - p}}$$

Variable symbol	Description
$\%RSD$	Percentage standard deviation
y_i	y value of calibration point i
$\bar{y}$	Mean value of all y values of the calibration points
$\hat{y}_i$	The y value of calibration point i calculated with the calibration curve
n	Number of calibration points of the calibration curve
p	Number of terms of the calibration equation that are not equal to zero

5.8.7.4.4 Mean X**Variable name:** RS.'Analysis name'.'Component name'.CALX-MEAN $\bar{x}$ is the mean value of all x values of the calibration points.**5.8.7.4.5 Mean Y****Variable name:** RS.'Analysis name'.'Component name'.CALY-MEAN $\bar{y}$ is the mean value of all y values of the calibration points.**5.8.7.4.6 Number of calibration points****Variable name:** RS.'Analysis name'.'Component name'.CALNUM

Number of measured values of the calibration curve.

5.8.7.4.7 Calibration terms**Variable name:** RS.'Analysis name'.'Component name'.CALTERM

Number of terms of the calibration curve.



5.8.7.4.8 Standard deviation X

Variable name: RS.'Analysis name'.'Component name'.CALXSD

$$s_x = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}}$$

Variable symbol	Description
s_x	Standard deviation of the X values of the calibration points.
x_i	x value of calibration point i
$\bar{x}$	Mean value of the X values of the calibration points
n	Number of calibration points of the calibration curve

5.8.7.4.9 Residual standard deviation Y

Variable name: RS.'Analysis name'.'Component name'.CALYRSD

$$s_y = \sqrt{\frac{\sum_{i=1}^n (y_i - \hat{y}_i)^2}{n-p}}$$

Variable symbol	Description
s_y	Residual standard deviation of the y values of the calibration points from the y values of the corresponding calibration point calculated with the calibration curve.
y_i	y value of calibration point i
$\hat{y}_i$	The y value of calibration point i calculated with the calibration curve
n	Number of calibration points of the calibration curve
p	Number of terms of the calibration equation that are not equal to zero

5.8.7.5 Recovery results

The following recovery results are automatically calculated/defined for each component and are available as variables:

5.8.7.5.1 Recovery (Check standard)

Variable name: RS.'Analysis name'.'Component name'.REC

For calculation of the recovery $W_{CS_n i}$ via a check standard, a check standard (with known concentration) is determined like a sample. The recovery is calculated by dividing the established concentration by the actual concentration of the check standard.

$$W_{CS_n i} = \frac{C_{CS_n i}}{C'_{CS_n i}}$$

Variable symbol	Description
$W_{CS_n i}$	Recovery of the ion i, calculated with the check standard i.
$C_{CS_n i}$	Measured concentration of ion i in check standard n.
$C'_{CS_n i}$	Defined concentration of ion i in the check standard n.

5.8.7.5.2 Recovery (spiking)

Variable name: RS.'Analysis name'.'Component name'.SREC

To calculate recovery W_{Ai} by spiking, the sample is spiked with a standard addition solution. The concentrations of the sample and the spiked sample are calculated by means of external and internal calibration. Recovery is calculated for every component from these two values.

This peak parameter is calculated when a sample of sample type **Spiking** is determined. Recovery is only ever calculated for one standard addition solution. A more extensive automatic offsetting of the recoveries of various standard addition solutions does not take place. The calculation always affects the sample last measured.

$$W_{A_n i} = \frac{C_{A_n P_i} \cdot (V_{A_n Inject} + V_{P_n Inject}) - C_{P_i} \cdot V_{P_n Inject}}{C_{A_n i} \cdot V_{A_n Inject}}$$

$$V_{A_n Inject} = \left(\frac{V_{A_n}}{V_{A_n} + V_{P_n}} \right) \cdot V$$

$$V_{P_n Inject} = \left(\frac{V_{P_n}}{V_{A_n} + V_{P_n}} \right) \cdot V$$

Variable symbol	Description
$W_{A_n i}$	Recovery of ion i, calculated with the standard addition solution A_n
$C_{A_n P i}$	Measured concentration of ion i in the sample, which was spiked with A_n .
$C_{P i}$	Measured concentration of ion i in the sample, without spiking.
$C_{A_n i}$	Defined concentration of ion i in the standard addition solution. A_n .
$V_{A_n \text{inject}}$	Injected volume of the standard addition solution A_n in the spiked sample.
$V_{P_n \text{inject}}$	Injected volume of the sample in the standard addition solution.
V_{A_n}	Volume of the standard addition solution in the spiked sample.
V_{P_n}	Volume of the sample in the spiked sample.
V	Volume from the sample data.

5.8.8 Evaluation - UV/VIS

5.8.8.1 UV/VIS - General

Subwindow section: **Method** ▶ **Evaluation** ▶ **UV/VIS**

Application

In the section **UV/VIS**, the special evaluation parameters for UV/VIS analyses are defined.

Tabs

- *Spectra*

5.8.8.2 UV/VIS - Spectra

Tab: **Method** ▶ **Evaluation** ▶ **Calibration** ▶ **Calibration curves**

For each analysis using the 887 Professional UV/VIS detector ("UV/VIS analysis"), spectra can be defined.

Analysis

Selection list of UV/VIS analyses. The *Table of spectra p. 469* below corresponds to the selected analysis.

Table of spectra

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add new line to the table and edit in separate dialog (<i>see Chapter 5.8.8.3, page 469</i>) (is also triggered by a double-click on an empty line).
Edit	Edits selected line in separate dialog (<i>see Chapter 5.8.8.3, page 469</i>) (is also triggered by a double-click on a non-empty line).
Copy [CTRL-C]	Copy selected line to the clipboard.
Paste [CTRL-V]	Insert line from the clipboard below in the table.
Cut [CTRL-X]	Cut selected line and copy it to the clipboard.
Delete [Delete]	Deletes the selected line.

5.8.8.3 Editing spectrum

Tab: **Method ▶ Evaluation ▶ UV/VIS ▶ Spectrum**

Here the properties of a spectrum defined before can be edited or the properties of a new spectrum can be defined.

For each spectrum you can define the wavelength ranges in which maxima are to be evaluated (*see "Evaluation of maxima", page 470*).

Spectrum

Time

Time when the spectrum is to be recorded in accordance to the timeline of the corresponding analysis.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Name

Name for the spectrum. Must be unique within the corresponding analysis.

Input	1 .. 40 characters

Start wavelength

Lower limit of the wavelength range in which the spectrum is to be measured.

Range	190 ... 900 nm (Increment: 1)
Default value	190 nm

RS.'Analysis name'.SPEC.'Spectrum name'.WVLMAX{x}

5.9 Subwindow Chromatograms

5.9.1 Chromatograms - General

Subwindow: **Method ▶ Chromatograms**

Subwindow Chromatograms

The last chromatogram and the associated calibration curves are displayed in the subwindow **Chromatograms** for every analysis which was recorded with this method and saved in the database. The blanks with which the chromatograms have been corrected and the standards (or standard addition solutions) which were used to calibrate the sample can also be displayed. The subwindow also supports data import from the chromatogram to the method parameters.

When a method is opened, the evaluation parameters of the method are immediately applied to the chromatograms and calibration curves shown.

Graphics window

The interface, functions and properties of the subwindow **Chromatograms** are described in the *Graphics window* chapter in the following subchapters:

- *Elements*
- *Chromatogram view*
- *Zooming*
- *Move curve*
- *Work with cursor*
- *Set Zoom*
- *Properties*
- *Change calibration*
- *Choose color*

5.9.2 Chromatograms - Update

Menu item: **Method ▶ Edit ▶ Update**

With the symbol  or the menu item **Edit ▶ Update**, the latest chromatograms are reloaded from the database and evaluated with the altered method parameters, and the calibration data is recalculated.

6 Configuration

6.1 Configuration - General

6.1.1 Configuration - Definition

Program part: **Configuration**

Definition

Under **Configuration** is to be understood all **MagIC Net** method-embracing settings for devices, columns, eluents, accessories, common variables, rack data and solutions. Configuration also includes methods, security settings, user administration, program administration, templates, and Audit Trail.

Organization

All configuration data is saved in the **configuration database**. In the local server systems (**MagIC Net Professional**) these are stored in the program directory of the computer on which the program has been installed. In client/server systems (**MagIC Net Multi**) the configuration database is stored centrally on the server and saves and contains all the configuration data of all computers (clients) that are connected to this server.

6.1.2 Configuration - Desktop

Program part: **Configuration**

Configuration symbol



By clicking on the configuration symbol in the vertical bar at the left-hand margin the program part **Configuration** is opened, at the same time the configuration symbol is shown in color.

Elements

The desktop of the program part **Configuration** comprises the following elements:

- Configuration-specific menu bar.
- Configuration specific toolbar.
- Main window in which up to 6 subwindows can be displayed.

6.1.3 Configuration - Menu bar

6.1.3.1 Configuration - Main menus

Program part: **Configuration**

The menu bar in the program part **Configuration** includes the following main menu items:

- *File*
Export, import, backup, restore configuration data.
- *View*
Change layout, load view, save view, quick access to subwindows.
- *Tools*
User administration, security settings, program administration, Audit Trail, templates, options.
- *Help*
Open program help, display program information.

6.1.3.2 Configuration - Menu File

Program part: **Configuration**

Export...	Exports configuration data (<i>see Chapter 6.3.1.1, page 504</i>).
Import...	Imports configuration data (<i>see Chapter 6.3.1.2, page 506</i>).
Backup ►	
Automatically	Backup configuration data automatically (<i>see Chapter 6.3.2.1, page 509</i>).
Manual	Backup configuration data manually (<i>see Chapter 6.3.2.2, page 510</i>).
Print (PDF)... ►	
PDF User administration	Outputs user administration data as PDF file (<i>see Chapter 6.2.1.1, page 481</i>).
PDF Security settings	Outputs security settings as PDF file (<i>see Chapter 6.2.2.1, page 490</i>).
 Logout...	Logout user (<i>see Chapter 2.2.3, page 21</i>)
Exit	End program.

6.1.3.3 Configuration - Menu View

Program part: **Configuration**

 Change layout...	Modifies layout of loaded configuration view (<i>see Chapter 3.1.7.2, page 107</i>).

 Load view...	Loads a saved configuration view (<i>see Chapter 3.1.7.3, page 108</i>).
 Save view...	Saves current configuration view (<i>see Chapter 3.1.7.4, page 109</i>).
Quick access	Opens a subwindow not contained in the current configuration view.
☒ Toolbar	Switch toolbar display on/off.

6.1.3.4 Configuration - Menu Tools

Program part: **Configuration**

 User administration...	Manages users and groups of users with access rights, signature rights and options (<i>see Chapter 6.2.1.1, page 481</i>).
 Security settings...	Options for login, password protection, Audit Trail and electronic signature (<i>see Chapter 6.2.2.1, page 490</i>).
Program administration...	General settings for local/server and client/server settings (<i>see Chapter 6.2.3.1, page 500</i>).
 Audit Trail...	Opens Audit Trail (<i>see Chapter 6.4, page 519</i>).
Templates ►	
Input lines...	Generates templates for scanning remote lines (<i>see Chapter 6.3.3.1.1, page 511</i>).
Output lines...	Generates templates for setting remote lines (<i>see Chapter 6.3.3.2.1, page 512</i>).
E-mail templates...	Generates templates for sending E-mails (<i>see Chapter 6.3.3.3, page 514</i>).
Options...	Sets program options (<i>see Chapter 6.3.4, page 516</i>).

6.1.3.5 Help Menu

Program part: **Workplace / Database / Method / Configuration**

 MagIC Net Help	Open MagIC Net Help.
About	Displays information about the program and the installation.



6.1.4 Configuration - Toolbar

Program part: **Configuration**

 Change layout...	Modifies layout of loaded configuration view (<i>see Chapter 3.1.7.2, page 107</i>).
 Load view...	Loads a saved configuration view (<i>see Chapter 3.1.7.3, page 108</i>).
 Save view	Saves current configuration view (<i>see Chapter 3.1.7.4, page 109</i>).
 User administration...	Manages users and groups of users with access rights, signature rights and options (<i>see Chapter 6.2.1.1, page 481</i>).
 Security settings...	Options for login, password protection, Audit Trail and electronic signature (<i>see Chapter 6.2.2.1, page 490</i>).
 Audit Trail...	Opens Audit Trail (<i>see Chapter 6.4, page 519</i>).
 Logout...	Logout user (<i>see Chapter 2.2.3, page 21</i>).
 MagIC Net Help	Open MagIC Net Help.

6.1.5 Configuration - Subwindows

Program part: **Configuration**

Selection

The following subwindows can be displayed in the main window:

- *Devices*
Shows the automatically recognized and manually added devices.
- *Columns*
Shows the automatically recognized and manually added separation columns.
- *Eluents*
Shows the manually added eluents.
- *Accessories*
Shows the data for all defined accessories parts.
- *Common variables*
Shows the data for all defined common variables.
- *Rack data*
Shows the data for all Metrohm sample racks.
- *Solutions*
Shows the manually added solutions.

Presentation

The subwindows can be enlarged or made smaller to suit by dragging the separating bar between the windows.

By clicking on the button  above at the right, the subwindows can be maximized so that only one subwindow is displayed in the main window. The original view of all subwindows is restored when the  button in the maximized subwindow is clicked on again.

Via the menu item **View ► Quick access...** subwindows that are not in the current configuration view can be shown as a single window.

6.1.6 Configuration - Functions

Program part: **Configuration**

In the program part **Configuration** the following functions can be carried out:

Views

- *Change the layout of the configuration view*
- *Load configuration view*
- *Save configuration view*
- *Rename configuration view*
- *Delete configuration view*

User administration

- *Manage user groups*
- *Access rights*
- *Signatures*
- *Options*
- *Users*

Security settings

- *Login/Password protection*
- *Audit Trail/Changes*
- *Electronic signature*
- *Default reasons*

Program administration

- *Backup directories*
- *Clients*
- *Licenses*

Export/Import of configuration data

- *Export configuration data*
- *Import configuration data*



Backup/Restore configuration data

- Backup configuration data automatically
- Backup configuration data manually
- Restore configuration data

Templates

- *Input lines*
- *Output lines*
- *E-mail templates*

Options

- *General program properties*

6.1.7 Views

6.1.7.1 Views - General

Program parts: **Workplace / Database / Configuration**

Definition

The term **View** defines the contents and design of the main window in the program parts **Workplace**, **Database** and **Configuration**. The following elements belong to a view:

- Number, arrangement, sequence and size of the subwindows.
- Representation within the individual subwindows, i.e. column sequence, column width, sorting and filter.

Functions

The following functions are possible for views:

- *Change layout*
Defines the number, arrangement and sequence of the subwindows for the current view.
- *Save view*
Save current view.
- *Load view*
Load view saved.
- *Rename view*
Rename view saved.
- *Delete view*
Delete view saved.

Automatic save

If in the programm part Configuration under **Tools ► Options** on the **Save** tab, the respective point under **Save on closing** is enabled, then the current view of the program will be saved automatically.

The standard procedure is that the view saved when the program is terminated will be loaded automatically the next time that the program is opened. As an alternative a standard view can be defined for each user group that is loaded automatically the first time that the program part is opened.

- **Workplace**
Run, Live window 1, Report, Watch window, Time program
- **Database**
Determination overview, Curves 1, Information, Results
- **Configuration**
Devices, Columns, Eluents, Accessories

Views can also be exported and imported. In this way these views can be exchanged between different client / server systems.

Dialog window: **Workplace / Database / Configuration ▶ View ▶ Change layout... ▶ Change layout**

With the symbol  or the menu item **View ► Change Layout...** the dialog window **Change layout** is opened.

Selects a graphical symbol for the number, arrangement and sequence of the subwindows.

Displays the subwindows that are still available for displaying the view.

Displays the subwindows that are shown in the view.





Remove the selected subwindow from the view.



Move the selected subwindow upward (modifies sequence).



Move the selected subwindow downward (modifies sequence).

6.1.7.3 Load view

Dialog window: **Workplace / Database / Configuration ▶ View ▶ Load view... ▶ Load view**

With the symbol  or the menu item **View ▶ Load view...** the dialog window **Load view** is opened.

Name

Name of the view that should be loaded.

[Rename]

Rename the selected view.

[Delete]

Delete the selected view.

[Load]

Load the selected view.

6.1.7.4 Save view

Dialog window: **Workplace / Database / Configuration ▶ View ▶ Save view... ▶ Save view**

With the symbol  or the menu item **View ► Save view...** the dialog window **Save view** is opened.

Name

Name under which the view is to be saved.

[Rename]

Rename the selected view.

[Delete]

Delete the selected view.

[Save]

Saves the view under given name. The saved views are globally valid and available for client/server systems.

Rename view

Dialog window: **Workplace / Database / Configuration ▶ View ▶ Rename view... ▶ Rename view**

To be able to rename a view, either open the dialog window **Load View** or **Save View** and press the **[Rename]** button. The **Rename View** window is opened.

Rename view to

Enter a new name for the view.

Input	50 characters

Delete view

Function: **Workplace / Database / Configuration ▶ View ▶ Load/Save view... ▶ [Delete]**

To be able to delete a view, either open the dialog window **Load view** or **Save view** and press the **[Delete]** button. The delete procedure must then be confirmed.

Administration

User administration

User administration

Dialog window: **Configuration ▶ Tools ▶ User administration**

Overview

User groups and their users can be managed in the dialog window **User administration**. For each user group, access rights can be defined for menu items and functions, signature rights and default views for the individual program parts. For client/server systems, the user administration is globally valid for all connected clients (central user administration).

During installation, the three user groups **Administrators** (with the user **Admin1**), **Users** and **Removed users** (each without any users) are automatically generated. All groups can be renamed; the **Administrators** group is the only group that cannot be deleted.

The user administration data can be exported and imported. In this way this data can be exchanged between different client/server systems.

The user administration data can be output as PDF file using the menu item **File ► Print (PDF) ► User administration**.

Structure

The dialog window **User administration** is divided into two parts, the size of which can be modified with the mouse. In the left-hand part the

user groups with their assigned users are listed in tree-form, the right-hand side shows details of the selected items.

Each user group, with the exception of the **Removed users** group, contains the following items:

- *Access rights*
Assigns access rights to the four program parts and their menu bars.
- *Signatures*
Assigns signature rights for methods and determinations.
- *Options*
Defines the view for the individual program parts.
- *Users*
Details of the users.

Functions

In the dialog window **User administration** the following functions can be carried out:

- *Add user groups*
- *Copy user groups*
- *Rename user groups*
- *Delete user groups*
- *Define access rights for user groups*
- *Define signature rights for user groups*
- *Define options for user groups*
- *Add user*
- *Set start password for new user*
- *Deactivate user*
- *Activate user*
- *Remove user*

6.2.1.2 User groups

6.2.1.2.1 User groups - Details

Dialog window: **Configuration** ► **Tools** ► **User administration**

If a user group is selected in the left-hand side of the **User administration** dialog window then details of this user group will be shown on the right-hand side together with a table containing all its members.

Group data

Group name	Shows the name of the user group.
Description	Description of the user group.
Input	256 characters

Renames selected user group.

Deletes selected user group.

Copies selected user group.

Adds new user group.

User group members

The table showing the group members contains information about all members of the selected user group. The table can neither be edited nor sorted.

User

Short name of the user.

Full name

Full name of the user.

Status

Current user status.

Selection	active inactive
active	The user can log in as usual.
inactive	The user can no longer log in. The Administrator must first assign him/her the status activated and provide a new Start password.

[Add user]

Adds new user to user group.

6.2.1.2.2 User administration - Access rights

Dialog window: **Configuration** ► **Tools** ► **User administration**

If in the left-hand part of the dialog window **User administration** the item **Access rights** is marked for a user group then the access rights of this group for program parts, menu items and functions will be shown in tree-form in the right-hand side of the window and can be modified there. If one item is deactivated, then all the subitems belonging to it will also be automatically deactivated. If a subitem, e.g. the menu **Tools**, is deactivated in the configuration then the box for the configuration is col-

ored gray. Blocked functions are deactivated for the particular user, i.e. shown in gray.

Meaning of the symbols:

	Enlarge view	P	Program part
	Reduce view	M	Menu item
	Full access to function(s)	F	Function
	Limited access to function(s)		
	No access to function(s)		



Note

In the **Administrators** group all access rights are switched on as standard and cannot be modified.

6.2.1.2.3 User administration - Signatures

Dialog window: **Configuration ▶ Tools ▶ User administration**

If in the left-hand part of the dialog window **User administration** the item **Signatures** is marked for a user group, then the rights of this group will be shown in the right-hand part and can be modified there.

Permissions for methods

Signature Level 1

If this check box is enabled then users in this user group can electronically sign methods at Level 1.

Selection	off on
Default value	off

Signature Level 2 (lock)

If this check box is enabled then users in this user group can electronically sign methods at Level 2 and at the same time lock them against further modifications.

Selection	off on
Default value	off

Delete signatures Level 2

If this check box is enabled then users in this user group can delete all signatures at Level 2. The method can be edited again.

Selection	off on
Default value	off

Copy user group

Dialog window: **Configuration** ▶ **Tools** ▶ **User administration** ▶ **[Copy group]** ▶ **Copy group**

Dialog window:

In order to copy a user group and save it under a new name, an existing group must be selected and either the context-sensitive menu item **Copy group** or the **[Copy group]** button must be pressed. This opens the dialog window **Copy group**.

Group name

Name of new group.

Input	24 characters

With **[OK]** a new group is generated under this name with same properties (access rights, signature rights, etc.) as the selected group; it does not contain any users. The **Description** field and the table of group members are empty.

Rename user group

Dialog window: **Configuration** ▶ **Tools** ▶ **User administration** ▶ **[Rename group]** ▶ **Rename group**

In order to rename a selected user group either the context-sensitive menu item **Rename group** or the **[Rename group]** button must be pressed. This opens the dialog window **Rename group**.

Group name

Enter the new group name.

Input	24 characters

Delete user group

Function: **Configuration** ▶ **Tools** ▶ **User administration** ▶ **[Delete group]**

In order to delete a selected user group either the context-sensitive menu item **Delete group** or the **[Delete group]** button must be pressed. The group is then deleted.



Note

It is only possible to delete a user group when the group no longer contains any users.

6.2.1.3 User

6.2.1.3.1 User - Details

Dialog window: **Configuration** ▶ **Tools** ▶ **User administration**

If in the left-hand side of the dialog window **User administration** a user in a user group has been selected, then details of the user will be shown at the right-hand side.

User

Shows the short name of the user that must be entered in the field **User**. This name is defined when a new user is entered for the first time and cannot be subsequently modified.

Input	24 characters

Full name

Full name of the user.

Input	256 characters

Status

Shows the current status of the user. Only users of the group **Administrators** can modify the status.

Selection **active** | inactive | removed

active

Users with the status **enabled** can log in in the usual way. An exception is the first login after a change in status from **disabled** or **removed** to **enabled**. In this case a **Start password** must be issued with which this user can then log in.

inactive

Users with the status **disabled** can no longer log in. They are automatically given this status as soon as the number of login attempts defined in the **Security settings** has been exceeded.

removed

Users with the status **removed** can no longer log in. If the status of a user is changed from **activated** or **deactivated** to **removed**, then the user is automatically moved to the group **Removed users**. If a removed user is subsequently again given the status **activated** or **deactivated** then a dialog window appears for selecting the group to which the user is to be assigned.

Start password

The invisible start password is shown with 6 * characters and must be entered the first time that a new user logs in or after a change in status from **deactivated** or **removed** to **activated**. The Administrator must

Input	50 characters

Opens the dialog window **Start password**. This button is enabled only for users with the status **activated**. If a user has forgotten his/her password then the Administrator can issue a new start password here.

Current user group. The administrator can modify the group assignment of the user. The user is automatically moved to the new group. A user can also be moved to a new group with Drag&Drop.

Selection	Selection of the defined user group

Optional entry of additional information for the user (e.g. function, address).

Input	1000 characters

Dialog window: **Configuration** ▶ **Tools** ▶ **User administration** ▶ **[Add user]** ▶ **Add user**

- Select user group and the context-sensitive menu item **Add user**.
- Select user group and press the **[Add user]** button.

In both cases this opens the dialog window **Add user**.

Short name of new user that must be used to log in at program start.
After the name has been entered a **Start password** must be issued with which the user is entered in the list of users.

Input	24 characters

Dialog window: **Configuration** ▶ **Tools** ▶ **User administration** ▶ **[Set start password]** ▶ **Set start password**

Using the **[Set start password]** button in the dialog window **User administration** a start password can be issued for the selected user. It is enabled only for newly added users or for those who have once again achieved **activated** status. The dialog window **Start password** opens:



Start password

Enter a new start password. Password options are not used for the start password.

Input	50 characters

Confirm password

Confirms the start password.

Input	50 characters

6.2.2 Security settings

6.2.2.1 Security settings

Dialog window: **Configuration ▶ Tools ▶ Security settings**

Overview

In the dialog window **Security settings** the parameters for log-in, password protection, Audit Trail and electronic signatures can be configured. These are primarily used to ensure that work is carried out according to the requirements of FDA Guideline 21 CFR 11.

With client/server systems the security settings are globally valid for all connected clients.

Security settings can be exported and imported. This means that these settings can be exchanged between different client/server systems.

The security settings can be put out as PDF file using the menu item **File ► Print (PDF) ► Security settings**.

Tabs

The security settings are configured on the following tabs:

- *Login/Password protection*
Settings for login and password protection.
- *Audit Trail/Changes*
Enable/Disable the Audit Trail and comments when methods, determinations or sample data are modified.
- *Signatures*
Options for electronic signatures.
- *Default reasons*
Definition of reasons for signing and modifying methods, determinations and sample data.

Login/Password protection

Tab: **Configuration ▶ Tools ▶ Security settings ▶ Login/Password protection**

On the tab **Login/Password protection** is defined whether the user must log in with his/her name or with name and password, and how the password is to be monitored and constructed.

Settings according to 21 CFR 11

[Set]

Sets the parameters to default settings for FDA-compliant work.

Login policies

Enforce login with user name

If this check box is **enabled** then every time that the program starts, the login window will appear in which the user must enter his/her user name. If this check box is **disabled** no login is necessary and the user logged in under Windows will be adopted as user name. In this case all subsequent parameters are deactivated.

Selection	on off
Default value	off
	FDA default: on

Password required

If this check box is **enabled** then every time that the program starts, the login window will appear in which the user has to enter a password as well as his/her user name. If this option is **disabled** then all subsequent parameters are inactive.

Selection	on off
Default value	off
	FDA default: on

Password monitoring by MagIC Net

If this option is **enabled** then the password will be monitored by **MagIC Net** according to the following parameters.

Selection	on off
Default value	off
	FDA default: on

Password monitoring by Windows

If this option is **enabled** then the password will be monitored according to the parameters defined in Windows. In this case the parameters for password protection are deactivated.

If this check box is **deactivated** then the newly logged-in user will have all the rights for the opened workplaces that his/her group assignment authorizes him/her to. For running determinations the new user name applies immediately (Audit Trail entries, Save, Export, etc.).

Selection	on off
Default value	off FDA default: off

Automatic logout after

If this check box is **activated** then the user will be logged out automatically when no operating functions have been carried out with the keyboard or the mouse within this time. After this automatic logout, only a member of the same user group as the one to which the previously logged-off user belongs or a user with administrator rights can log in again.

Selection	on off
Default value	off FDA default: off
Range	1 ... 60 min
Default value	10 min FDA default: 10 min



Note

The immediate termination of all determinations on all activated workplaces with the **emergency stop button** still remains possible after an automatic logout.

Password policies

Enforce unique password

If this check box is **activated** then this ensures that a user can use a given password only once.

Selection	on off
Default value	off
	FDA default: on

Special characters required

If this check box is **activated** then this ensures that the password must contain at least one special character (@, #, ~ etc.).

Selection	on off
Default value	off
	FDA default: off

6.2.2.4 Audit Trail/Modifications

Tab: **Configuration** ▶ **Tools** ▶ **Security settings** ▶ **Audit Trail/Modifications**

Audit Trail recording is enabled and disabled on the **Audit Trail/Modifications** tab. When a method, determination or sample data is modified, you can also define whether or not a reason must be given for the modification together with comments.

Settings according to 21 CFR 11

[Set]

Sets the parameters to default settings for FDA-compliant work.

Audit Trail

Enable Audit Trail

If this check box is **activated** then all program actions will be automatically recorded; these are defined as Audit Trail actions.

Selection	on off
Default value	off
	FDA default: on

Modifications

Comment on modification of methods

If this check box is **activated** then each time that a method is modified a modification reason and a modification comment must be entered; these are saved in the method and shown in the method history. The reason and comments are also recorded in the Audit Trail.

Selection	on off
Default value	off
	FDA default: on

Comment on modification of determinations

If this check box is **activated** then each time that a determination is modified a modification reason and a modification comment must be entered; these are saved in the determination and shown in the database in the subwindow **Information** on the tab **Determination**. The reason and comments are also recorded in the Audit Trail.

Selection	on off
Default value	off
	FDA default: on

Comment on modification of sample data (live)

If this check box is **activated** then each time that a determination is modified a modification reason and a modification comment must be entered; these are saved in the determination and shown in the database in the subwindow **Information** on the tab **Sample**. The reason and comments are also recorded in the Audit Trail.

Selection	on off
Default value	off
	FDA default: on

Reprocessing with history

on | off (Default value: **on**)

With this parameter the behavior of the reprocessing is set for the entire MagIC Net installation (server and all clients). With **On**, for each reprocessing a new version of the determination is created and stored in the database. With **Off**, *no* new determination version is created (except when there was only the original version).

Selection	on off
Default value	off
	FDA default: on

6.2.2.5 Signatures

Tab: **Configuration** ▶ **Tools** ▶ **Security settings** ▶ **Signatures**

On the tab **Signatures** the parameters for the electronic signatures can be configured.

Settings according to 21 CFR 11

[Set]

Sets the parameters to default settings for FDA-compliant work.

Inactivity delay

If this check box is **activated** then the dialog window for signing will be automatically closed when the entered time limit has expired.

Selection	on off
Default value	off FDA default: on
Range	1 ... 60 min
Default value	10 min FDA default: 10 min

Remove password after signature

If this check box is **activated** then the password must be entered again after each signature.

Selection	on off
Default value	off FDA default: on

Sign each determination separately

If this check box is **activated** then each determination contained in the determination overview must be signed individually.

Selection	on off
Default value	off FDA default: on

6.2.2.6 Default reasons

Tab: **Configuration** ▶ **Tools** ▶ **Security settings** ▶ **Default reasons**

On the tab **Default reasons** the reasons are defined that have to be entered when methods and determinations have to be signed for, or when methods, determinations and sample data are modified.

Category

Selection of the category for which the reasons are to be defined.

Selection	Signature Level 1 Signature Level 2 Modification of methods Modification of determination Modification of sample data
Default value	Signature Level 1

Reasons

Shows the reasons defined for the selected category.

Input	50 characters



Moves text upward (modifies sequence).



Moves text downward (modifies sequence).

[New]

Adds a new reason.

[Edit]

Edits the selected reason.

Deletes the selected reason.

Dialog window: **Configuration ▶ Tools ▶ Security settings ▶ Login/Password protection ▶ [E-mail...] ▶ Send E-mail**

E-mail address of the recipient.

Input	200 characters

Title for describing the message.

Input	200 characters

The message defined here will be transmitted as an E-mail if the maximum permitted number of login attempts is exceeded.

The Text editor for entering or changing the message is opened with  or by double-clicking into the text field.

Selection	Text (unlimited)

E-mail address

E-Mail address of the sender.

Input	200 characters

Address of SMTP mail server.

Input	200 characters

Port number of the SMTP mail server.

Range	1 ... 65536

Default value	25

- ### 6.2.3.2 Backup directories

6.2.3.2.1 Backup directories

Tab: **Configuration** ▶ **Tools** ▶ **Program administration** ▶ **Backup directories**

Table with the defined backup directories. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The directory **Default backup directory** is generated during installation.



The following buttons are activated only when **MagIC Net** is running on the server; they are deactivated for the individual clients.

[New]

Adds a new backup directory (see [Chapter 6.2.3.2.2, page 501](#)).

[Edit]

Edits the selected backup directory (see *Chapter 6.2.3.2.3, page 502*).

[Delete]

Deletes the selected backup directory.



The **Default backup directory** cannot be deleted.

6.2.3.2.2 Create new backup directory

Dialog window: **Configuration ► Tools ► Program administration ► Backup directories ► [New] ► New backup directory**

Name

Name for the backup directory.

Input	50 characters

Directory

Entry or selection (with ) of the path for the backup directory.

Input	1000 characters



Note

If the backup directory is on a network drive the saving date should be added manually to the **Backup name** because the saving date information is not available when the directory is restored.



Note

Make sure that you have read and write access rights on the selected directory.

6.2.3.2.3 Edit backup directory

Dialog window: **Configuration** ▶ **Tools** ▶ **Program administration** ▶ **Backup directories** ▶ **[Edit]** ▶ **Edit backup directory**

Name

Name for the backup directory.

Input	50 characters



Note

The **Default backup directory** generated during installation cannot be renamed.

Directory

Entry or selection (with) of the path for the backup directory.

Input	1000 characters



Note

If the backup directory is on a network drive the saving date should be added manually to the **Backup name** because the saving date information is not available when the directory is restored.



Note

Make sure that you have read and write access rights on the selected directory.

Clients

Tab: **Configuration** ▶ **Tools** ▶ **Program administration** ▶ **Clients**

Table with information about the computers on which **MagIC Net** is installed. The table cannot be edited. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence.

Client ID

Shows the ID for the client that has been entered for the client/server installation.

Computer name

Shows the name of the computer on which the client has been installed.

Status

Shows whether **MagIC Net** has been started (**active**) or not (**inactive**).



Note

The contents of the tab **Clients** can be displayed, even if **MagIC Net** is not running, by using the shortcut  **Clients** in the directory `..\Metrohm\magic\bin` (only available on the server).

6.2.3.4 Add licenses

Dialog window: **Configuration ▶ Tools ▶ Program administration ▶ Licenses ▶ [Add licenses]**

The menu **Tools ► Program administration ► Licenses ► [Add licenses]** in the program part **Configuration** opens the dialog window **Add licenses** in which the new license code can be entered.

License code

Entry of the license code.

6.2.3.5 Licenses

Tab: **Configuration** ▶ **Tools** ▶ **Program administration** ▶ **Licenses**

Table with the licenses that are installed on the server (for **MagIC Net Multi**) or local server (for **MagIC Net Professional**). The table cannot be edited. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence.



Note

In client/server systems this tab is only visible on the server and only for members of the **Administrators** user group.

License code

Shows the entered license code.

Number of licenses

Shows the number of clients to have been enabled with the license code.

[Add licenses]

Adds new, additional licenses. The dialog window **Add licenses** opens.

License code

Entry of the license code.

6.3 Configuration data

6.3.1 Export/Import

6.3.1.1 Export configuration data

Dialog window: **Configuration** ▶ **File** ▶ **Export...** ▶ **Export configuration data**

With **File ► Export...** the dialog window **Export configuration data** opens, in which the following parts of the configuration database can be selected for export:

Devices

on | off (Default value: **on**)

Exports configuration data for devices (see *Chapter 6.5.1, page 535*).

Solutions

on | off (Default value: **on**)

Exports configuration data for solutions (see *Chapter 6.8.1, page 560*).

Common variables

on | off (Default value: **on**)

Exports configuration data for common variables (see *Chapter 6.11.1*, page 588).



E-mail templates

on | off (Default value: **on**)

Exports saved E-mail templates (see Chapter 6.3.3.3, page 514).

Text templates

on | off (Default value: **on**)

Exports saved text templates (see Chapter 3.6, page 138).

Sample assignment table

on | off (Default value: **on**)

Exports the saved sample assignment table (see Chapter 3.5, page 136).

Security settings

on | off (Default value: **on**)

Exports saved security settings (see *Chapter 6.2.2.1, page 490*).

User administration

on | off (Default value: **on**)

Exports saved user administration (see *Chapter 6.2.1.1, page 481*).

[OK]

The dialog window **Save** for saving data opens, in which the name and directory for the export file must be entered. The selected configuration data is then saved in a file with the extension **.mcfg**.

6.3.1.2 Import configuration data

Dialog window: **Configuration** ▶ **File** ▶ **Import...** ▶ **Import configuration data**

With **File ► Import...** and after selection of the file ***.mcfg** to be imported, the dialog window **Import configuration data** opens, in which the parts of the configuration database present in the export file can be selected for import:



Note

Data that is not present in the export file cannot be selected.

Devices

on | off (Default value: **on**)

Imports configuration data for devices (*see Chapter 6.5.1, page 535*).

Solutions

on | off (Default value: **on**)

Imports configuration data for solutions (*see Chapter 6.8.1, page 560*).

Common variables

on | off (Default value: **on**)

Imports configuration data for common variables (*see Chapter 6.11.1, page 588*).

Rack data

on | off (Default value: **on**)

Imports configuration data for sample changer racks (*see Chapter 6.10.1, page 581*).

Columns

on | off (Default value: **on**)

Imports configuration data for separation columns (*see Chapter 6.6.1, page 541*).

Eluents

on | off (Default value: **on**)

Imports configuration data for eluents (*see Chapter 6.7.1, page 553*).

Accessories

on | off (Default value: **on**)

Imports configuration data for accessories (*see Chapter 6.9.1, page 573*).

Configuration views

on | off (Default value: **on**)

Imports saved configuration views (*see Chapter 3.1.7, page 106*).

Workplace views

on | off (Default value: **on**)

Imports saved workplace views (*see Chapter 3.1.7.1, page 106*).



Database views

on | off (Default value: **on**)

Imports saved database views (see *Chapter 3.1.7, page 106*).

Control chart templates

on | off (Default value: **on**)

Imports saved control card templates (see *Chapter 4.5.1, page 249*).

E-mail templates

on | off (Default value: **on**)

Imports saved E-mail templates (see Chapter 6.3.3.3, page 514).

Export template

on | off (Default value: **on**)

Imports the saved export template

Text templates

on | off (Default value: **on**)

Imports saved text templates (see Chapter 3.6, page 138).

Sample assignment table

on | off (Default value: **on**)

Imports the saved sample assignment table (see Chapter 3.5, page 136).

Security settings

on | off (Default value: **on**)

Imports security settings (see *Chapter 6.2.2.1, page 490*).

User administration

on | off (Default value: **on**)

Imports user administration (see *Chapter 6.2.1.1, page 481*).

[OK]

The selected data is imported.

6.3.2.2 Backup configuration data manually

Dialog window: **Configuration** ▶ **File** ▶ **Save** ▶ **Manually** ▶ **Backup configuration file manually**

Backup target

Backup directory

Selection of a pre-defined backup directory (see *Chapter 6.2.3.2.1, page 501*).



Note

Make sure that you have read and write access rights on the selected directory.

Backup name

Selection of an existing name for the backup file or entry of a new name.
If an existing backup file is selected it will be overwritten.

Input	50 characters
Selection	Backup names



Note

If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** because the backup date information is not available when the directory is restored.

[Start]

Start manual backup of complete configuration database (including method groups and methods).

6.3.2.3 Restore configuration data

Dialog window: **Restore configuration data**

Dialog window "Restore configuration data"

Backup directory

Selection of a directory predefined in the Program administration that contains the backed up configuration database.

Selection	Backup directories

Generates a new template (see *Chapter 6.3.3.2.2, page 513*).

Edits the selected template (see *Chapter 6.3.3.2.2, page 513*).

Deletes the selected template.

Dialog window: **Configuration** ▶ **Tools** ▶ **Templates** ▶ **Output lines...** ▶ **Templates for output lines** ▶ **[New] / [Edit]** ▶ **New template / Edit template**

Name of the pattern for the output signal.

Bit	13	12	11	10	9	8	7	6	5	4	3	2	1	0



Note

We recommend masking the irrelevant output lines with an asterisk * so as not to modify these line conditions.

Pulse length

Duration of the transmitted pulse.

Range	100 ... 1000 ms
Default value	200 ms

6.3.3.3 E-mail templates

6.3.3.3.1 Manage E-mail templates

Dialog window: **Configuration ▶ Tools ▶ Templates ▶ E-mail templates... ▶ E-mail templates**

The stored E-mail templates are displayed in a table in the dialog window **E-mail templates**. The table cannot be edited, but with a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence.

[New]

Generates a new template. The window **Edit E-mail template** opens, in which a new template can be defined (see *Chapter 6.3.3.2, page 514*).

[Edit]

Edits the selected template. The window **Edit E-Mail template** opens, in which the template can be edited (*see Chapter 6.3.3.3.2, page 514*).

[Delete]

Deletes the selected template.

[Copy]

Copies the selected template and saves it under the name **Copy of....**

6.3.3.3.2 Edit E-mail templates

Dialog window: **Configuration ▶ Tools ▶ Templates ▶ E-mail templates... ▶ E-mail templates ▶ [New] / [Properties] ▶ Edit E-mail template**

With **[New]** or **[Edit]** in the **E-mail templates** dialog window, the dialog window **Edit E-mail template** opens for entering a new template or for editing an existing template.

E-mail template

Name of the E-mail template.

Input	1 ... 16 characters

Receiver

E-mail address

E-mail address of the receiver.

Input	1 ... 200 characters

Sender

E-mail address

E-mail address of the sender.

Input	1 ... 200 characters

SMTP server

Address of SMTP mail server.

Input	1 ... 200 characters

Port

Port number of the SMTP mail server.

Range	1 ... 1 ... 65536

Default value	25

Authentication

on | off (Default value: **off**)

Check box for activating the authentication of the sender when sending the E-mail or selecting the authentication method.

Selection	SMTP	SMTP after POP

Default value **SMTP**

POP server

Address of POP mail server.

Input	3 ... 200 characters

Port

Port number of the POP mail server.

Range	1 ... 1 ... 65536

Default value	110

User

Name of the user for access to mail server. The name need not agree with the Windows user name.

Input	2 ... 50 characters

Password

Password for access to the mail server. This password does not necessarily have to be identical to the Windows password.

Input	0 ... 50 characters

6.3.4 Options

6.3.4.1 Options - Overview

Dialog window: **Configuration** ▶ **Tools** ▶ **Options** ▶ **Options**

Under **Tools ► Options**, general program properties can be set on the following tabs:

- *General*
Selects dialog language and pressure unit.
- *Error handling*
Settings for emergency stop button and safety shutdown.
- *Save*
Saves settings on exiting the program.
- *PDF*
Settings for PDF files.

6.3.4.2 Options - General

Tab: **Configuration** ▶ **Tools** ▶ **Options** ▶ **Options** ▶ **General**

Dialog language

Dialog language

Selection of the dialog language.

Selection	German English additional languages (dependent on installed language patches)
Default value	English



Note

For the altered setting to become effective the program must be restarted.

Unit

Pressure

Selecting the unit for pressure.

Modifying the document allowed

on | off (Default value: **on**)

If this option is **switched off** no changes can be made to the PDF file.

6.4 Audit Trail

6.4.1 Audit Trail - General

6.4.1.1 Audit Trail - Definition

Program window: **Configuration ▶ Tools ▶ Audit Trail... ▶ Audit Trail**

Definition

The term **Audit Trail** means the FDA-compliant logging of all user actions with which in **MagIC Net** data is generated, altered or deleted. Each of these actions is saved as a line in the Audit Trail table together with the date, time and name of the logged-in user.

Organization

All the Audit Trail data is saved in the configuration database and can be backed up and restored together with this database. In the **local server systems (MagIC Net Professional)** this is stored in the program directory of the computer on which the program has been installed. In the **client/server systems (MagIC Net multi)** the Audit Trail data is stored centrally on the server and contains all the actions taking place on all the computers (clients) that are connected to this server.

Configuration

Recording the Audit Trail actions can be switched on and off in the Security settings (see Chapter 6.2.2.4, page 496).

6.4.1.2 Audit Trail - Desktop

Program window: **Configuration ▶ Tools ▶ Audit Trail... ▶ Audit Trail**

Elements

The desktop of the **Audit Trail** program window contains the following elements:

- *Menu bar*
- *Toolbar*
- *Filter selection*
- *Audit Trail table*
- *Navigation bar*

 Special filter...	Defines and uses special filter (<i>see Chapter 6.4.2.3.4.1, page 527</i>).
 Remove filter	Removes current filter (<i>see Chapter 6.4.2.3.5, page 530</i>).

6.4.1.3.5 Audit Trail - Menu Tools

Program window: **Configuration ► Tools ► Audit Trail... ► Audit Trail**

Monitoring	Defines Audit Trail table monitoring (<i>see Chapter 6.4.2.9, page 534</i>).
Installation log	Opens log file for installation.
Verify export/archive	Checks the checksum of an exported or stored Audit Trail file (<i>see Chapter 6.4.2.10, page 534</i>).

6.4.1.3.6 Audit Trail - Menu Help

Program window: **Configuration ► Tools ► Audit Trail... ► Audit Trail**

 MagIC Net help	Opens MagIC Net Help.
Info	Displays information about the program and the installation.

6.4.1.4 Audit Trail - Toolbar

Program window: **Configuration ► Tools ► Audit Trail... ► Audit Trail**

 Print (PDF)...	Prints Audit Trail data sets as PDF file (<i>see Chapter 6.4.2.8, page 533</i>).
 Last filter	Uses the last quick or special filter again (<i>see Chapter 6.4.2.3.2, page 526</i>).
 Quick filter	Uses the quick filter (<i>see Chapter 6.4.2.3.3, page 526</i>).
 Special filter...	Defines and uses special filter (<i>see Chapter 6.4.2.3.4.1, page 527</i>).
 Remove filter	Removes current filter (<i>see Chapter 6.4.2.3.5, page 530</i>).
 Update	Updates Audit Trail table (<i>see Chapter 6.4.2.4, page 530</i>).
 MagIC Net help	Opens MagIC Net Help.

6.4.1.5 Audit Trail - Filter selection

Program window: **Configuration ► Tools ► Audit Trail... ► Audit Trail**

Filter

Selection of the filter with which the Audit Trail table is to be filtered:

6.4.1.7

Program window: **Configuration** ▶ **Tools** ▶ **Audit Trail...** ▶ **Audit Trail**

In the **Audit Trail** program window the following functions can be carried out:

- *Filter Audit Trail*
- *Update Audit Trail*
- *Export Audit Trail*
- *Archive Audit Trail*
- *Delete Audit Trail*
- *Print Audit Trail*

6.4.2

6.4.2.1

Program window: **Configuration** ▶ **Tools** ▶ **Audit Trail...** ▶ **Audit Trail**

Open

The Audit Trail table is opened with **Tools ► Audit Trail...** or the symbol  in the program part **Configuration**.



Note

The table can only be opened if the option **Audit Trail activated** is switched on in the Security settings (see *Chapter 6.2.2.4, page 496*).

Contents

The Audit Trail table shows the following information about user actions as standard:

Type

Symbol for characterizing the action:



Information about the action, which is neither relevant to the security nor has altered any data.



Information about the action, which is either relevant to the security or has altered any data.



Information about errors or incorrect actions. These actions are additionally shown with a red background to their line numbers.

Date

Date, time and time zone of the action.

User

Short name of the logged-in user.

Full name

Full name of the logged-in user.

Client

Name of the Client on which the action was carried out or which is affected by the action.

Category

Program part to which the action belonged.

Action

Short description of the action.

Details

Detailed information about the action.

Archived

Shows whether the action has already been archived or not (only archived actions can be deleted).

With the menu item **View ► Column display...** unwanted columns can be removed.

Table view

The Audit Trail table cannot be edited. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles:**
Sets the column width
- **Double-click on the margin between column titles:**
Sets the optimal column width
- **Drag the column title:**
Moves the column to the required location

If the contents of a field is larger than the column width then the whole contents will be shown as a tooltip if the mouse cursor is kept on the field.

Functions

The following functions can be carried out:

- *Filter Audit Trail*
- *Update Audit Trail*
- *Export Audit Trail*
- *Archive Audit Trail*
- *Delete Audit Trail*
- *Print Audit Trail*
- *Monitor Audit Trail*
- *Verify Audit Trail*

6.4.2.2 Audit Trail - Column display

Dialog window: **Audit Trail ▶ View ▶ Column display... ▶ Column display**

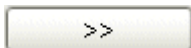
View ► Column display... opens the dialog window **Column display**. Here you can define the columns that are to be shown in the Audit Trail table.

Columns available

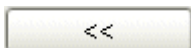
Shows all the fields that can be displayed as columns in the Audit Trail table.

Columns displayed

Shows all the fields that are displayed as columns in the Audit Trail table. All available columns are shown as the default.



Adds the selected column to the table.



Removes the selected column from the table.



Modifies the sequence of displayed columns by moving the selected column up.



Modifies the sequence of displayed columns by moving the selected column down.



6.4.2.3 Filter Audit Trail

6.4.2.3.1 Filter Audit Trail

Program window: **Configuration** ▶ **Tools** ▶ **Audit Trail...** ▶ **Audit Trail**

The following possibilities exist for filtering entries in the Audit Trail table:

- *Filter selection in filter bar*
- *Quick filter*
- *Special filter*
- *Last filter*
- *Remove filter*

6.4.2.3.2 Audit Trail - Last filter

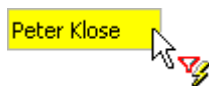
Menu item: **Audit Trail** ▶ **Filter** ▶ **Last filter**

With the menu item **Filter ► Last filter** or the symbol  in the **Audit Trail** program window, the previously used filter is reactivated.

6.4.2.3.3 Audit Trail - Quick filter

Menu item: **Audit Trail** ▶ **Filter** ▶ **Quick filter**

A quick filter can be applied for the contents of the selected table field with the menu item **Filter ► Quick filter** or the symbol  in the **Audit Trail** program window. After this function has been selected, the field in which the cursor is located will have a colored background when navigating in the Audit Trail table. At the same time the following special filter symbol appears:



By double clicking on it with the left-hand mouse button, the contents of the field selected in the table will be set as the filter criterion and this filter will be applied directly to the table.



Note

The quick filter can be used again within the filtered table, so that the number of entries can be limited step by step.

6.4.2.3.4.1 Special filter table

With the menu item **Filter ► Special filter** or the symbol  in the **Audit Trail** program window, the dialog window **Special filter - Database 'ConfigDB'** opens for defining user-specific filters.

Selects the filter to be loaded for processing. An empty table with the name **New filter** is loaded as standard.

Selection	Filter name New filter
Default value	New filter

Opens the dialog window **Save filter** in which the filter criteria entered in the table can be saved as a special filter under the required name (see *Chapter 6.4.2.3.4.3, page 530*).

Deletes the special filter that is currently loaded.

The overview table shows all the defined filter criteria and cannot be directly edited. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles:**
Sets the column width
- **Double-click on the margin between column titles:**
Sets the optimal column width

If the contents of a field is larger than the column width then the whole contents will be shown as a tooltip if the mouse cursor is kept on the field.

For the meaning of the columns, see *Edit filter criterion*.

The menu **[Edit]** beneath the filter table contains the following menu items:

Edit line	Opens the dialog window Edit filter criterion in which the filter condition of the line selected in the table can be edited (<i>see Chapter 6.4.2.3.4.2, page 528</i>).

Operator

Selection of the comparison operator for the filter criterion.

for fields of type 'Text'

Selection	= <> empty not empty
Default value	=

for fields of type 'Number'

Selection	= <> < > <= >= invalid out of limits
Default value	=

for fields of type 'Date'

Selection	= <> < > <= >= Today
Default value	=



Note

If for the column **Date**, the **Operator Today** is selected then filtering will be carried out for the actual date. In the field **Comparative value**, a range in days (-9999 ... 9999) can also be defined for filtering based on the current date.

Comparative value

Selection or entry of the comparative value for the filter criterion.

for fields of type 'Text'

Input	250 characters ^* can be used as a wildcard for any strings.

for fields of type 'Number'

Input	Numerical value

for fields of type 'Date'

The  opens the window **Select date** to select the date (see Chapter 2.5.1, page 77).

for fields of type 'Date' and 'Operator = Today'

Range	-9999 ... 9999
Default value	0

Match case

on | off (Default value: **off**)

If this option is switched on then upper/lower case will be differentiated when filtering fields with **Type = Text**.

Use asterisk (*) as wildcard

on | off (Default value: **off**)

If this option is switched on, the asterisk ***** can be used as a wildcard for any character strings for filtering fields with **Type = Text**.

6.4.2.3.4.3 Special filter - Saving filter

Dialog window: **Audit Trail** ▶ **Filter** ▶ **Special filter...** ▶ **Special filter - Database**
'ConfigDB' ▶ **[Save filter]** ▶ **Save filter**

With the **[Save filter]** button the dialog window **Save filter** opens for saving a Special filter.

Filter name

Name under which the special filter is to be saved.

Input	50 characters

[Save]

Saves filter under given name.



Note

The filters are saved globally in the configuration database and are therefore available for all clients.

6.4.2.3.5 Audit Trail - Removing filter

Menu item: **Audit Trail** ► **Filter** ► **Remove filter**

With the menu item **Filter ► Remove filter** or the symbol  in the **Audit Trail** program window, the previously used filter is removed and all the entries are shown.

6.4.2.4 Update Audit Trail

Menu item: **Audit Trail** ▶ **View** ▶ **Update**

The Audit Trail table is updated with the menu item **View ► Update** or the symbol .



Selection

Selection	All records Records until ...
Default value	All records

All records

All entries from the filtered Audit Trail table will be archived.

Records until ...

Only data sets from the Audit Trail table up to the selected date will be archived.



Note

Archiving Audit Trail entries is identical to exporting them, i.e. the Audit Trail entries are stored in text format and cannot be imported back into the Audit Trail Table. The difference between this and exporting is that the archived entries can be marked in the column **Archive** and then deleted. The archive file contains a checksum which allows to verify whether the file has been modified later on.

6.4.2.7 Delete Audit Trail

Dialog window: **Audit Trail** ► **File** ► **Delete** ► **Delete Audit Trail**

With the menu item **File ► Delete** the dialog window **Delete Audit Trail** opens.

Selection

Selection	All archived records Archived records until ...
Default value	All archived records

All archived records

All the archived entries will be deleted from the Audit Trail table.

Archived records until ...

Only the archived entries generated up to the entered date will be deleted from the Audit Trail table.

User 1

User

Short name of the first user to have the right to delete Audit Trail entries.

Input	24 characters

Password

Password of the first user to have the right to delete Audit Trail entries.

Input	24 characters

User

Input	24 characters

Input	24 characters

Selection	All records Selected records
Default value	Selected records

Selection	Portrait Landscape
Default value	Portrait





6.4.2.9 Monitor Audit Trail

Dialog window: **Audit Trail ▶ Tools ▶ Monitoring ▶ Audit Trail monitoring**

With the menu item **Tools ► Monitoring** the dialog window **Audit Trail monitoring** opens.

Monitor number of entries

on | off (Default value: **on**)

If this option is **switched on**, then the number of entries in the Audit Trail table will be monitored.

Maximum number

Maximum number of entries allowed in the Audit Trail table. If this number is exceeded an error message appears.

Range	10 ... 500000
Default value	100000

6.4.2.10 Verify Audit Trail

Dialog window: **Audit Trail ▶ Tools ▶ Verify export/archive ▶ Verify Audit Trail export/archive**

With the menu item **Extras ► Verify export/archive**, the dialog window **Verify Audit Trail export/archive** opens, in which the checksum of a file exported or archived from the Audit Trail can be checked.

Selecting file

Entering or selecting (with ) the file that is to be verified

[Verify export/archive]

Triggers the checking of the selected file.

Result

The result of the checking of the checksum is displayed.

6.5 Subwindow Devices

6.5.1 Configuration - Devices

Subwindow: **Configuration ► Devices**

Subwindow Devices

The subwindow **Devices** contains the device table with all automatically recognized and manually added devices and is always shown in the program part **Configuration**, i.e. it cannot be removed from the Configuration view. The subwindow can be enlarged and reduced as required; it can also be maximized.

USB devices

Devices connected to the PC via USB are automatically recognized at the start of the program and entered in the device table. If the connection between PC and device or the current supply is interrupted then the device will remain in the device table with the status **not ok**. If it is reconnected then it will be recognized automatically by its serial number and again assigned to the existing device entries. The status will change to **ok**.

Peripheral devices of USB devices

Peripheral devices connected to USB devices (e.g. dosing devices, stirrers, etc.) are also recognized automatically. If they are connected or removed while a program is running, then after confirming a corresponding message, either the device must be reinitialized, the USB connection must be interrupted and then re-established or the program must be restarted.

RS-232 devices

Devices that are connected to the PC via an RS-232 interface will not be recognized automatically. They must be added manually to the device table as new devices. If the connection between PC and device or if the current supply is interrupted, the device will nevertheless remain in the device table with the status **ok**. In order to update the status to **not ok**, the properties window of the device must be opened and then closed again. The same applies when the device is connected again or switched on.

6.5.2 Device table

6.5.2.1 Device table - Desktop

Subwindow: **Configuration ► Devices**

Contents

In the device table the following information about automatically recognized or manually added devices is shown as standard:

**Instrument name**

Designation of the device.

Device type

Type of device.

Device serial number

Serial number of the instrument.

Status

Device status. A device that is ready has the status **ok** shown in green, a device that is not ready has the status **not ok** shown in red.



Note

The device status is permanently monitored and updated for USB devices only. For Metrohm devices with RS-232 connection, the current status at the last access to the device is shown always. For barcode readers, the status cannot be monitored. It will be set to **ok** after confirmation of the connection test.

Start-up

Date on which the device was added to the device table.

Next GLP test

Date on which the next GLP test is due. If GLP monitoring is switched on and the set date is before the current date (i.e. the GLP test has not yet been carried out) then the date will be shown in red.

Remarks

Remarks about the device.



All of the devices or device modules used in the method will be reserved as soon as a determination is started. Generally speaking, they can then neither be used at a different workplace nor used or configured in manual control until the determination has been terminated. The line for a reserved device is shown in gray letters. An array of devices and device modules does however support the time program command **Enable** with which they can once again be enabled even before the end of the determination.

The device table cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left mouse button as follows:

- If the contents of a field is larger than the column width then the whole contents will be shown as a Tooltip if the mouse cursor is kept on the field.

The menu **Edit** beneath the device table contains the following menu items:

MagIC Net 2.2

>>



6.5.2.5 Editing ignored devices

The dialog window **Ignored devices** is opened with **[Edit] ► Ignored devices...**. Here the list of ignored devices can be edited.

Table contents

Device type

Device serial number

[Delete]

The highlighted device is removed from the list. It will be recognized automatically again at the time of the next program start and can be included in the list of devices.



6.5.2.6 Printing device list

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Print (PDF)... ▶ Print list of devices (PDF)**

With **[Edit] ► Print (PDF)...** the dialog window **Print list of devices (PDF)** opens.

Orientation

Selection	Portrait Landscape
Default value	Portrait

Portrait

Prints the device table in portrait format.

Landscape

Prints the device table in landscape format.

[OK]

The table of devices is shown in the required format as a PDF file and can be opened directly with the Acrobat Reader; it can then be printed out and/or saved.

6.5.3 Device properties

Dialog window: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'**

With the menu item **[Edit] ► Properties...** in the subwindow **Devices** the properties window opens for the device selected in the device table in which the parameters of the device can be edited. It consists of several tabs. The tabs **General** and **GLP** are always present, the remaining tabs depend on the selected device. Properties can be set for the following devices:

- 850 Professional IC
- 881 Compact IC Pro
- 882 Compact IC Plus
- 882 Compact IC Plus
- 814 USB Sample Processor and 815 Robotic USB Sample Processor XL
- 858 Professional Sample Processor
- 863 Compact Autosampler
- 889 IC Sample Center
- 886 Professional Thermostat / Reactor
- 887 Professional UV/VIS Detector
- 872 Extension Module IC Pump
- 872 Extension Module IC Module
- 872 Extension Module Sample Prep
- 872 Extension Module Liquid Handling
- 872 Extension Module Suppression
- 872 Extension Module Suppression – MCS

- The device properties of the **891 Professional Analog Out** (see *Chapter 7.1.2.6, page 602*) are assigned to the main device it is connected to.



Maximum pressure

Maximum permitted pressure for the separation column.

Precolumn type

Type of precolumn used for the separation column.

Determinations

Number of determinations carried out with the separation column.

Working hours

Number of working hours for the separation column.

Next GLP test

Shows the date on which the next GLP test is due for the separation column. If GLP monitoring is switched on and the set date is before the current date (i.e. the GLP test has not yet been carried out) then the date will be shown in red.

Table view

The column table cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left mouse button as follows:

- **Drag the border between column titles:**
Sets the column width
- **Double-click on the border between column titles:**
Sets the optimal column width
- **Drag the column title:**
Moves the column to the required location

If the contents of a field is larger than the column width then the whole contents will be shown as a Tooltip if the mouse cursor is kept on the field.

If a column is reserved for a running determination or for manual operation then the line will be shown in gray and the column cannot be edited until the determination has been finished.

Functions

The menu **[Edit]** beneath the column table contains the following menu items:

New...	Manually adds a new column (see <i>Chapter 6.6.2.2, page 543</i>).
Delete	Deletes the selected column (see <i>Chapter 6.6.2.3, page 543</i>).

Outputs the column table as a PDF file (see *Chapter 6.6.2.5, page 544*).

Menu item: **Configuration** ▶ **Columns** ▶ **[Edit]** ▶ **New...**

Add new column

Selection	unknown List of column types
Default value	unknown

Menu item: **Configuration** ▶ **Columns** ▶ **[Edit]** ▶ **Delete**

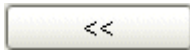
Dialog window: **Configuration** ▶ **Columns** ▶ **[Edit]** ▶ **Column display...** ▶ **Column display**

Available columns

Displayed columns

>>

543



Removes the selected column from the table.



Modifies the sequence of displayed columns by moving the selected column up.



Modifies the sequence of displayed columns by moving the selected column down.

6.6.2.5 Print column list

Menu item: **Configuration** ▶ **Columns** ▶ **[Edit]** ▶ **Print (PDF)...**

[Edit] ► Print (PDF)... opens the dialog window **Print list of columns (PDF)**.

Orientation

Selection	Portrait Landscape
Default value	Landscape

Portrait

Prints the column table in portrait format.

Landscape

Prints the column table in landscape format.

[OK]

The column table is shown in the required format as a PDF file and can be opened directly with Acrobat Reader; it can then be printed and/or saved.

6.6.3 Column properties

6.6.3.1 Edit column properties

Dialog window: **Configuration** ▶ **Columns** ▶ **[Edit]** ▶ **Properties...** ▶ **Column - 'Name'**

The parameters for the selected columns are defined on the following tabs:

- *Column*
Parameters of the separation column.
- *Properties*
Operating characteristics and technical specifications of the separation column.
- *Precolumn*
Parameters of the precolumn used.

- ### 6.6.3.2 Properties - Column

Column name

Input	24 characters

Input	40 characters

Input **10 characters**

Input	16 characters

Input	16 characters

Input	24 characters

Standard temperature

Recommended temperature for operating the separation column (entry only possible for **Column type = unknown**).

Range	0 ... 30 °C
Default value	100 °C

Standard eluent

Recommended eluent for operating the separation column (entry only possible for **Column type** = **unknown**).

Input	100 characters

pH range

Recommended pH range for operating the separation column (entry only possible for **Column type = unknown**).

Range	0.0 ... 14.0

Technical specifications

Inner diameter

Inner diameter of separation column (entry only possible for **Column type = unknown**).

Range	0.0 ... 999.9 mm

Length

Length of separation column (entry only possible for **Column type = unknown**).

Range	0.1 ... 9999.9 mm

Particle size

Particle size of separation column (entry only possible for **Column type = unknown**). Either a numerical value (in μm) or a text (e.g. **monolithic**) can be entered here.

Input	10 characters

6.6.3.4 Properties - Precolumn

Tab: **Configuration** ▶ **Columns** ▶ **[Edit]** ▶ **Properties...** ▶ **Column - 'Name'** ▶ **Guard column**

Using precolumn

on | off (Default value: **off**)

If this option is enabled, use of the selected precolumn is activated. This means that the data of the precolumn can be saved both on the column

chip and in every determination. The use of a precolumn also influences certain calculations.

Precolumn type

Type of precolumn

Input	40 characters
Selection	unknown Select precolumns

Order number precolumn

Order number for the precolumn.

Input	10 characters

Serial number precolumn

Serial number of the precolumn.

Input	16 characters

Batch number

Batch number of the precolumn

Input	16 characters

Start-up

Date on which the precolumn was first used for a determination. This date can be edited by pressing .

Technical specifications

Inner diameter precolumn

Inner diameter of the precolumn.

Range	0.0 ... 999.9 mm

Length

Length of the precolumn

Range	0.1 ... 9999.9 mm

6.6.3.5 Properties - Monitoring

Tab: **Configuration** ▶ **Columns** ▶ **[Edit]** ▶ **Properties...** ▶ **Column - 'Name'** ▶ **Monitoring**

Column

Determinations

Maximum number of determinations permitted with this separation column. If this value is exceeded, the message defined below or action will be triggered.

Range	1 ... 99999

Shows the number of determinations carried out with the separation column. If the **Limit value** is exceeded, the **Current value** is displayed in red.

on | off (Default value: **off**)

This check box activates monitoring.

Maximum permitted working hours with this separation column. If this value is exceeded, the message defined below or action will be triggered.

Range **1 ... 99999**

Shows the maximum permitted working hours with this separation column. If the **Limit value** is exceeded, the **Current value** is displayed in red.

on | off (Default value: **off**)

This check box activates monitoring.

Maximum permitted number of determinations with this precolumn. If this value is exceeded, the message defined below or action will be triggered.

Range **1 ... 99999**

Shows the number of determinations carried out with this precolumn. If the **Limit value** is exceeded, the **Current value** is displayed in red.



Monitor

on | off (Default value: **off**)

This check box activates monitoring.

Time elapsed

Limit value

Maximum permitted working hours with this precolumn. If this value is exceeded, the message defined below or action will be triggered.

Range **1 ... 99999**

Current value

Shows the maximum permitted working hours with this precolumn. If the **Limit value** is exceeded, the **Current value** is displayed in red.

Monitor

on | off (Default value: **off**)

This check box activates monitoring.

[Reset]

Resets current values for the precolumn to 0.

Generic message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the E-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-mail] opens the **Send E-mail** window.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that a limit value has been exceeded then one of the following actions will be triggered automatically at start test:

Document message

Display message

Cancel determination

6.6.3.6 Properties - GLP

GLP test date

Comment GLP test

Input	1000 characters

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Only editable when the monitoring is activated.

551

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test.

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the validity period has expired will be automatically saved with the determination.

Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

6.7.1 Configuration - Eluents

Subwindow Eluents

Using eluents

6.7.2 Eluent table

6.7.2.1 Eluent table - Desktop

Contents

In the eluent table the following information about manually added eluents is shown as standard:

Eluent name

Name of the eluent

Composition

Composition of the eluent

Production date

Date on which the eluent was added to the table.

Expiry date

Expiry date of the eluent. If eluent monitoring is switched on and the set date is before the current date (i.e. the working life has expired), then the date will be shown in red.

Next GLP test

Shows the date on which the next GLP test is due for the eluent. If GLP monitoring is switched on and the set date is before the current date (i.e. the GLP test has not yet been carried out) then the date will be shown in red.

Table view

The eluent table cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left mouse button as follows:

- **Drag the border between column titles:**
Sets the column width
- **Double-click on the border between column titles:**
Sets the optimal column width
- **Drag the column title:**
Moves the column to the required location

If the contents of a field is larger than the column width then the whole contents will be shown as a Tooltip if the mouse cursor is kept on the field.

If an eluent is reserved for a running determination then the line will be shown in gray and the eluent cannot be edited until the determination has been finished.

Functions

The menu **Edit** below the eluent table contains the following menu items:

New...	Adds a new eluent manually (<i>see Chapter 6.7.2.2, page 554</i>).
Delete	Deletes the selected eluent (<i>see Chapter 6.7.2.3, page 555</i>).
Properties...	Edits the selected eluent (<i>see Chapter 6.7.3.1, page 556</i>).
Column display...	Defines columns for the eluent table (<i>see Chapter 6.7.2.4, page 555</i>).
Print (PDF)...	Outputs the eluent table as a PDF file (<i>see Chapter 6.7.2.5, page 555</i>).

6.7.2.2 Adding new eluent

Menu item: **Configuration** ▶ **Eluents** ▶ **[Edit]** ▶ **New...**

A new eluent is added manually with **[Edit] ► New...** to the eluent table. The Properties window then opens automatically for editing the eluent. After closing the Properties window, the eluent is entered in the eluent

6.7.2.3 Deleting eluent

With **[Edit]** ► **Delete** the eluent selected in the table is deleted.

Dialog window: **Configuration ▶ Eluents ▶ [Edit] ▶ Column display... ▶ Column display**

Available columns

Displayed columns

>>

6.7.2.5 Printing eluent list

[Edit] ► **Print (PDF)...** opens the dialog window **Print list of eluents (PDF)**.

Input	25 characters

Composition

Composition of the eluent

Input	250 characters

Comment

Comments on the eluent.

Input	250 characters

6.7.3.3 Properties - Monitoring

Tab: **Configuration** ▶ **Eluents** ▶ **[Edit]** ▶ **Properties...** ▶ **Eluent - 'Name'** ▶ **Monitoring**

Production date

Shows date and time when the eluent was produced. This date can be edited by pressing .

Eluent monitoring

on | off (Default value: **off**)

If this option is switched on then the working life of the eluent will be monitored.

Working life

Working life of the eluent in days. If a value is entered here then the field **Expiry date** will be automatically adapted.

Range 0 ... 999 Days

Default value **999 Days**

Expiry date

Expiry date of the eluent. The date can be selected by pressing  in the dialog window **Select date**. When a date has been entered the **Working life** will be automatically adapted.

Selection	Date selection

Message

The message options can only be edited if monitoring of eluent is switched on.

Comment on GLP test.

Input	1000 characters

on | off (Default value: **off**)

Monitoring can only be switched on when a date has been entered in the field GLP test date.

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range	1 ... 999 Days
Default value	999 Days

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

The message options can only be edited if monitoring is switched on.

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Solutions for pumps

6.8.2 Solution table

Subwindow: Configuration ► Solutions

In the solution table the following information about automatically recognized or manually added solutions is shown as standard:

Name of the solution.

Concentration (value and unit) of the solution.

Cylinder volume of the dosing unit in mL.

Type of solution (**manual** = manually added solution, **IDU** = Solution intelligent dosing equipment).

Device name and connection of the dosing device on which the dosing unit is fitted.

Expiry date of the solution. If solution monitoring is switched on and the set date is before the current date (i.e. the expiry date has elapsed), then the date will be shown in red.

With menu item **[Edit] ▶ Column display...** further columns from the solution properties can be shown.



Note

Lines that contain red entries will also show the line number with a red background.

Table view

The solution table cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles:**
Sets the column width
- **Double-click on the margin between column titles:**
Sets the optimal column width
- **Drag the column title:**
Moves the column to the required location

If the contents of a field is larger than the column width then the whole contents will be shown as a tooltip if the mouse cursor is kept on the field.

Functions

The menu **[Edit]** below the solution table contains the following menu items:

New...	Adds new solution manually (<i>see Chapter 6.8.2.2, page 562</i>).
Delete	Deletes selected solution (<i>see Chapter 6.8.2.3, page 563</i>).
Properties...	Edits selected solution (<i>see Chapter 6.8.3.1, page 564</i>).
Column display...	Defines the columns for the solution table (<i>see Chapter 6.8.2.4, page 563</i>).
Print (PDF)	Shows the solution table as a PDF file (<i>see Chapter 6.8.2.5, page 563</i>).

6.8.2.2 Add new solution

Menu item: Configuration ▶ Solutions ▶ [Edit] ▶ New...

A new solution not transported by means of dosing device is entered manually with **[Edit] ► New...** in the solution table. The Properties window then opens automatically for editing the solution. After the Properties window has been closed, the solution will be entered in the solution table. The parameters can be altered at any time with **[Edit] ► Properties...**

Delete solution

Menu item:Configuration ▶ Solutions ▶ [Edit] ▶ Delete

With **[Edit] ► Delete**, the solution selected in the solution table is deleted.

Solutions - Column display

Dialog window:Configuration ▶ Solutions ▶ [Edit] ▶ Column display... ▶ Column display

With **[Edit] ► Column display...**, the dialog window **Column display** opens. Here you can define the columns that are to be shown in the solution table.

Columns available

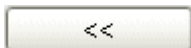
Shows all the fields that can be shown as columns in the solution table.

Columns displayed

Shows all the fields that will be shown as columns in the solution table. The default situation is that the columns **Solution name**, **Concentration**, **Cylinder volume**, **Type**, **Dosing device**, and **Expiry date** are shown. The column **Solution name** is always present and cannot be removed.



Adds the selected column to the table.



Removes the selected column from the table.



Modifies the sequence of displayed columns by moving the selected column up.



Modifies the sequence of displayed columns by moving the selected column down.

Print list of solutions

Dialog window: Configuration ▶ Solutions ▶ [Edit] ▶ Print (PDF)
... ▶ Print list of solutions (PDF)

[Edit] ► **Print (PDF)...** opens the dialog window **Print list of solutions (PDF)**.

Concentration (unit)

Concentration unit of solution.

Input	10 characters
Selection	mol/L g/L µg/mL µmol/L µmol/mL mEq/L mg/L mg/mL mmol/L % ppb ppm
Default value	mol/L

Comment

Remarks about the solution (e.g. batch number.)

Input	24 characters

Production date

Date on which the solution was produced. This date can be edited only for manually added solutions by pressing .

Selection	Date selection

Solution monitoring

on | off (Default value: **off**)

If this option is switched on then the working life of the solution will be monitored.

Working life

Working life of the solution in days. If a value is entered here then the **Expiry date** will be automatically adapted.

Range	0 ... 999 Days
Default value	999 Days

Expiry date

Expiry date of the solution. The date can be selected by pressing  in the dialog window **Select date**. When a date has been entered the **Working life** will be automatically adapted.

Selection	Date selection

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the E-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.



[E-mail]

[E-Mail] opens the **Send E-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the working life has expired then one of the following actions will be triggered automatically at Start test:

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the working life has expired will be automatically saved with the determination.

Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued, the message that the working life has expired is automatically saved in the determination.

Stop determination

The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

6.8.3.3 Properties - Dosing unit

Tab:Configuration ▶ Solutions ▶ Properties... ▶ Dosing unit

Hardware

Name

Freely definable name for the dosing unit.

Input	24 characters
Default value	'empty'

Type

Shows the type of dosing unit:

Selection	IDU

IDU

Intelligent 807 Dosing Unit with data chip.

Order number

Shows order number of dosing unit.

Serial number

Shows serial number of dosing unit.

Cylinder volume

Shows the cylinder volume for the dosing unit:

Cylinder serial number

Shows the serial number of the cylinder that is read out automatically. It is printed on new cylinders and can be altered at any time, e.g. if the cylinder has to be replaced.

Input	8 characters

Parameters for preparation

Configures the parameters to be used in the commands **Prepare** and **Empty**.

Dosing port Prep/Empty

Dosing port via which the cylinder contents are to be ejected during preparation and emptying.

Selection	Dosing port 1 Dosing port 2 Fill port Special port
Default value	Dosing port 1

Dosing rate Dosing port 1

Speed at which dosing is to be carried out at **Dosing port 1**. The maximum dosing rate depends on the cylinder volume of the exchange unit used (see below). When the function is carried out the speed will automatically be reduced to the largest possible value.

Range	0.01 ... 166.00 mL/min
Selection	maximum
Default value	maximum

Dosing rate Dosing port 2

Speed at which dosing is to be carried out at **Dosing port 2**. The maximum dosing rate depends on the cylinder volume of the exchange unit used (see below). When the function is carried out the speed will automatically be reduced to the largest possible value.

Range	0.01 ... 166.00 mL/min

Selection	maximum
Default value	maximum

Dosing rate Fill port

Speed at which dosing or filling is to be carried out at the **Fill port**. The maximum dosing rate depends on the cylinder volume of the exchange unit used (see below). When the function is carried out the speed will automatically be reduced to the largest possible value.

Range	0.01 ... 166.00 mL/min
Selection	maximum
Default value	maximum

Dosing rate Special port

Speed at which dosing is to be carried out at the **special port**. The maximum dosing rate depends on the cylinder volume of the exchange unit used (see below). When the function is carried out the speed will automatically be reduced to the largest possible value.

Range	0.01 ... 166.00 mL/min
Selection	maximum
Default value	maximum

The maximum dosing rate depends on the cylinder volume of the dosing unit used (see below):

Cylinder volume	Maximum rate
2 mL	6.67 mL/min
5 mL	16.67 mL/min
10 mL	33.3 mL/min
20 mL	66.6 mL/min
50 mL	166.0 mL/min



Note

Enter lower rates for high-viscosity liquids.

Tubing parameters

Defines the length and diameter of the tubing connected to the dosing unit. The port assignment can also be altered. These parameters are important for carrying out the dosing unit commands **Prepare** and **Empty** correctly, as the volumes of the tubing connections have to be taken into account.



Default values have already been entered for the tubing parameters; these correspond to the dimensions of the standard tubing supplied. If you do not make any alterations to the tubing connections then you do not need to modify the tubing parameters. For information on length and diameter of other tubings see **Products/Accessories and columns** under <http://products.metrohm.com>.

Dosing port 1

Port

Port to be used as Dosing port 1.

Selection	Port 1 Port 2 Port 3 Port 4
Default value	Port 1

Length

Length of tubing attached to Dosing port 1.

Range	0.0 ... 999.9 cm
Default value	40.0 cm

Diameter

Diameter of tubing attached to Dosing port 1.

Range	0.0 ... 9.9 mm
Default value	2.0 mm

Dosing port 2

Port

Port to be used as Dosing port 2.

Selection	Port 1 Port 2 Port 3 Port 4
Default value	Port 3

Length

Length of tubing attached to Dosing port 2.

Range	0.0 ... 999.9 cm
Default value	0.0 cm

Diameter

Diameter of tubing attached to Dosing port 2.

Range	0.0 ... 9.9 mm
Default value	2.0 mm

Fill port

Port

Port to be used as Fill port for aspirating the solution.

Selection	Port 1 Port 2 Port 3 Port 4
Default value	Port 2

Length

Length of tubing attached to Fill port.

Range	0.0 ... 999.9
Default value	25.0

Diameter

Diameter of tubing attached to Fill port.

Range	0.0 ... 9.9 mm
Default value	2.0 mm

Special port

Port

Port to be used as special port.

Selection	Port 1 Port 2 Port 3 Port 4
Default value	Port 4

Length

Length of tubing attached to special port.

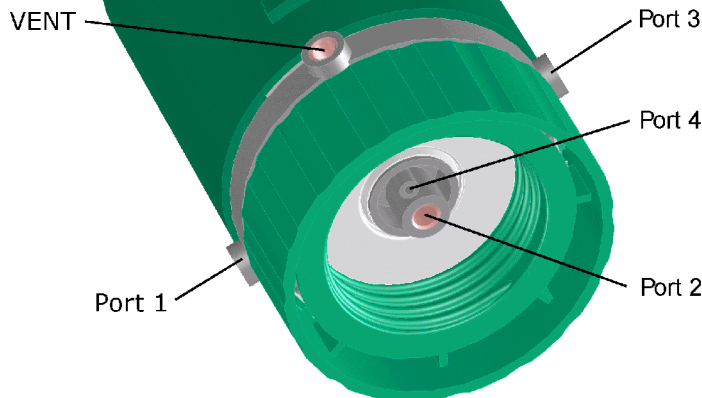
Range	0.0 ... 999.9 cm
Default value	0.0 cm

Diameter

Diameter of tubing attached to special port.

Range	0.0 ... 9.9 mm
Default value	2.0 mm

Port assignment of dosing unit:



Valve disc

Rotating direction

Specification of the shift direction of the valve disc. **Automatic** is the shift direction with the shortest distance.

Selection	ascending descending automatic not over
Default value	automatic

Not over

Here you can choose the protected port. The protected port is the one which is not driven at during rotation.

Selection	Port 1 Port 2 Port 3 Port 4
Default value	Port 4

6.8.3.4 Properties - GLP

Tab: **Configuration** ▶ **Device** ▶ **[Edit]** ▶ **Properties...** ▶ **'Properties - 'Device type' - 'Device name'** ▶ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on  in the dialog window **Select date** (see Chapter 2.5.1, page 77).

Comment GLP test

Comment on GLP test.

Input	1000 characters

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range	1 ... 999 Days
Default value	999 Days

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test.

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the validity period has expired will be automatically saved with the determination.

Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

6.9 Subwindow Accessories

6.9.1 Configuration - Accessories

Subwindow: **Configuration ▶ Accessories**

Subwindow Accessories

The subwindow **Accessories** contains the table with the accessories defined by the user. It can be shown in a separate window in the program part **Configuration** as a part of the Configuration view or (if not present on the desktop) with **View ► Quick access**. The subwindow can be enlarged and reduced as required; it can also be maximized.

Use of accessories

The accessories defined in the accessories table can be assigned to each analysis in the method in the devices subwindow. The accessories data is then saved in the determination. The working life of the accessories can also be monitored.

6.9.2 Accessories table

6.9.2.1 Accessories table - Desktop

Contents

In the accessories table the following information about automatically recognized or manually added accessories parts is shown as standard:

Accessories name

Name of the accessories part

Start-up

Date on which the accessories part was added to the table.

Expiry date

Expiry date of the accessories part. If accessories monitoring is switched on and the set date is before the current date (i.e. the working life has expired), then the date will be shown in red.

Next GLP test

Shows the date on which the next GLP test is due for the accessories part. If GLP monitoring is switched on and the set date is before the current date (i.e. the GLP test has not yet been carried out) then the date will be shown in red.

Table view

The accessories table cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left mouse button as follows:

- **Drag the border between column titles:**
Sets the column width
- **Double-click on the border between column titles:**
Sets the optimal column width
- **Drag the column title:**
Moves the column to the required location

If the contents of a field is larger than the column width then the whole contents will be shown as a Tooltip if the mouse cursor is kept on the field.

If the accessories part is reserved for a running determination then the line will be shown in gray and the accessories part cannot be edited until the determination has been finished.

The menu **[Edit]** beneath the accessories table contains the following menu items:

New...	Adds a accessories manually (<i>see Chapter 6.9.2.2, page 575</i>).
Delete	Deletes the selected accessories (<i>see Chapter 6.9.2.3, page 575</i>).
Properties...	Edits the selected accessories (<i>see Chapter 6.9.3.1, page 576</i>).
Column display...	Defines columns for the accessories table (<i>see Chapter 6.9.2.4, page 575</i>).
Print (PDF)...	Outputs the accessories table as a PDF file (<i>see Chapter 6.9.2.5, page 576</i>).

6.9.2.2 Adding new accessories

Menu item: **Configuration** ▶ **Accessories** ▶ **[Edit]** ▶ **New...**

A new accessories part is added manually with **[Edit] ▶ New...** to the accessories table. The Properties window then opens automatically for editing the accessories part. After closing the properties window, the accessories part is entered in the accessories table. The parameters can be altered at any time with **[Edit] ▶ Properties...**

6.9.2.3 Deleting accessories

Menu item: **Configuration** ▶ **Accessories** ▶ **[Edit]** ▶ **Delete**

With **[Edit]** ► **Delete** the accessories part selected in the table will be deleted.

6.9.2.4 Accessories - Column display

Dialog window: **Configuration** ▶ **Accessories** ▶ **[Edit]** ▶ **Column display...** ▶ **Column display**

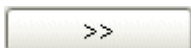
With **[Edit] ► Column display...** the dialog window **Column display** opens. Here you can define the columns that are to be shown in the accessories table.

Available columns

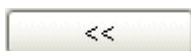
Shows all the fields that can be shown as columns in the accessories table.

Displayed columns

Shows all the fields that will be shown as columns in the accessories table. The default display is of the columns **Accessories name**, **Set to work**, **Expiry date** and **Next GLP test**. The column **Accessories name** is always present and cannot be removed.



Adds the selected column to the table.



Removes the selected column from the table.



Modifies the sequence of displayed columns by moving the selected column up.



Modifies the sequence of displayed columns by moving the selected column down.

6.9.2.5 Printing accessories list

Menu item: **Configuration** ▶ **Accessories** ▶ **[Edit]** ▶ **Print (PDF)...**

[Edit] ► Print (PDF)... opens the dialog window **Print list of accessories (PDF)**.

Orientation

Selection	Portrait Landscape
Default value	Portrait

Portrait

Prints accessories table in portrait format.

Landscape

Prints accessories table in landscape format.

[OK]

The accessories table is shown in the required format as a PDF file and can be opened directly with Acrobat Reader; it can then be printed and/or saved.

6.9.3 Accessories properties

6.9.3.1 Editing accessories properties

Dialog window: **Configuration** ▶ **Accessories** ▶ **[Edit]** ▶ **Properties...** ▶ **Accessories**
- 'Name'

The parameters for the selected accessories part are defined in the following tabs:

- *Accessories*
Parameters of the eluent.
- *Monitoring*
Parameters for monitoring the eluent.
- *GLP*
GLP parameters.

Accessories name

Name of the accessories part.

Input	40 characters

Order number for accessories part

Input	25 characters

Comments on accessories part.

Input	250 characters

Start-up

Tab: **Configuration** ▶ **Accessories** ▶ **[Edit]** ▶ **Properties...** ▶ **Accessories - 'Name'** ▶ **Monitoring**

Date and time when the accessories part was used for the first time. This date can be edited by pressing .

Monitoring accessories

on | off (Default value: **off**)

If this option is switched on then the working life of the accessories part will be monitored.

Working life

Working life of the accessories part in days. If a value is entered here then the field **Expiry date** will be automatically adapted.

Range **0 ... 999 Days**

Default value	999 Days

Expiry date

Expiry date of the accessories part. The date can be selected by pressing  in the dialog window **Select date**. When a date has been entered the **Working life** will be automatically adapted.

Selection	Date selection



Message

The message options can only be edited if monitoring of accessories parts is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the E-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-mail] opens the **Send E-mail** window.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring of accessories parts is switched on.

If during accessories part monitoring it is found that the working life has expired then one of the following actions will be triggered automatically at Start test:

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the working life of the accessories part has expired will be automatically saved with the determination.

Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the working life of the accessories part has expired will be saved automatically with the determination.

Stop determination

The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.



Table view

The rack table cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left mouse button as follows:

- **Drag the border between column titles:**
Sets the column width
- **Double-click on the border between column titles:**
Sets the optimal column width
- **Drag the column title:**
Moves the column to the required location

If the contents of a field is larger than the column width then the whole contents will be shown as a Tooltip if the mouse cursor is kept on the field.

With sample racks that are placed on a Sample Processor and are recognized automatically the corresponding device name will be shown in the **Instrument** column. In addition the line number will be shown with a green background.

If a rack is reserved for a running determination or for manual control then the line will be shown in gray and the rack cannot be edited until the determination has been finished.

Functions

The menu **Edit** beneath the rack table contains the following menu items:

New...	Adds new rack manually (see Chapter 6.10.2.2, page 582).
Delete	Deletes the selected rack (see Chapter 6.10.2.3, page 583).
Properties...	Edits the selected rack (see Chapter 6.10.3.1, page 583).
Print (PDF)...	Outputs the rack table as a PDF file (see Chapter 6.10.2.4, page 583)

6.10.2.2 Adding new rack

Dialog window: **Configuration** ▶ **Rack data** ▶ **[Edit]** ▶ **New...** ▶ **New rack**

A new rack can only be generated as a copy of an already existing rack under a new rack name and with a new rack code. **[Edit] ► New...** opens the dialog window **New rack**.

Template

Selection of the rack to be used as a template for the new rack.

Selection	All existing racks

Name for the new rack. The selected name must not already exist.

Code of the new rack. The selected rack code must not already exist.

6.10.2.3 Deleting rack

With **[Edit] ► Delete** the rack selected in the rack list will be deleted.

Orientation

Portrait

Landscape

[OK]

6.10.3 Rack properties

Dialog window: **Configuration** ▶ **Rack data** ▶ **[Edit]** ▶ **Properties...** ▶ **Rack data**

Shows the name of the rack attached. If no rack is in position then "-----" will be shown.

Shows the number of positions on the rack in position. The rack code corresponds to the arrangement of magnets on the base of the rack and is

read in by the Sample Processor in order to recognize the rack. If no rack is in position then the display will be empty.

Number of positions

Shows the number of positions on the rack. If no rack is in position then the display will be empty.

The parameters for the rack in position are defined in the following tabs:

- *Rack parameters*
Defines the parameters that are valid for all rack positions.
- *Lift positions*
Defines the work, rinse, shift and special positions for Tower 1 and Tower 2 (if present).
- *Special beakers*
Special beaker Settings for all special beakers on the rack in position.

6.10.3.2 Properties - Rack parameters

Tab: **Configuration** ▶ **Rack data** ▶ **[Edit]** ▶ **Properties...** ▶ **Rack data** ▶ **Rack parameters**

Beaker radius samples

Radius of the sample beakers on the rack. If the lift is moved to the work position then this value will be compared with the parameter **Min. beaker radius** (see Chapter 7.5.3.2, page 777) that can be specifically defined for each tower. If **Beaker radius samples < min. beaker radius**, then a corresponding error message will appear. With **off** the beaker radius will not be checked.

Range	1.0 ... 100.0 mm
Selection	off

Beaker sensor

When a sample position is moved to with the command **MOVE** then the beaker sensor (**Tower, Robotic arm**) checks whether the special beaker is present or not. With **off** no check will be made. For the option **Robotic arm** a swing head with beaker sensor must be installed and a suitable work position with beaker contact must be defined for the lift, as this must move to the beaker recognition position.

With the parameter **Beaker test** in the command **MOVE** you can determine whether the determination is to be terminated if a beaker is missing with or without the display of a corresponding message and whether the series is to be continued or also terminated.

Selection	Tower	Robotic arm	off

The rack offset is a production-dependent tolerance value between the upper part of the rack and the lower part. The value is determined by a rack adjustment and displayed here. If necessary, it can be edited.

Range	-5.00 ... 5.00 °

Tab: **Configuration** ▶ **Rack data** ▶ **[Edit]** ▶ **Properties...** ▶ **Rack data** ▶ **Lift positions**

Defines the lift positions for Tower 1. These apply for all rack positions except those that are defined as **Special beaker**.

Work position for Lift 1. At this lift position the electrodes, stirrer and buret tips are optimally positioned for work.

Range	0 ... 235 mm

Rinse position for Lift 1. This lift position is used for rinsing the electrodes.

Range	0 ... 235 mm

Shift position for Lift 1. Each time that the rack shifts, the lift will move to this position if it is located at a lower lift position. If the lift is located at a higher lift position than that defined here, then the shifting will take place at the current lift position. This means that the shift position must be selected so that a safe movement across the entire rack is possible at any time.

Range	0 ... 235 mm

Special position for Lift 1. This additional definable position can be used e.g. during pipetting so that the tip is just immersed in the sample solution.

Range	0 ... 235 mm

Defines the lift positions for Tower 2. These apply for all rack positions except those that are defined as **Special beaker**.

Number of the special beaker for the selected rack.

Number of the rack position for the special beaker.

Work position for the special beaker at Tower 1.

Work position for the special beaker at Tower 2.

Radius of the special beaker.

Shows whether and which beaker sensor is to be used for the special beaker.

Opens the dialog window **Special beaker #** (see Chapter 6.10.3.5, page 587) for editing the data of the selected special beaker.

Dialog window: **Configuration** ▶ **Rack data** ▶ **[Edit]** ▶ **Properties...** ▶ **Rack data** ▶ **Special beaker** ▶ **[Edit]** ▶ **Special beaker #**

The parameters for the special beaker selected in the table of special beakers can be defined in the dialog window **Special beaker #**.

Number of rack position for selected special beaker.

Range	0 ... n (n is rack-dependent)



Special beakers should preferably be set at high rack positions so that sample series can start from rack position 1. Rack positions which are defined as special beakers are no longer available as sample positions. They will be skipped during an automatic movement to a sample position.

Work position of the selected special beaker at Tower 1.

Common variables are method-embracing variables that are stored per client and can be used in formulas under the designation '**CV.Name**'. They are either entered manually in the configuration or assigned in the method run under **Evaluation - Results - Common variable**.

6.11.2.1 Table of common variables

Contents

Name

Type

Value

Unit

Assignment date

Assignment method

User

Next assignment

Additional columns can be shown from the properties of the common variables with the menu item **[Edit] ► Column display**.



Note

Lines that contain red entries will also show the line number with a red background.

Table view

The table of common variables cannot be edited directly. With a click on the column title the table can be sorted according to the selected column in either increasing or decreasing sequence. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles:**
Sets the column width
- **Double-click on the margin between column titles:**
Sets the optimal column width
- **Drag the column title:**
Moves the column to the required location

If the contents of a field is larger than the column width then the whole contents will be shown as a tooltip if the mouse cursor is kept on the field.

Functions

The menu **[Edit]** beneath the table of common variables contains the following menu items:

New...	Adds new common variable manually (<i>see Chapter 6.11.2.2, page 590</i>).
Delete	Deletes the selected common variable (<i>see Chapter 6.11.2.3, page 591</i>).
Properties...	Edits the selected common variable (<i>see Chapter 6.11.3.1, page 592</i>).
Column display...	Defines the columns of the table of Common variables (<i>see Chapter 6.11.2.4, page 591</i>).
Print (PDF)...	Outputs the table of common variables as a PDF file (<i>see Chapter 6.11.2.5, page 591</i>).

6.11.2.2 Add new common variable

Menu item: **Configuration** ▶ **Common variables** ▶ **[Edit]** ▶ **New...**

With **[Edit] ► New...** a new common variable is added manually to the table of common variables. The Properties window then opens automatically for editing the common variable. After the Properties window has been closed the common variable will be entered in the table of common variables. The parameters can be altered at any time with **[Edit] ► Properties...**

Delete common variable

Menu item: **Configuration** ▶ **Common variables** ▶ **[Edit]** ▶ **Delete**

With **[Edit] ► Delete** the common variable selected in the table is deleted.

Common variables - Column display

Dialog window: **Configuration** ▶ **Common variables** ▶ **[Edit]** ▶ **Column display...** ▶ **Column display**

With **[Edit] ► Column display...** the dialog window **Column display** opens. Here you can define the columns that are to be shown in the Common variables table.

Columns available

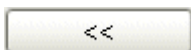
Shows all the fields that can be displayed as columns in the table of common variables.

Columns displayed

Shows all the fields that will be displayed as columns in the table of common variables. The default situation shows the columns **Name**, **Type**, **Value**, **Unit**, **Assignment date**, **Assignment method**, **User** and **Next assignment**. The three columns **Name**, **Type** and **Value** are always present and cannot be removed.



Adds the selected column to the table.



Removes the selected column from the table.



Modifies the sequence of displayed columns by moving the selected column up.



Modifies the sequence of displayed columns by moving the selected column down.

Print list of common variables

Dialog window: **Configuration** ▶ **Common variables** ▶ **[Edit]** ▶ **Print (PDF)...** ▶ **Print**
list of common variables (PDF)

Orientation

Selection	Portrait Landscape
Default value	Portrait

Type = Text	
Input	256 characters

Value (unit)

Input	20 characters
Selection	'empty' mol/L mmol/L μmol/mL g/L mg/L μg/L mg/mL ppm % mEq/L mL μg
Default value	mol/L

It is possible to enter remarks about the common variable.

Assignment date



In contrast to automatic value assignment, when assigning the value manually the date is only entered if the value has really been changed.

Name of the method with which the last value assignment was carried out. If the value was entered manually then **manual** will be shown here.

Short name of the user who was logged in during value assignment or who entered the value manually. If work is not carried out using log in, then the user logged in under Windows will be entered automatically.



Common variable monitoring

on | off (Default value: **off**)

If this option is switched on then the validity of the common variables will be monitored.

Validity

Validity period of the common variable in days. If a value is entered here then the field **Next assignment** will be adapted automatically.

Range	0 ... 999 Days
Default value	999 Days

Next assignment

Date on which the next value assignment must take place. The date can be selected by pressing  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After a date has been entered, the value for the **Validity** will be automatically adapted.

Selection	Date selection

Message

The message options can only be edited if monitoring for common variables is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the E-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-mail] opens the **Send E-mail** window.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring for common variables is switched on.

If during common variable monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test:

The running determination will be automatically canceled. The following message must be confirmed with **[OK]**.

7 Devices

7.1 850 Professional IC

7.1.1 850 Professional IC - Overview



Note

The **850 Professional IC** is available in numerous versions that differ in the combination of integrated modules. The **850 Professional IC** is described in the online help with all possible modules.

Different versions are available for different fields of application:

- **2.850.1010 Professional IC Cation**
Ion chromatography system for determining anions or cations without chemical suppression.
- **2.850.1030 Professional IC Cation Prep 1**
Ion chromatography system for determining anions or cations without suppression in combination with sample preparation such as ultrafiltration and dialysis.
- **2.850.1050 Professional IC Cation Prep 2**
Ion chromatography system for determining anions or cations without suppression after sample preparation. The system is suitable for integrating the Metrohm inline sample preconcentration, inline matrix elimination or inline calibration.
- **2.850.1210 Professional IC Cation LP-Gradient**
Ion chromatography system with low pressure gradient but without suppression. The device may be combined with any types of separation and detection for which no suppression is necessary.
- **2.850.1220 Professional IC Cation – Gradient**
Ion chromatography system for high pressure gradient without suppression. The device may be combined with any types of separation and detection for which no suppression is necessary.
- **2.850.2010 Professional IC Anion**
Ion chromatography system for determining anions with chemical suppression.
- **2.850.2030 Professional IC Anion MCS**
Ion chromatography system for determining anions or cations with sequential suppression.
- **2.850.2050 Professional IC Anion MSM-HC**
Ion chromatography system for determining anions or cations with *high capacity* chemical suppression.

- **2.850.2070 Professional IC Anion MSM-HC MCS**
Ion chromatography system for determining anions or cations with *high capacity* sequential suppression.
- **2.850.2110 Professional IC Anion MCS Prep 1**
Ion chromatography system for determining anions with sequential suppression in combination with inline sample preparation techniques such as ultrafiltration or dialysis.
- **2.850.2120 Professional IC Anion MSM-HC MCS Prep 1**
Ion chromatography system for determining anions with *high capacity* sequential suppression in combination with inline sample preparation techniques such as ultrafiltration or dialysis.
- **2.850.2140 Professional IC Anion MSM-HC MCS Prep 2**
Ion chromatography system for determining anions or cations with *high capacity* sequential suppression. It allows fully automatic sample preparation at the same time when inline sample preconcentration, inline matrix elimination or inline calibration is necessary.
- **2.850.2150 Professional IC Anion MCS Prep 2**
Ion chromatography system for determining anions or cations with sequential suppression. It allows fully automatic sample preparation at the same time when inline sample preconcentration, inline matrix elimination or inline calibration is necessary.
- **2.850.2180 Professional IC Anion MSM-HC MCS Prep 3**
Ion chromatography system for determining anions with *high capacity* sequential suppression with inline neutralization or inline cation removal at the same time.
- **2.850.2190 Professional IC Anion MCS Prep 3**
Ion chromatography system for determining anions with sequential suppression with inline neutralization elimination or inline cation removal at the same time.
- **2.850.2210 Professional IC Anion MCS LP-Gradient**
Ion chromatography system for determining anions with sequential suppression and low pressure gradient.
- **2.850.2220 Professional IC Anion MCS Gradient**
Ion chromatography system for determining anions with sequential suppression and binary high pressure gradient.
- **2.850.2230 Professional IC Anion MSM-HC MCS LP Gradient**
Ion chromatography system for determining anions with *high capacity* sequential suppression and low pressure gradient.
- **2.850.2240 Professional IC Anion MSM-HC MCS Gradient**
Ion chromatography system for determining anions with *high capacity* sequential suppression and binary high pressure gradient.
- **2.850.2250 Professional IC Anion – MSM-HC – LP Gradient**
Ion chromatography system for determining anions with highly capacitive chemical suppression and low pressure gradient. It can be operated with different types of detection.

- **2.850.1260 Professional IC Anion – MSM-HC – Gradient**
Ion chromatography system for determining anions with highly capacitive chemical suppression and binary high pressure gradient. It can be operated with different types of detection.
- **2.850.3000 Professional IC AnCat Nonsuppressed**
Ion chromatography system for determining anions and cations without suppression.
- **2.850.3010 Professional IC AnCat**
Ion chromatography system for determining cations without suppression and of anions with or without chemical suppression.
- **2.850.3030 Professional IC AnCat MCS**
Ion chromatography system for the determination of cations without suppression and of anions optionally with or without sequential suppression.
- **2.850.3040 Professional IC AnCat MSM-HC MCS**
Ion chromatography system for the determination of cations without suppression and of anions optionally with or without *high capacity* sequential suppression.

7.1.2 850 Professional IC - Configuration

Dialog window: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'**

If a type **850 Professional IC** device is selected in the device table, menu item **[Edit] ► Properties...** can be used to open the dialog window **Properties - 'device name' - 'device type'** with the device-specific tabs. The properties for the various modules, the connections of the modules to the main device and the GLP data can all be defined on these.

7.1.2.1 Properties - General

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Start-up

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

Selection	connected not connected

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

**Note**

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Input	1000 characters
Default value	empty

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB



Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.1.2.8 Properties - GLP

Tab: **Configuration** ▶ **Device** ▶ **[Edit]** ▶ **Properties...** ▶ **'Properties - 'Device type' - 'Device name'** ▶ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on  in the dialog window **Select date** (see Chapter 2.5.1, page 77).

Comment GLP test

Comment on GLP test.

Input	1000 characters

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range	1 ... 999 Days
Default value	999 Days

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

The actions can only be edited if monitoring is switched on.

Selection	Record message Display message Stop determination
Default value	Display message

Load new program version

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ General ▶ [Update] ▶ Load new program version**

If it is discovered that the device to connect has an old program version not supported by **MagIC Net**, it must be updated. Select the device from the device table. **[Edit] ▶ Properties...** opens the properties window. On the **General** tab, **[Update]** is now active and can be used to open the **Load new program version** dialog window.

Shows the old device program version.

Shows the new device program version to be loaded.

Loads new program version.



605

Generic message

This space is for you to indicate how you wish to be informed about the time of the next service.

Message by E-mail

on | off (Default value: **off**)

If this option is enabled and a limit value is exceeded, the message defined in the field **Message** is sent to the address given in **[E-mail]**.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above if a limit exceeded.

[E-Mail]

The **[E-Mail]** button opens the **Send E-Mail** window, and the address can be entered (*see Chapter 2.7.1, page 99*).

Action

This is where you can indicate which action is to be triggered automatically on start check if the time interval for the service has expired.

Selection	Record message Display message Stop determination
Default value	Record message

Record message

If this option is enabled a message is sent when a limit is exceeded to inform you that the service interval has been exceeded. You will find this message in **Database ► Information ► Messages**. The run will not be stopped.

Display message

If this option is enabled a message is displayed on the screen when a limit is exceeded to inform you that the service interval has been exceeded. The determination is continued with **[Yes]** and the message recorded. The determination is terminated with **[No]**.

Stop determination

The running determination will be terminated.

7.1.2.10.2 Monitoring - Working hours

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **'Module'** ▶ **[monitoring]** ▶ **Monitoring - 'Module'** ▶ **Working hours**

Time elapsed

Current value

Shows the working hours to date.

[Reset]



Note

This function is only available in the monitoring of the 887 Professional UV/VIS Detector.

Use this function after having replaced the corresponding lamp of the 887 Professional UV/VIS Detector. Thereby, the values of the parameters **Current value** and **Last service** are being reset.

Last service

Working hours at time of last service. This value is used for monitoring
(**Last service + Service interval = Next service**).

Range	0 ... 99999 Hours

Comment

Optional comment on service.

Input	1000 characters

Monitor working hours

on | off (Default value: **off**)

If this option is enabled, then the service interval for the working hours will be monitored.



Note

Monitoring cannot be switched on until a value is entered in **Last service**.

Service interval

Interval in hours after which the service for the module should be repeated. If a value is entered here then the value in the field **Next service** will be adjusted automatically.

Running time after which the next service is to be carried out. If a value is entered here then the value in the field **Service interval** will be adjusted automatically.

This space is for you to indicate how you wish to be informed about the time of the next service.

If this option is enabled and a limit value is exceeded, the message defined in the field **Message** is sent to the address given in **[E-mail]**.

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above if a limit exceeded.

The **[E-Mail]** button opens the **Send E-Mail** window, and the address can be entered (*see Chapter 2.7.1, page 99*).

This is where you can indicate what action is to be triggered automatically on start check if the time interval for the service has expired.

The running determination will be terminated.



7.1.3 850 Professional IC - Method

Program part: **Method**

In the program part **Method**, start parameters, data channels and program commands can be defined for the **850 Professional IC**.

7.1.3.1 850 Professional IC - Start parameters

Subwindow: **Method ▶ Devices**

Clicking on the symbol for the **850 Professional IC** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.1.3.1.1 Start parameters - High pressure pump

Tab: **Method** ▶ **Devices** ▶ **Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.



Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Range	0.000 ... 20.000 mL/min
Default value	0.500 mL/min

P_{min}

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Range	0.00 ... $P_{\max}$ MPa
Default value	0.00 MPa

P_{max}

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.

**Note**

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Range	P_{min} ... 50.00 MPa
Default value	35.00 MPa

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.

**Note**

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump (see Chapter 5.6.6.1, page 382) the value from the properties of the column (see "Recommended working values", page 546) can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Range	0 ... 99 min (Increment: 1)

Eluent

Selecting the eluent that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	not defined Eluents from the Eluent table
Default value	not defined

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.2 Start parameters - Low pressure gradient pump

Tab: **Method** ▶ **Devices** ▶ **Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.



Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Range	0.000 ... 20.000 mL/min
Default value	0.500 mL/min

 $P_{\min}$

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Range	0.00 ... $P_{\max}$ MPa
Default value	0.00 MPa

 $P_{\max}$

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.



Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Range	P_{min} ... 50.00 MPa
Default value	35.00 MPa

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.



Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump (*see Chapter 5.6.6.1, page 382*) the value from the properties of the column (*see "Recommended working values", page 546*) can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Range	0 ... 99 min (Increment: 1)

Eluent A

Selecting the eluent A that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	not defined Eluents from the Eluent table
Default value	not defined

% Eluent A

Displays the proportion of eluent A in the mixing ratio. The proportion is calculated automatically from the proportions for the other eluents using the formula **100 - (% Eluent B + % Eluent C)**.

Eluent B

Selecting the eluent B that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	not defined Eluents from the Eluent table
Default value	not defined

% Eluent B

Enter the proportion of eluent B in the mixing ratio.

Range	0 ... 100 - (% Eluent A + % Eluent C) % %



Eluent C

Selecting the eluent C that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	not defined	Eluents from the Eluent table
Default value	not defined	

% Eluent C

Enter the proportion of eluent C in the mixing ratio.

Range	0 ... 100 - (% Eluent A + % Eluent B) % %

When there is a change from one dialog/tab to another, the percentages are checked ($\Sigma = 100\%$).

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.3 Start parameter - Injection valve

Tab: **Method** ▶ **Devices** ▶ **Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	Maintain current position Fill Inject
Default value	Maintain current position

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

Tab: **Method** ▶ **Devices** ▶ **Peristaltic**

Selection	On Off
Default value	Off

7.1.3.1.5.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StarthW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Range	1.0 ... 10000.0 min
Default value	10.0 min

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

Tab: **Method** ▶ **Devices** ▶ **MSM-HC**

7.1.3.1.7 Start parameters - SPM

Tab: **Method** ▶ **Devices** ▶ **SPM**

7.1.3.1.7.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StarthW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Range	1.0 ... 10000.0 min
Default value	10.0 min

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

Start parameters - MCS

Tab: **Method** ▶ **Devices** ▶ **MCS**

Status

Selection	On Off
Default value	On

On

The MCS (Metrohm CO2 Suppressor) is switched on when the hardware is started with **[Start HW]**.

Off

The MCS (Metrohm CO₂ Suppressor) is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

Start parameters - Degasser

Tab: **Method** ▶ **Devices** ▶ **Degasser**

Status

Selection	On	Off

On

The degasser is switched on when the hardware is started with **[Start HW]**.

Off

The degasser is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.10 Start parameters - Column thermostat

Tab: **Method ▶ Devices ▶ Column thermostat**

Status

Selection	On Off
Default value	Off

On

The thermostat is switched on when the hardware is started with **[Start HW]**.

Off

The thermostat is switched off when the hardware is started with **[Start HW]**.

Temperature

Temperature that is set for the column thermostat when the hardware is started with **[Start HW]**.

Range	0.0 ... 80.0 °C
Default value	30.0 °C

Monitor temperature stability

on | off (Default value: **on**)

If this option is **switched on**, then a determination will not start until the set temperature has been reached and is stable.

If this option is **switched off**, then the sequence of a determination will not be influenced by the temperature. An attempt will indeed be made to achieve the temperature and to maintain it, but the determination will begin in any case.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.11 Start parameters - Conductivity detector

Tab: **Method** ▶ **Devices** ▶ **Conductivity detector**

Temperature coefficient

Temperature coefficient that is set when the hardware is started with **[Start HW]**. The temperature coefficient corrects the measured conduc-

Range	0.0 ... 5.0 %/°C
Default value	2.3 %/°C



Note

- Default value anions **2.3%/°C**
- Default value cations **1.5%/°C**

Warning limit

Range	1 ... 14999 µS/cm
Default value	9999 µS/cm

Active

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.12 Start parameters - Analog Out



Note

The tabs **Out1**, **Out2**, **Aux1** and **Aux2** are only available when an **891 Professional Analog Out** is connected.

7.1.3.1.12.1 Data source, Polarity, Range/Volt

Tab: **Method** ▶ **Devices** ▶ **Analog Out**

Channels Out1, Out2, Aux1, Aux2

The 891 Professional Analog Out includes 4 output channels for analog voltage in the range of -1...+1 volt:

- 2 main channels **Out1**, **Out2** with high resolution, for the digital/analog converting of chromatograms.
- 2 auxiliary channels **Aux1**, **Aux2** with low resolution for the digital/analog converting of measured values such as pressure, flow, temperature, ratio eluent.

The technical specifications can be found in the device manual of the 891 Professional Analog Out.

Each channel has the following set of start parameters. These are on one tab each in the start parameters of the main instrument. The parameter values are sent to the 891 Professional Analog Out when starting the method.

Data source

If a data source and a data channel has been selected with the button [...] (see Chapter 5.6.6.4, page 384), the **Name of the data source** is displayed here.

Channel

If a data source and a data channel has been selected with the button [...] (see Chapter 5.6.6.4, page 384), the **Name of the data channel** is displayed here

Polarity

Indicates the sign of the output voltage of the channel.

Selection	+ -
Default value	+

Range/Volt

Indicates a measured value which is – after using a possible **Measured value offset** – to be converted to 1 volt output voltage (see Chapter 7.1.3.1.2.3, page 623).

Range	0.001 ... 15000
Default value	1.0
	Next to the input field the unit of the data channel is displayed.

[Offset..]

This button opens the dialog for defining the measured value offset and the voltage offset (see *Chapter 7.1.3.1.2.2, page 623*).

Active

on | off (Default value: **off**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.1.3.1.12.2 Offset

Tab: **Method** ▶ **Device** ▶ **Analog Out** ▶ **Offset**

Measured value offset

Indicates a positive or negative amount (in the units of the data channel selected) every measured value is to be corrected by (*see Chapter 7.1.3.1.12.3, page 623*).

Selection	Current value Value
Default value	Current value

Current value

Select this option if the offset value *currently* set in the Analog Out is to be used. This value can be found in the Manual Control (*see Chapter 7.1.4.11, page 656*).

Value

Select this option, if you want to enter a new measured value offset in the field **Value**.

Value

Enter a new measured value offset.

Range	-15000 ... +15000
Default value	0.0

Voltage offset

Value

Offset in mV, to be used on the output signal after the digital/analog conversion.

Range	-1'000 ... +1'000 mV (Increment: 1)
Default value	0 mV

7.1.3.1.12.3 Using range/volt and offsets

With **Range/Volt**, you can indicate the measured value amount to be converted to 1000 mV.

If you want to correct every measured value by a certain amount, then define a corresponding **Measured value offset**. If you enter a *positive* measured value offset, it will be *added* to every measured value, if you enter a *negative* measured value offset, it will be *subtracted* from every measured value. This happens **before** the digital/analog conversion.

With **Voltage offset** you can indicate a value in mV to be used on the output signal **after** the digital/analog conversion.

Example for the channel "Conductivity" of the data source "Detector"

If the required measured values are e.g. between 15 and 35 $\mu\text{S}/\text{cm}$, you could define a measured value of **-15** ($\mu\text{S}/\text{cm}$). The measured values corrected by this offset then are between 0 and 20 $\mu\text{S}/\text{cm}$. The output voltage these offset-corrected values are converted to, depends on **Range/Volt**. Examples:

With a **Range/Volt** of 20 ($\mu\text{S}/\text{cm} \cdot \text{V}$), 20 $\mu\text{S}/\text{cm}$ are output as 1.0 V (1000 mV).

With a **Range/Volt** of 40 ($\mu\text{S}/\text{cm}-\text{V}$), 20 $\mu\text{S}/\text{cm}$ are output as 0.5 V (500 mV).

With a **Range/Volt** of 10 ($\mu\text{S}/\text{cm-V}$), 20 $\mu\text{S}/\text{cm}$ are output as 1.0 V (1000 mV).

You can correct the output signal by a **Voltage offset**. Example: You find out that the output voltage sometimes is slightly negative, whereas you would like to have positive output signals only. If the lowest output voltage is e.g. at -12 mV, you could reach positive voltage values with the aid of a **Voltage offset** of 15 mV.



Note

The sign of the resulting output voltage depends on the parameter **Polarity** in the last entity.

7.1.3.2 850 Professional IC - Data channels

List of data channels offered by the device. In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

7.1.3.2.1 High-pressure pump - Data channels

Tab: **Method** ▶ **Devices** ▶ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No

7.1.3.2.2 Low-pressure gradient pump - Data channels

Tab: **Method** ▶ **Devices** ▶ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No
Proportion eluent A	Eluent name	%	No
Proportion eluent B	Eluent name	%	No
Proportion eluent C	Eluent name	%	No

7.1.3.2.3 Column thermostat - Data channels

Tab: **Method** ▶ **Devices** ▶ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
Temperature	Temperature	°C	No

7.1.3.2.4 Conductivity detector - Data channels

Tab: **Method** ▶ **Devices** ▶ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
Conductivity	Conductivity	µS/cm	Yes
Demo anion	Demo anion	µS/cm	Yes
Demo cation	Demo cation	µS/cm	Yes



Note

With the aid of data channels **Demo anion** and **Demo cation** measurement curves saved in the detector can be output.

Demo curves

There are 6 measurement curves stored in the detector that can be output for demonstration purposes. These are real curves that were generated with an 850 Professional IC and **MagIC Net**. The anion curves are recor-

ded with Column A Supp 5 100, the cation curves with Column C 3 250. . Three standards and one sample are available from the anion curves and one sample and one standard each from the cation curves. Drinking water from Herisau (Switzerland) was used as the sample.

Data channel	Sample type
Demo anion	Standard 1
	Standard 2
	Standard 3
	Sample
Demo cation	Standard 1
	Sample

Output of demo curves



Note

The demo curves cannot be output directly. Methods and sample data must fulfill certain requirements in order to generate a determination contained in the demo curves.

The combination of **data channel** in the method and **sample type** in the sample data determines which curve is output.

1 Method

The method used must fulfill the following conditions:

- It must include a conductivity detector.
- It must include an analysis that uses the data channel **Demo anion** or **Demo cation** as data source.
- The duration of recording the analysis must not exceed **12.0 min** (anions) or **13.0 min** (cations)!
- 3 standards (anions) or 1 standard (cation) must be defined.
- There must be the command **Start data recording** in the time program for the analysis.

2 Sample data

It is of no importance whether a **single determination** or a **determination series** is to be recorded: the sample data must merely fulfill the following conditions:

- The method described must be used.

- The **sample type** must be **Standard 1...3** (anions) or **Standard 1** (cations) or **sample**.

3 Recording a determination

It is of no importance whether a **single determination** or a **determination series** is to be recorded.

- Start determination
- Instead of the conductivity value, the conductivity detector outputs in realtime one of the saved measurement curves. The determination behaves as if a real chromatogram is being recorded.

After completing the determination, it is saved in the database and has exactly the same properties as a real determination, i.e. it can be displayed, reprocessed and output in exactly the same way.



Note

The demo curves are output with the settings described and saved in a determination, but not evaluated.

If the demo curves are to be evaluated, the retention times and standard concentrations must also be given.

Demo anion

Overview of the main characteristics of the anion curves:

Separation column A Supp 5 100

Injection volume 20 µL

Duration of recording 12.0 min

Component	Retention time [min]	Standard 1 [ppm]	Standard 2 [ppm]	Standard 3 [ppm]
Chloride	4.15	5	10	20
Nitrate	6.55	5	10	20
Sulfate	9.85	2	5	10

Demo cation

Overview of the main characteristics of the cation curves:

Separation column C 3 250

Injection volume 10 µL

Duration of recording 13.0 min

Component	Retention time [min]	Standard 1 [ppm]
Sodium	3.57	2
Potassium	4.85	0.5
Magnesium	8.82	8
Calcium	10.72	30

7.1.3.3 850 Professional IC - Commands

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the 850 Professional IC:

7.1.3.3.1 Commands - High-pressure pump

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the high-pressure pump:

7.1.3.3.1.1 On/Off

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the high-pressure pump on/off.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Pump

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Comment

Optional comment on the time program command.

Input	64 characters

Flow

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the high-pressure pump to the defined value.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Flow

Range	0.000 ... 20.000 mL/min
Default value	(Start parameters for flow in the method) mL/min

Comment

Optional comment on the time program command.

Input	64 characters

Gradient

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a flow gradient program for the high-pressure pump.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Gradient

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles:**
Sets the column width.
- **Double-click on the margin between column titles:**
Sets the optimal column width.



- **Drag the column title:**

Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window Edit gradient (see Chapter 7.1.3.3.1.4, page 630).
Edit	Edit selected line in the table in the Edit gradient window (see Chapter 7.1.3.3.1.4, page 630).
Copy	Copy selected line to the clipboard.
Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The flow of the programmed gradient is displayed below the gradient table in a graph as a factor of time. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Input	64 characters

7.1.3.3.1.4 Editing gradient

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Gradient ▶ [Edit] ▶ New / Edit ▶ Edit gradient**

Time

Time at which the gradient command is to be executed.

Range	0.00 ... 1000.00 min
Default value	0.00 min

Flow

Setting the flow of the high-pressure pump to the given value.

Range	0.001 ... 20.000 mL/min
Default value	(Start parameters for flow in the method) mL/min

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	Linear Step

Linear

The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Step

The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line.

7.1.3.3.1.5 Measuring pressure

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Measure pressure**

The device-dependent time program command **Measure pressure** (command with feedback) measures the pressure in the system.

Comment

Optional comment on the time program command.

Input	64 characters

Generated variables

The following type '**TP.command number.Variable name**' variables are generated by the command:

Variable name	Description	Data type
MPA	Measured pressure [MPa]	Number
BAR	Measured pressure [bar]	Number
PSI	Measured pressure [Psi]	Number

7.1.3.3.1.6 Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.1.3.3.2 Commands - Low-pressure gradient pump

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the low-pressure gradient pump:

7.1.3.3.2.1 On/Off

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the low-pressure gradient pump on/off.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Pump

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Comment

Optional comment on the time program command.

Input	64 characters

7.1.3.3.2.2 Flow

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the low-pressure gradient pump to the defined value.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Range	0.000 ... 20.000 mL/min
Default value	(Start parameters for flow in the method) mL/min

Optional comment on the time program command.

Input	64 characters

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a mixing gradient program for the low-pressure gradient pump.

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

The sequence of the gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles:**
Sets the column width.
- **Double-click on the margin between column titles:**
Sets the optimal column width.
- **Drag the column title:**
Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window Edit gradient (see Chapter 7.1.3.3.2.4, page 634).
Edit	Edit selected line in the table in the Edit gradient window (see Chapter 7.1.3.3.2.4, page 634).
Copy	Copy selected line to the clipboard.

Flow

Range	0.001 ... 20.000 mL/min
Default value	(Start parameters for flow in the method) mL/min

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

Time

MagIC Net 2.2

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.1.3.3.3 Commands - Injection valve

Subwindow: **Method** ▶ **Time program**

Overview of the time program commands available for the injection valve:

7.1.3.3.3.1 Fill

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

7.1.3.3.3.2 Inject

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.1.3.3.4 Commands - Peristaltic pump

Subwindow: **Method** ▶ **Time program**

Overview of the time program commands available for the peristaltic pump:

7.1.3.3.4.1 On/Off

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Status

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Rate

Rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Comment

Optional comment on the time program command.

Input	64 characters

7.1.3.3.4.2 Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.1.3.3.5 Commands - MSM

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the MSM module (Metrohm Suppressor Module):

7.1.3.3.5.1 Step

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Range	0.1 ... 10000.0 min (Increment: 0.1)

Comment

Optional comment on the time program command.

Input	64 characters



Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSL**(see Chapter 2.4.3.5, page 35), even if the condition was not used.

7.1.3.3.5.2

Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters



7.1.3.3.6 Commands - MSM-HC

Subwindow: **Method** ▶ **Time program**

Overview of the time program commands available for the MSM-HC module (Metrohm Suppressor Module - High Capacity):

7.1.3.3.6.1 Step

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Range **0.1 ... 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Input	64 characters



Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLS**(see *Chapter 2.4.3.5, page 35*), even if the condition was not used.

Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

Commands - SPM

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the SPM module (Sample Preparation Module):

Step

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device'** - **'Module'** - **Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Range **0.1 ... 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Input	64 characters



Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLs** (see Chapter 2.4.3.5, page 35), even if the condition was not used.

7.1.3.3.7.2 Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.1.3.3.8 Commands - MCS

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the MCS (Metrohm CO₂ Suppressor):

7.1.3.3.8.1 On/Off

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the pump for the MCS (Metrohm CO₂ Suppressor) on/off.

Time

Time at which the command is to be executed.

Pump

On

Off

Comment

Input	64 characters

Subwindow: **Method ▶ Time program**

7.1.3.3.9.1 On/Off

The device-dependent time program command **On/Off** (command without feedback) switches the pump for the degasser on/off.

Time at which the command is to be executed.

Pump

On

Off

Comment

Input	64 characters

7.1.3.3.11.2 Measure noise

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Range	0.2 ... 999.0 min (Increment: 0.2)
Default value	1.0 min

Optional comment on the time program command.

Input	64 characters

The following type '**TP.command number.Variable name**' variables are generated by the command:

7.1.3.3.11.3 Measure drift

The device-dependent time program command **Measure drift** (command with feedback) measures the drift of the detector during the defined **measuring time**.

Range	0.2 ... 999.0 min (Increment: 0.2)
Default value	1.0 min

Optional comment on the time program command.

Input	64 characters

Changing polarity

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Devices' - Analog Out - Change polarity**

The device-dependent time program command **Change polarity** (command without feedback) of the 891 Professional Analog Out redefines the sign of the output voltage in the method run.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Polarity

Indicates the new sign of the output voltage.

Selection	+ -
Default value	+

Comment

Optional comment on the time program command.

Input	64 characters

7.1.3.3.12.3 Resetting baseline

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Analog Out - Reset baseline**

The device-dependent time program command **Reset baseline** (command without feedback) of the 891 Professional Analog Out redefines the baseline of the output voltage in the method run. If the standard value **0mV** is applied for the parameter **Voltage offset**, then the current value of the output voltage is defined as new baseline (0 mV). If you enter a different value for the **Voltage offset**, the baseline will be moved additionally by this value.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Voltage offset

Optional offset in mV, which is *additionally* used after resetting the baseline to 0 mV.

Range	-1000 ... +1000 mV
Default value	0 mV

Comment

Optional comment on the time program command.

Input	64 characters

7.1.3.3.12.4 Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.1.4 850 Professional IC - Manual Control

Program part: **Manual Control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.1.4.1 Manual Control - High-pressure pump

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Pump name'

Flow

Current value

Currently set value of the flow of the pump.

Input

Entering a new value for the flow.

Range	0.000 ... 20.000 mL/min
Default value	0.500 mL/min

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Range	0.00 ... $P_{\max}$ MPa
Default value	0.00 MPa

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Range	P_{min} ... 50.00 MPa
Default value	35.00 MPa

Pressure

Current value

Shows the current pressure in the system.

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.1.4.2 Manual control - Low-pressure gradient pump

Tab: **Manual ▶ Manual Control - 'Device name' ▶ 'Pump name'**

Flow

Current value

Currently set value of the flow of the pump.

Input

Entering a new value for the flow.

Range	0.000 ... 20.000 mL/min
Default value	0.500 mL/min

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Range	0.00 ... $P_{\max}$ MPa
Default value	0.00 MPa

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Range	P_{min} ... 50.00 MPa
Default value	35.00 MPa

Pressure

Current value

Shows the current pressure in the system.

Mixing ratio

Eluent A

Current value

Current percentage of the proportion of eluent A in the mixing ratio

Input

Enter the new proportion of eluent A in the mixing ratio

Range	0 ... 100 - (% Eluent B + % Eluent C)
Default value	100

Eluent B

Current percentage of the proportion of eluent B in the mixing ratio

Enter the new proportion of eluent B in the mixing ratio

Eluent C

Current percentage of the proportion of eluent C in the mixing ratio

Enter the new proportion of eluent C in the mixing ratio

[

Start the pump with the set parameters. This is inactive if the pump is already running.

Stop the pump with the set parameters. This is inactive if the pump is not running.

Send the parameters to the pump.

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Injection valve'

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

Tab: **Manual Control** ▶ **Manual Control - All devices - 'Device name' ▶ 'Peristaltic pump'**

Display of the currently set rate of the peristaltic pump.



[On]

[Off]

Time since last stepping to next position

[Step]

7.1.4.6 Manual Control - MSM-HC

7.1.4.6.1 Manual Control - Stepping to next position

Automatic stepping to next position

Interval – Input

Range	1.0 ... 10000.0 min
Default value	10.0 min

[Apply]

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.



Note

If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

[On]

If automatic stepping to the next position is not yet active, then it can be started with this button.

[Off]

If automatic stepping to the next position is already active, then it can be stopped with this button.

Time since last stepping to next position

Current value

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

[Step]

Moves the rotor of the module to the next position.

7.1.4.7 Manual Control - SPM

Tab: **Manual** ▶ **Manual Control** - 'Device name' ▶ 'SPM'

7.1.4.7.1 Manual Control - Stepping to next position

The settings for the automatic stepping of the rotor to the next position can be changed in the manual control of this module. In addition, the time since the last stepping to the next position can be called up and a manual stepping to the next position can be triggered.

Automatic stepping to next position

Interval – Current value

Display of the current time interval between 2 sequential rotor stepping operations. If no automatic stepping to next position is currently active, then ---- will be displayed.

Input of the time interval between 2 sequential automatic rotor stepping operations.

Range	1.0 ... 10000.0 min
Default value	10.0 min

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.



If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

If automatic stepping to the next position is not yet active, then it can be started with this button.

If automatic stepping to the next position is already active, then it can be stopped with this button.

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

Moves the rotor of the module to the next position.

Tab: **Manual** ▶ **Manual Control** - 'Device name' ▶ 'MCS'

Start MCS (Metrohm CO₂ suppressor). This is inactive if the suppressor is already running.

Stop MCS (Metrohm CO₂ suppressor). This is inactive if the suppressor is not running.



Sets the current measured value as new baseline.

Via this button the dialog window *Properties* opens, in which you can modify the properties of the channels.

Tab: **Manual** ▶ **Manual Control** - 'Device name' ▶ 'Channel' ▶ Properties

Current value

Displays the name of the data source currently assigned.

Displays the name of the newly assigned data source, which has been selected with the button [...].

Opens the dialog for selecting a different data source and a channel (see *Chapter 5.6.6.4, page 384*).

Current value

Displays the name of the channel of the **data source** currently assigned.

Displays the name of the channel of the new data source which has been selected with the button [...]. If a new channel has been selected, then its unit (e.g. $\mu\text{S}/\text{cm}$ in case of conductivity) will be displayed on the right to the input fields of the parameters **Range/Volt** and **Measured value offset**.

Input

Optional input of a new voltage offset in [mV].

Range	-1'000 ... +1'000 mV (Increment: 1)
Default value	0 mV

[OK]

The values in the column **Input** are applied for the device and the dialog is closed.

[Cancel]

The values in the column **Input** are rejected and the dialog is closed.

[OK]

The values in the column **Input** are applied for the device. The dialog remains open.

7.2 881 Compact IC pro

7.2.1 881 Compact IC pro - Overview



Note

The **881 Compact IC pro** device is available in various versions which differ with respect to the combination of integrated modules. The **881 Compact IC pro** is described in the online help with all possible modules.

Different versions are available for different fields of application:

- **2.881.0010 Compact IC pro - Cation**
Compact ion chromatography system for the determination of anions or cations with electronic suppression.
- **2.881.0020 Compact IC pro - Anion**
Compact ion chromatography system for the determination of anions with chemical suppression.
- **2.881.0030 Compact IC pro - Anion MCS**
Compact ion chromatography system for the determination of anions or cations with sequential suppression.

7.2.2 881 Compact IC pro - Configuration

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name'**

If a device of type **881 Compact IC pro** is selected in the device table, then the menu item **[Edit] ▶ Properties...** opens the dialog window

Properties - 'Device name' - 'Device type' with the device-specific tabs. The properties for the various modules, the connections of the modules to the main device and the GLP data can be defined on them.

7.2.2.1 Properties - General

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagiC Net** and which can be updated by **MagiC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Start-up

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

Selection	connected	not connected
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		
82		
83		
84		
85		
86		
87		
88		
89		
90		
91		
92		
93		
94		
95		
96		
97		
98		
99		
100		

Serial number

Display of the serial number of pump head, is read out of the chip on the pump head.

Flow range

Display of the flow range of pump head, is read out of the chip on the pump head.

 $P_{\max}$

Display of the maximum pressure, is read out of the chip on the pump head.

Correction factor

Factor with which any deviations in the flow of the pump as compared to the flow set (in the method) are corrected. Is read out of the chip on the pump head, can be edited and is then written back to the pump head automatically.

Range	0.90 ... 1.10
Default value	1.00

[Monitoring]

Opens the dialog window **Monitoring – 'Pump name'** in which the criteria for monitoring this module can be defined (*see Chapter 7.1.2.10, page 606*).

7.2.2.3 Properties - Conductivity detector

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Conductivity detector**

Detector type

Displays the detector type, is read out automatically from the detector.

Connector

Displays the connector on the device to which the detector is connected.

Serial number

Displays the serial number of detector, is read out of the detector.

Measuring cell

Cell constant

Cell constant of the measuring cell.

Range 13 ... 21 /cm (Increment: 0.1)

Selecting thermostat temperature of the detector block.

Note

Range	20 ... 50 °C (Increment: 5)
Default value	40 °C

Note

Device serial number

Display of the serial number of the connected 891 Professional Analog Out.

7.2.2.7 Properties - Connections

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC, 881 Compact IC pro, 882 Compact IC plus, 814 USB Sample Processor, 815 Robotic USB Sample Processor XL, 858 Professional Sample Processor**).

Extension modules



Note

Extension modules can only be connected to the **850 Professional IC**.
This section does not exist for other devices.

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB



Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.2.2.8 Properties - GLP

Tab: **Configuration** ▶ **Device** ▶ **[Edit]** ▶ **Properties...** ▶ **'Properties - 'Device type' - 'Device name'** ▶ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on  in the dialog window **Select date** (see Chapter 2.5.1, page 77).

Comment GLP test

Comment on GLP test.

Input	1000 characters

Monitoring of GLP validity**Monitoring of GLP validity**

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range	1 ... 999 Days
Default value	999 Days

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test.

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the validity period has expired will be automatically saved with the determination.

Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

7.2.2.9 Load new program version

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ General ▶ [Update] ▶ Load new program version**

If it is discovered that the device to connect has an old program version not supported by **MagIC Net**, it must be updated. Select the device from the device table. **[Edit] ► Properties...** opens the properties window. On the **General** tab, **[Update]** is now active and can be used to open the **Load new program version** dialog window.

Old version

Shows the old device program version.

New version

Shows the new device program version to be loaded.

[Load]

Loads new program version.



Note

Make sure that the device is not manipulated or switched off during the loading process and follow the instructions shown.

7.2.2.10 Monitoring

Dialog window: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **'Module'** ▶ **[Monitoring]** ▶ **Monitoring - 'Module'**

The dialog window consists of the tabs **Date** and **Working hours**, on which the parameters for monitoring the module are defined.

7.2.2.10.1 Monitoring - Date

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **'Module'** ▶ **[Monitoring]** ▶ **Monitoring - 'Module'** ▶ **Date**

Date

Current value

Shows the current date.

Last service

Date of the last service. This date can be selected after clicking on  in the dialog window **Select date** and is used for monitoring (**Last service + Service interval = Next service**).

Action

This is where you can indicate which action is to be triggered automatically on start check if the time interval for the service has expired.

Selection	Record message Display message Stop determination
Default value	Record message

Record message

If this option is enabled a message is sent when a limit is exceeded to inform you that the service interval has been exceeded. You will find this message in **Database ► Information ► Messages**. The run will not be stopped.

Display message

If this option is enabled a message is displayed on the screen when a limit is exceeded to inform you that the service interval has been exceeded. The determination is continued with **[Yes]** and the message recorded. The determination is terminated with **[No]**.

Stop determination

The running determination will be terminated.

7.2.2.10.2 Monitoring - Working hours

Tab: **Configuration ► Devices ► [Edit] ► Properties... ► 'Module' ► [monitoring] ► Monitoring - 'Module' ► Working hours**

Time elapsed

Current value

Shows the working hours to date.

[Reset]



Note

This function is only available in the monitoring of the 887 Professional UV/VIS Detector.

Use this function after having replaced the corresponding lamp of the 887 Professional UV/VIS Detector. Thereby, the values of the parameters **Current value** and **Last service** are being reset.

Last service

Working hours at time of last service. This value is used for monitoring (**Last service + Service interval = Next service**).

Range	0 ... 99999 Hours

Comment

Optional comment on service.

Input	1000 characters

Monitor working hours

on | off (Default value: **off**)

If this option is enabled, then the service interval for the working hours will be monitored.



Note

Monitoring cannot be switched on until a value is entered in **Last service**.

Service interval

Interval in hours after which the service for the module should be repeated. If a value is entered here then the value in the field **Next service** will be adjusted automatically.

Next service

Running time after which the next service is to be carried out. If a value is entered here then the value in the field **Service interval** will be adjusted automatically.

Generic message

This space is for you to indicate how you wish to be informed about the time of the next service.

Message by E-mail

on | off (Default value: **off**)

If this option is enabled and a limit value is exceeded, the message defined in the field **Message** is sent to the address given in **[E-mail]**.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above if a limit exceeded.

[E-Mail]

The **[E-Mail]** button opens the **Send E-Mail** window, and the address can be entered (*see Chapter 2.7.1, page 99*).

Action

This is where you can indicate what action is to be triggered automatically on start check if the time interval for the service has expired.

Selection	Record message Display message Stop determination
Default value	Record message

Record message

If this option is enabled a message is sent when a limit is exceeded to inform you that the service interval has been exceeded. You will find this message in **Database ► Information ► Messages**. The run will not be stopped.

Display message

If this option is enabled a message is displayed on the screen when a limit is exceeded to inform you that the service interval has been exceeded. The determination is continued with **[Yes]** and the message recorded. The determination is terminated with **[No]**.

Stop determination

The running determination will be terminated.

7.2.3 881 Compact IC pro - Method

Program part: **Method**

In the program part **Method**, start parameters, data channels and program commands can be defined for the **881 Compact IC pro**.

7.2.3.1 881 Compact IC pro - Start parameters

Subwindow: **Method ► Devices**

Clicking on the symbol for the **881 Compact IC pro** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.2.3.1.1 Start parameters - High pressure pump

Tab: **Method ► Devices ► Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.



Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Range	0.000 ... 20.000 mL/min
Default value	0.500 mL/min

 $P_{\min}$

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Range	0.00 ... $P_{\max}$ MPa
Default value	0.00 MPa

 $P_{\max}$

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.



Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Range	P_{min} ... 50.00 MPa
Default value	35.00 MPa

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.



Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump (see *Chapter 5.6.6.1, page 382*) the value from the properties of the column (see *"Recommended working values", page 546*) can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Range	0 ... 99 min (Increment: 1)

Eluent

Selecting the eluent that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	not defined Eluents from the Eluent table
Default value	not defined

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.2 Start parameter - Injection valve

Tab: **Method ▶ Devices ▶ Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	Maintain current position Fill Inject
Default value	Maintain current position

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.3 Start parameters - Peristaltic pump

Tab: **Method** ▶ **Devices** ▶ **Peristaltic**

Status

Selection	On Off
Default value	Off

On

The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off

The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Solution

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	not defined Non-intelligent solutions from the solution table
Default value	not defined

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.4 Start parameters - MSM

Tab: **Method** ▶ **Devices** ▶ **MSM**

Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StartHW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Range	1.0 ... 10000.0 min
Default value	10.0 min

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.5 Start parameters - MCS

Tab: **Method** ▶ **Devices** ▶ **MCS**

Status

Selection	On Off
Default value	On

On

The MCS (Metrohm CO2 Suppressor) is switched on when the hardware is started with **[Start HW]**.

Off

The MCS (Metrohm CO₂ Suppressor) is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.6 Start parameters - Degasser

Tab: **Method** ▶ **Devices** ▶ **Degasser**

Status

Selection	On	Off

On

The degasser is switched on when the hardware is started with **[Start HW]**.

Off

The degasser is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.7 Start parameters - Column heater

Tab: **Method ▶ Devices ▶ Column heater**

Status

Selection	On Off
Default value	Off

On

The column heater is switched on when the hardware is started with **[Start HW]**.

Off

The column heater is switched off when the hardware is started with **[Start HW]**.

Temperature

Temperature that is set for the column heater when the hardware is started with **[Start HW]**.

Range	0.0 ... 80.0 °C
Default value	30.0 °C

Monitor temperature stability

on | off (Default value: **on**)

If this option is **switched on**, then a determination will not start until the set temperature has been reached and is stable.

If this option is **switched off**, then the sequence of a determination will not be influenced by the temperature. An attempt will indeed be made to achieve the temperature and to maintain it, but the determination will begin in any case.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.8 Start parameters - Conductivity detector

Tab: **Method ▶ Devices ▶ Conductivity detector**

Temperature coefficient

Temperature coefficient that is set when the hardware is started with **[Start HW]**. The temperature coefficient corrects the measured conduc-

tivity of the detector at the operating temperature to the conductivity at the **reference temperature** 20 °C.

Range	0.0 ... 5.0 %/°C
Default value	2.3 %/°C



Note

The temperature coefficient of the conductivity is dependent upon the type of ions in the solution, among other things.

- Default value anions **2.3%/°C**
- Default value cations **1.5%/°C**

Warning limit

Warning limit for the conductivity that is set when the hardware is started with **[Start HW]**. If it is exceeded, the conductivity display in the Watch Window turns red.

Range	1 ... 14999 µS/cm
Default value	9999 µS/cm

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.9 Start parameters - Analog Out



Note

The tabs **Out1**, **Out2**, **Aux1** and **Aux2** are only available when an **891 Professional Analog Out** is connected.

7.2.3.1.9.1 Data source, Polarity, Range/Volt

Tab: **Method** ▶ **Devices** ▶ **Analog Out**

Channels Out1, Out2, Aux1, Aux2

The 891 Professional Analog Out includes 4 output channels for analog voltage in the range of -1...+1 volt:

- 2 main channels **Out1**, **Out2** with high resolution, for the digital/analog converting of chromatograms.
- 2 auxiliary channels **Aux1**, **Aux2** with low resolution for the digital/analog converting of measured values such as pressure, flow, temperature, ratio eluent.

The technical specifications can be found in the device manual of the 891 Professional Analog Out.

Each channel has the following set of start parameters. These are on one tab each in the start parameters of the main instrument. The parameter values are sent to the 891 Professional Analog Out when starting the method.

Data source

If a data source and a data channel has been selected with the button [...] (see Chapter 5.6.6.4, page 384), the **Name of the data source** is displayed here.

Channel

If a data source and a data channel has been selected with the button [...] (see Chapter 5.6.6.4, page 384), the **Name of the data channel** is displayed here

Polarity

Indicates the sign of the output voltage of the channel.

Selection	+ –
Default value	+

Range/Volt

Indicates a measured value which is – after using a possible **Measured value offset** – to be converted to 1 volt output voltage (see Chapter 7.1.3.1.12.3, page 623).

Range	0.001 ... 15000
Default value	1.0
Next to the input field the unit of the data channel is displayed.	

[Offset..]

This button opens the dialog for defining the measured value offset and the voltage offset (see Chapter 7.1.3.1.12.2, page 623).

Active

on | off (Default value: **off**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.2.3.1.9.2 Offset

Tab: **Method** ▶ **Device** ▶ **Analog Out** ▶ **Offset**

Measured value offset

Indicates a positive or negative amount (in the units of the data channel selected) every measured value is to be corrected by (*see Chapter 7.1.3.1.12.3, page 623*).

Selection	Current value Value
Default value	Current value

Current value

Select this option if the offset value *currently* set in the Analog Out is to be used. This value can be found in the Manual Control (*see Chapter 7.1.4.11, page 656*).

Value

Select this option, if you want to enter a new measured value offset in the field **Value**.

Value

Enter a new measured value offset.

Range	-15000 ... +15000
Default value	0.0

Voltage offset

Value

Offset in mV, to be used on the output signal after the digital/analog conversion.

Range	-1'000 ... +1'000 mV (Increment: 1)
Default value	0 mV

7.2.3.1.9.3 Using range/volt and offsets

With **Range/Volt**, you can indicate the measured value amount to be converted to 1000 mV.

If you want to correct every measured value by a certain amount, then define a corresponding **Measured value offset**. If you enter a *positive* measured value offset, it will be *added* to every measured value, if you enter a *negative* measured value offset, it will be *subtracted* from every measured value. This happens **before** the digital/analog conversion.

With **Voltage offset** you can indicate a value in mV to be used on the output signal **after** the digital/analog conversion.

Example for the channel "Conductivity" of the data source "Detector"

If the required measured values are e.g. between 15 and 35 $\mu\text{S/cm}$, you could define a measured value of **-15** ($\mu\text{S/cm}$). The measured values corrected by this offset then are between 0 and 20 $\mu\text{S/cm}$. The output voltage these offset-corrected values are converted to, depends on **Range/Volt**. Examples:

With a **Range/Volt** of 20 ($\mu\text{S/cm-V}$), 20 $\mu\text{S/cm}$ are output as 1.0 V (1000 mV).

With a **Range/Volt** of 40 ($\mu\text{S/cm-V}$), 20 $\mu\text{S/cm}$ are output as 0.5 V (500 mV).

With a **Range/Volt** of 10 ($\mu\text{S/cm-V}$), 20 $\mu\text{S/cm}$ are output as 1.0 V (1000 mV).

You can correct the output signal by a **Voltage offset**. Example: You find out that the output voltage sometimes is slightly negative, whereas you would like to have positive output signals only. If the lowest output voltage is e.g. at -12 mV, you could reach positive voltage values with the aid of a **Voltage offset** of 15 mV.



Note

The sign of the resulting output voltage depends on the parameter **Polarity** in the last entity.

7.2.3.2 881 Compact IC pro - Data channels

List of data channels offered by the device. In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

7.2.3.2.1 High-pressure pump - Data channels

Tab: **Method** ▶ **Devices** ▶ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No

Output of demo curves



Note

The demo curves cannot be output directly. Methods and sample data must fulfill certain requirements in order to generate a determination contained in the demo curves.

The combination of **data channel** in the method and **sample type** in the sample data determines which curve is output.

1 Method

The method used must fulfill the following conditions:

- It must include a conductivity detector.
- It must include an analysis that uses the data channel **Demo anion** or **Demo cation** as data source.
- The duration of recording the analysis must not exceed **12.0 min** (anions) or **13.0 min** (cations)!
- 3 standards (anions) or 1 standard (cation) must be defined.
- There must be the command **Start data recording** in the time program for the analysis.

2 Sample data

It is of no importance whether a **single determination** or a **determination series** is to be recorded: the sample data must merely fulfill the following conditions:

- The method described must be used.
- The **sample type** must be **Standard 1...3** (anions) or **Standard 1** (cations) or **sample**.

3 Recording a determination

It is of no importance whether a **single determination** or a **determination series** is to be recorded.

- Start determination
- Instead of the conductivity value, the conductivity detector outputs in realtime one of the saved measurement curves. The determination behaves as if a real chromatogram is being recorded.

After completing the determination, it is saved in the database and has exactly the same properties as a real determination, i.e. it can be displayed, reprocessed and output in exactly the same way.



Note

The demo curves are output with the settings described and saved in a determination, but not evaluated.

If the demo curves are to be evaluated, the retention times and standard concentrations must also be given.

Demo anion

Overview of the main characteristics of the anion curves:

Separation column A Supp 5 100

Injection volume 20 μ L

Duration of recording 12.0 min

Component	Retention time [min]	Standard 1 [ppm]	Standard 2 [ppm]	Standard 3 [ppm]
Chloride	4.15	5	10	20
Nitrate	6.55	5	10	20
Sulfate	9.85	2	5	10

Demo cation

Overview of the main characteristics of the cation curves:

Separation column C 3 250

Injection volume 10 μ L

Duration of recording 13.0 min

Component	Retention time [min]	Standard 1 [ppm]
Sodium	3.57	2
Potassium	4.85	0.5
Magnesium	8.82	8
Calcium	10.72	30

Subwindow: **Method** ▶ **Time program**Subwindow: **Method** ▶ **Time program**

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - On/Off**

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Flow

Range	0.000 ... 20.000 mL/min
Default value	(Start parameters for flow in the method) mL/min

Comment

Optional comment on the time program command.

Input	64 characters

7.2.3.3.1.3 Gradient

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a flow gradient program for the high-pressure pump.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Gradient

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles:**
Sets the column width.
- **Double-click on the margin between column titles:**
Sets the optimal column width.
- **Drag the column title:**
Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window Edit gradient (see Chapter 7.1.3.3.1.4, page 630).

Edit	Edit selected line in the table in the Edit gradient window (<i>see Chapter 7.1.3.3.1.4, page 630</i>).
Copy	Copy selected line to the clipboard.
Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The flow of the programmed gradient is displayed below the gradient table in a graph as a factor of time. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Input	64 characters

7.2.3.3.1.4 Editing gradient

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Gradient ▶ [Edit] ▶ New / Edit ▶ Edit gradient**

Time

Time at which the gradient command is to be executed.

Range	0.00 ... 1000.00 min
Default value	0.00 min

Flow

Setting the flow of the high-pressure pump to the given value.

Range	0.001 ... 20.000 mL/min
Default value	(Start parameters for flow in the method) mL/min

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	Linear Step

Linear

The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Commands - Injection valve

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the injection valve:

7.2.3.3.2.1 Fill

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

7.2.3.3.2.2 Inject

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

7.2.3.3.2.3 Release

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.2.3.3.3 Commands - Peristaltic pump

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the peristaltic pump:

7.2.3.3.3.1 On/Off

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Status

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Rate

Rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Comment

Optional comment on the time program command.

Input	64 characters

Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

Commands - MSM

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the MSM module (Metrohm Suppressor Module):

Step

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device'** - **'Module'** - **Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Range **0.1 ... 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Input	64 characters



Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSL**(see *Chapter 2.4.3.5, page 35*), even if the condition was not used.

7.2.3.3.4.2 Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.2.3.3.5 Commands - MCS

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the MCS (Metrohm CO₂ Suppressor):

7.2.3.3.5.1 On/Off

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the pump for the MCS (Metrohm CO₂ Suppressor) on/off.

Time

Time at which the command is to be executed.

Pump

On

Off

Comment

Input	64 characters

Subwindow: **Method ▶ Time program**

7.2.3.3.6.1 On/Off

The device-dependent time program command **On/Off** (command without feedback) switches the pump for the degasser on/off.

Time at which the command is to be executed.

Pump

On

Off

Comment

Input	64 characters

7.2.3.3.7 Commands - Column heater

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the column heater:

7.2.3.3.7.1 Measuring temperature

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Measure temperature**

The device-dependent time program command **Measure temperature** (command with feedback) measures the temperature in the column heater.

Comment

Optional comment on the time program command.

Input	64 characters

Generated variables

The following type '**TP.command number.Variable name**' variables are generated by the command:

Variable name	Description	Data type
TEMP	Measured temperature [°C]	Number

7.2.3.3.8 Commands - Conductivity detector

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the conductivity detector:

7.2.3.3.8.1 Measure conductivity

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Measure conductivity**

The device-dependent time program command **Measure conductivity** (command with feedback) measures the conductivity.

Comment

Optional comment on the time program command.

Input	64 characters

Generated variables

The following type '**TP.command number.Variable name**' variables are generated by the command:

7.2.3.3.8.2 Measure noise

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Range	0.2 ... 999.0 min (Increment: 0.2)
Default value	1.0 min

Input	64 characters

The following type '**TP.command number.Variable name**' variables are generated by the command:

7.2.3.3.8.3 Measure drift

The device-dependent time program command **Measure drift** (command with feedback) measures the drift of the detector during the defined **measuring time**.

Range	0.2 ... 999.0 min (Increment: 0.2)
Default value	1.0 min

Input	64 characters

Changing polarity

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Devices' - Analog Out - Change polarity**

The device-dependent time program command **Change polarity** (command without feedback) of the 891 Professional Analog Out redefines the sign of the output voltage in the method run.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Polarity

Indicates the new sign of the output voltage.

Selection	+ -
Default value	+

Comment

Optional comment on the time program command.

Input	64 characters

7.2.3.3.9.3 Resetting baseline

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Analog Out - Reset baseline**

The device-dependent time program command **Reset baseline** (command without feedback) of the 891 Professional Analog Out redefines the baseline of the output voltage in the method run. If the standard value **0mV** is applied for the parameter **Voltage offset**, then the current value of the output voltage is defined as new baseline (0 mV). If you enter a different value for the **Voltage offset**, the baseline will be moved additionally by this value.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Voltage offset

Optional offset in mV, which is *additionally* used after resetting the baseline to 0 mV.

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Range	0.00 ... $P_{\max}$ MPa
Default value	0.00 MPa

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Range	P_{min} ... 50.00 MPa
Default value	35.00 MPa

Pressure

Current value

Shows the current pressure in the system.

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.2.4.2 Manual Control - Injection valve

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Injection valve'

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

[Apply]

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.

**Note**

If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

[On]

If automatic stepping to the next position is not yet active, then it can be started with this button.

[Off]

If automatic stepping to the next position is already active, then it can be stopped with this button.

Time since last stepping to next position**Current value**

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

[Step]

Moves the rotor of the module to the next position.

7.2.4.5 Manual Control - MCS

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'MCS'

[On]

Start MCS (Metrohm CO₂ suppressor). This is inactive if the suppressor is already running.

[Off]

Stop MCS (Metrohm CO₂ suppressor). This is inactive if the suppressor is not running.

7.2.4.6 Manual Control - Degasser

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Degasser'

[On]

Start degasser. This is inactive if the degasser is already running.

[Off]

Stop degasser. This is inactive if the degasser is not running.

Properties

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Channel' ► **Properties**

Data source

Current value

Displays the name of the data source currently assigned.

Input

Displays the name of the newly assigned data source, which has been selected with the button [...].

[...]

Opens the dialog for selecting a different data source and a channel (see *Chapter 5.6.6.4, page 384*).

Channel

Current value

Displays the name of the channel of the **data source** currently assigned.

Input

Displays the name of the channel of the new data source which has been selected with the button [...]. If a new channel has been selected, then its unit (e.g. $\mu\text{S}/\text{cm}$ in case of conductivity) will be displayed on the right to the input fields of the parameters **Range/Volt** and **Measured value off-set**.

Range/Volt

Current value

Displays the measured value amount currently defined in the device and which is converted to 1 volt output signal.

Input

Input of a new measured value amount to be converted to 1 volt output signal.

Range	0.001 ... 15000 (Increment: 0.001)
Default value	(empty) Next to the input field the unit of the data channel is displayed.

Polarity

Current value

Displays the polarity of the output voltage currently set in the device.

Input

Selection of the new sign for the output voltage.

Selection	+ -
Default value	+

Measured value offset

Current value

Displays the measured value offset currently set in the device, put out in the unit of the current channel.

Input

Optional input of a new measured value offset, put out in the units of the channel selected in the parameter Channel (Input).

Range	-15000 ... +15000 (Increment: 0.001)
Default value	(empty) Next to the input field the unit of the data channel is displayed.

Voltage offset

Current value

Displays the voltage offset currently set in the device in [mV].

Input

Optional input of a new voltage offset in [mV].

Range	-1'000 ... +1'000 mV (Increment: 1)
Default value	0 mV

[OK]

The values in the column **Input** are applied for the device and the dialog is closed.

[Cancel]

The values in the column **Input** are rejected and the dialog is closed.

[OK]

The values in the column **Input** are applied for the device. The dialog remains open.

7.3 882 Compact IC plus

7.3.1 882 Compact IC plus - Overview



Note

The **882 Compact IC plus** is available in various versions which differ with respect to the combination of integrated modules. The **882 Compact IC plus** is described in the online help with all possible modules.

- **2.882.0010 Compact IC plus - Cation**
Compact ion chromatography system for the determination of anions or cations with electronic suppression.
- **2.882.0020 Compact IC plus - Anion**
Compact ion chromatography system for the determination of anions with chemical suppression.
- **2.882.0030 Compact IC plus - Anion MCS**
Compact ion chromatography system for the determination of anions or cations with sequential suppression.

7.3.2 882 Compact IC plus - Configuration

Dialog window: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'**

If a type **882 Compact IC plus** device is selected in the device table, then the menu item **[Edit]** ▶ **Properties...** can be used to open the dialog window **Properties - 'device name' - 'device type'** with the device-specific tabs. The properties for the various modules, the connections of the modules to the main device and the GLP data can be defined on them.

7.3.2.1 Properties - General

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name' ▶ General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Start-up

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

Selection	connected	not connected

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.



Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Input	1000 characters
Default value	empty

7.3.2.2 Properties - High-pressure pump

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Pump**

Pump type

Display of type of pump.

Pump head**Type**

Designation of pump head is read out of the chip on the pump head.

Order number

Display of the order number of pump head, is read out of the chip on the pump head.

Material

Display of the material of pump head, is read out of the chip on the pump head.

Serial number

Display of the serial number of pump head, is read out of the chip on the pump head.

Flow range

Display of the flow range of pump head, is read out of the chip on the pump head.

P_{max}

Display of the maximum pressure, is read out of the chip on the pump head.

Correction factor

Factor with which any deviations in the flow of the pump as compared to the flow set (in the method) are corrected. Is read out of the chip on the pump head, can be edited and is then written back to the pump head automatically.

Range	0.90 ... 1.10
Default value	1.00

[Monitoring]

Opens the dialog window **Monitoring – 'Pump name'** in which the criteria for monitoring this module can be defined (*see Chapter 7.1.2.10, page 606*).

7.3.2.3 Properties - Conductivity detector

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Conductivity detector**

Detector type

Displays the detector type, is read out automatically from the detector.

Connector

Displays the connector on the device to which the detector is connected.

Serial number

Displays the serial number of detector, is read out of the detector.

Measuring cell

Cell constant

Cell constant of the measuring cell.

Range **13 ... 21 /cm** (Increment: **0.1**)

Thermostat

Selecting thermostat temperature of the detector block.



Note

The temperature should be at least 5°C higher than the room temperature in order to ensure stable measuring conditions.

Range	20 ... 50 °C (Increment: 5)
Default value	40 °C

7.3.2.4 Properties - MCS

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **MCS**

The MCS (Metrohm CO₂ Suppressor) has no configurable properties apart from the monitoring parameters.

[Monitoring]

Opens the dialog window **Monitoring - MCS** in which the criteria for monitoring this module can be defined (*see Chapter 7.1.2.10, page 606*).

Properties - Analog Out

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Analog Out**



Note

This tab is only available when an **891 Professional Analog Out** is connected.

Device type

Display of the device type.

Device serial number

Display of the serial number of the connected 891 Professional Analog Out.

7.3.2.6 Properties - Connections

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC, 881 Compact IC pro, 882 Compact IC plus, 814 USB Sample Processor, 815 Robotic USB Sample Processor XL, 858 Professional Sample Processor**).

Extension modules



Note

Extension modules can only be connected to the **850 Professional IC**. This section does not exist for other devices.

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB



Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.3.2.7 Properties - GLP

Tab: **Configuration** ▶ **Device** ▶ **[Edit]** ▶ **Properties...** ▶ **'Properties - 'Device type' - 'Device name'** ▶ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on  in the dialog window **Select date** (see Chapter 2.5.1, page 77).

Comment GLP test

Comment on GLP test.

Input	1000 characters

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range	1 ... 999 Days
Default value	999 Days

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test.

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the validity period has expired will be automatically saved with the determination.



Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

7.3.2.8 Load new program version

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ General ▶ [Update] ▶ Load new program version**

If it is discovered that the device to connect has an old program version not supported by **MagiC Net**, it must be updated. Select the device from the device table. **[Edit] ► Properties...** opens the properties window. On the **General** tab, **[Update]** is now active and can be used to open the **Load new program version** dialog window.

Old version

Shows the old device program version.

New version

Shows the new device program version to be loaded.

[Load]

Loads new program version.



Note

Make sure that the device is not manipulated or switched off during the loading process and follow the instructions shown.

7.3.2.9 Monitoring

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ 'Module' ▶ [Monitoring] ▶ Monitoring - 'Module'**

The dialog window consists of the tabs **Date** and **Working hours**, on which the parameters for monitoring the module are defined.

7.3.2.9.1 Monitoring - Date

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **'Module'** ▶ **[Monitoring]** ▶ **Monitoring - 'Module'** ▶ **Date**

Date

Current value

Shows the current date.

Last service

Date of the last service. This date can be selected after clicking on  in the dialog window **Select date** and is used for monitoring (**Last service + Service interval = Next service**).

Comment

Optional comment on service.

Input **1000 characters**

Monitor date

on | off (Default value: **off**)

If this option is enabled then the service interval for the date will be monitored.



Note

Monitoring cannot be switched on until a date has been entered in the field **Last service**.

Service interval

Interval in days after which the service for the module should be repeated. If a value is entered here then the date in the field **Next service** will be adjusted automatically.

Next service

Date on which the next service is to be carried out. The date can be selected by pressing  in the dialog window **Select date**. After the date has been entered the field **Service interval** will be adapted automatically.

Generic message

This space is for you to indicate how you wish to be informed about the time of the next service.

Message by E-mail

on | off (Default value: **off**)

If this option is enabled and a limit value is exceeded, the message defined in the field **Message** is sent to the address given in **[E-mail]**.

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above if a limit exceeded.

[E-Mail]

The **[E-Mail]** button opens the **Send E-Mail** window, and the address can be entered (*see Chapter 2.7.1, page 99*).

Action

This is where you can indicate which action is to be triggered automatically on start check if the time interval for the service has expired.

Selection	Record message Display message Stop determination
Default value	Record message

Record message

If this option is enabled a message is sent when a limit is exceeded to inform you that the service interval has been exceeded. You will find this message in **Database ► Information ► Messages**. The run will not be stopped.

Display message

If this option is enabled a message is displayed on the screen when a limit is exceeded to inform you that the service interval has been exceeded. The determination is continued with **[Yes]** and the message recorded. The determination is terminated with **[No]**.

Stop determination

The running determination will be terminated.

7.3.2.9.2 Monitoring - Working hours

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **'Module'** ▶ **[monitoring]** ▶ **Monitoring - 'Module'** ▶ **Working hours**

Time elapsed

Current value

Shows the working hours to date.

[Reset]



Note

This function is only available in the monitoring of the 887 Professional UV/VIS Detector.

Last service

Range	0 ... 99999 Hours

Optional comment on service.

Input	1000 characters

If this option is enabled, then the service interval for the working hours will be monitored.



Monitoring cannot be switched on until a value is entered in **Last service**.

If this option is enabled and a limit value is exceeded, the message defined in the field **Message** is sent to the address given in **[E-mail]**.



Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above if a limit exceeded.

[E-Mail]

The **[E-Mail]** button opens the **Send E-Mail** window, and the address can be entered (*see Chapter 2.7.1, page 99*).

Action

This is where you can indicate what action is to be triggered automatically on start check if the time interval for the service has expired.

Selection	Record message Display message Stop determination
Default value	Record message

Record message

If this option is enabled a message is sent when a limit is exceeded to inform you that the service interval has been exceeded. You will find this message in **Database ► Information ► Messages**. The run will not be stopped.

Display message

If this option is enabled a message is displayed on the screen when a limit is exceeded to inform you that the service interval has been exceeded. The determination is continued with **[Yes]** and the message recorded. The determination is terminated with **[No]**.

Stop determination

The running determination will be terminated.

7.3.3 882 Compact IC plus - Method

Program part: **Method**

In the program part **Method**, start parameters, data channels and program commands can be defined for the **882 Compact IC plus**.

7.3.3.1 882 Compact IC plus - Start parameters

Subwindow: **Method** ▶ **Devices**

Clicking on the symbol for the **882 Compact IC plus** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.3.3.1.1 Start parameters - High pressure pump

Tab: **Method** ▶ **Devices** ▶ **Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.



Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Range	0.000 ... 20.000 mL/min
Default value	0.500 mL/min

$P_{\min}$

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Range	0.00 ... $P_{\max}$ MPa
Default value	0.00 MPa

$P_{\max}$

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.



Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Range	$P_{\min}$... 50.00 MPa
Default value	35.00 MPa

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.



Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump (see Chapter 5.6.6.1, page 382) the value from the properties of the column (see "Recommended working values", page 546) can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Range **0 ... 99 min** (Increment: **1**)

Eluent

Selecting the eluent that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	not defined Eluents from the Eluent table
Default value	not defined

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.2 Start parameter - Injection valve

Tab: **Method** ▶ **Devices** ▶ **Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	Maintain current position Fill Inject
Default value	Maintain current position

7.3.3.1.4 Start parameters - MSM

Tab: **Method** ▶ **Devices** ▶ **MSM**

7.3.3.1.4.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StarthW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Range	1.0 ... 10000.0 min
Default value	10.0 min

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.5 Start parameters - MCS

Tab: **Method** ▶ **Devices** ▶ **MCS**

Status

Selection	On Off
Default value	On

On

The MCS (Metrohm CO₂ Suppressor) is switched on when the hardware is started with **[Start HW]**.

Off

The MCS (Metrohm CO₂ Suppressor) is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.6 Start parameters - Conductivity detector

Tab: **Method** ▶ **Devices** ▶ **Conductivity detector**

Temperature coefficient

Temperature coefficient that is set when the hardware is started with **[Start HW]**. The temperature coefficient corrects the measured conductivity of the detector at the operating temperature to the conductivity at the **reference temperature** 20 °C.

Range	0.0 ... 5.0 %/°C
Default value	2.3 %/°C



Note

The temperature coefficient of the conductivity is dependent upon the type of ions in the solution, among other things.

- Default value anions **2.3%/°C**
- Default value cations **1.5%/°C**



Warning limit

Warning limit for the conductivity that is set when the hardware is started with **[Start HW]**. If it is exceeded, the conductivity display in the Watch Window turns red.

Range	1 ... 14999 µS/cm
Default value	9999 µS/cm

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.7 Start parameters - Analog Out



Note

The tabs **Out1**, **Out2**, **Aux1** and **Aux2** are only available when an **891 Professional Analog Out** is connected.

7.3.3.1.7.1 Data source, Polarity, Range/Volt

Tab: **Method** ▶ **Devices** ▶ **Analog Out**

Channels Out1, Out2, Aux1, Aux2

The 891 Professional Analog Out includes 4 output channels for analog voltage in the range of -1...+1 volt:

- 2 main channels **Out1**, **Out2** with high resolution, for the digital/analog converting of chromatograms.
- 2 auxiliary channels **Aux1**, **Aux2** with low resolution for the digital/analog converting of measured values such as pressure, flow, temperature, ratio eluent.

The technical specifications can be found in the device manual of the 891 Professional Analog Out.

Each channel has the following set of start parameters. These are on one tab each in the start parameters of the main instrument. The parameter values are sent to the 891 Professional Analog Out when starting the method.

Data source

If a data source and a data channel has been selected with the button [...] (see Chapter 5.6.6.4, page 384), the **Name of the data source** is displayed here.

Channel

If a data source and a data channel has been selected with the button [...] (see Chapter 5.6.6.4, page 384), the **Name of the data channel** is displayed here

Polarity

Indicates the sign of the output voltage of the channel.

Selection	+ –
Default value	+

Range/Volt

Indicates a measured value which is – after using a possible **Measured value offset** – to be converted to 1 volt output voltage (see Chapter 7.1.3.1.12.3, page 623).

Range	0.001 ... 15000
Default value	1.0
Next to the input field the unit of the data channel is displayed.	

[Offset..]

This button opens the dialog for defining the measured value offset and the voltage offset (see Chapter 7.1.3.1.12.2, page 623).

Active

on | off (Default value: **off**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.3.3.1.7.2 Offset

Tab: **Method ▶ Device ▶ Analog Out ▶ Offset**

Measured value offset

Indicates a positive or negative amount (in the units of the data channel selected) every measured value is to be corrected by (see Chapter 7.1.3.1.12.3, page 623).

With a **Range/Volt** of 40 ($\mu\text{S}/\text{cm-V}$), 20 $\mu\text{S}/\text{cm}$ are output as 0.5 V (500 mV).

With a **Range/Volt** of 10 ($\mu\text{S}/\text{cm-V}$), 20 $\mu\text{S}/\text{cm}$ are output as 1.0 V (1000 mV).

You can correct the output signal by a **Voltage offset**. Example: You find out that the output voltage sometimes is slightly negative, whereas you would like to have positive output signals only. If the lowest output voltage is e.g. at -12 mV, you could reach positive voltage values with the aid of a **Voltage offset** of 15 mV.



Note

The sign of the resulting output voltage depends on the parameter **Polarity** in the last entity.

7.3.3.2 882 Compact IC plus - Data channels

List of data channels offered by the device. In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

7.3.3.2.1 High-pressure pump - Data channels

Tab: **Method** ► **Devices** ► **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No

7.3.3.2.2 Conductivity detector - Data channels

Tab: **Method** ► **Devices** ► **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
Conductivity	Conductivity	$\mu\text{S}/\text{cm}$	Yes
Demo anion	Demo anion	$\mu\text{S}/\text{cm}$	Yes
Demo cation	Demo cation	$\mu\text{S}/\text{cm}$	Yes



Note

With the aid of data channels **Demo anion** and **Demo cation** measurement curves saved in the detector can be output.

Demo curves

There are 6 measurement curves stored in the detector that can be output for demonstration purposes. These are real curves that were generated with an 850 Professional IC and **MagIC Net**. The anion curves are recorded with Column A Supp 5 100, the cation curves with Column C 3 250. . Three standards and one sample are available from the anion curves and one sample and one standard each from the cation curves. Drinking water from Herisau (Switzerland) was used as the sample.

Data channel	Sample type
Demo anion	Standard 1
	Standard 2
	Standard 3
	Sample
Demo cation	Standard 1
	Sample

Output of demo curves



Note

The demo curves cannot be output directly. Methods and sample data must fulfill certain requirements in order to generate a determination contained in the demo curves.

The combination of **data channel** in the method and **sample type** in the sample data determines which curve is output.

1 Method

The method used must fulfill the following conditions:

- It must include a conductivity detector.
- It must include an analysis that uses the data channel **Demonion** or **Demo cation** as data source.
- The duration of recording the analysis must not exceed **12.0 min** (anions) or **13.0 min** (cations)!

- 3 standards (anions) or 1 standard (cation) must be defined.
- There must be the command **Start data recording** in the time program for the analysis.

2 Sample data

It is of no importance whether a **single determination** or a **determination series** is to be recorded: the sample data must merely fulfill the following conditions:

- The method described must be used.
- The **sample type** must be **Standard 1...3** (anions) or **Standard 1** (cations) or **sample**.

3 Recording a determination

It is of no importance whether a **single determination** or a **determination series** is to be recorded.

- Start determination
- Instead of the conductivity value, the conductivity detector outputs in realtime one of the saved measurement curves. The determination behaves as if a real chromatogram is being recorded.

After completing the determination, it is saved in the database and has exactly the same properties as a real determination, i.e. it can be displayed, reprocessed and output in exactly the same way.



Note

The demo curves are output with the settings described and saved in a determination, but not evaluated.

If the demo curves are to be evaluated, the retention times and standard concentrations must also be given.

Demo anion

Overview of the main characteristics of the anion curves:

Separation column	A Supp 5 100
Injection volume	20 µL
Duration of recording	12.0 min

Selection	On Off
Default value	On

Switches the module on.

Switches the module off.

Optional comment on the time program command.

Input	64 characters

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the high-pressure pump to the defined value.

Time at which the command is to be executed.

Range 0.00 ... 10000.00 min

Default value	0.00 min

Range	0.000 ... 20.000 mL/min

Default value (Start parameters for flow in the method) mL/min

Optional comment on the time program command.

Input	64 characters

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a flow gradient program for the high-pressure pump.

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Gradient

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles:**
Sets the column width.
- **Double-click on the margin between column titles:**
Sets the optimal column width.
- **Drag the column title:**
Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window Edit gradient (see Chapter 7.1.3.3.1.4, page 630).
Edit	Edit selected line in the table in the Edit gradient window (see Chapter 7.1.3.3.1.4, page 630).
Copy	Copy selected line to the clipboard.
Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The flow of the programmed gradient is displayed below the gradient table in a graph as a factor of time. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Input	64 characters

7.3.3.3.1.4 Editing gradient

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Gradient ▶ [Edit] ▶ New / Edit ▶ Edit gradient**

Time

Time at which the gradient command is to be executed.

Range	0.00 ... 1000.00 min
Default value	0.00 min

Flow

Setting the flow of the high-pressure pump to the given value.

Range	0.001 ... 20.000 mL/min
Default value	(Start parameters for flow in the method) mL/min

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	Linear Step

Linear

The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Step

The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line.

7.3.3.3.1.5 Measuring pressure

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Measure pressure**

The device-dependent time program command **Measure pressure** (command with feedback) measures the pressure in the system.

Comment

Optional comment on the time program command.

Input	64 characters

Generated variables

The following type '**TP.command number.Variable name**' variables are generated by the command:

Variable name	Description	Data type
MPA	Measured pressure [MPa]	Number
BAR	Measured pressure [bar]	Number
PSI	Measured pressure [Psi]	Number

7.3.3.3.1.6 Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.3.3.3.2 Commands - Injection valve

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the injection valve:

7.3.3.3.2.1 Fill

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

Inject

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

Commands - Peristaltic pump

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the peristaltic pump:

On/Off

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ 'Device' - 'Module' - On/Off

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Status

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Rate

Rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Comment

Optional comment on the time program command.

Input	64 characters

7.3.3.3.3.2

Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

Commands - MSM

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the MSM module (Metrohm Suppressor Module):

7.3.3.3.4.1 Step

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Range **0.1 ... 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Input	64 characters



Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLs**(see *Chapter 2.4.3.5, page 35*), even if the condition was not used.

Optional comment on the time program command.

Input	64 characters

7.3.3.3.6 Commands - Conductivity detector

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the conductivity detector:

7.3.3.3.6.1 Measure conductivity

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Measure conductivity**

The device-dependent time program command **Measure conductivity** (command with feedback) measures the conductivity.

Comment

Optional comment on the time program command.

Input	64 characters

Generated variables

The following type '**TP.command number.Variable name**' variables are generated by the command:

Variable name	Description	Data type
CONDUCTIVITY	Measured conductivity [$\mu\text{S}/\text{cm}$]	Number

7.3.3.3.6.2 Measure noise

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Measure noise**

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Measuring time

Range	0.2 ... 999.0 min (Increment: 0.2)
Default value	1.0 min

Comment

Optional comment on the time program command.

Input	64 characters

Changing range

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Devices' - Analog Out - Change range**

The device-dependent time program command **Change range** (command without feedback) of the 891 Professional Analog Out redefines the measured value range per volt in the method run.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Range/Volt

Indicates the measured value amount to be output as 1 Volt (1000 mV).
The value is transferred to the device.

Range	0.001 ... 15000
Default value	(empty) Next to the input field, the unit of the corresponding data channel is displayed.

Comment

Optional comment on the time program command.

Input	64 characters

7.3.3.3.7.2 Changing polarity

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Devices' - Analog Out - Change polarity**

The device-dependent time program command **Change polarity** (command without feedback) of the 891 Professional Analog Out redefines the sign of the output voltage in the method run.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Polarity

Indicates the new sign of the output voltage.

Selection	+ -
Default value	+

Optional comment on the time program command.

Input	0 ... 64 characters

7.3.4 882 Compact IC plus - Manual Control

Program part: **Manual Control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.3.4.1 Manual Control - High-pressure pump

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Pump name'

Flow

Current value

Currently set value of the flow of the pump.

Input

Entering a new value for the flow.

Range	0.000 ... 20.000 mL/min
Default value	0.500 mL/min

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Range	0.00 ... $P_{\max}$ MPa
Default value	0.00 MPa

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Range	P_{min} ... 50.00 MPa
Default value	35.00 MPa

Pressure

Current value

Shows the current pressure in the system.

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.3.4.2 Manual Control - Injection valve

Tab: **Manual ▶ Manual Control - 'Device name' ▶ 'Injection valve'**

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.3.4.3 Manual Control - Peristaltic pump

Tab: **Manual Control** ► **Manual Control - All devices - 'Device name' ► 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

Send the parameters to the pump.

7.3.4.4 Manual Control - MSM

Tab: **Manual** ▶ **Manual Control** - 'Device name' ▶ 'MSM'

7.3.4.4.1 Manual Control - Stepping to next position

The settings for the automatic stepping of the rotor to the next position can be changed in the manual control of this module. In addition, the time since the last stepping to the next position can be called up and a manual stepping to the next position can be triggered.

Automatic stepping to next position

Interval – Current value

Display of the current time interval between 2 sequential rotor stepping operations. If no automatic stepping to next position is currently active, then ----- will be displayed.

Interval – Input

Input of the time interval between 2 sequential automatic rotor stepping operations.

Range	1.0 ... 10000.0 min
Default value	10.0 min

[Apply]

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.



Note

If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

[On]

If automatic stepping to the next position is not yet active, then it can be started with this button.

[Off]

If automatic stepping to the next position is already active, then it can be stopped with this button.

Time since last stepping to next position

Current value

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

[Step]

Moves the rotor of the module to the next position.

7.3.4.5 Manual Control - MCS

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'MCS'

[On]

Start MCS (Metrohm CO₂ suppressor). This is inactive if the suppressor is already running.

[Off]

Stop MCS (Metrohm CO₂ suppressor). This is inactive if the suppressor is not running.

7.3.4.6 Manual Control - Analog Out



Note

The tabs **Out1**, **Out2**, **Aux1** and **Aux2** are only available when an **891 Professional Analog Out** is connected.

7.3.4.6.1 Channels Out1, Out2, Aux1, Aux2

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Channel'



Note

In the Manual Control of the Workplace the tabs of those channels of a connected **891 Professional Analog Out** are displayed which have been activated in the start parameters of the method.

[Resetting baseline]

Sets the current measured value as new baseline.

[Properties...]

Via this button the dialog window *Properties* opens, in which you can modify the properties of the channels.

Properties

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Channel' ► **Properties**

Data source

Current value

Displays the name of the data source currently assigned.

Input

Displays the name of the newly assigned data source, which has been selected with the button [...].

[...]

Opens the dialog for selecting a different data source and a channel (see *Chapter 5.6.6.4, page 384*).

Channel

Current value

Displays the name of the channel of the **data source** currently assigned.

Input

Displays the name of the channel of the new data source which has been selected with the button [...]. If a new channel has been selected, then its unit (e.g. $\mu\text{S}/\text{cm}$ in case of conductivity) will be displayed on the right to the input fields of the parameters **Range/Volt** and **Measured value off-set**.

Range/Volt

Current value

Displays the measured value amount currently defined in the device and which is converted to 1 volt output signal.

Input

Input of a new measured value amount to be converted to 1 volt output signal.

Range	0.001 ... 15000 (Increment: 0.001)
Default value	(empty) Next to the input field the unit of the data channel is displayed.

Polarity

Current value

Displays the polarity of the output voltage currently set in the device.

Input

Selection of the new sign for the output voltage.

Selection	+ -
Default value	+

Measured value offset

Current value

Displays the measured value offset currently set in the device, put out in the unit of the current channel.

Input

Optional input of a new measured value offset, put out in the units of the channel selected in the parameter Channel (Input).

Range	-15000 ... +15000 (Increment: 0.001)
Default value	(empty) Next to the input field the unit of the data channel is displayed.

Voltage offset

Current value

Displays the voltage offset currently set in the device in [mV].

Input

Optional input of a new voltage offset in [mV].

Range	-1'000 ... +1'000 mV (Increment: 1)
Default value	0 mV

[OK]

The values in the column **Input** are applied for the device and the dialog is closed.

[Cancel]

The values in the column **Input** are rejected and the dialog is closed.

[OK]

The values in the column **Input** are applied for the device. The dialog remains open.

7.4 883 Basic IC plus

7.4.1 883 Basic IC plus - Overview

The device **883 Basic IC plus** is available in 1 model version:

- **2.883.0020 883 Basic IC plus**
Intelligent, very compact ion chromatograph for education and routine analysis. For determining anions and cations with and without chemical suppression.

7.4.2 883 Basic IC plus - Configuration

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name'**

If a type **883 Compact IC plus** device is selected in the device table, then the menu item **[Edit] ▶ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs. The properties for the various modules, the connections of the modules to the main device and the GLP data can be defined on them.

7.4.2.1 Properties - General

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

7.4.2.2 Properties - High-pressure pump

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Pump**

Pump type

Display of type of pump.

Pump head

Type

Designation of pump head is read out of the chip on the pump head.

Order number

Display of the order number of pump head, is read out of the chip on the pump head.

Material

Display of the material of pump head, is read out of the chip on the pump head.

Serial number

Display of the serial number of pump head, is read out of the chip on the pump head.

Flow range

Display of the flow range of pump head, is read out of the chip on the pump head.

$P_{\max}$

Display of the maximum pressure, is read out of the chip on the pump head.

Correction factor

Factor with which any deviations in the flow of the pump as compared to the flow set (in the method) are corrected. Is read out of the chip on the pump head, can be edited and is then written back to the pump head automatically.

Range	0.90 ... 1.10
Default value	1.00

[Monitoring]

Opens the dialog window **Monitoring – 'Pump name'** in which the criteria for monitoring this module can be defined (*see Chapter 7.1.2.10, page 606*).

7.4.2.3 Properties - Conductivity detector

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Conductivity detector**

Detector type

Displays the detector type, is read out automatically from the detector.

Connector

Displays the connector on the device to which the detector is connected.

Serial number

Displays the serial number of detector, is read out of the detector.

Measuring cell

Cell constant

Cell constant of the measuring cell.

Range **13 ... 21 /cm** (Increment: **0.1**)

Thermostat

Selecting thermostat temperature of the detector block.



Note

The temperature should be at least 5°C higher than the room temperature in order to ensure stable measuring conditions.

Range	20 ... 50 °C (Increment: 5)
Default value	40 °C

7.4.2.4 Properties - Connections

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC, 881 Compact IC pro, 882 Compact IC plus, 814 USB Sample Processor, 815 Robotic USB Sample Processor XL, 858 Professional Sample Processor**).

Comment GLP test

Comment on GLP test.

Input	1000 characters

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range 1 ... 999 Days

Default value **999 Days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test.

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the validity period has expired will be automatically saved with the determination.

Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

7.4.3 883 Basic IC plus - Method

Program part: **Method**

In the program part **Method**, start parameters, data channels and program commands can be defined for the **883 Basic IC plus**.

7.4.3.1 883 Basic IC plus - Start parameters

Subwindow: **Method ▶ Devices**

Clicking on the symbol for the **883 Compact IC plus** device in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.4.3.1.1 Start parameters - High pressure pump

Tab: **Method ▶ Devices ▶ Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.



Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Range	0.000 ... 20.000 mL/min
Default value	0.500 mL/min

 $P_{\min}$

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Range	0.00 ... $P_{\max}$ MPa
Default value	0.00 MPa

 $P_{\max}$

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.



Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Range	P_{min} ... 50.00 MPa
Default value	35.00 MPa

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.



Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump (see *Chapter 5.6.6.1, page 382*) the value from the properties of the column (see *"Recommended working values", page 546*) can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Range	0 ... 99 min (Increment: 1)

Eluent

Selecting the eluent that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	not defined Eluents from the Eluent table
Default value	not defined

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.4.3.1.2 Start parameter - Injection valve

Tab: **Method ▶ Devices ▶ Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	Maintain current position Fill Inject
Default value	Maintain current position

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.4.3.1.3 Start parameters - Peristaltic pump

Tab: **Method** ▶ **Devices** ▶ **Peristaltic**

Status

Selection	On Off
Default value	Off

On

The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off

The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Solution

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	not defined Non-intelligent solutions from the solution table
Default value	not defined

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.4.3.1.4 Start parameters - MSM

Tab: **Method** ▶ **Devices** ▶ **MSM**

Automatic stepping to next position

7.4.3.2.1 High-pressure pump - Data channels

Tab: **Method** ▶ **Devices** ▶ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No

7.4.3.2.2 Conductivity detector - Data channels

Tab: **Method** ▶ **Devices** ▶ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
Conductivity	Conductivity	µS/cm	Yes
Demo anion	Demo anion	µS/cm	Yes
Demo cation	Demo cation	µS/cm	Yes



Note

With the aid of data channels **Demo anion** and **Demo cation** measurement curves saved in the detector can be output.

Demo curves

There are 6 measurement curves stored in the detector that can be output for demonstration purposes. These are real curves that were generated with an 850 Professional IC and **MagIC Net**. The anion curves are recorded with Column A Supp 5 100, the cation curves with Column C 3 250. . Three standards and one sample are available from the anion curves and one sample and one standard each from the cation curves. Drinking water from Herisau (Switzerland) was used as the sample.

Data channel	Sample type
Demo anion	Standard 1
	Standard 2
	Standard 3
	Sample
Demo cation	Standard 1
	Sample

Output of demo curves



Note

The demo curves cannot be output directly. Methods and sample data must fulfill certain requirements in order to generate a determination contained in the demo curves.

The combination of **data channel** in the method and **sample type** in the sample data determines which curve is output.

1 Method

The method used must fulfill the following conditions:

- It must include a conductivity detector.
- It must include an analysis that uses the data channel **Demo anion** or **Demo cation** as data source.
- The duration of recording the analysis must not exceed **12.0 min** (anions) or **13.0 min** (cations)!
- 3 standards (anions) or 1 standard (cation) must be defined.
- There must be the command **Start data recording** in the time program for the analysis.

2 Sample data

It is of no importance whether a **single determination** or a **determination series** is to be recorded: the sample data must merely fulfill the following conditions:

- The method described must be used.
- The **sample type** must be **Standard 1...3** (anions) or **Standard 1** (cations) or **sample**.

3 Recording a determination

It is of no importance whether a **single determination** or a **determination series** is to be recorded.

- Start determination
- Instead of the conductivity value, the conductivity detector outputs in realtime one of the saved measurement curves. The determination behaves as if a real chromatogram is being recorded.

After completing the determination, it is saved in the database and has exactly the same properties as a real determination, i.e. it can be displayed, reprocessed and output in exactly the same way.

**Note**

The demo curves are output with the settings described and saved in a determination, but not evaluated.

If the demo curves are to be evaluated, the retention times and standard concentrations must also be given.

Demo anion

Overview of the main characteristics of the anion curves:

Separation column A Supp 5 100

Injection volume 20 µL

Duration of recording 12.0 min

Component	Retention time [min]	Standard 1 [ppm]	Standard 2 [ppm]	Standard 3 [ppm]
Chloride	4.15	5	10	20
Nitrate	6.55	5	10	20
Sulfate	9.85	2	5	10

Demo cation

Overview of the main characteristics of the cation curves:

Separation column C 3 250

Injection volume 10 µL

Duration of recording 13.0 min

Component	Retention time [min]	Standard 1 [ppm]
Sodium	3.57	2
Potassium	4.85	0.5
Magnesium	8.82	8
Calcium	10.72	30

7.4.3.3 883 Basic IC plus - Commands

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the 883 Basic IC plus:

7.4.3.3.1 Commands - High-pressure pump

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the high-pressure pump:

7.4.3.3.1.1 On/Off

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the high-pressure pump on/off.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Pump

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Comment

Optional comment on the time program command.

Input	64 characters

7.4.3.3.1.2 Flow

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the high-pressure pump to the defined value.

Time

Time at which the command is to be executed.

Flow

Comment

Input	64 characters

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - Gradient**

Time

Gradient

- **Drag the margin between column titles:**
Sets the column width.
- **Double-click on the margin between column titles:**
Sets the optimal column width.
- **Drag the column title:**
Moves the column to the required location.

New

Add a new line to the table and edit it in the window **Edit gradient** (see Chapter 7.1.3.3.1.4, page 630).

Step

The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line.

7.4.3.3.1.5 Measuring pressure

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Measure pressure**

The device-dependent time program command **Measure pressure** (command with feedback) measures the pressure in the system.

Comment

Optional comment on the time program command.

Input	64 characters

Generated variables

The following type '**TP.command number.Variable name**' variables are generated by the command:

Variable name	Description	Data type
MPA	Measured pressure [MPa]	Number
BAR	Measured pressure [bar]	Number
PSI	Measured pressure [Psi]	Number

7.4.3.3.1.6 Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.4.3.3.2 Commands - Injection valve

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the injection valve:

7.4.3.3.2.1 Fill

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device'** - **'Module'** - Fill

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

7.4.3.3.2.2 Inject

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

7.4.3.3.2.3 Release

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Comment

Input	0 ... 64 characters

Subwindow: **Method ▶ Time program**

7.4.3.3.3.1 On/Off

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time at which the command is to be executed.

Status

On

Off

Rate

Comment

Input	64 characters

Comment

Optional comment on the time program command.

Input	64 characters

**Note**

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLs**(see Chapter 2.4.3.5, page 35), even if the condition was not used.

7.4.3.3.4.2 Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.4.3.3.5 Commands - Conductivity detector

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the conductivity detector:

7.4.3.3.5.1 Measure conductivity

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Measure conductivity**

The device-dependent time program command **Measure conductivity** (command with feedback) measures the conductivity.

Comment

Optional comment on the time program command.

Input	64 characters

Optional comment on the time program command.

Input	64 characters

Generated variables

The following type '**TP.command number.Variable name**' variables are generated by the command:

Variable name	Description	Data type
DRIFT	Measured drift	Number

7.4.4 883 Basic IC plus - Manual Control

Program part: **Manual Control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.4.4.1 Manual Control - High-pressure pump

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Pump name'

Flow

Current value

Currently set value of the flow of the pump.

Input

Entering a new value for the flow.

Range	0.000 ... 20.000 mL/min
Default value	0.500 mL/min

P_{min}

Current value

Current value for the minimum permitted pressure in the system.

Input

Entering a new value for the minimum permitted pressure in the system.

Range	0.00 ... $P_{\max}$ MPa
Default value	0.00 MPa

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Range	P_{min} ... 50.00 MPa
Default value	35.00 MPa

Pressure

Current value

Shows the current pressure in the system.

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.4.4.2 Manual Control - Injection valve

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Injection valve'

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.4.4.3 Manual Control - Peristaltic pump

Tab: **Manual Control** ► **Manual Control - All devices - 'Device name' ► 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

Start the pump with the set parameters. This is inactive if the pump is already running.

Stop pump. This is inactive if the pump is not running.

Send the parameters to the pump.

Tab: **Manual ▶ Manual Control - 'Device name' ▶ 'MSM'**

The settings for the automatic stepping of the rotor to the next position can be changed in the manual control of this module. In addition, the time since the last stepping to the next position can be called up and a manual stepping to the next position can be triggered.

Interval – Current value

Display of the current time interval between 2 sequential rotor stepping operations. If no automatic stepping to next position is currently active, then ----- will be displayed.

Input of the time interval between 2 sequential automatic rotor stepping operations.

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.



If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.



[On]

If automatic stepping to the next position is not yet active, then it can be started with this button.

[Off]

If automatic stepping to the next position is already active, then it can be stopped with this button.

Time since last stepping to next position

Current value

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

[Step]

Moves the rotor of the module to the next position.

7.5 814 USB Sample Processor and 815 Robotic USB Sample Processor XL



Note

The devices **814 USB Sample Processor** and **815 Robotic USB Sample Processor XL** are available in various versions which differ from one another in their total number of towers and in the combinations of modules installed. These sample changers, together with all of the possible towers and/or modules are described in the online help.

7.5.1 814 USB Sample Processor - Overview

The 814 USB Sample Processor is suitable for sample racks with diameters of up to 42 cm. Different versions are available for different fields of application:

- **2.814.0010814 USB Sample Processor**
Sample changer with 1 tower, 1 integrated membrane pump and 1 connector for an external pump.
- **2.814.0020814 USB Sample Processor**
Sample changer with 1 tower and 2 integrated membrane pumps.
- **2.814.0030814 USB Sample Processor**
Sample changer with 1 tower and 2 connectors for external pumps.
- **2.814.0110814 USB Sample Processor**
Sample changer with 2 towers, 2 integrated membrane pumps and 2 connectors for external pumps.

- **2.814.0120814 USB Sample Processor**

Sample changer with 2 towers and 4 integrated membrane pumps.

- **2.814.0130814 USB Sample Processor**

Sample changer with 2 towers, and 4 connectors for external pumps.

For all variants, 1 Swing Head and 1 tower stirrer can be connected for each tower.

7.5.2 815 Robotic USB Sample Processor XL - Overview

The 815 Robotic USB Sample Processor XL is suitable for sample racks with diameters of up to 48 cm. Different versions are available for different fields of application:

- **2.815.0010815 Robotic USB Sample Processor XL**

Sample changer with 1 tower, 1 integrated membrane pump and 1 connector for an external pump.

- **2.815.0020815 Robotic USB Sample Processor XL**

Sample changer with 1 tower and 2 integrated membrane pumps.

- **2.815.0030815 Robotic USB Sample Processor XL**

Sample changer with 1 tower and 2 connectors for external pumps.

- **2.815.0110815 Robotic USB Sample Processor XL**

Sample changer with 2 towers, 2 integrated membrane pumps and 2 connectors for external pumps.

- **2.815.0120815 Robotic USB Sample Processor XL**

Sample changer with 2 towers and 4 integrated membrane pumps.

- **2.815.0130815 Robotic USB Sample Processor XL**

Sample changer with 2 towers, and 4 connectors for external pumps.

For all variants, 1 Swing Head and 1 tower stirrer can be connected for each tower.

7.5.3 814 USB Sample Processor und 815 Robotic USB Sample Processor XL - Configuration

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name'**

If a device of type **814 USB Sample Processor** or **815 Robotic USB Sample Processor XL** is selected in the device table, then the menu item **[Edit] ▶ Properties...** opens the dialog window **Properties - 'Device type' - 'Device name'** with the device-specific tabs.

The devices can be initialized if necessary by means of the **[Initialize]** menu item in the device table (see Chapter 6.5.2.1, page 535).

active**on | off** (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

**Note**

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Input	1000 characters
Default value	empty

7.5.3.2 Properties - Tower

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Tower**

**Note**

With the 858 Professional Sample Processor, the properties of the tower, including the Swing Head attached to it, are displayed on the tab **Tower**. In the case of the 814 USB Sample Processor and the 815 Robotic USB Sample Processor XL, the device versions with 1 tower have 1 tab **Tower 1**; device versions with 2 towers have 2 tabs **Tower 1** and **Tower 2**.

Tower parameters**Max. stroke path**

Entry of the lowest permitted lift position. A lift height of **0 mm** corresponds to the "Home position", i.e. the lift is moved right to the top.

Range	0 ... 235 mm
Default value	235 mm

Min. beaker radius

Definition of the minimum radius which the beakers used on the rack must have. If the lift is moved to the work position the beaker radii defined in **Rack table**(see Chapter 6.10.2.1, page 581) for general **Sample positions**(see Chapter 6.10.3.2, page 584) and **Special beakers**(see Chapter 6.10.3.4, page 586) will be compared with the **Min. beaker radius**. If this minimum beaker radius is not achieved, then the run will be stopped and an error message will appear. No check will be made if **off** is enabled.

Selection	1.0 ... 100.0 mm off
Default value	off

Lift rate

Lift rate for manual operation of the tower.

Range	3 ... 25 mm/s
Default value	25 mm/s

Axial distance

Distance between the axis of rotation of the sample rack and swing axis of the robotic arm.

Range	100.0 ... 300.0 mm

814 USB Sample Processor

Selection	166.0 mm
Default value	166.0 mm

815 Robotic USB Sample Processor XL

Selection	196.0 mm
Default value	196.0 mm

858 Professional Sample Processor

Selection	166.0 mm
Default value	166.0 mm

Swing Head

This parameter is only shown when a swing head is mounted on the tower.

Serial number

Shows the serial number of the swing head.

Swing position

Lift position valid for all 4 external positions, at which the swing head turns to the external positions.

Number

Only editable for **Move to initial position** = **on**, otherwise inactive.

Range	1 ... 999
Default value	1

Range	1 ... 16
Default value	1

Range	1 ... 4
Default value	1

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC, 881 Compact IC pro, 882 Compact IC plus, 814 USB Sample Processor, 815 Robotic USB Sample Processor XL, 858 Professional Sample Processor**).

Extension modules



Note

Extension modules can only be connected to the **850 Professional IC**.
This section does not exist for other devices.

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB #

Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.5.3.6 Properties - GLP

Tab: **Configuration ▶ Device ▶ [Edit] ▶ Properties...** ▶ 'Properties - 'Device type' - 'Device name' ▶ GLP

GLP test date

Date of the last GLP test. This date can be selected by clicking on  in the dialog window **Select date** (see Chapter 2.5.1, page 77).

Comment GLP test

Comment on GLP test.

Input	1000 characters

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range	1 ... 999 Days
Default value	999 Days

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test.

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the validity period has expired will be automatically saved with the determination.

Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

7.5.3.7 Configuration Robotic arm

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ Tower ▶ [Configuration] ▶ Robotic arm configuration**

In the dialog window **Robotic arm configuration**, the specific settings can be made for each robotic arm mounted on a swing head.

Swing offset

Swing angle offset for specific robotic arm model. This value must be set according to the leaflet supplied with the swing head.

Range	-270.0 ... 270.0 °
Default value	0.0 °

Max. swing range

Maximum usable swing range for specific robotic arm model. Each robotic arm model displays a different value on the basis of its construction. This

Range	0.0 ... 330.0 °
Default value	60.0 °

Swing radius

Range	30.0 ... 300.0 mm
Default value	110.0 mm

Rotation offset

Range	-270.0 ... 270.0 °
Default value	0.0 °

Swing direction

Selection	+ -
Default value	+

+
Clockwise rotation.

-
Counterclockwise rotation.

7.5.3.8 External position

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name' ▶ Tower ▶ [Edit] ▶ External position #**

In the dialog window **External position #** a **Swing angle** and a specific **Work position** can be defined for each external position. **Shift position** and **Rinse position** can only be defined for all 4 external positions together. No **Special position** can be defined for external positions.

Angle

Definition of the swing angle for the selected external position. The offset is made up of a design-dependent angle (approximately 8-9°) together with the robotic arm offset from the Robotic arm properties (*see Chapter 7.5.3.7, page 784*). The maximum swing range is also defined under Robotic arm properties.

Range	(Offset) ... (Offset + max. swing range) °
Default value	60.0 °

Work position

Definition of the work position for the selected external position.

Range	0 ... 235 mm
Default value	0 mm

7.5.4 814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Method

Program part: **Method**

In the program part **Method**, start parameters and program commands can be defined for the **814 USB Sample Processor** or for the **815 Robotic USB Sample Processor XL**.

7.5.4.1 814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Start parameters

Subwindow: **Method ▶ Devices**

Clicking on the symbol for the **814 USB sample processor** or the **815 Robotic USB Sample Processor XL** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.5.4.1.1 Start parameters - Rack

Tab: **Method** ▶ **Devices** ▶ **Rack**

Rack name

Name of the rack which must be initialized on the sample changer when the hardware is started **[Start HW]**. If no rack is initialized, the method is not carried out.

Selection	not defined Rack names from the rack table
Default value	not defined

not defined

The method is always carried out.

Rack names from the rack table

If a rack is selected, the method is only carried out if it is initialized in the sample changer. There is no automatic check to ensure that the rack is in position and that it is the correct rack. In order to check this during the run, the command **Initialize** must be inserted in the time program for the module **Rack**.

7.5.4.1.2 Start parameters - Peripherals Tower

Tab: **Method** ▶ **Devices** ▶ **Peripherals Tower**

Pump 1

Status

Selection	on off
Default value	off

on

Pump 1 is switched on when the hardware is started with **[Start HW]**.

off

Pump 1 is switched off when the hardware is started with **[Start HW]**.

Solution

Selection list for the solution to be transported by Pump 1 when the hardware is started with **[Start HW]**.

Selection	not defined Non-intelligent solutions from the solution table
Default value	not defined

Pump 2

Status

Selection	on off
Default value	off

on

Pump 2 is switched on when the hardware is started with **[Start HW]**.

off

Pump 2 is switched off when the hardware is started with **[Start HW]**.

Solution

Selection list for the solution to be transported by Pump 2 when the hardware is started with **[Start HW]**.

Selection	not defined Non-intelligent solutions from the solution table
Default value	not defined

Tower stirrer



Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The settings have no effect.

Status

Selection	on off
Default value	off

on

The tower stirrer is switched on when the hardware is started with **[Start HW]**.

off

The tower stirrer is switched off when the hardware is started with **[Start HW]**.

Rate

Enter the stirring rate

Range	-15 ... 15
Default value	8

7.5.4.2 814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Commands

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the **814 USB Sample Processor** or the **815 Robotic USB Sample Processor XL**:

7.5.4.2.1 Commands - Tower

Subwindow: **Method ▶ Time program**

Overview of the time program commands assigned to the tower of the sample changer:

7.5.4.2.1.1 Move (Rack)

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Move (Rack)**

The device-dependent time program command **Move (Rack)** (command with feedback) turns the rack until the desired position is reached with reference to the tower.

Target

Move

Selecting the target position on the rack:

Selection	Sample position Rack position Special beaker Relative angle

Sample position

Position defined for the current determination in the Run window as parameter **Position**.

Rack position

Predefined position on the rack.

Special beaker

Special position on the rack defined in the rack properties.

Relative angle

Rotate the rack relative to the current position by the angle indicated. This can be used, for example, to remove vial caps automatically.

Number

Specification of the number of the rack position. This parameter is displayed only for **Move = Rack position** or **Move = Special beaker**. The number can also be defined with the aid of the formula editor ()

Range	1 ... 999
Default value	1

Move angle

Indication of relative rotation angle. This parameter is displayed only for **Move = Relative angle**.

Range	-359.90 ... 359.90 °
Default value	5.00 °

Beaker test

on | off (Default value: **off**)

If this option is switched on, a beaker test is carried out. In this case, the action to be carried out can be selected if the beaker sensor defined for the rack does not detect a beaker at the target position. If the robotic arm is selected as beaker sensor, then a Swing Head must be installed and a work position also defined in the rack data must be defined in such a way that contact exists between the beaker sensor and the beaker. This work position will be automatically moved to for beaker recognition after the command **Move**.

Selection	Display message Stop determination Stop determination and series
0	Stop determination
1	Display message Stop determination
2	Display message Stop determination and series

Display message

A message is displayed and the determination is stopped.

Stop determination

The determination is stopped and the next determination of the series is started.

Stop determination and series

Both the determination and the series are stopped.

Parameters

Shift rate

Selection of the rate at which the sample rack rotates.

Range	3 ... 20 °/s
Default value	20 °/s

Shift direction

Selection of the shift direction

Selection	auto + -
Default value	auto

auto

The shift direction with the smallest rotation angle is selected automatically.

+

Movement is in the direction of **ascending** rack positions. The question of whether this movement must be clockwise or counterclockwise rotation depends on the individual rack.

—

Movement is in the direction of **descending** rack positions. The question of whether this movement must be clockwise or counterclockwise rotation depends on the individual rack.

Swing rate

Selects the rate of the robotic arm when moving to a rack position or a special beaker (only with multiple row sample racks).

Range	10 ... 55 °s
Default value	55 °s

Comment

Optional comment on the time program command.

Input	64 characters

7.5.4.2.1.2 Lift

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Lift**

With the device-dependent time program command **Lift** (command with feedback), the lift on the tower of the sample changer moves to the desired position.

Target

Lift position

Entering the desired lift position in mm or select a lift position predefined for the rack. A lift height of **0 mm** corresponds to the Home position. Here the lift is moved to the uppermost stop.

Range	0.0 ... 235.0 mm
Selection	Work position Shift position Rinse position Special position Home position
Default value	Work position



Note

Please make sure that none of the lift positions exceed the maximum stroke path given in the tower properties of the device.

Parameters

Lift rate

Selection of the rate for moving the lift.

Range	3 ... 25 mm/s
Default value	25 mm/s

Comment

Optional comment on the time program command.

Input	64 characters

7.5.4.2.1.3 Swing

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Swing**

The device-dependent time program command **Swing** (command with feedback) swings the robotic arm until the desired position is reached.

Target

Swing

Selecting the target position for the robotic arm.

7.5.4.2.2 Commands - Rack

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the rack:

7.5.4.2.2.1 Initialize

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Initialize**

The device-independent time program command **Initialize** (command with feedback) initializes the rack positioned on the sample changer.

Rack test

on | off (Default value: **on**)

If this option is enabled, the rack attached will be checked.

Test rack

Select the rack to be positioned on the sample changer. The rack attached will be checked to ensure it is the one specified.

Selection	Racks from the rack table
Comment	
Optional comment on the time program command.	
Input	64 characters

7.5.4.2.3 Commands - Peripherals Tower

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the peripheral devices assigned to the tower:

7.5.4.2.3.1 Pump # On/Off

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Pump # On/Off**

The device-dependent time program command **Pump # On/Off** (command without feedback) switches the respective pump on/off.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min
Pump	
Selection	On Off
Default value	On

Input	64 characters

7.5.4.2.4 Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.5.5 814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Manual Control

Program part: **Manual Control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.5.5.1 Manual Control - Tower

Tab: **Manual** ▶ **Manual Control - 'Device name'** ▶ **Tower**

Rack position

Current value

Shows the current rack position.

Input

Enter or select the rack position to be moved to.

Range	1 ... n (depending on rack)
Default value	1
Selection	Special beaker 1 ... 16

[Start]

Start moving to the specified position. After the start, the button changes to **[Stop]** and the two arrow keys become inactive (gray).



[Stop]

Stop moving to current rack immediately.



Move to current rack position -1.



Move to current rack position +1.

Lift position

Current value

Current lift position.

Input

Enter or select the lift position that is to be moved to for the current rack position (normal beaker, special beaker, external position).

Range	0 ... Max. stroke path mm
Default value	0 mm
Selection	Work position Shift position Rinse position Special position Home position

[Start]

Move lift to the desired position.

[Stop]

Stop moving to lift position immediately.



The lift continues moving up as long as this button is pressed.



The lift continues moving down as long as this button is pressed.

Robotic arm position

Current value

Current position (angle) of the robotic arm on the tower.

Input

Enter or select the robotic arm position to be moved to.

Range	0.0 ... 330.0 °
Default value	0.0 °
Selection	External 1 External 2 External 3 External 4

Move robotic arm to the desired position.

Immediately stop the action which was triggered with **[Start]**.



The robotic arm continues moving to the left as long as this button is pressed.



The robotic arm continues moving to the right long as this button is pressed.

[Configure rack]

Open dialog window **Rack configure 'Rack name'** (see Chapter 7.5.5.4, page 798).

7.5.5.2 Manual Control - Rack

Tab: **Manual** ▶ **Manual Control** - 'Device name' ▶ **Rack**

[Initialize rack]

Initialize rack that is in position.

7.5.5.3 Manual Control - Peripheral devices

Tab: **Manual Control** ▶ **Manual Control - All Devices - 'Device name'** ▶ **Peripherals Tower**

Tower stirrer - Rate



Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The settings have no effect.

Current value

Current rate of the tower stirrer.

Input

Enter the rate of the tower stirrer.

Range	-15 ... 15 (without 0)
Default value	Current value



[Apply]

Send the set parameters to the stirrer.

[On]

Start the stirrer with the set parameters. This is inactive if the stirrer is running.

[Off]

Stop the stirrer. This is inactive if the stirrer is not running.

Pump 1

[On]

Start pump 1 with the set parameters. This is inactive if the pump is running.

[Off]

Stop pump 1. This is inactive if the pump is not running.

Pump 2

[On]

Start pump 2 with the set parameters. This is inactive if the pump is running.

[Off]

Stop pump 2. This is inactive if the pump is not running.

7.5.5.4 Configuring rack

Dialog window: **Manual ▶ Manual Control - All devices - 'Device name' ▶ Rack ▶ [Configure rack] ▶ Rack 'Rack name' configure**

Rack position

Current position

Shows the current rack position.

Special beaker

Select the special beaker to be assigned to the current rack position.

Range **1 ... 16**

[Assign]

Assign current rack position to the selected special beaker.

Lift position

Current position

Shows the current lift position in mm.

Work position for

If this option is selected, the current lift position is assigned to the work position for the tower, for a special beaker or for an external position of the robotic arm.

Selection	Tower Special beaker 1...16 External 1...4
Default value	Tower

Rinse position for

If this option is selected, the current lift position is assigned to the rinse position for the tower, or for the external positions of the robotic arm.

Selection	Tower External position
Default value	Tower

Shift position for

If this option is selected, the current lift position is assigned to the shift position for the tower.

Selection	Tower

Special position for

If this option is selected, the current lift position is assigned to the special position for the tower.

Selection	Tower

Robotic arm position

If this option is selected, the current lift position is assigned to the swing position of the robotic arm.

Selection	External position

[Assign]

Assign the current lift position to the selected position.

Robotic arm position

Current position

Displays the current position of the robotic arm in °.

External position

Select the external position to which the current robotic arm position is to be assigned.

Selection	External 1	External 2	External 3	External 4

[Assign]

Assign the current robotic arm position to the selected external position.

7.6 858 Professional Sample Processor

7.6.1 858 Professional Sample Processor - Overview



Note

The **858 Professional Sample Processor** is available in various versions that differ in the combination of integrated modules. In the online help, the **858 Professional Sample Processor** is described with all possible modules.

Different versions are available for different fields of application:

- **2.858.0010 Professional Sample Processor**
Sample changer for ion chromatography without peristaltic pump.
- **2.858.0020 Professional Sample Processor**
Sample changer for ion chromatography with integrated two-channel peristaltic pump.
- **2.858.0030 Professional Sample Processor**
Sample changer for ion chromatography with integrated two-channel peristaltic pump and injection valve.

7.6.2 858 Professional Sample Processor - Configuration

Dialog window: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'**

If a device of type **858 Professional Sample Processor** is selected in the device table, the the menu item **[Edit] ► Properties...** opens the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

The device can be initialized if necessary by means of the **[Initialize]** menu item in the device table *Device table - Desktop*.

7.6.2.1 Properties - General

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Display of the device type.

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIc Net** and which can be updated by **MagIc Net** itself.

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Shows the date on which the device was automatically added to the device table.

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.



Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Input	1000 characters
Default value	empty

7.6.2.2 Properties - Tower

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Tower**



Note

With the 858 Professional Sample Processor, the properties of the tower, including the Swing Head attached to it, are displayed on the tab **Tower**. In the case of the 814 USB Sample Processor and the 815 Robotic USB Sample Processor XL, the device versions with 1 tower have 1 tab **Tower 1**; device versions with 2 towers have 2 tabs **Tower 1** and **Tower 2**.

Tower parameters

Max. stroke path

Entry of the lowest permitted lift position. A lift height of **0 mm** corresponds to the "Home position", i.e. the lift is moved right to the top.

Range	0 ... 235 mm
Default value	235 mm

Min. beaker radius

Definition of the minimum radius which the beakers used on the rack must have. If the lift is moved to the work position the beaker radii defined in **Rack table**(see Chapter 6.10.2.1, page 581) for general **Sample positions**(see Chapter 6.10.3.2, page 584) and **Special beakers**(see Chapter 6.10.3.4, page 586) will be compared with the **Min. beaker radius**. If this minimum beaker radius is not achieved, then the run will

be stopped and an error message will appear. No check will be made if **off** is enabled.

Selection	1.0 ... 100.0 mm off
Default value	off

Lift rate

Lift rate for manual operation of the tower.

Range	3 ... 25 mm/s
Default value	25 mm/s

Axial distance

Distance between the axis of rotation of the sample rack and swing axis of the robotic arm.

Range	100.0 ... 300.0 mm

814 USB Sample Processor

Selection	166.0 mm
Default value	166.0 mm

815 Robotic USB Sample Processor XL

Selection	196.0 mm
Default value	196.0 mm

858 Professional Sample Processor

Selection	166.0 mm
Default value	166.0 mm

Swing Head

This parameter is only shown when a swing head is mounted on the tower.

Serial number

Shows the serial number of the swing head.

Swing position

Lift position valid for all 4 external positions, at which the swing head turns to the external positions.

Range	0 ... 235 mm
Default value	0 mm

Rinse position

Rinse position valid for all 4 external positions.

Shift rate

Sample rack shift rate for manual operation.

Range	3 ... 20 °/s
Default value	20 °/s

[Rack data]

Opens the dialog window **Rack data** (see Chapter 6.10.3.1, page 583), in which the data of the mounted rack is displayed and is available for editing.

[Initialize rack]

Initializes the attached rack. This resets the rack, the lift and the robotic arm, reads out the rack code and transfers the corresponding rack data to the sample changer.

7.6.2.4 Properties - Initial position

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Initial position**

On tab **Initial position**, a position can be defined which is automatically moved to when initializing the sample changer.

Moving to the initial position

on | off (Default value: **off**)

If this option is activated, the position defined here is moved to when initializing the device.

Tower

Selection of the tower on the sample changer for moving to the required position.

Only editable for **Move to initial position** = **on** and if the corresponding sample changer has 2 towers, otherwise inactive.

Selection	1 2
Default value	1

Destination

Selection of the target position which is to be moved to:

Only editable for **Move to initial position** = **on**, otherwise inactive.

Selection	Rack position Special beaker Ext. position
Default value	Rack position

Rack position

Predefined position on the rack. The lift is thereby lowered to the work position defined for that position.

Special beaker

Special position on the rack defined in the rack properties. The lift is thereby lowered to the work position defined for that position.

Ext. position

External position which is defined for the Swing Head mounted to the tower. The lift is thereby lowered to the work position defined for that position. This option is only available if a Swing Head is mounted to the tower.

Number

Specification of the number of the rack position, of the special beaker or of the external position.

Only editable for **Move to initial position** = **on**, otherwise inactive.

for Move = Rack position

Range	1 ... 999
Default value	1

for Move = Special beaker

Range	1 ... 16
Default value	1

for Move = External position

Range	1 ... 4
Default value	1

7.6.2.5 Properties - Connections

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC, 881 Compact IC pro, 882 Compact IC plus, 814 USB Sample Processor, 815 Robotic USB Sample Processor XL, 858 Professional Sample Processor**).

Extension modules



Note

Extension modules can only be connected to the **850 Professional IC**. This section does not exist for other devices.

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB #**Note**

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

7.6.2.6 Properties - GLP

Tab: **Configuration** ► **Device** ► **[Edit]** ► **Properties...** ► **'Properties - 'Device type' - 'Device name'** ► **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on  in the dialog window **Select date** (see Chapter 2.5.1, page 77).

Comment GLP test

Comment on GLP test.

Input **1000 characters**

Monitoring of GLP validity**Monitoring of GLP validity**

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range	1 ... 999 Days
Default value	999 Days

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test.

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the validity period has expired will be automatically saved with the determination.

Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

7.6.2.7 Configuration Robotic arm

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ Tower ▶ [Configuration] ▶ Robotic arm configuration**

In the dialog window **Robotic arm configuration**, the specific settings can be made for each robotic arm mounted on a swing head.

Swing offset

Swing angle offset for specific robotic arm model. This value must be set according to the leaflet supplied with the swing head.

Range	-270.0 ... 270.0 °
Default value	0.0 °

Max. swing range

Maximum usable swing range for specific robotic arm model. Each robotic arm model displays a different value on the basis of its construction. This value must be set according to the leaflet supplied with the swing head and can also be reduced as required.

Range	0.0 ... 330.0 °
Default value	60.0 °

Swing radius

The swing radius depends on the length of the robotic arm and, together with the axial distance, is the most important parameter for exact movement to a rack position. This value must be set according to the leaflet supplied with the swing head.

Range	30.0 ... 300.0 mm
Default value	110.0 mm

Rotation offset

Offset from the middle of the tower to the middle of the robotic arm. If a robotic arm must be mounted on the tower so that it is offset to one side, then this value can be determined by the service technician during rack adjustment.

Range	-270.0 ... 270.0 °
Default value	0.0 °

Swing direction

The swing direction of the robotic arm depends on the type of robotic arm.

Selection	+ -
Default value	+

+
Clockwise rotation.

-
Counterclockwise rotation.

7.6.2.8 External position

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Tower** ▶ **[Edit]** ▶ **External position #**

In the dialog window **External position # a Swing angle** and a specific **Work position** can be defined for each external position. **Shift position** and **Rinse position** can only be defined for all 4 external positions together. No **Special position** can be defined for external positions.

Angle

Definition of the swing angle for the selected external position. The offset is made up of a design-dependent angle (approximately 8-9°) together with the robotic arm offset from the Robotic arm properties (*see Chapter 7.5.3.7, page 784*). The maximum swing range is also defined under Robotic arm properties.

Range	(Offset) ... (Offset + max. swing range) °
Default value	60.0 °

Work position

Definition of the work position for the selected external position.

Range	0 ... 235 mm
Default value	0 mm

Program part: **Method**

In the program part **Method**, start parameters and program commands can be defined for the **858 Professional Sample Processor**.

Subwindow: **Method ▶ Devices**

Clicking on the symbol for the **858 Professional Sample Processor** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

Tab: **Method** ▶ **Devices** ▶ **Rack**

Name of the rack which must be initialized on the sample changer when the hardware is started **[Start HW]**. If no rack is initialized, the method is not carried out.

Selection	not defined Rack names from the rack table
Default value	not defined

not defined

The method is always carried out.

Rack names from the rack table

If a rack is selected, the method is only carried out if it is initialized in the sample changer. There is no automatic check to ensure that the rack is in position and that it is the correct rack. In order to check this during the run, the command **Initialize** must be inserted in the time program for the module **Rack**.

Tab: **Method** ▶ **Devices** ▶ **Injector**

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	Maintain current position Fill Inject
Default value	Maintain current position

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.6.3.1.3 Start parameters - Peristaltic pump

Tab: **Method** ▶ **Devices** ▶ **Peristaltic**

Status

Selection	On Off
Default value	Off

On

The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off

The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Solution

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	not defined Non-intelligent solutions from the solution table
Default value	not defined

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.6.3.1.4 Start parameters - Peripherals Tower

Tab: **Method** ▶ **Devices** ▶ **Peripherals Tower**

Pump 1

Status

Selection	on off
Default value	off

on

Pump 1 is switched on when the hardware is started with **[Start HW]**.

off

Pump 1 is switched off when the hardware is started with **[Start HW]**.

Solution

Selection list for the solution to be transported by Pump 1 when the hardware is started with **[Start HW]**.

Selection	not defined Non-intelligent solutions from the solution table
Default value	not defined

Pump 2

Status

Selection	on off
Default value	off

on

Pump 2 is switched on when the hardware is started with **[Start HW]**.

off

Pump 2 is switched off when the hardware is started with **[Start HW]**.

Solution

Selection list for the solution to be transported by Pump 2 when the hardware is started with **[Start HW]**.

Selection	not defined Non-intelligent solutions from the solution table
Default value	not defined

Tower stirrer



Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The settings have no effect.

Status

Selection	on off
Default value	off

on

The tower stirrer is switched on when the hardware is started with **[Start HW]**.

off

The tower stirrer is switched off when the hardware is started with **[Start HW]**.

Rate

Enter the stirring rate

Range	-15 ... 15
Default value	8

7.6.3.2 858 Professional Sample Processor - Commands

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the 858 Professional Sample Processor:

7.6.3.2.1 Commands - Tower

Subwindow: **Method ▶ Time program**

Overview of the time program commands assigned to the tower of the sample changer:

7.6.3.2.1.1 Move (Rack)

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Move (Rack)**

The device-dependent time program command **Move (Rack)** (command with feedback) turns the rack until the desired position is reached with reference to the tower.

Target

Move

Selecting the target position on the rack:

Selection	Sample position	Rack position	Special beaker	Relative angle

Sample position

Position defined for the current determination in the Run window as parameter **Position**.

Rack position

Predefined position on the rack.

Special beaker

Special position on the rack defined in the rack properties.

Relative angle

Rotate the rack relative to the current position by the angle indicated. This can be used, for example, to remove vial caps automatically.

Number

Specification of the number of the rack position. This parameter is displayed only for **Move = Rack position** or **Move = Special beaker**. The number can also be defined with the aid of the formula editor ()

Range	1 ... 999
Default value	1

Move angle

Indication of relative rotation angle. This parameter is displayed only for **Move = Relative angle**.

Range	-359.90 ... 359.90 °
Default value	5.00 °

Beaker test

on | off (Default value: **off**)

If this option is switched on, a beaker test is carried out. In this case, the action to be carried out can be selected if the beaker sensor defined for the rack does not detect a beaker at the target position. If the robotic arm is selected as beaker sensor, then a Swing Head must be installed and a work position also defined in the rack data must be defined in such a way that contact exists between the beaker sensor and the beaker. This work position will be automatically moved to for beaker recognition after the command **Move**.

Selection	Display message Stop determination Stop determination and series

Display message

A message is displayed and the determination is stopped.

Stop determination

The determination is stopped and the next determination of the series is started.

Stop determination and series

Both the determination and the series are stopped.

Parameters**Shift rate**

Selection of the rate at which the sample rack rotates.



Please make sure that none of the lift positions exceed the maximum stroke path given in the tower properties of the device.

Lift rate

Range	3 ... 25 mm/s
Default value	25 mm/s

Input	64 characters

The device-dependent time program command **Swing** (command with feedback) swings the robotic arm until the desired position is reached.

Swing

Selection	External position	Maximum angle	Relative angle

Swinging to one of the 4 external positions available for each tower. They are defined in the Tower properties of the Sample Processor.

Swinging the robotic arm outwards to the maximum angle permitted in the robotic arm properties.

Swinging by the specified swing angle relative to the current position. This can be used, for example, to remove vial caps automatically.

Selection	Racks from the rack table
Comment Optional comment on the time program command.	
Input	64 characters

7.6.3.2.3 Commands - Injection valve

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the injection valve:

7.6.3.2.3.1 Fill

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

7.6.3.2.3.2 Inject

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

7.6.3.2.3.3 Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.6.3.2.4 Commands - Peristaltic pump

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the peristaltic pump:

7.6.3.2.4.1 On/Off

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Status

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Pump

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Comment

Optional comment on the time program command.

Input	64 characters

7.6.3.2.5.2 Tower stirrer On/Off

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Tower stirrer On/Off**

The device-dependent time program command **Tower stirrer On/Off** (command without feedback) switches the tower stirrer on/off and sets the value for the stirring rate.



Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The command is ignored in the run.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Stirrer

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Rate

Rate of the stirrer.

Comment

Input	64 characters

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

Time

Comment

Input	0 ... 64 characters

Program part: **Manual Control**

7.6.4.1 Manual Control - Tower

Rack position

Current value

Shows the current rack position.

Input

Range	1 ... n (depending on rack)
Default value	1
Selection	Special beaker 1 ... 16



[Start]

Start moving to the specified position. After the start, the button changes to **[Stop]** and the two arrow keys become inactive (gray).

[Stop]

Stop moving to current rack immediately.



Move to current rack position -1.



Move to current rack position +1.

Lift position

Current value

Current lift position.

Input

Enter or select the lift position that is to be moved to for the current rack position (normal beaker, special beaker, external position).

Range	0 ... Max. stroke path mm
Default value	0 mm
Selection	Work position Shift position Rinse position Special position Home position

[Start]

Move lift to the desired position.

[Stop]

Stop moving to lift position immediately.



The lift continues moving up as long as this button is pressed.



The lift continues moving down as long as this button is pressed.

Robotic arm position

Current value

Current position (angle) of the robotic arm on the tower.

Input

Enter or select the robotic arm position to be moved to.

Range	0.0 ... 330.0 °
Default value	0.0 °
Selection	External 1 External 2 External 3 External 4

Move robotic arm to the desired position.

Immediately stop the action which was triggered with **[Start]**.



The robotic arm continues moving to the left as long as this button is pressed.



The robotic arm continues moving to the right long as this button is pressed.

[Configure rack]

Open dialog window **Rack configure 'Rack name'** (see Chapter 7.5.5.4, page 798).

7.6.4.2 Manual Control - Rack

Tab: **Manual** ▶ **Manual Control - 'Device name'** ▶ **Rack**

[Initialize rack]

Initialize rack that is in position.

7.6.4.3 Manual Control - Injection valve

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Injection valve'

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.6.4.4 Manual Control - Peristaltic pump

Tab: **Manual Control** ► **Manual Control - All devices - 'Device name' ► 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.6.4.5 Manual Control - Peripheral devices

Tab: **Manual Control** ▶ **Manual Control - All Devices - 'Device name'** ▶ **Peripherals Tower**

Tower stirrer - Rate



Note

The tower stirrer will be deactivated if a **stirrer** is connected to the **MSB 1** of the sample changer. The settings have no effect.

Current value

Current rate of the tower stirrer.

Input

Enter the rate of the tower stirrer.

Range	-15 ... 15 (without 0)
Default value	Current value

[Apply]

Send the set parameters to the stirrer.

[On]

Start the stirrer with the set parameters. This is inactive if the stirrer is running.

[Off]

Stop the stirrer. This is inactive if the stirrer is not running.

[On]

[Off]

[On]

[Off]

Off

The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Solution #

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	not defined Non-intelligent solutions from the solution table
Default value	not defined

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.7.2.2 863 Compact Autosampler - Commands

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the 863 Compact Autosampler:

7.7.2.2.1 Commands - Tower

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the tower of the sample changer:

7.7.2.2.1.1 Move (Rack)

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Move**

The device-dependent time program command **Move** (command with feedback) turns the rack until the desired position is reached on the sample changer.

Destination

Move

Selecting the target position on the rack:

Selection	Sample position Rack position
Default value	Sample position

Sample position

Position defined for the current determination in the Run window as parameter **Position**.

Rack position

Predefined position on the rack.

Number

Specification of the number of the rack position. This parameter is only visible for **Move = Rack position** or **Move = Special beaker**.

Range	1 ... 36
Default value	1

Parameters

Shift direction

Selection of the shift direction

Selection	auto + -
Default value	auto

auto

The shift direction with the smallest rotation angle is selected automatically.

+

It turns counterclockwise.

—

It turns clockwise.

Comment

Optional comment on the time program command.

Input	64 characters

7.7.2.2.1.2 Lift

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Lift**

With the device-dependent time program command **Lift** (command with feedback), the lift on the tower of the sample changer moves to the desired position.

Destination

Lift position

Entering the desired lift position in mm or select a lift position predefined for the rack. A lift height of **0 mm** corresponds to the Home position. Here the lift is moved to the uppermost stop.

Range	0.0 ... 126.0 mm
Selection	Work position Shift position
Default value	Work position



Note

Please make sure that none of the lift positions exceed the maximum stroke path given in the tower properties of the device.

Comment

Optional comment on the time program command.

Input	64 characters

7.7.2.2.2 Commands - Peristaltic pump

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the peristaltic pump:

7.7.2.2.2.1 On/Off

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Status

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Rate

Rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Comment

Optional comment on the time program command.

Input	64 characters

7.7.2.2.2.2

Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.7.2.2.3

Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Lift position

Current value

Current lift position.

Input

Enter or select the lift position that is to be moved to for the current rack position (normal beaker, special beaker, external position).

Range	0 ... Max. stroke path mm
Default value	0 mm
Selection	Work position Shift position

[Start]

Move lift to the desired position.



The lift continues moving up as long as this button is pressed.



The lift continues moving down as long as this button is pressed.

7.7.3.2 Manual Control - Peristaltic pump

Tab: **Manual Control** ► **Manual Control - All devices - 'Device name' ► 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.8 889 IC Sample Center

7.8.1 889 IC Sample Center - Overview



Note

The **889 IC Sample Center** device is available in two versions which differ in the combination of integrated modules. This sample changer is described with all modules in the online help.

The following versions are available depending on the application:

- **2.889.0010 IC Sample Center**
IC Autosampler for small sample volumes.
- **2.889.0020 889 IC Sample Center - cool**
IC Autosampler for small sample volumes, with sample cooling.

7.8.2 889 IC Sample Center - Configuration

Dialog window: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'**

If a device of type **889 IC Sample Center** is selected in the device table, then the menu item **[Edit]** ▶ **Properties...** opens the dialog window **Properties - 'Device type' - 'Device name'** with the device-specific tabs.

7.8.2.1 Properties - General

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagiC Net** and which can be updated by **MagiC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Start-up

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

Selection	connected	not connected

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.



Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Input	1000 characters
Default value	empty

7.8.2.2 Properties - Syringe

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Syringe**

Volume Syringe

Displays the volume of the syringe in μL .

Volume Buffer loop

Volume of the buffer loop in μL .

Range	1 ... 50000 μL
Default value	1000 μL

7.8.2.3 Properties - Needle

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Needle**

Volume Needle to Valve

Whole volume, from the needle tip to the injection valve, in μL .



Note

The needle is supplied together with the necessary capillary. The capillary is labeled with the volume in μL ; put this value in here.

Range	1 ... 999 μL
Default value	15 μL

7.8.2.4 Properties - Injector

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Injector**

Volume Sample loop

Volume of the sample loop of the injection valve, in μL .

Range	1 ... 5000 μL (Increment: 1)
Default value	100 μL

7.8.2.5 Properties - GLP

Tab: **Configuration** ▶ **Device** ▶ **[Edit]** ▶ **Properties...** ▶ **'Properties - 'Device type' - 'Device name'** ▶ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on  in the dialog window **Select date** (see Chapter 2.5.1, page 77).

Comment GLP test

Comment on GLP test.

Input	1000 characters

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range 1 ... 999 Days

Default value **999 Days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Exchange position

Position, allowing to exchange the rack.

Number

If in the parameter **Position** the value **Rack position** is selected, an actual rack position can be indicated here. Note the label of the rack with letters and numbers. To distinguish between the left and the right rack, there is a preceding L or R, respectively.

**Note**

The following examples show how to define rack positions. Hold the 6.2041.200 standard rack (48 vials) the way the A1 coordinate is below on the left. In this orientation the rack has 6 columns (A...F) and 8 rows (1...8). In order to indicate the position A1 on the *left* rack, enter the value **LA1** in **Number**. In order to indicate the position in the 3rd column and 7th row on the *right* rack, enter the value **RC7** in **Number**.

Comment

Optional comment on the time program command.

Input	64 characters

Generated variables

The command **Move to position** generates the command variable **TP.'Command number'.PRO**.

Identifica- tion	Description	Data type
RPO	Rack position after the end of the command. 0 = not defined.	Text

7.8.3.3.2 Commands - Needle

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the needle:

7.8.3.3.2.1 Move

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Move**

With the device-dependent time program command **Move** (command with feedback) of the 889 IC Sample Center vertical and horizontal movements of the needle can be carried out.



Note

Use the time program command **Move to position** of the rack in order to position the rack in the way that the needle is located above the rack position required.

Target

Position

Selection of the horizontal or vertical position the needle is to be moved to.

Selection	top	bottom	Wash position	Waste position

top

Vertical movement of the needle right to the top.

bottom

Vertical movement of the needle to the bottom. If the needle is located above a rack position, it will be moved to the bottom thus far that the distance between the needle tip and the bottom of the vial specified in the parameter **Needle height** is reached

Wash position

Movement of the needle to the wash position and down.

Waste position

Movement of the needle to the waste position and down.

Needle height

Distance of the needle tip from the bottom of the vial or the cavity of the micro titer plate. Only available if the parameter **Position** has the value **bottom**. The default value is the needle height defined in the start parameters of the rack (*see Chapter 7.8.3.1.1, page 846*).

Range	2.0 ... 6.0 mm (Increment: 0.5)

Vial test

Vial test

on | off (Default value: **off**)

Only available if the value **bottom** is selected for **Position**. Selection whether the needle is to be checked for the availability of a vial and what happens, if there is no vial.

Selection	Display message Stop determination Stop determination and series

Display message

The determination is stopped and an error message is displayed.

Stop determination

The determination is stopped and the next determination of the series is started.

Stop determination and series

Both the determination and the series are stopped.

Comment

Optional comment on the time program command.

Input	64 characters

7.8.3.3.3 Commands - Injection valve

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the injection valve:

7.8.3.3.3.1 Fill

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command with feedback) switches the injection valve to **Fill**.

Comment

Optional comment on the time program command.

Input	64 characters

7.8.3.3.3.2 Inject

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command with feedback) switches the injection valve to **Inject**.

Comment

Optional comment on the time program command.

Input	64 characters

7.8.3.3.4 Command - Syringe

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the syringe:

Port to the waste container.

Selection of the rate level the plunger of the syringe is to be moved at.

Comment

Optional comment on the time program command.

Input	64 characters

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Aspirate**

With the device-dependent time program command **Aspirate** (command with feedback) of the 889 IC Sample Center the syringe aspirates a certain volume. The maximum volume that can be aspirated, depends on the current position of the syringe plunger.

Selection of the syringe valve port the **Volume** is to be aspirated at.

Needle

Port to the needle.

Wash

Port to the wash container.

Waste

Port to the waste container.

Volume to be aspirated in μL . Can also be described as formula. If a volume is indicated that cannot be aspirated because of the current position of the syringe plunger, an error message is displayed.

Range **1 ... 500 µL** (Increment: **1**)

Selection of the rate level the plunger of the syringe is to be moved at.

Selection	fast normal slow
Default value	normal

Comment

Optional comment on the time program command.

Input	64 characters

Generated variables

The command **Aspirate** generates the command variable **TP.'Command number'.DVOL** with the volume actually dispensed.

Identifica- tion	Description	Data type
DVOL	Dispensed volume [μL].	Number

7.8.3.3.4.5 Change port

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Change port**

With the device-dependent time program command **Change port** (command without feedback) of the 889 IC Sample Center the syringe valve can be switched to a different port.

Port

Selection of the syringe valve port to be switched to.

Selection	Needle Wash Waste
Default value	Needle

Needle

Port to the needle.

Wash

Port to the wash container.

Waste

Port to the waste container.

Comment

Optional comment on the time program command.

Input	64 characters

7.8.3.3.5 Commands - Cooling

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the cooling:

7.8.3.3.7 Commands - General

Subwindow: **Method ▶ Time program**

Overview of further time program commands made available by the 889 Sample Center:

7.8.3.3.7.1 Full loop injection

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - General - Full loop injection**

With the device-dependent time program command **Full loop injection** (command with feedback) an automatic injection sequence is carried out by the 889 IC Sample Center. The sample loop is **completely** filled thereby.

Rinsing volume

Enter the volume to be used for rinsing.

Range	0 ... 9999 µL (Increment: 1)
Default value	30 µL

Needle height

Distance of the needle tip from the bottom of the vial or the cavity of the micro titer plate. The default value is the needle height defined in the start parameters of the rack (*see Chapter 7.8.3.1.1, page 846*).

Range	2.0 ... 6.0 mm (Increment: 0.5)

Syringe rate

Selection of the rate level the plunger of the syringe is to be moved at.

Selection	fast normal slow
Default value	normal

Air segment

on | off (Default value: **off**)

Selection whether the sample is separated by an air segment.

Headspace pressure

on | off (Default value: **off**)

Selection whether pressure is to be applied to the liquid level in the vial while aspirating sample. This option is only useful when vials with septa are used.

Wash after injection

on | off (Default value: **off**)

Selection whether the washing procedure of the injection sequence is to be carried out after the injection.

Vial test

Selection of what is to happen if no vial is present when moving the needle downwards.

Selection	Display message Stop determination Stop determination and series
Display message The determination is stopped and an error message is displayed. Stop determination The determination is stopped and the next determination of the series is started. Stop determination and series Both the determination and the series are stopped.	
Comment Optional comment on the time program command.	
Input	64 characters

7.8.3.3.7.2 Partial loop injection

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - General - Partial loop injection**

With the device-dependent time program command **Partial loop injection** (command with feedback) an automatic injection sequence is carried out by the 889 IC Sample Center. The sample loop is thereby filled **to 50% maximum**.

Injection volume

Definition of the volume to be injected. The volume can be applied from the sample data. You can alternatively define it manually our by a formula.

Selection	From sample data (empty)
Default value	From sample data

If the empty entry has been selected, the injection volume must be defined manually or by a formula.

Range	1 ... 500 µL (Increment: 1)
Default value	10 µL

Rinsing volume

Enter the volume to be used for rinsing.

Range	0 ... 9999 µL (Increment: 1)
Default value	30 µL

Needle height

Distance of the needle tip from the bottom of the vial or the cavity of the micro titer plate. The default value is the needle height defined in the start parameters of the rack (*see Chapter 7.8.3.1.1, page 846*).

Range	2.0 ... 6.0 mm (Increment: 0.5)

Syringe rate

Selection of the rate level the plunger of the syringe is to be moved at.

Selection	fast normal slow
Default value	normal

Air segment

on | off (Default value: **off**)

Selection whether the sample is separated by an air segment.

Headspace pressure

on | off (Default value: **off**)

Selection whether pressure is to be applied to the liquid level in the vial while aspirating sample. This option is only useful when vials with septa are used.

Wash after injection

on | off (Default value: **off**)

Selection whether the washing procedure of the injection sequence is to be carried out after the injection.

Vial test

Selection of what is to happen if no vial is present when moving the needle downwards.

Selection	Display message Stop determination Stop determination and series

Display message

The determination is stopped and an error message is displayed.

Stop determination

The determination is stopped and the next determination of the series is started.

on | off (Default value: **off**)

on | off (Default value: **off**)

on | off (Default value: **off**)

Selection	Display message Stop determination Stop determination and series
Display message The determination is stopped and an error message is displayed. Stop determination The determination is stopped and the next determination of the series is started. Stop determination and series Both the determination and the series are stopped.	
Comment Optional comment on the time program command.	
Input	64 characters

With the device-dependent time program command **Wait for injection** (command with feedback) of the 889 IC Sample Center, MagIC Net waits until the injection valve of the 889 IC Sample Center switches to **INJECT**.

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.8.4 889 IC Sample Center - Manual Control

Program part: **Manual Control**

Manually controlling devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during running determinations) via the symbol **Manual** on the left of the program bar.

7.8.4.1 Manual Control - Rack

Tab: **Manual Control** ► **Manual Control - All devices** - 'Device name' ► **Rack**

Type**Current value**

Display of the rack type currently set.

Input

Selection of a (different) rack type. Analogous to the parameter **Type** in the start parameters of the rack (*see Chapter 7.8.3.1.1, page 846*).

Selection	12 vials 48 vials 96 low 96 high 384 low
Default value	48 vials

12 vials

Holder for 12 vials

48 vials

Holder for 48 vials

96 low

Micro titer plate low, with 96 cavities

96 high

Micro titer plate high, with 96 cavities

384 low

Micro titer plate low, with 384 cavities

[Apply]

By this function, the rack type selected in the parameter **Input** is set.

Position**Current value**

Displays the current position of the rack. If the position is undefined, ----- is displayed.

Input

Select or enter a (different) rack position.

Selection	(empty) Exchange position
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

(empty)

If the empty entry is selected, manually entering a rack position is expected (*see page 849*). The moving to the position is triggered with **[Start]**

Exchange position

When selecting this value the rack is moved with **[Start]** to the exchange position (front position) in which the rack can be removed.

[Start]

By this function, the position selected in the parameter **Position (Input)** is moved to. The moving cannot be stopped.

7.8.4.2 Manual Control - Needle

Tab: **Manual Control** ▶ **Manual Control - All devices - 'Device name'** ▶ **Needle**

Position

Current value

Displays current needle position.

Input

Selection of a (different) needle position.

Selection **top | bottom | Wash position | Waste position | Exchange position**

top

Vertical movement of the needle right to the top.

bottom

Vertical movement of the needle to the bottom. If the needle is located above a rack position, it will be moved to the bottom thus far that the distance between the needle tip and the bottom of the vial specified in the parameter **Needle height** is reached. **In the Manual Control, the vertical movement of the needle is always carried out without vial test.**

Wash position

Horizontal movement of the needle to the wash position.

Waste position

Horizontal movement of the needle to the waste position.

Exchange position

Movement of the needle to the exchange position.

Needle height

Current value

Displays the current value of the needle height.

Input

Input of a (different) needle height.

Range	2.0 ... 6.0 mm (Increment: 0.5)
Default value	6.0 mm

[Start]

By this function, the selected position in the parameter **Input** is moved to.

7.8.4.3 Manual Control - Injector

Tab: **Manual Control** ► **Manual Control - All devices** - 'Device name' ► **Injector**

[Inject]

By this function, the valve is switched to the position **Inject**.

[Fill]

By this function, the valve is switched to the position **Fill**.

7.8.4.4 Manual Control - Syringe

Tab: **Manual Control** ► **Manual Control - All devices** - 'Device name' ► **Syringe**

Command

Selection of the required action of the syringe.

Selection	Fill Eject Aspirate Dispense
Default value	Fill

Volume

Input

If the **Command Aspirate** or **Dispense** has been selected, the volume in μL has to be entered here.

Port

Current value

Displays the current position of the syringe valve.

Input

Selection of a (different) position of the syringe valve.

Selection	Needle Wash Waste
Default value	Needle

Needle

Port to the needle.

Wash

Port to the wash container.

Waste

Port to the waste container.

Rate

Input

Selection of the syringe rate when carrying out the selected **Command**.

[Start]

Starts the required action.

7.8.4.5 Manual Control - Cooling

Tab: **Manual Control** ▶ **Manual Control - All devices - 'Device name'** ▶ **Cooling**

Temperature

Current value

Displays the current temperature in the sample chamber.

Input

Input of a (different) cooling temperature.

Range	4 ... 22 °C (Increment: 1)
Default value	20 °C

[On]

Switch on cooling.

[Off]

Switch off cooling.

[Apply]

By this function, the value in **Input** is applied for to the device as new cooling temperature.

7.8.4.6 Manual Control - Compressor

Tab: **Manual Control** ▶ **Manual Control - All devices - 'Device name'** ▶ **Compressor**

[On]

Switch on compressor.

[Off]

Switch off compressor.

7.8.4.7 Manual Control - General

Tab: **Manual Control** ► **Manual Control - All devices** - 'Manual Control' ► **General**

Wash

With the corresponding button **[Start]** the standard washing procedure is started. During the washing the label of the button changes to **[Stop]**.

[Start]

Starts the washing procedure.

[Stop]

Stops the washing procedure.

Reset device

With the corresponding button **[Start]** the device is reset. With this function the device can be reset from an error status to the ready status.

7.8.5 889 IC Sample Center - Troubleshooting

If MagIC Net reports a problem during working with the 889 IC Sample Center, information on causes and possibilities for troubleshooting can be found in the following error list.

7.8.5.1 Error list

7.8.5.1. Rack unit

Problem	Cause	Remedy
Error 294	<i>The Home sensor of the rack holder has not been activated.</i>	1. Switch off sample changer. 2. Slide the rack holder carefully back and forth and remove possible obstacles. 3. If possible, slide the rack holder backwards right to the stop. 4. Switch on sample changer. If the error occurs again, please call the Metrohm Service.
Error 295	<i>The current position of the rack holder deviates more than 2 mm from the Home position.</i>	1. Switch off sample changer. 2. Slide the rack holder carefully back and forth and remove possible obstacles. 3. If possible, slide the rack holder backwards right to the stop. 4. Switch on sample changer. If the error occurs again, please call the Metrohm Service.

Problem	Cause	Remedy
Error 307	<i>The Home sensor for the horizontal movement of the needle has unexpectedly been activated.</i>	Call the Metrohm Service.
Error 308	<i>In order to reach the horizontal Home position of the needle, the expected number of steps has not been carried out.</i>	1. Check whether the horizontal movement of the needle is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 312	<i>The needle is located in an undefined vertical position.</i>	Carry out the function [Reset device] in the Manual Control of the sample changer. If the error occurs again, please call the Metrohm Service.
Error 313	<i>The Home sensor for the vertical movement of the needle has not been activated.</i>	1. Check whether the vertical movement of the needle unit is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 315	<i>The Home sensor for the vertical movement of the needle has not been deactivated.</i>	1. Check whether the vertical movement of the needle unit is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 316	<i>The Home sensor for the vertical movement of the needle has been unexpectedly activated.</i>	Call the Metrohm Service.
Error 317	<i>When moving the needle unit vertically the needle deflector has not recognized a rack, nor a wash or waste position.</i>	If the error has occurred during moving to a rack position: ensure that there is a rack with vials or a micro titer plate on the rack holder. If the error occurs again, please call the Metrohm Service.
Error 318	<i>When moving the needle unit vertically the needle deflector is blocked.</i>	1. Check whether the movement of the needle deflector is obstructed. 2. If possible, remove possible obstacles.

Problem	Cause	Remedy
		- Check whether the required unload volume is possible assuming the current position of the syringe piston. - Before unloading the syringe aspirate enough volume first or enter a lower unload volume.
Error 334	<i>The syringe plunger is located in an undefined position.</i>	Carry out the function [Reset device] in the Manual Control of the sample changer. If the error occurs again, please call the Metrohm Service.
Error 335	<i>The spindle of the syringe cannot be rotated correctly.</i>	- Check whether the flow path is kinked or blocked in on one or more places. - If possible, free the flow path of blockages. If the error occurs again, please call the Metrohm Service.

7.8.5.1. Injection valve unit

Problem	Cause	Remedy
Error 340	<i>The injection valve has not reached the required port.</i>	Call the Metrohm Service.
Error 341	<i>The consumption warning limit of the injection valve has been reached.</i>	Call the Metrohm Service.
Error 342	<i>The sensor of the injection valve has provided an unexpected value.</i>	Call the Metrohm Service.

7.8.5.1. Cooling unit

Problem	Cause	Remedy
Error 347	<i>When switching on the cooling a temperature of over 48 °C has been measured.</i>	Have a look at the technical specifications in the device manual of the sample changer and ensure that the range of the operating temperature has not been exceeded.

7.8.5.1. Electronics

Problem	Cause	Remedy
Error 280, 282, 283, 284	<i>An electronic error has occurred in the EEPROM.</i>	1. Switch off sample changer. 2. Wait a few seconds. 3. Switch on sample changer. If the error occurs again, please call the Metrohm Service.
Error 290	<i>When initializing the sample changer at least one critical malfunction has been found. No injections can be carried out.</i>	1. Exit MagIC Net. 2. Switch off sample changer. 3. Ensure that the cable between the sample changer and the PC is connected correctly. 4. Switch on sample changer. 5. Start MagIC Net. If the error occurs again, please call the Metrohm Service.

7.9 886 Professional Thermostat / Reactor

7.9.1 886 Professional Thermostat / Reactor - Overview



Note

The device **886 Professional Thermostat / Reactor** is available in 2 model versions. The device is described in the online help with all possible modules.

The following versions are available for different fields of application:

- **2.886.0110 Professional Reactor**

The 886 Professional Reactor is a heatable reactor, especially developed for pre- and post-column derivatisation. It captivates by its robustness, the fast heating rate and the possibility to carry out reactions at up to 120 °C.

- **2.886.0210 Professional Thermostat**

The 886 Professional Thermostat is a stand-alone column oven for up to two columns with a maximum length of 150 mm. It captivates by its fast heating rate and the possibility to operate two separation columns at up to 80 °C.

7.9.2 886 Professional Thermostat / Reactor - Configuration

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name'**

If a type **886 Professional Thermostat / Reactor** device is selected in the device table, menu item **[Edit] ► Properties...** can be used to open the dialog window **Properties - 'device name' - 'device type'** with the device-specific tabs.

7.9.2.1 Properties - General

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MaqIC Net** and which can be updated by **MaqIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Start-up

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

Selection	connected	not connected
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		
82		
83		
84		
85		
86		
87		
88		
89		
90		
91		
92		
93		
94		
95		
96		
97		
98		
99		
100		

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.



Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Input	1000 characters
Default value	empty

7.9.2.2 Properties - Reactor unit

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Reactor unit**



Note

This tab is only available when there is a reactor unit in the device.

The properties of the reactor plate and the monitoring of the reactor plate can be defined here. In addition, up to 4 reactors can be defined.

Properties of the reactor unit

Name

Name of the reactor unit (must not be empty).

Input	1 .. 24 characters

Start-up

Display of the set to work date of the reactor unit.

Comment

Field for optional and additional information.

Input	0 .. 50 characters

[Monitoring]

Opens the dialog window **Monitoring – 'Reactor unit name'** in which the criteria for monitoring this module can be defined (*see Chapter 7.1.2.10, page 606*).

Reactors

Table of reactors of the reactor unit. Up to 4 reactors can be defined. The most important properties are displayed in the table. The table cannot be edited directly. Use the menu **[Edit]** below the table. This contains the following menu items:

New	Add new line to the table and edit in separate dialog (<i>see Chapter 7.9.2.5, page 878</i>) (is also triggered by a double-click on an empty line).
Edit	Edits selected line in separate dialog (<i>see Chapter 7.9.2.5, page 878</i>) (is also triggered by a double-click on a non-empty line).
Copy [CTRL-C]	Copy selected line to the clipboard.
Paste [CTRL-V]	Insert line from the clipboard below in the table.
Cut [CTRL-X]	Cut selected line and copy it to the clipboard.
Delete [Delete]	Deletes the selected line.

The properties of the reactors are described in *7.9.2.5 Editing reactor, p. 878*.

7.9.2.3 Properties - Connections

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC, 881 Compact IC pro, 882 Compact IC plus, 814 USB Sample Processor, 815 Robotic USB Sample Processor XL, 858 Professional Sample Processor**).

Extension modules



Note

Extension modules can only be connected to the **850 Professional IC**. This section does not exist for other devices.

Displays the extension modules connected to the main device. These devices are managed separately and have their own entry in the device table and are configured under their own name.

Name

Shows the name of the extension module.

Type

Displays the type of extension module.

MSB



Note

One **MSB #** (#=number of the connector) section exists for each MSB connector of the main device.

Displays the devices connected to the MSB # of the main device. They are listed in the order in which they are connected in series. These MSB devices are not managed separately and do not have their own entry in the device table.

Name

The display is made up of the name of the MSB device and the number of the MSB connection.

Type

Shows the type of MSB device.

Material

Optional entry of the material of the reactor capillary.

Input	0 .. 16

Length

Optional entry of the length of the reactor capillary.

Range	0.01 ... 10.0 m (Increment: 0.01)
Default value	2.00 m

Inner diameter

Optional entry of the inner diameter [mm] of the reactor capillary.

Range	0.01 ... 10.0 mm (Increment: 0.01)
Default value	0.5 mm

Volume

In this field the total volume of the reactor capillary in [μL], calculated from **Inner diameter** and **Length**, is displayed.

calculated volume in [μL], without decimal places

Comment

Optional comment on the reactor.

Input	0 .. 24

7.9.3 886 Professional Thermostat / Reactor - Method

Program part: **Method**

In the program part **Method**, start parameters and program commands can be defined for the **886 Professional Thermostat / Reactor**.

7.9.3.1 886 Professional Thermostat / Reactor - Start parameters

Subwindow: **Method ▶ Devices**

Clicking on the symbol for the **886 Professional Thermostat / Reactor** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.9.3.1.1 Start parameters - Thermostat

Tab: **Method ▶ Devices ▶ Thermostat**

Status

Selection	On Off
Default value	Off



On

The thermostat is switched on when the hardware is started with **[Start HW]**.

Off

The thermostat is switched off when the hardware is started with **[Start HW]**.

Temperature

Temperature that is set for the thermostat when the hardware is started with **[Start HW]**.



Caution

Maximum temperatures allowed

The checking does not take place until the start test of the method.

- Intelligent column (iColumn): 80°C.
- Intelligent Reactor unit: 120°C.
- Otherwise: 150°C.

Range	0.0 ... 150.0 °C (Increment: 0.1)
Default value	25.0 °C

Monitor temperature stability

on | off (Default value: **on**)

If this option is **switched on**, then a determination will not start until the set temperature has been reached and is stable.

If this option is **switched off**, then the sequence of a determination will not be influenced by the temperature. An attempt will indeed be made to achieve the temperature and to maintain it, but the determination will begin in any case.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.9.3.2 886 Professional Thermostat / Reactor - Data channels

Tab: **Method** ▶ **Devices** ▶ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
Temperature	Temperature	°C	No

7.9.3.3 886 Professional Thermostat / Reactor - Commands

Subwindow: **Method** ▶ **Devices**

Subwindow: **Method** ▶ **Time program**

Overview of the time program commands available for the 886 Professional Thermostat / Reactor.

7.9.3.3.1 Commands - Thermostat

Subwindow: **Method** ▶ **Time program**

Overview of the time program commands available for the thermostat:

7.9.3.3.1.1 Measuring temperature

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device'** - **'Module'** - **Measure temperature**

The device-dependent time program command **Measure temperature** (command with feedback) measures the temperature in the thermostat.

Comment

Optional comment on the time program command.

Input	64 characters

Generated variables

The following type **'TP.command number.Variable name'** variables are generated by the command:

Variable name	Description	Data type
TEMP	Measured temperature [°C]	Number

7.9.4 886 Professional Thermostat / Reactor - Manual Control

Program part: **Manual Control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.9.4.1 Manual Control - Column thermostat

Tab: **Manual** ▶ **Manual Control** - 'Device name' ▶ 'Thermostat'

Temperature

Current value

Current temperature of the thermostat.

Input

Entering a new value for the temperature of the thermostat.

Range	0.0 ... 80.0 °C
Default value	30.0 °C

[On]

Switching on the thermostat. This is inactive if it is running.

[Off]

Switching off the thermostat. This is inactive if it is not running.

[Apply]

Sending the parameters set to the thermostat.

7.10 887 Professional UV/VIS Detector

7.10.1 887 Professional UV/VIS Detector - Overview

The device **887 Professional UV/VIS Detector** is available in 1 model version:

- **2.887.0010 Professional UV/VIS Detector**

The 887 Professional UV/VIS Detector is an alternative to the proven conductivity detector and extends the family of the intelligent detectors by Metrohm. It permits a secure and reliable quantification of substances active in the ultraviolet or visible range.

7.10.2 887 Professional UV/VIS Detector - Configuration

Dialog window: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'**

If a type **887 Professional UV/VIS Detector** device is selected in the device table, menu item **[Edit] ► Properties...** can be used to open the dialog window **Properties - 'device name' - 'device type'** with the device-specific tabs.

Properties - General

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagiC Net** and which can be updated by **MagiC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Start-up

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

Selection	connected	not connected

Properties - Detector

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Detector**

Integration duration

Shows the integration duration of the diode array (time until the next reading of each diode). The value is set in the dialog **Settings** (see *Chapter 7.10.2.7, page 887*).

Range	10 ... 247 ms

[Settings..]

If the device is being connected, the dialog **Settings** (see Chapter 7.10.2.7, page 887) is opened.

7.10.2.5 Properties - Analog Out

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Analog Out**

The 887 Professional UV/VIS Detector supports the output of data via a maximum of 4 analog channels.

Range/Volt

Entry of the absorbance value in [mAU], which is to be put out as 1 Volt.
This value applies for all 4 analog channels.

Range	10.0 ... 2000.0 mAU (Increment: 10.0)

7.10.2.6 Properties - GLP

Tab: **Configuration** ▶ **Device** ▶ **[Edit]** ▶ **Properties...** ▶ **'Properties - 'Device type' - 'Device name'** ▶ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on  in the dialog window **Select date** (see Chapter 2.5.1, page 77).

Comment GLP test

Comment on GLP test.

Input	1000 characters

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range	1 ... 999 Days
Default value	999 Days

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test.

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the validity period has expired will be automatically saved with the determination.

Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

7.10.2.7 Settings

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ Detector ▶ Settings**

Here the detector settings can be optimized:

In the upper part of the dialog window the current intensity spectrum is shown. Note, that the UV or VIS part of the spectrum is only displayed when the corresponding lamps are switched on. The spectrum indicates whether your settings are optimal. The settings can be optimized manually (see "*Manually optimizing the settings*", page 887) or automatically (see "*Automatically optimizing the settings*", page 887).

Manually optimizing the settings**Integration duration**

Entry of the integration duration.

Range	10 ... 247 ms (Increment: 1)

VIS intensity level

Entry of the intensity level of the lamp.

Range	1 ... 8 (Increment: 1)

[Apply]

The values of **Integration duration** and **VIS intensity level** are written to the device. Afterwards, a new intensity spectrum is displayed.

Automatically optimizing the settings

As an alternative to the manual optimization the settings may also be optimized automatically.

[Optimize automatically]

With this function, the optimization is carried out by a built-in algorithm of the device. This calculates and sets the values for the parameters **Integra-**

tion duration and **VIS intensity level**. After the optimization a new intensity spectrum is displayed.

[OK]

The parameter values are written to the device and the dialog is closed.

[Cancel]

The dialog is closed and those values apply which were set *before* opening this dialog.

7.10.3 887 Professional UV/VIS Detector - Method

Program part: **Method**

In the program part **Method**, start parameters and program commands can be defined for the **887 Professional UV/VIS Detector**.

The recording of spectra is defined in the evaluation of the method (see *Chapter 5.8.8, page 468*).

7.10.3.1 887 Professional UV/VIS Detector - Start parameters

Subwindow: **Method ▶ Devices**

Clicking on the symbol for the **887 Professional UV/VIS Detector** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.10.3.1.1 Start parameters - UV lamp

Tab: **Method ▶ Devices ▶ UV lamp**

On / Off

Selection	On Off
Default value	Off

On

The UV lamp is switched on when the hardware is started with **[Start HW]**.

Off

The UV lamp is switched off when the hardware is started with **[Start HW]**.

7.10.3.1.2 Start parameters - VIS lamp

Tab: **Method** ▶ **Devices** ▶ **VIS lamp**

On / Off

Selection	On Off
Default value	Off

On

The VIS lamp is switched on when the hardware is started with **[Start HW]**.

Off

The VIS lamp is switched off when the hardware is started with **[Start HW]**.

7.10.3.1.3 Start parameters - Detector

Tab: **Method ▶ Devices ▶ Detector**

Up to 8 measuring channels can be defined:

A measuring channel is a wavelength range in which a chromatogram may be recorded via the change of absorbance. For this, the channel must be assigned as a data source to an analysis (*see Chapter 5.6.6.1, page 382*).

Channels

Table of the measuring channels defined for the 887 Professional UV/VIS Detector. The table cannot be edited directly. Use the menu **[Edit]** below the table. This contains the following menu items:

New	Add new line to the table and edit in separate dialog (<i>see Chapter 7.10.3.1.5, page 891</i>) (is also triggered by a double-click on an empty line).
Edit	Edits selected line in separate dialog (<i>see Chapter 7.10.3.1.5, page 891</i>) (is also triggered by a double-click on a non-empty line).
Cut [CTRL-X]	Cut selected line and copy it to the clipboard.
Delete [Delete]	Deletes the selected line.

Reference channel

The reference channel is optional. It can be used to compensate lamp effects (drift, flicker) out of the intensities.

Use reference channel

on | off (Default value: **off**)

If this option is enabled, the properties of the reference channel can be edited with the button **[...]** and the reference channel will be used in the determination. If this option is disabled, no reference channel will be used in the determination. However, the properties previously defined for a reference channel will remain.

[...]

Opens the dialog for entering / editing the properties of the reference channel (*see Chapter 7.10.3.1.6, page 891*).

Measuring duration

Entry of the measuring duration per data point.



Note

This value is used as an approximate value. The *actual* measuring duration is that integral multiple of the configuration parameter **Integration duration** (see page 885) which is closest to this guideline.

Range	50 ... 2000 ms

7.10.3.1.4 Start parameters - Analog Out

Tab: **Method** ▶ **Devices** ▶ **Detector**

The 887 Professional UV/VIS Detector supports the output of data in 4 analog outputs **Out #** (#=1..4). In the start parameters of the detector (see *Chapter 7.10.3.1, page 888*), up to 8 measuring channels **Channel #** (#=1..8) can be defined. Here the measuring channels can be assigned to analog output channels.

Out #

Assignment of a measuring channel to the corresponding analog output.

Selection	'not defined' Channel #
Default value	'not defined'

'not defined'

If this entry is selected, no measuring channel is assigned to the corresponding analog channel.

Channel

For each measuring channel defined in the start parameters of the detector there will be an entry in the selection list. If a measuring channel is selected, then it will be assigned to the corresponding output channel.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.10.3.1.5 Editing channel

Tab: **Method** ▶ **Device** ▶ **Detector** ▶ **Channel**

Channel

Number of the channel. Only available for measuring channels, not for the reference channel.

Selection	1 2 3 4 5 6 7 8

Wavelength

Entry of the wavelength of the channel.

Range	191 ... 899 nm (Increment: 1)
Default value	254 nm

Bandwidth ±

Entry of the wavelength which is subtracted from and added to the wavelength of the measuring channel.

Example: if the wavelength of the channel is 390 nm and for **Bandwidth ±** the value 5 nm has been entered, then the channel comprises the interval 385 .. 395 nm.

Range	1 ... 100 nm (Increment: 1)
Default value	5 nm

7.10.3.1.6 Editing the reference channel

Tab: **Method** ▶ **Device** ▶ **Detector** ▶ **Reference channel**

In this dialog the properties for the reference channel can be edited.

7.10.3.1.7 Calculation of the absorbance

Here the formulas for calculating the absorbance A can be found. In the formulas the following abbreviations are used:

A	Absorbance	
I	Intensity	The sum of the intensities of wavelengths in the channel.
Mc	Measuring channel	Normally a wavelength range in which the sample of interest absorbs light.
M	(Index: m)	Number of bundled points in the measuring channel.
Rc	Reference channel	Normally another wavelength range in which the sample of interest <i>does not</i> absorb light.

R	(Index: r)	Number of bundled points in the reference channel.
BIs	Baseline spectrum	Spectrum without sample substance. This spectrum is always there. The detector itself creates one when switching on. The user can have it newly recorded in the manual control or in the time program. It is stored in the detector.
Msp	Measured spectrum	Spectrum, recorded during run-time.

Calculation of the absorbance (without reference channel)

$$A = \frac{1}{M} \cdot \sum_{m=1}^M \log \frac{I_m^{Mc, Bls}}{I_m^{Mc, Msp}}$$

Calculation of the absorbance (with reference channel)

The first term corresponds to the formula above for the absorbance without reference channel. The second term subtracts the absorbance of the reference channel.

$$A = \frac{1}{M} \cdot \sum_{m=1}^M \log \frac{I_m^{Mc, Bls}}{I_m^{Mc, Msp}} - \frac{1}{R} \cdot \sum_{r=1}^R \log \frac{I_r^{Rc, Bls}}{I_r^{Rc, Msp}}$$

7.10.3.2 887 Professional UV/VIS Detector - Data channels

Tab: **Method** ▶ **Devices** ▶ **Hardware assignment**

Each of the 8 measuring channels of the detector (see Chapter 7.10.3.1.3, page 889) can be selected as **Channel** for the analysis (see Chapter 5.6.6.1, page 382).

Property	Label of Y axis	Unit	Evaluation
Absorbance	none	mAU	Yes

7.10.3.3 887 Professional UV/VIS Detector - Commands

Subwindow: **Method ▶ Devices**Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the 887 Professional UV/VIS Detector:

7.10.3.3.1 Commands - Detector

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the detector:

7.10.3.3.1.1 Reset baseline

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Reset baseline**

The device-dependent time program command **Reset baseline** (command without feedback) measures a complete spectrum (190-900 nm). This is immediately calculated as background spectrum.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

7.10.3.3.1.2 Modify channel

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Modify channel**

The device-dependent time program command **Modify channel** (command without feedback) redefines the parameters of the corresponding measuring channel. The modifications apply until the end of the method run.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Channel

Selection of the measuring channel whose parameters are to be modified.

Selection	Channel #

Channel

For each measuring channel defined in the start parameters of the detector there will be an entry in the selection list.

Wavelength

Entry of the wavelength of the channel.

7.10.3.3.1.4 Measure noise

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Measure noise**

The device-dependent time program command **Measure noise** (command with feedback) measures the noise of the detector during the defined **Measuring time**.

Measuring time

Range	0.2 ... 999.0 min (Increment: 0.2)
Default value	1.0 min

Comment

Optional comment on the time program command.

Input	64 characters

Generated variables

The following type '**TP.command number.Variable name**' variables are generated by the command:

Variable name	Description	Data type
NOISE	Measured noise	Number

7.10.3.3.1.5 Measure drift

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Measure drift**

The device-dependent time program command **Measure drift** (command with feedback) measures the drift of the detector during the defined **measuring time**.

Measuring time

Range	0.2 ... 999.0 min (Increment: 0.2)
Default value	1.0 min

Comment

Optional comment on the time program command.

Input	64 characters

Generated variables

The following type '**TP.command number.Variable name**' variables are generated by the command:

Variable name	Description	Data type
DRIFT	Measured drift	Number

7.10.4 887 Professional UV/VIS Detector - Manual Control

Program part: **Manual Control**

The manual control of devices takes place in the separate dialog window **Manual Control**, which can be called up at all times by all program parts (even during ongoing determinations) via the symbol **Manual** at the left of the program bar.

7.10.4.1 Manual Control - UV lamp

Tab: **Manual Control** ▶ **Manual Control - All devices - 'Device name'** ▶ UV lamp

In the manual control the UV lamp can be switched on and off.

[On]

Switching on UV lamp.

[Off]

Switching off UV lamp.

7.10.4.2 Manual Control - VIS lamp

Tab: **Manual Control** ▶ **Manual Control - All devices - 'Device name'** ▶ **VIS lamp**

In the manual control the VIS lamp can be switched on and off.

[On]

Switching on VIS lamp.

[Off]

Switching off VIS lamp.

7.10.4.3 Manual Control - Detector

Tab: **Manual Control** ▶ **Manual Control - All devices - 'Device name'** ▶ **Detector**

In the manual control, the measuring channel of detector can be edited. In addition, the current absorbance, intensity or baseline spectrum can be displayed. It is also possible to record a new baseline spectrum here.

Channel

Selection of the channel which is to be edited when pressing the button **[Edit]**.

Selection	Channel #

Channel

For each measuring channel defined in the start parameters of the detector there will be an entry in the selection list.

Display of the device type.

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIc Net** and which can be updated by **MagIc Net** itself.

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Shows the date on which the device was automatically added to the device table.

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.



Note

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Input	1000 characters
Default value	empty

7.11.1.1.2 Properties - High-pressure pump

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Pump**

Pump type

Display of type of pump.

Pump head

Type

Designation of pump head is read out of the chip on the pump head.

Order number

Display of the order number of pump head, is read out of the chip on the pump head.

Material

Display of the material of pump head, is read out of the chip on the pump head.

Serial number

Display of the serial number of pump head, is read out of the chip on the pump head.

Flow range

Display of the flow range of pump head, is read out of the chip on the pump head.

Display of the maximum pressure, is read out of the chip on the pump head.

Factor with which any deviations in the flow of the pump as compared to the flow set (in the method) are corrected. Is read out of the chip on the pump head, can be edited and is then written back to the pump head automatically.

Opens the dialog window **Monitoring – 'Pump name'** in which the criteria for monitoring this module can be defined (*see Chapter 7.1.2.10, page 606*).

Only editable when the monitoring is activated.

Range	1 ... 999 Days
Default value	999 Days

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test.

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the validity period has expired will be automatically saved with the determination.

Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

7.11.1.2 872 Extension Module IC Pump - Method

Program part: **Method**

The start parameters, data channels and program commands can be defined for the 872 Extension Module IC Pump in the program part **Method**.

7.11.1.2.1 872 Extension Module IC Pump - Start parameters

Subwindow: **Method ▶ Devices**

Clicking on the symbol for the **872 Extension Module IC Pump** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.11.1.2.1.1 Start parameters - High pressure pump

Tab: **Method ▶ Devices ▶ Pump**

Flow

Flow of the high pressure pump when the hardware is started with **[Start HW]**.

**Note**

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Range	0.000 ... 20.000 mL/min
Default value	0.500 mL/min

P_{min}

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Range	0.00 ... P_{max} MPa
Default value	0.00 MPa

P_{max}

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.



Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Range	P_{min} ... 50.00 MPa
Default value	35.00 MPa

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.



Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump (*see Chapter 5.6.6.1, page 382*) the value from the properties of the column (*see "Recommended working values", page 546*) can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Range 0 ... 99 min (Increment: 1)

Eluent

Selecting the eluent that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	not defined	Eluents from the Eluent table
Default value	not defined	

Pump

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Comment

Optional comment on the time program command.

Input	64 characters

7.11.1.2.3.1.2

Flow

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the high-pressure pump to the defined value.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Flow

Range	0.000 ... 20.000 mL/min
Default value	(Start parameters for flow in the method) mL/min

Comment

Optional comment on the time program command.

Input	64 characters

7.11.1.2.3.1.3

Gradient

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a flow gradient program for the high-pressure pump.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Gradient

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles:**
Sets the column width.
- **Double-click on the margin between column titles:**
Sets the optimal column width.
- **Drag the column title:**
Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window Edit gradient (see Chapter 7.1.3.3.1.4, page 630).
Edit	Edit selected line in the table in the Edit gradient window (see Chapter 7.1.3.3.1.4, page 630).
Copy	Copy selected line to the clipboard.
Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The flow of the programmed gradient is displayed below the gradient table in a graph as a factor of time. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Input	64 characters

7.11.1.2.3.1.6

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

Time at which the command is to be executed.

Optional comment on the time program command.

Tab: **Manual** ▶ **Manual Control** - 'Device name' ▶ 'Pump name'

Entering a new value for the flow.

Current value for the minimum permitted pressure in the system.



Input

Entering a new value for the minimum permitted pressure in the system.

Range	0.00 ... $P_{\max}$ MPa
Default value	0.00 MPa

P_{max}

Current value

Current value for the maximum permitted pressure in the system.

Input

Entering a new value for the maximum permitted pressure in the system.

Range	P_{min} ... 50.00 MPa
Default value	35.00 MPa

Pressure

Current value

Shows the current pressure in the system.

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.11.2 872 Extension Module IC Module

7.11.2.1 872 Extension Module IC Module - Configuration

Dialog window: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'**

If a type **872 Extension Module IC Module** device is selected in the device table, the menu item **[Edit] ► Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.11.2.1.1 Properties - General

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name' ▶ General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** (*see Chapter 7.1.2.9, page 605*).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Start-up

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

Selection	connected not connected

Serial number

Display of the serial number of pump head, is read out of the chip on the pump head.

Flow range

Display of the flow range of pump head, is read out of the chip on the pump head.

 $P_{\max}$

Display of the maximum pressure, is read out of the chip on the pump head.

Correction factor

Factor with which any deviations in the flow of the pump as compared to the flow set (in the method) are corrected. Is read out of the chip on the pump head, can be edited and is then written back to the pump head automatically.

Range	0.90 ... 1.10
Default value	1.00

[Monitoring]

Opens the dialog window **Monitoring – 'Pump name'** in which the criteria for monitoring this module can be defined (see Chapter 7.1.2.10, page 606).

7.11.2.1.3 Properties - Degasser

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Degasser**

The degasser has no configurable properties apart from the monitoring parameters.

[Monitoring]

Opens the dialog window **Monitoring - Degasser** in which the criteria for monitoring this module can be defined (*see Chapter 7.1.2.10, page 606*).

7.11.2.1.4 Properties - GLP

Tab: **Configuration** ▶ **Device** ▶ **[Edit]** ▶ **Properties...** ▶ **'Properties - 'Device type' - 'Device name'** ▶ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on  in the dialog window **Select date** (see Chapter 2.5.1, page 77).

Comment GLP test

Comment on GLP test.

Input	1000 characters

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range 1 ... 999 Days

Default value **999 Days**

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).



Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the flow of the high pressure pump can be set automatically to the standard flow of the column.

Range	0.000 ... 20.000 mL/min
Default value	0.500 mL/min

 $P_{\min}$

Minimum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure level is not reached.

Range	0.00 ... P_{max} MPa
Default value	0.00 MPa

 $P_{\max}$

Maximum permitted pressure in the system when the hardware is started with **[Start HW]**. The high pressure pump automatically switches off if this pressure is exceeded.



Note

If a separation column or a high pressure pump is re-assigned to an analysis under **Hardware assignment**, then the maximum permitted pressure can be set automatically to the default value of the column.

Range	P_{min} ... 50.00 MPa
Default value	35.00 MPa

Start-up time

on | off (Default value: **off**)

Selection whether the start-up time defined for the column is to be considered when starting the pump with **[Start HW]**.



Note

- This option is **not** being considered when starting the pump in the manual control.
- If in a method more than one column is assigned to the same pump via hardware assignment, the last value applied for the starting-up time is valid.

Start-up time [min]. Only active when the option described above is deactivated. When linking a column to the pump (see *Chapter 5.6.6.1, page 382*) the value from the properties of the column (see *"Recommended working values", page 546*) can be applied. If the value cannot be read from the column, the default value is 0. The user cannot modify this value.

Range	0 ... 99 min (Increment: 1)

Eluent

Selecting the eluent that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	not defined Eluents from the Eluent table
Default value	not defined

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.11.2.2.1.2 Start parameter - Injection valve

Tab: **Method ▶ Devices ▶ Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	Maintain current position Fill Inject
Default value	Maintain current position

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.11.2.2.1.3 Start parameters - Degasser

Tab: **Method** ▶ **Devices** ▶ **Degasser**

Status

Selection	On Off

On

The degasser is switched on when the hardware is started with **[Start HW]**.

Off

The degasser is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.11.2.2.2 872 Extension Module IC Module - Data channels

List of data channels offered by the device. In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

7.11.2.2.2.1 High-pressure pump - Data channels

Tab: **Method** ▶ **Devices** ▶ **Hardware assignment**

Property	Label of Y axis	Unit	Evaluation
System pressure	Pressure	MPa; bar; psi	No
Flow	Flow	mL/min	No

7.11.2.2.3 872 Extension Module IC Module - Commands

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the 872 Extension Module IC Module:

Commands - High-pressure pump

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the high-pressure pump:

7.11.2.2.3.1.1 On/Off

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device'** - **'Module'** - On/Off

The device-dependent time program command **On/Off** (command without feedback) switches the high-pressure pump on/off.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Pump

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Comment

Optional comment on the time program command.

Input	64 characters

7.11.2.2.3.1.2 Flow

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Flow**

The device-dependent time program command **Flow** (command without feedback) sets the flow rate of the high-pressure pump to the defined value.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Flow

Range	0.000 ... 20.000 mL/min
Default value	(Start parameters for flow in the method) mL/min

Comment

Optional comment on the time program command.

Input	64 characters

7.11.2.2.3.1.3

Gradient

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - Gradient**

The device-dependent time program command **Gradient** (command without feedback) starts a flow gradient program for the high-pressure pump.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Gradient

The sequence of the flow gradient program is defined in a table. It consists of as many lines as gradient steps are entered, or at least the first line with the start settings of the gradient. The lines are chronologically sorted in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles:**
Sets the column width.
- **Double-click on the margin between column titles:**
Sets the optimal column width.
- **Drag the column title:**
Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window Edit gradient (see Chapter 7.1.3.3.1.4, page 630).
Edit	Edit selected line in the table in the Edit gradient window (see Chapter 7.1.3.3.1.4, page 630).
Copy	Copy selected line to the clipboard.

Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The flow of the programmed gradient is displayed below the gradient table in a graph as a factor of time. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Input	64 characters

7.11.2.2.3.1.4 Editing gradient

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Gradient ▶ [Edit] ▶ New / Edit ▶ Edit gradient**

Time

Time at which the gradient command is to be executed.

Range	0.00 ... 1000.00 min
Default value	0.00 min

Flow

Setting the flow of the high-pressure pump to the given value.

Range	0.001 ... 20.000 mL/min
Default value	(Start parameters for flow in the method) mL/min

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	Linear Step

Linear

The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Step

The flow of the pump remains at the value of the previous command line up to the point in time of the current command line and is then altered to the value of the current command line.

Commands - Injection valve

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the injection valve:

7.11.2.2.3.2.1 Fill

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

7.11.2.2.3.2 Inject

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Inject**

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	64 characters

7.11.2.2.3.2.3 Release

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.11.2.2.3.3 Commands - Degasser

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the degasser:

7.11.2.2.3.3.1 On/Off

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the pump for the degasser on/off.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Pump

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Comment

Optional comment on the time program command.

Input	64 characters

7.11.2.3 872 Extension Module IC Module - Manual Control

7.11.2.3.1 Manual Control - High-pressure pump

Tab: **Manual** ▶ **Manual Control** - 'Device name' ▶ 'Pump name'

Flow

Current value

Currently set value of the flow of the pump.



7.11.2.3.2 Manual Control - Injection valve

Tab: **Manual** ▶ **Manual Control** - 'Device name' ▶ 'Injection valve'

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.11.2.3.3 Manual Control - Degasser

Tab: **Manual** ▶ **Manual Control** - 'Device name' ▶ 'Degasser'

[On]

Start degasser. This is inactive if the degasser is already running.

[Off]

Stop degasser. This is inactive if the degasser is not running.

7.11.3 872 Extension Module Sample Prep

7.11.3.1 872 Extension Module Sample Prep - Configuration

Dialog window: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'**

If a type **872 Extension Module Sample Prep** device is selected in the device table, the menu item **[Edit] ► Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.11.3.1.1 Properties - General

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagIC Net** and which can be updated by **MagIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Start-up

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

Selection	connected not connected

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

**Note**

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Input	1000 characters
Default value	empty

7.11.3.2.1 872 Extension Module Sample Prep - Start parameters

Subwindow: **Method ▶ Devices**

Clicking on the symbol for the **872 Extension Module Sample Prep** in the top part of the window causes the tabs of the modules in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.11.3.2.1.1 Start parameters - Peristaltic pump

Tab: **Method** ▶ **Devices** ▶ **Peristaltic**

Status

Selection	On Off
Default value	Off

On

The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off

The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Solution

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	not defined Non-intelligent solutions from the solution table
Default value	not defined

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.11.3.2.1.2 Start parameter - Injection valve

Tab: **Method** ▶ **Devices** ▶ **Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	Maintain current position Fill Inject
Default value	Maintain current position

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.11.3.2.2 872 Extension Module Sample Prep - Commands

Subwindow: **Method** ▶ **Time program**

Overview of the time program commands available for the 872 Extension Module Sample Prep:

7.11.3.2.2.1 Commands - Peristaltic pump

Subwindow: **Method** ▶ **Time program**

Overview of the time program commands available for the peristaltic pump:

7.11.3.2.2.1.1 On/Off

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device'** - **'Module'** - **On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Status

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Rate

Rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Comment

Optional comment on the time program command.

Input	64 characters

7.11.3.2.2.1.2

Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range **0.00 ... 10000.00 min** (Increment: **0.01**)

Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.11.3.2.2.2

Commands - Injection valve

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the injection valve:

7.11.3.2.2.2.1

Fill

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Fill**

The device-dependent time program command **Fill** (command without feedback) switches the injection valve to **Fill**.

Time

Time at which the command is to be executed.

Comment

Input	64 characters

Inject

The device-dependent time program command **Inject** (command without feedback) switches the injection valve to **Inject**.

Time at which the command is to be executed.

Comment

Input	64 characters

Release

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time at which the command is to be executed.

Comment

Input	0 ... 64 characters

7.11.3.3 872 Extension Module Sample Prep - Manual Control

7.11.3.3.1 Manual Control - Peristaltic pump

Tab: **Manual Control** ▶ **Manual Control - All devices - 'Device name' ▶ 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.11.3.3.2 Manual Control - Injection valve

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Injection valve'

[Fill]

Switch the valve to **Fill**. Only active when the valve is set to **Inject**.

[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.11.4 872 Extension Module Liquid Handling

7.11.4.1 872 Extension Module Liquid Handling - Configuration

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name'**

If a type **872 Extension Module Liquid Handling** device is selected in the device table, the menu item **[Edit] ► Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.11.4.1.1

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name' ▶ General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagiC Net** and which can be updated by **MagiC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Start-up

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

Selection	connected	not connected

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range	1 ... 999 Days
Default value	999 Days

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test.

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the validity period has expired will be automatically saved with the determination.



Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

7.11.4.2 872 Extension Module Liquid Handling - Method

Program part: **Method**

In the program part **Method** the start parameters and program commands can be defined for the 872 Extension Module Liquid Handling.

7.11.4.2.1 872 Extension Module Liquid Handling - Start parameters

Subwindow: **Method ▶ Devices**

Clicking on the symbol for the **872 Extension Module Liquid Handling** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.11.4.2.1.1 Start parameters - Peristaltic pump

Tab: **Method** ▶ **Devices** ▶ **Peristaltic**

Status

Selection	On Off
Default value	Off

On

The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off

The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Solution

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.11.4.2.1.2.2 Port configuration

Method **Devices** ▶ **10-port valve** ▶ **Port configuration**

The dialog **Port configuration** displays in tabular fashion the names and optionally assigned solutions of the individual ports, and permits the editing of these port properties.

7.11.4.2.1.2.2.1 Port table

The dialog **Port configuration** shows the table of the ports.

Name

Name of the port. The default name is **Port #**, where # stands for the number of the port. A user-defined port name must be unique in the context of the respective method.

Input	24 characters

Solution

Optional allocation of a ("non-intelligent") solution from the solution table.

Selection	not defined Non-intelligent solutions from the solution table
Default value	not defined

[Edit]

Opens the dialog window **Edit port**, in which the name for the selected port can be defined and a solution from the solution table can be allocated (see Chapter 7.11.4.2.1.2.2.2, page 940).

7.11.4.2.1.2.2.2 Editing port

Method **Devices** ▶ **10-port valve** ▶ **Port configuration** ▶ **Edit port**

A user-defined name can be assigned in the dialog **Port configuration** for each port and a solution can be allocated from the solution table .

Port

Display of the number of the selected port.

Name

Name of the port. The default name is **Port #**, where # stands for the number of the port. A user-defined port name must be unique in the context of the respective method.

Input	24 characters

Solution

Optional allocation of a ("non-intelligent") solution from the solution table.

Selection	not defined Non-intelligent solutions from the solution table
Default value	not defined

[OK]

Save the port properties.

[Cancel]

Cancel the editing of the port properties.

7.11.4.2.1.3 Start parameter - Injection valve

Tab: **Method ▶ Devices ▶ Injector**

Position

Position of the injection valve when the hardware is started with **[Start HW]**.

Selection	Maintain current position Fill Inject
Default value	Maintain current position

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.11.4.2.2 872 Extension Module Liquid Handling - Commands

Subwindow:Method ▶ Time program

Overview of the time program commands available for the 872 Extension Module Liquid Handling:

Time at which the command is to be executed.

Optional comment on the time program command.

Overview of the time program commands available for the 10-port valve:

Time at which the command is to be executed.

List of the port names for selecting the target port.

List of the shift modes of the 10-port valve.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.11.4.3 872 Extension Module Liquid Handling - Manual control

7.11.4.3.1 Manual Control - Peristaltic pump

Tab: **Manual Control** ► **Manual Control - All devices - 'Device name' ► 'Peristaltic pump'**

Rate

Current value

Display of the currently set rate of the peristaltic pump.

Input

Entering a new value for the rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

[Start]

Start the pump with the set parameters. This is inactive if the pump is already running.

[Stop]

Stop pump. This is inactive if the pump is not running.

[Apply]

Send the parameters to the pump.

7.11.4.3.2 Manual control - 10-port valve

Manual **Manual Control - 'Device name' ▶ '10-port valve'**

Current port

Shows the current port.

Port

List of the port names for selecting the target port.

Shift direction

Selection	ascending descending automatic not over
Default value	automatic

The valve moves towards the target port in ascending direction. Example: if the current position is *Port 9*, and the target port is to be *Port 2*, then the valve in this mode will select the path 9 – 10 – 1 – 2.

The valve moves towards the target port in descending direction.
Example: if the current position is *Port 1*, and the target port is to be *Port 7*, then the valve in this mode will select the path 1 – 10 – 9 – 8 – 7.

The valve determines the shortest path to the target port on its own.

The valve moves towards the target port in such a way that the port specified in the parameter "Not over" will not be traversed.

Combobox for selecting the port which is not to be traversed when the port is changed; will have no effect here if the port selected is the same as the target port. Only active when the parameter's "Not over" option is selected for the shift direction. The user-defined name, if available, is used as the 'Port name', otherwise the default name.

[Apply]

7.11.4.3.3 Manual Control - Injection valve

[Fill]

MagIC Net 2.2



[Inject]

Switch the valve to **Inject**. Only active when the valve is set to **Fill**.

7.11.5 872 Extension Module Suppression

7.11.5.1 872 Extension Module Suppression - Configuration

Dialog window: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'**

If a type **872 Extension Module Suppression** device is selected in the device table, the menu item **[Edit] ► Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.11.5.1.1 Properties - General

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MagiC Net** and which can be updated by **MagiC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Start-up

Shows the date on which the device was automatically added to the device table.

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test.

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the validity period has expired will be automatically saved with the determination.

Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

7.11.5.2 872 Extension Module Suppression - Method

Program part: **Method**

In the program part **Method** the start parameters and program commands can be defined for the 872 Extension Module Suppression.

7.11.5.2.1 872 Extension Module Suppression - Start parameters

Subwindow: **Method ▶ Devices**

Clicking on the symbol for the **872 Extension Module Suppression** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.11.5.2.1.1 Start parameters - MSM

Tab: **Method** ▶ **Devices** ▶ **MSM**

7.11.5.2.1.1.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was

released in the time program, then automatic stepping to the next position will *not* be resumed.

Automatic stepping to next position during equilibration

on | off (Default value: **off**)

This parameter can be used only if the parameter **Active** has been activated.

If this option is **enabled**, then – after the method is loaded – automatic stepping of the rotor to the next position is initiated with **[StartHW]**. The time interval defined in the parameter **Interval** is used.

If this option is **disabled**, then no automatic stepping of the rotor to the next position will be initiated with **[StarthW]**.

Interval

Time interval between 2 sequential automatic rotor stepping operations. This parameter is available only if **Automatic stepping to next position during equilibration** has been activated.

Range	1.0 ... 10000.0 min
Default value	10.0 min

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.11.5.2.1.2 Start parameters - Peristaltic pump

Tab: **Method** ▶ **Devices** ▶ **Peristaltic**

Status

Selection	On Off
Default value	Off

On

The peristaltic pump is switched on when the hardware is started with **[Start HW]**.

Off

The peristaltic pump is switched off when the hardware is started with **[Start HW]**.

Rate of the peristaltic pump when the hardware is started with **[Start HW]**.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Solution

Selecting the solution to be transported in channel # of the peristaltic pump when the hardware is started with **[Start HW]**.

Selection	not defined Non-intelligent solutions from the solution table
Default value	not defined

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.11.5.2.2 872 Extension Module Suppression - Commands

Subwindow: **Method** ▶ **Time program**

Overview of the time program commands available for the 872 Extension Module Suppression:

7.11.5.2.2.1 Commands - MSM

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the MSM module (Metrohm Suppressor Module):

7.11.5.2.2.1.1 Step

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Step**

The device-dependent time program command **Step** (command without feedback) moves the rotor one step to the next position. This can be made dependent on a condition.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Execution condition

on | off (Default value: **off**)

If this option is selected, the command will be executed only if the specified minimum regeneration time has been reached or exceeded.

Minimum regeneration time

Input of the time which must have been reached or exceeded since the last stepping to the next position.

Range **0.1 ... 10000.0 min** (Increment: **0.1**)

Comment

Optional comment on the time program command.

Input	64 characters



Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLs** (see Chapter 2.4.3.5, page 35), even if the condition was not used.

7.11.5.2.2.1.2

Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

Commands - Peristaltic pump

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the peristaltic pump:

7.11.5.2.2.2.1 On/Off

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Status

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Rate

Rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Comment

Optional comment on the time program command.

Input	64 characters

7.11.5.2.2.2.2 Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.11.5.3 872 Extension Module Suppression - Manual Control

7.11.5.3.1 Manual Control - MSM

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'MSM'

7.11.5.3.1.1 Manual Control - Stepping to next position

The settings for the automatic stepping of the rotor to the next position can be changed in the manual control of this module. In addition, the time since the last stepping to the next position can be called up and a manual stepping to the next position can be triggered.

Automatic stepping to next position

Interval – Current value

Display of the current time interval between 2 sequential rotor stepping operations. If no automatic stepping to next position is currently active, then ---- will be displayed.

Interval – Input

Input of the time interval between 2 sequential automatic rotor stepping operations.

Range	1.0 ... 10000.0 min
Default value	10.0 min

[Apply]

If automatic stepping to the next position is already active, then the value entered for the parameter **Interval** can be applied with the button **[Apply]**.



Note

If the new value for **Interval** is less than the **time since the last stepping to the next position**, then the rotor will be moved one step to the next position **immediately**.

If automatic stepping to the next position is not yet active, then it can be started with this button.

If automatic stepping to the next position is already active, then it can be stopped with this button.

Current value

Display of the time since the last (manual or automatic) stepping to the next position, in minutes.

Moves the rotor of the module to the next position.

Tab: **Manual Control** ► **Manual Control - All devices - 'Device name'** ► **'Peristaltic pump'**

Current value

Display of the currently set rate of the peristaltic pump.

Entering a new value for the rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Start the pump with the set parameters. This is inactive if the pump is already running.

Stop pump. This is inactive if the pump is not running.

Send the parameters to the pump.

on | off (Default value: **on**)

Selection	connected	not connected
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		
82		
83		
84		
85		
86		
87		
88		
89		
90		
91		
92		
93		
94		
95		
96		
97		
98		
99		
100		

on | off (Default value: **on**)



- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Input	1000 characters
Default value	empty

7.11.6.2.1 872 Extension Module Suppression – MCS - Start parameters

Subwindow: **Method ▶ Devices**

Clicking on the symbol for the **872 Extension Module Suppression – MCS** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.11.6.2.1.1 Start parameters - MCS

Tab: **Method** ▶ **Devices** ▶ **MCS**

Status

Selection	On Off
Default value	On

On

The MCS (Metrohm CO2 Suppressor) is switched on when the hardware is started with **[Start HW]**.

Off

The MCS (Metrohm CO₂ Suppressor) is switched off when the hardware is started with **[Start HW]**.

Active

on | off (Default value: **on**)

If this option is **enabled**, then the device module is used in the method. The module is reserved when a determination is started with this method.

If this option is **disabled**, then the device module is not used in the method. The module is then not reserved during the run and can be used at the same time by another method.

7.11.6.2.1.2 Start parameters - MSM

Tab: **Method** ▶ **Devices** ▶ **MSM**

7.11.6.2.1.2.1 Automatic stepping to next position

With automatic stepping to the next position, the rotor is periodically moves one step to the next position after a defined time interval has expired. If automatic stepping to the next position was desired in the method, then it is initiated with **[StartHW]**. It can be stopped with **[StopHW]**. Any automatic stepping to the next position that may have been in effect is stopped at the beginning of a time program and then restarted after the end of the time program. Exception: if the module was released in the time program, then automatic stepping to the next position will *not* be resumed.



Note

The time since the last stepping to the next position is available for the respective **Step** command in the time program variable **TP.'Command number'.TSLS**(see *Chapter 2.4.3.5, page 35*), even if the condition was not used.

7.11.6.2.2.2

Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.11.6.2.2.3

Commands - Peristaltic pump

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the peristaltic pump:

7.11.6.2.2.3.1

On/Off

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the peristaltic pump on/off and sets the value for the pump rate.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Selection	On Off
Default value	On

Switches the module on.

Switches the module off.

Rate of the peristaltic pump.

-7 .. +7 (without 0); for 858 Professional Sample Processor: **-15 .. +15** (without 0)

Optional comment on the time program command.

Input	64 characters

Release

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Optional comment on the time program command.

Input 0 ... 64 characters

872 Extension Module Suppression - Manual Control

Manual Control - MCS

Tab: **Manual** ▶ **Manual Control** - 'Device name' ▶ 'MCS'

Start MCS (Metrohm CO₂ suppressor). This is inactive if the suppressor is already running.

7.12 771 IC Compact Interface

The 771 IC Interface serves to record and evaluate the analog signal of existing Metrohm IC devices of the Compact, Modular and Advanced series with MagIC Net.

7.12.1 771 IC Compact Interface - Configuration

Dialog window: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'**

If a type **771 IC Compact Interface** device is selected in the device table, then menu item **[Edit] ► Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.12.1.1 Properties - General

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **General**

General properties of the device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	Device designation #

Device type

Display of the device type.

Program version

Program version of the device. Only editable with the 771 IC Compact Interface and the RS-232 device.

[Update]

Opens the dialog window **Load new program version** (see Chapter 7.1.2.9, page 605).

This button is only displayed with devices that have their own firmware. It is only active if the device has an old program version not supported by **MaqIC Net** and which can be updated by **MaqIC Net** itself.

Device serial number

Serial number of the device. The field is only editable when adding a 771 IC Compact Interface or an RS-232 device for the first time.

Start-up

Shows the date on which the device was automatically added to the device table.

Leak sensor

on | off (Default value: **on**)

Displays whether the leak sensor is connected. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

Selection	connected not connected

active

on | off (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

**Note**

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Input	1000 characters
Default value	empty

7.12.1.2 Properties - RS 232

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **RS 232**

The connection to 771 IC Compact Interface is configured on this tab.

COM Port

Selection of the serial port to which the 771 IC Compact Interface is connected.



Note

Make sure that the following settings have been made for the FIFO buffer of the selected interface.

Receive buffers maximum

Transmit buffers minimum

Range	COM 1 ... COM n
Default value	First COM port found

[Connect]

Establishes a connection to the device.

[Disconnect]

Disconnects the connection to the device (only then the device can be deleted from the configuration).

7.12.1.3 Properties - GLP

Tab: **Configuration** ▶ **Device** ▶ **[Edit]** ▶ **Properties...** ▶ **'Properties - 'Device type' - 'Device name'** ▶ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on  in the dialog window **Select date** (see Chapter 2.5.1, page 77).

Comment GLP test

Comment on GLP test.

Input	1000 characters

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Range	1 ... 999 Days
Default value	999 Days

Default value	GLP test date + 999 days

Selection	Record message Display message Stop determination
Default value	Display message



Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

7.12.2 771 IC Compact Interface - Method

Program part: **Method**

Start parameters, data channels and program commands can be defined for the 771 IC Compact Interface in the program part **Method**.

7.12.2.1 771 IC Compact Interface - Start parameters

Subwindow: **Method ▶ Devices**

Clicking on the symbol for the **771 IC Compact Interface** in the top part of the window causes the tabs of the modules contained in the device to appear in the bottom part of the subwindow. The start parameters for the various modules can be defined on these.

7.12.2.1.1 Channel

Tab: **Method** ▶ **Devices** ▶ **Channel #**

Warning limit

The warning limit for the signal from **channel #** is defined. If it is exceeded, the display in the Watch Window turns **red**. No messages are displayed or documented and no action is triggered.

Range	1 ... 2499 mV
Default value	2499 mV

7.12.2.2 771 IC Compact Interface - Data channels

Tab: **Method** ▶ **Devices** ▶ **Analysis** ▶ **Hardware assignment**

In the method, a data channel is assigned to the analysis as a data source, the signal of which can be recorded and evaluated.

The 771 IC Compact Interface has **two data channels**, both of which have the same properties:

Label of Y axis	Unit	Evaluation
Analog signal	mV	Yes

771 IC Compact Interface - Commands

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the 771 IC Compact Interface:

7.12.2.3.1 Waiting for injection IC Net

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Wait for injection IC Net**

With this device-dependent time program command **Wait for Injection IC Net** (command with feedback) **MagIC Net** waits until the signal is set for the completed injection at the remote input of the 771 IC Compact Interface.

Max. waiting time

on | off (Default value: **off**)

If this option is activated, the time program is continued as soon as either the requested input signal is received or the waiting time has expired.

Time

Range	0 ... 9999
Default value	10

Unit

Selection	s min
Default value	min

Comment

Optional comment on the time program command.

Input	64 characters

7.12.2.3.2 Measuring analog signal

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Measure analog signal**

The device-dependent time program command **Measure analog signal** (command with feedback) measures the voltage and makes it available as a variable **TP.'command number'.analog signal**. If this command is executed more than once in a time program, then the resulting variable will be overwritten each time.

Comment

Optional comment on the time program command.

Input	64 characters

Variable name	Description	Data type
DRIFT	Measured drift	Number

7.12.3 771 IC Compact Interface - Manual control

The **771 IC Compact Interface** has no functions that can be performed manually.

7.13 High-pressure gradient pump

The high-pressure gradient pump is a «virtual» device, i.e. it is not physically present as **one** device.

It therefore has no properties that could be configured in the device table.

Within a method, it can be formed in the **subwindow: Method ► Devices** by combining several existing high-pressure pump modules. In the software, they then behave as a single device. It has properties which differ from those of the separate assemblies from which it was created.



Note

Any number of pump modules can be combined to form a gradient pump. They must fulfill the following conditions:

- The pump modules must all be on the same **850 Professional IC**; it does not matter whether they are permanently installed or connected via an **872 Extension Module**.
- The pump modules must all have the same type of pump head mounted.
- A low-pressure gradient pump can not be part of a high-pressure gradient pump.

7.13.1 High-pressure gradient pump - Configuration

The high-pressure gradient pump is not entered in the device table. It is a «virtual» device that exists only within the method.

7.13.2 High pressure gradient pump - Method

Program part: **Method**

The high-pressure gradient pump is a «virtual» device that exists only within the method.

Start parameters, data channels and program commands can be defined for the high-pressure gradient pump in the program part **Method**.

% Eluent A

Displays the proportion of eluent A in the mixing ratio. The proportion is calculated automatically from the proportions for the other eluents using the formula **100 - (% Eluent B + % Eluent C + % Eluent D)**.

Eluent B

Selecting the eluent B that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	not defined Eluents from the Eluent table
Default value	not defined

% Eluent B

Enter the proportion of eluent B in the mixing ratio.

Range	0 ... 100 - % Eluent C - % Eluent D % %

Eluent C

Selecting the eluent C that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	not defined Eluents from the Eluent table
Default value	not defined

% Eluent C

Enter the proportion of eluent C in the mixing ratio.

Range	0 ... 100 - % Eluent B - % Eluent D % %

Eluent D

Selecting the eluent D that is to be transported with the pump when the hardware is started with **[Start HW]**.

Selection	not defined Eluents from the Eluent table
Default value	not defined

% Eluent D

Enter the proportion of eluent D in the mixing ratio.

Range	0 ... 100 - % Eluent B - % Eluent C % %

When there is a change from one dialog/tab to another, the percentages are checked ($\Sigma = 100\%$).

in the **Time** column. The table view can be adapted with the left-hand mouse button as follows:

- **Drag the margin between column titles:**
Sets the column width.
- **Double-click on the margin between column titles:**
Sets the optimal column width.
- **Drag the column title:**
Moves the column to the required location.

The table cannot be edited directly. Use the menu **[Edit]** below the table. It contains the following menu items:

New	Add a new line to the table and edit it in the window Edit gradient (see Chapter 7.13.2.3.4, page 982).
Edit	Edit selected line in the table in the Edit gradient window (see Chapter 7.13.2.3.4, page 982).
Copy	Copy selected line to the clipboard.
Paste	Paste line from the clipboard below in the table.
Cut	Cut selected line and copy it to the clipboard.
Delete	Delete the selected line.

The mixing ratio and the flow of the programmed gradient as a factor of time are displayed in a graph below the gradient table. The graph is updated automatically after the gradient table has been edited.

Comment

Optional comment on the time program command.

Input	64 characters

7.13.2.3.4 Editing gradient

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Gradient ▶ [Edit] ▶ New / Edit ▶ Edit gradient**

Time

Time at which the gradient command is to be executed.

Range	0.00 ... 1000.00 min
Default value	0.00 min

Eluent A

Displays the proportion of eluent A in the mixing ratio as %. The proportion is calculated automatically from the proportions for the other eluents using the formula **100 - (% Eluent B + % Eluent C + % Eluent D)**.

Eluent B

Enter the proportion of eluent B in the mixing ratio.

Range	0 ... 100 - (% Eluent A + % Eluent C + % Eluent D) %
Default value	0 %

Eluent C

Enter the proportion of eluent C in the mixing ratio.

Range	0 ... 100 - (% Eluent A + % Eluent B + % Eluent D) %
Default value	0 %

Eluent D

Enter the proportion of eluent D in the mixing ratio.

Range	0 ... 100 - (% Eluent A + % Eluent B + % Eluent C) %
Default value	0 %

When there is a change from one dialog/tab to another, the percentages are checked ($\Sigma = 100\%$).

Curve

Selecting the curve form with which you intend to move from the previous input in the gradient table to the current input.

Selection	Convex 1...4 Linear Concave 1...4 Step

Convex 1...4

The proportion of the eluents of the pump is altered along the selected curve from the setting of the previous command line to the value of the current command line. The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear.

Linear

The modification of the eluents of the pump from the setting of the previous command line to the value of the current command line is linear. The modification of the flow of the pump from the setting of the previous command line to the value of the current command line is linear over time. The change in the mixing ratio is not however linear in this situation.

Comment

Input	0 ... 64 characters

Tab: **Manual ▶ Manual control - All devices - 'Device name' ▶ 'Pump name'**

Currently set value of the flow of the pump.

Entering a new value for the flow.

P_{min}

Current value for the minimum permitted pressure in the system.

Entering a new value for the minimum permitted pressure in the system.

P_{max}

Current value for the maximum permitted pressure in the system.

Entering a new value for the maximum permitted pressure in the system.

Pressure

Shows the current pressure in the system.

Mixing ratio

Eluent A

Current value

Current percentage of the proportion of eluent A in the mixing ratio

Input

Enter the new proportion of eluent A in the mixing ratio

Range	0 ... 100 - (% Eluent B + % Eluent C + % Eluent D)
Default value	100

Eluent B

Current value

Current percentage of the proportion of eluent B in the mixing ratio

Input

Enter the new proportion of eluent B in the mixing ratio

Range	0 ... 100 - % Eluent C - % Eluent D %
Default value	100

Eluent C

Current value

Current percentage of the proportion of eluent C in the mixing ratio

Input

Enter the new proportion of eluent C in the mixing ratio

Range	0 ... 100 - % Eluent B - % Eluent D %
Default value	100

Eluent D

Current value

Current percentage of the proportion of eluent D in the mixing ratio

Input

Enter the new proportion of eluent D in the mixing ratio

Range	0 ... 100 - % Eluent B - % Eluent C %
Default value	100

[Start]

The button starts the pump with the set parameters. This is inactive if the pump is running.

[Stop]

The button stops the pump with the set parameters. This is inactive if the pump is not running.

[Apply]

Button sends the set parameters to the pump.

[Exit]

Button closes the dialog window **Manual control** and returns to the program part last edited.

7.14 800 Dosino

7.14.1 800 Dosino - General

The **800 Dosino** is a flexible dosing drive which, as an MSB device, can be used with a host of Metrohm main devices. Together with the intelligent **807 Dosing unit**, it is well suited for both simple dosing and for automation and liquid handling tasks, such as sample transfer or pipetting.



Note

MagIC Net only supports the use of intelligent **807 Dosing units**!

Devices with which the 800 Dosino can be used

- 7.1 850 Professional IC
- 7.2 881 Compact IC pro
- 7.3 882 Compact IC plus
- 7.5 814 USB Sample Processor and 815 Robotic USB Sample Processor XL
- 7.6 858 Professional Sample Processor
- 7.15 846 Dosing Interface

7.14.2 Configuration MSB Device

An MSB device is not entered in the device table. In the configuration it is only listed under the MSB connections of the main device to which it is connected (e.g. **850 Professional IC** or **858 Professional Sample Processor**).

7.14.3 800 Dosino - Method

Subwindow: **Method** ▶ **Devices**

An 800 Dosino (as is the case with all MSB devices) cannot be added separately to a method. It is added to the list of devices by adding the main device to which it is connected to the method.

If the method is created without connected devices, the MSB device can be added separately. In this case, the MSB connector on the main device must be entered manually.

In the device group, the 800 Dosino behaves like a stand-alone device. It can be selected and displayed graphically in the upper area of the device window.

7.14.3.1 800 Dosino - Start parameters

Tab: **Method** ▶ **Devices** ▶ **Dosino**

Solution

Select the solution for the Dosino that should be available when the hardware is started with **[Start HW]**. A check is carried out in the method run to ensure that the correct solution has been put on the dosing device. When the method is started, the working life and GLP test interval are checked for the selected solution.

Selection	not defined Solutions from the solution table
Default value	not defined

not defined

The solution is not checked.

Solutions from the solution table

Only "intelligent" solutions, i.e. solutions that are assigned to an 807 Dosing unit, can be selected.

Connector

Shows the main device and the MSB connector which the **800 Dosino** is on.

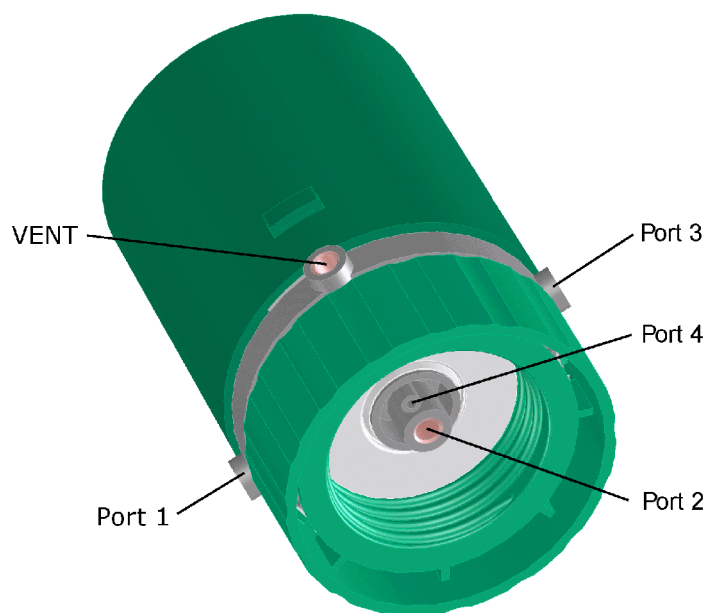
7.14.3.2 800 Dosino - Commands

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the 800 Dosino:

Dosing

The device-dependent time program command **Dosing** (command with feedback) doses the specified volume via the defined port. There is no automatic filling beforehand or afterwards.



Cylinder volume 5 mL

Range	0.01 ... 16.00 mL/min
Default value	1.00 mL/min
Selection	maximum

Cylinder volume 10 mL

Range	0.01 ... 33.00 mL/min
Default value	1.00 mL/min
Selection	maximum

Cylinder volume 20 mL

Range	0.01 ... 66.00 mL/min
Default value	1.00 mL/min
Selection	maximum

Cylinder volume 50 mL

Range	0.01 ... 166.00 mL/min
Default value	1.00 mL/min
Selection	maximum

Filling rate

Speed at which filling takes place. The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Range	0.01 ... 6.00 mL/min
Default value	1.00 mL/min
Selection	maximum

Cylinder volume 5 mL

Range	0.01 ... 16.00 mL/min
Default value	1.00 mL/min
Selection	maximum

Cylinder volume 10 mL

Range	0.01 ... 33.00 mL/min
Default value	1.00 mL/min
Selection	maximum

Cylinder volume 20 mL

Range	0.01 ... 66.00 mL/min
Default value	1.00 mL/min
Selection	maximum

Range	0.01 ... 166.00 mL/min
Default value	1.00 mL/min
Selection	maximum

Optional comment on the time program command.

Input	64 characters

The following type '**TP.command number.Variable name**' variables are generated by the command:

Variable name	Description	Data type
CONC	Concentration of the dosed solution as long as one has been assigned to the Dosing.	Number
DVOL	Dosed volume [mL]	Number

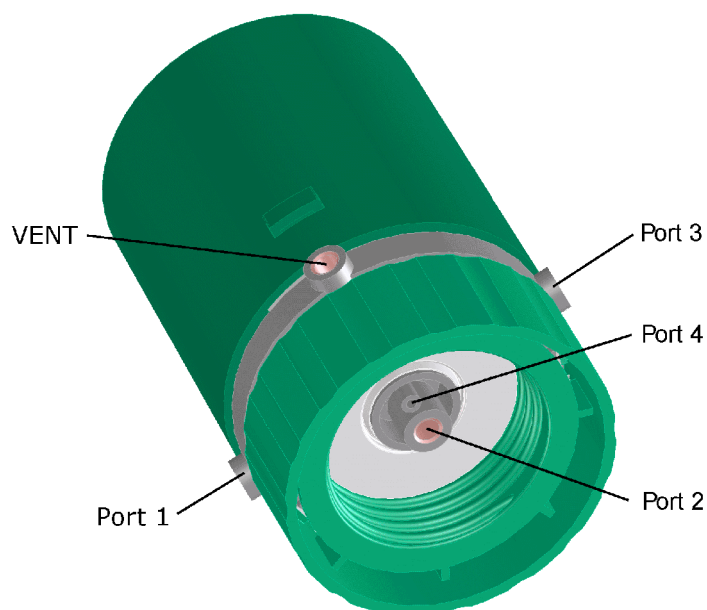
Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Aspirate**

The device-dependent time program command **Aspirate** (command with feedback) draws in the specified volume via the defined port. As with the command **Dosing**, the cylinder is not filled automatically beforehand or afterwards. It should be possible to achieve the volume to be aspirated with a single piston stroke.

Parameters

Port

Port via which aspiration takes place. Formula input possible.



Range	1 ... 4
Default value	1

Volume

Volume to be transported. Formula input possible.

Range	0.0000 ... 50.0000 mL
Default value	1.0000 mL

Rate

The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Range	0.01 ... 6.00 mL/min
Selection	maximum
Default value	maximum

Cylinder volume 5 mL

Range	0.01 ... 16.00 mL/min
Selection	maximum
Default value	maximum

Cylinder volume 10 mL

Range	0.01 ... 33.00 mL/min
Selection	maximum
Default value	maximum

Range	0.01 ... 66.00 mL/min
Selection	maximum
Default value	maximum

Range	0.01 ... 166.00 mL/min
Selection	maximum
Default value	maximum

Optional comment on the time program command.

Input	64 characters

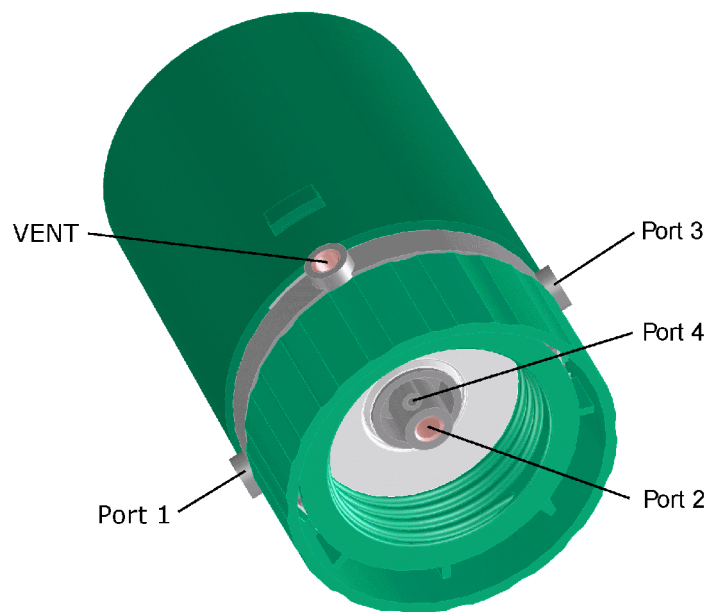
The following type '**TP.command number.Variable name**' variables are generated by the command:

Variable name	Description	Data type
AVOL	Aspirated volume [mL]	Number

Fill

The device-dependent time program command **Fill** (command with feedback) fills the cylinder via the specified port. The valve disc stops on the selected port.

Port via which filling takes place. Formula input possible.



Range	1 ... 4
Default value	2

Rate

The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

<i>Cylinder volume 2 mL</i>	
Range	0.01 ... 6.00 mL/min
Selection	maximum
Default value	maximum

<i>Cylinder volume 5 mL</i>	
Range	0.01 ... 16.00 mL/min
Selection	maximum
Default value	maximum

<i>Cylinder volume 10 mL</i>	
Range	0.01 ... 33.00 mL/min
Selection	maximum
Default value	maximum

<i>Cylinder volume 20 mL</i>	
Range	0.01 ... 66.00 mL/min
Selection	maximum
Default value	maximum

<i>Cylinder volume 50 mL</i>	
Range	0.01 ... 166.00 mL/min

Comment

Input	64 characters

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Eject to end volume**

Parameters

Port via which ejection takes place. Formula input possible.



The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Range	0.01 ... 6.00 mL/min
Selection	maximum
Default value	maximum

Cylinder volume 5 mL

Range	0.01 ... 16.00 mL/min
Selection	maximum
Default value	maximum

Cylinder volume 10 mL

Range	0.01 ... 33.00 mL/min
Selection	maximum
Default value	maximum

Cylinder volume 20 mL

Range	0.01 ... 66.00 mL/min
Selection	maximum
Default value	maximum

Cylinder volume 50 mL

Range	0.01 ... 166.00 mL/min
Selection	maximum
Default value	maximum

Comment

Optional comment on the time program command.

Input	64 characters

7.14.3.2.5 Eject to stop

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - Eject to stop**

The device-dependent time program command **Eject to stop** (command with feedback) ejects the entire contents of the cylinder via the specified port. The piston is lowered to the stop point, i.e. past the maximum volume mark.



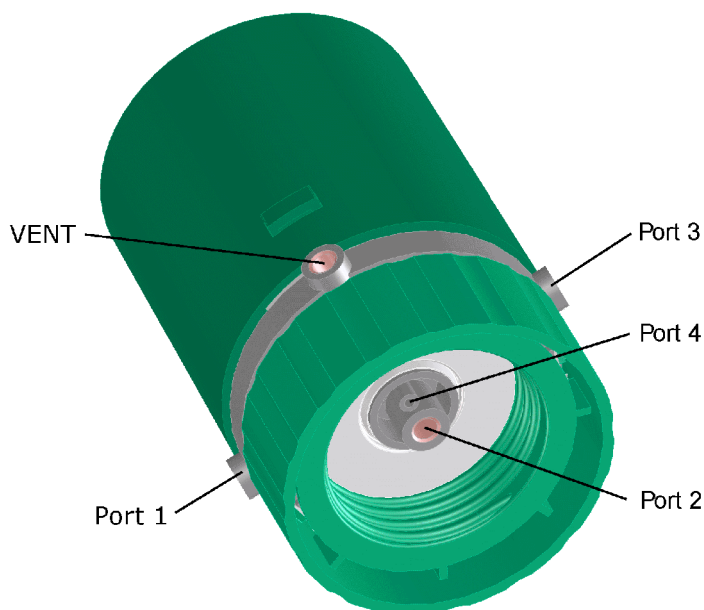
Note

This function should only be carried out to eject any air bubbles present.



Parameters

Port via which ejection takes place. Formula input possible.



Range	1 ... 4
Default value	4

The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Range	0.01 ... 6.00 mL/min
Selection	maximum
Default value	maximum

Cylinder volume 5 mL

Range	0.01 ... 16.00 mL/min

Selection	maximum
Default value	maximum

Cylinder volume 10 mL

Range	0.01 ... 33.00 mL/min
Selection	maximum
Default value	maximum

Cylinder volume 20 mL

Range	0.01 ... 66.00 mL/min
Selection	maximum
Default value	maximum

Cylinder volume 50 mL

Range	0.01 ... 166.00 mL/min
Selection	maximum
Default value	maximum

Comment

Optional comment on the time program command.

Input	64 characters

7.14.3.2.6 Exchange position

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Exchange position**

With the device-dependent time program command **Exchange position** (command with feedback) the cylinder is first filled via the port specified. The valve disc is then turned to **Port 2** and the dosing unit can be removed from the dosing drive.

Parameters

Fill port

Port via which filling takes place. Formula input possible.



The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Range	0.01 ... 6.00 mL/min
Selection	maximum
Default value	maximum

Range	0.01 ... 16.00 mL/min
Selection	maximum
Default value	maximum

Range	0.01 ... 33.00 mL/min
Selection	maximum
Default value	maximum

Range	0.01 ... 66.00 mL/min
Selection	maximum
Default value	maximum

Range	0.01 ... 166.00 mL/min



Selection	maximum
Default value	maximum

Comment

Optional comment on the time program command.

Input	64 characters

7.14.3.2.7 Change port

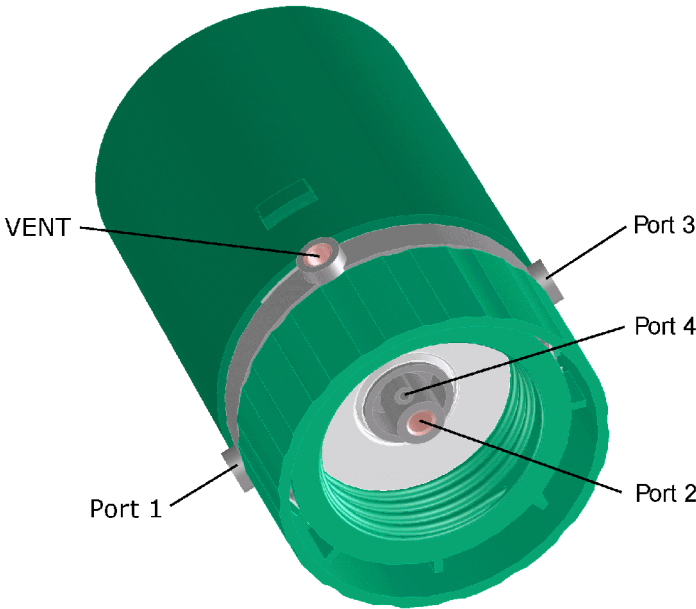
Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Change port**

The device-dependent time program command **Change port** (command with feedback) results only in one rotation of the valve to the given port and not in any piston movement.

Parameters

Port

Port to which the valve is rotated. Formula input possible.



Range	1 ... 4
Default value	2

Comment

Optional comment on the time program command.

Input	64 characters

Compensate

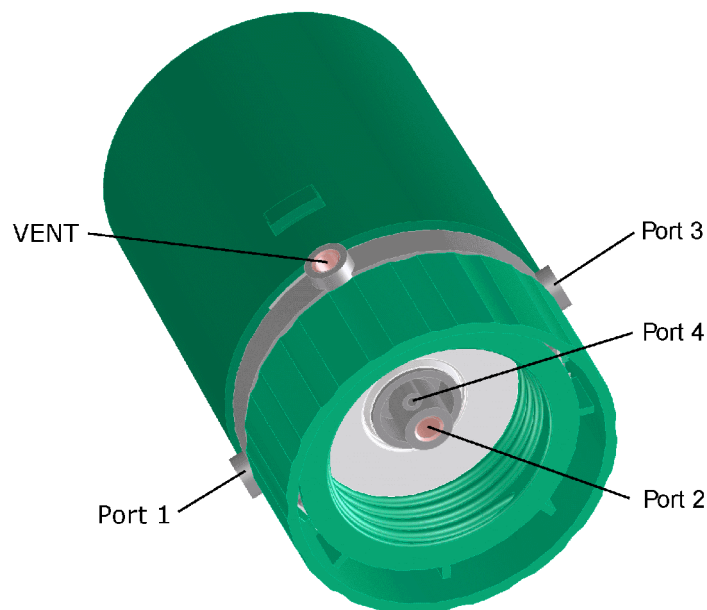
Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - Compensate**

Because of the fact that the dosing units are interchangeable, the coupling of the Dosino piston rod (spindle) exhibits a low mechanical tolerance that can be noticed when the piston changes its direction of movement. This tolerance can be compensated for with the device-dependent time program command **Compensate** (command with feedback). A short piston movement is first made in the same direction as the previous movement, which is then followed by a piston movement in the reverse direction.

Parameters

Port

Port via which the piston motion runs. Formula input possible.



Range	1 ... 4
Default value	4

Comment

Optional comment on the time program command.

Input	64 characters

7.14.4 800 Dosino - Manual Control

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Dosino'

Command

Selection of the Dosino command that is to be triggered manually.

Selection	Dosing Aspirate Fill Prepare Empty
Default value	Dosing

Dosing

Doses the specified volume via the defined port. There is no automatic filling beforehand or afterwards.

Aspirate

Aspirates the specified volume via the defined port. There is no automatic filling beforehand or afterwards.

Fill

The cylinder is filled in a fixed sequence. The parameters required for this process are stored in the configuration of the solution.

Prepare

The cylinder and all the tubing of a dosing unit are rinsed in an extensive cleaning sequence. The parameters required for this process are stored in the configuration of the solution.

Empty

The cylinder and all the tubing of a dosing unit are emptied in an extensive sequence. The parameters required for this process are stored in the configuration of the solution.

Solution

Displays the solution assigned to the Dosino.

Volume

Current value

Displays the current dosed volume.

Input

Enter the volume that is to be dosed / moved.

Range	0.0000 ... 99999.9000 (Exception: with command "Aspirate" 50.0000) mL
Default value	1.0000 mL

Port

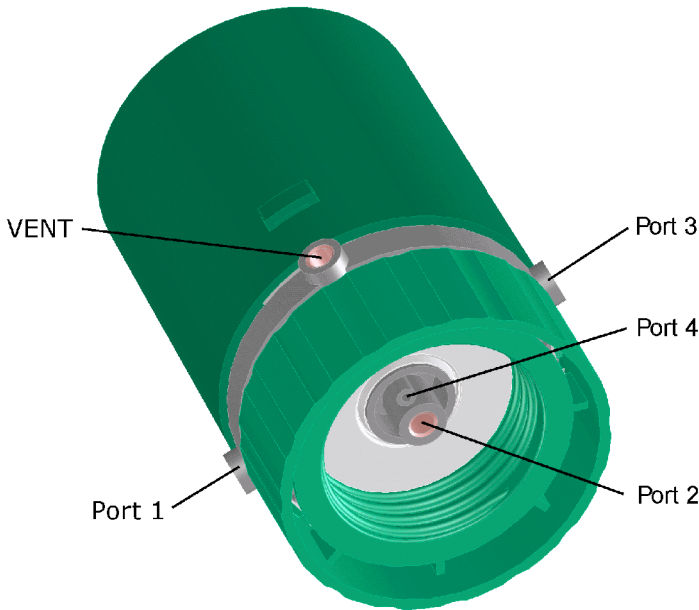
Current value

Shows the current port.



Input

Selection of a port for the action selected in the parameter **Command**.



Range	1 ... 4
Default value	1

Dosing rate

Input

Enter dosing rate. The maximum rate depends on the cylinder volume of the buret used. Formula input possible.

Cylinder volume 2 mL

Range	0.01 ... 6.00 mL/min
Selection	maximum
Default value	maximum

Cylinder volume 5 mL

Range	0.01 ... 16.00 mL/min
Selection	maximum
Default value	maximum

Cylinder volume 10 mL

Range	0.01 ... 33.00 mL/min
Selection	maximum
Default value	maximum

Cylinder volume 20 mL

Range	0.01 ... 66.00 mL/min

Leak sensor

on | off (Default value: **on**)

Selection	connected	not connected
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		
82		
83		
84		
85		
86		
87		
88		
89		
90		
91		
92		
93		
94		
95		
96		
97		
98		
99		
100		

on | off (Default value: **on**)



If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks about the device.

Input	1000 characters
Default value	empty

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **Connections**

All of the devices/modules are displayed on this tab which are connected to the interfaces of the main device (e.g. **850 Professional IC, 881 Compact IC pro, 882 Compact IC plus, 814 USB Sample Processor, 815 Robotic USB Sample Processor XL, 858 Professional Sample Processor**).

Comment GLP test

Comment on GLP test.

Input	1000 characters

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range	1 ... 999 Days
Default value	999 Days

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Message by E-mail

on | off (Default value: **off**)

The message is additionally sent to the e-mail address defined under **[E-mail]** if this option is activated. The message is sent in text format.

[E-mail]

[E-Mail] opens the **Send e-mail** window (see Chapter 2.7.1, page 99).

Acoustic signal

on | off (Default value: **off**)

If this option is enabled, an acoustic signal will be emitted additionally to the message defined above

Action

The actions can only be edited if monitoring is switched on.

If during monitoring it is found that the validity period has expired then one of the following actions will be triggered automatically at Start test.

Selection	Record message Display message Stop determination
Default value	Display message

Record message

The message that the validity period has expired will be automatically saved with the determination.

Display message

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

7.15.2 846 Dosing Interface - Method

The **846 Dosing Interface** itself has no start parameters and no method commands.

In order to be able to use MSB devices connected to an 846 Dosing Interface, the latter must be added to the list of devices in the method (*see Chapter 5.6.3.1, page 372*).

In the same way, the MSB devices connected to the 846 Dosing Interface must be added to the method. The MSB connector must be selected for each MSB device (*see Chapter 5.6.3.5, page 376*).

7.15.3 846 Dosing Interface - Manual Control

The **846 Dosing Interface** has no functions that can be performed manually.

Off

The stirrer is switched off when the hardware is started with **[Start HW]**.

Rate

Stirring rate when the hardware is started with **[Start HW]**.

Range	-15 ... 15 (without 0)
Default value	8

Connector

Displays the connector on the device to which the stirrer is connected.

7.16.3.2 Stirrer - Commands

Subwindow: **Method ▶ Time program**

Overview of the time program commands available for the stirrers **801 Magnetic Stirrer**, **803 Ti Stand** and **804 Ti Stand**:

7.16.3.2.1 On/Off

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - On/Off**

The device-dependent time program command **On/Off** (command without feedback) switches the stirrer on/off.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Stirrer

Selection	On Off
Default value	On

On

Switches the module on.

Off

Switches the module off.

Rate

Input field for the stirring rate.

Range	-15 ... 15 (without 0)
Default value	8

Comment

Optional comment on the time program command.

Input	64 characters

7.16.3.2.2 Release

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Release**

The device-dependent time program command **Release** (command without feedback) releases the module/device for use by other methods running at the same time. It removes the reservation made by the current method.

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min (Increment: 0.01)
Default value	0.00 min

Comment

Optional comment on the time program command.

Input	0 ... 64 characters

7.16.4 Stirrer - Manual Control

Tab: **Manual** ► **Manual Control** - 'Device name' ► 'Stirrer name'

Rate

Current value

Current value of the rate.

Input

Entering a new value for the rate.

Range	-15 ... 15 (without 0)
Default value	8

[On]

The button starts the stirrer with the set parameters. This is inactive if it is running.

[Off]

The button stops the stirrer. This is inactive if it is not running.

[Apply]

The button sends the set parameters to the stirrer.

7.17 Remote Box MSB

7.17.1 Remote Box MSB - General

The **6.2148.010 Remote Box MSB** is an MSB device and can be operated with a host of Metrohm main devices. It makes it possible to control third-party devices and MagIC Net can receive external control signals.

Devices with which the Remote Box MSB can be used

- 7.1 850 Professional IC
- 7.2 881 Compact IC pro
- 7.3 882 Compact IC plus
- 7.5 814 USB Sample Processor and 815 Robotic USB Sample Processor XL
- 7.6 858 Professional Sample Processor
- 7.15 846 Dosing Interface

7.17.2 Configuration MSB Device

An MSB device is not entered in the device table. In the configuration it is only listed under the MSB connections of the main device to which it is connected (e.g. **850 Professional IC** or **858 Professional Sample Processor**).

7.17.3 Remote Box MSB - Method

Subwindow: **Method ▶ Devices**

A Remote Box MSB (as is the case with all MSB devices) cannot be added separately to a method. It is added to the list of devices by adding the main device to which it is connected to the method.

If the method is created without connected devices, the MSB device can be added separately. The MSB connection on the main device must be entered manually in such cases.

A Remote Box MSB behaves in the list of devices like a stand-alone device. It can be selected and displayed graphically in the upper area of the device window.

7.17.3.1 Remote Box MSB - Start parameters

Tab: **Method** ▶ **Devices** ▶ **Remote Box MSB**

Output signal

Input of the binary pattern for the output signal of exactly 14 characters or selecting a predefined signal pattern.

0 = line inaktiv

1 = line active

p = set pulse (pulse length = 200 ms). If an impulse with a different length is to be emitted, a corresponding template must be defined.

Example: *****1* sets the output line 1 to active (= set),
*****0* sets the line to inactive.



Note

We recommend masking the irrelevant output lines with an asterisk * so as not to alter these line conditions.

Input	0, 1, *, p (14 characters)
Default value	*****
Selection	Select a predefined signal template

Connector

Shows the main device and the MSB connection at which the Remote Box MSB is located.

7.17.3.2 Remote Box MSB - Commands

Subwindow: **Method** ▶ **Time program**

Overview of the time program commands available for the Remote Box
MSB:

7.17.3.2.1 Scanning lines

Dialog window: **Method** ▶ **Time program** ▶ **Edit** ▶ 'Device' - 'Module' - Scan lines

The device-dependent time program command **Scan lines** (command with feedback) serves to request remote input signals. It waits until the lines exhibit the required status, after which the time program is resumed.

7.17.3.2.1.1 Scanning lines - Parameter

Input signal

Input of the binary pattern for the input signal of exactly 8 characters or selecting a predefined signal pattern.

0 = line inaktiv

1 = line active

* = retain line status

The input lines are always numbered from right to left: 7 6 5 4 3 2 1 0.

Example: `*****1` expects an active input line 0 (**1** = set).



Note

Input lines that are of no interest or for which no defined condition can be predicted should also be masked with an asterisk *.

Input	0, 1, * (8 characters)
Default value	*****
Selection	Select a predefined signal template

Max. waiting time

on | off (Default value: **off**)

If this option is activated, the time program is continued as soon as either the requested input signal is received or the waiting time has expired.

Time

Range	0.0 ... 9999.9
Default value	10.0

Unit

Selection	s min
Default value	min

Generated variables

The following type '**TP.command number.Variable name**' variables are generated by the command:

Variable name	Description	Data type
TOU	1 = max. waiting time expired 0 = max. waiting time not expired	Number

7.17.3.2.1.2 Scanning lines - 849 Level Control / Mitsubishi GA-100 for Combustion IC

Here you will find the list of signals with which the **849 Level Control** / the **Mitsubishi GA-100** (for Combustion IC) can be actuated via Remote Box MSB in **MagIC Net**. These signals can be saved for the purpose of convenient reuse as templates.

**Note**

Preconditions for correct scanning of the 849 Level Control:

- The 6.2148.010 Remote Box MSB is connected to the MSB connection of a device (see "Devices with which the Remote Box MSB can be used", page 1014), and this is in turn connected to a PC.
- The Remote Box MSB is connected to the 849 Level Control with the cable 6.2125.090.

Table 2 Remote signals for scanning the 849 Level Control

Sensor	Function	Input signal	Canister
Overall status ok	No sensor signal active	*****0**	
Overall status "active"	At least one sensor signal active	*****1**	
Full level 1 ok	Overflow monitoring 1: everything ok	***0****	
Full level 1 "active"	Overflow warning at sensor 1	***1****	full
	Overflow warning at sensor 1	***1*1**	full
Full level 2 ok	Overflow monitoring 2: everything ok	**0*****	
Full level 2 "active"	Overflow warning at sensor 2	**1*****	full
	Overflow warning at sensor 2	**1**1**	full
Empty level 1 ok	Empty level monitoring 1: everything ok	*0*****	
Empty level 1 "active"	Empty level warning at sensor 1	*1*****	empty
	Empty level warning at sensor 1	*1***1**	empty
Empty level 2 ok	Empty level monitoring 2: everything ok	0*****	
Empty level 2 "active"	Empty level warning at sensor 2	1*****	empty
	Empty level warning at sensor 2	1***1**	empty



Note

Preconditions for correct scanning of the Mitsubishi GA-100:

- The 6.2148.010 Remote Box MSB is connected to the MSB connection of a device (see *"Devices with which the Remote Box MSB can be used"*, page 1014), and this is in turn connected to a PC.
- The Remote Box MSB is connected to the Mitsubishi GA-100 with the cable 6.2141.140. The cable ends are correctly connected to the terminal block of the GA-100.

Table 3 Remote signal for scanning the Mitsubishi GA-100

Function	Input signal
<i>Inject</i> signal of the GA-100 to the IC device (synchronization).	*****1**

7.17.3.2.2 Setting lines

Dialog window: **Method ▶ Time program ▶ Edit ▶ 'Device' - 'Module' - Set lines**

The device-dependent time program command **Set lines** (command with feedback) is used to control third-party devices during a run. It sets the remote lines to the defined values.

7.17.3.2.2.1 Setting lines - Parameters

Time

Time at which the command is to be executed.

Range	0.00 ... 10000.00 min
Default value	0.00 min

Output signal

Input of the binary pattern for the output signal of exactly 14 characters or selecting a predefined signal pattern.

0 = line inaktiv

1 = line active

* = retain line status

p = set pulse (pulse length = 200 ms). If an impulse with a different length is to be emitted, a corresponding template must be defined.

The outputs are always numbered from right to left: 13 12 11 10 9 8 7 6 5 4 3 2 1 0.

Example: *****1* sets the output line 1 to active (= set),
*****0* sets the line to inactive.

**Note**

We recommend masking the irrelevant output lines with an asterisk * so as not to alter these line conditions.

Input	0, 1, *, p (14 characters)
Default value	*****
Selection	Select a predefined signal template

7.17.3.2.2.2 Setting lines - Output signals for control of devices

Here you will find lists of signals with which older-generation Metrohm IC devices, as well as devices from other manufacturers, can be actuated in **MagIC Net** via Remote Box MSB. These output signals can be saved for the purpose of convenient reuse as templates.

**Note**

Preconditions for correct actuation:

- The 6.2148.010 Remote Box MSB is connected to the MSB connection of a device (see "Devices with which the Remote Box MSB can be used", page 1014), and this is in turn connected to a PC.
- The Remote Box MSB is connected to the IC device with a corresponding remote cable.

Table 4 Remote signals for controlling Metrohm IC devices

Device	Function	Output signal	Cable (Remote Box MSB - Device)
833 IC Liquid Handling Unit	Starting the peristaltic pump	*****1 *	6.2143.200 6.2143.210 6.2143.220 (Connection B)
833 IC Liquid Handling Unit	Stopping the peristaltic pump	*****0 *	6.2143.200 6.2143.210 6.2143.220 (Connection B)
833 IC Liquid Handling Unit	Switch actuator forward, e.g. switch MSM suppressor	*****P* *	6.2143.210 6.2143.220 (Connection C)

Optional comment on the time program command.

Input	0 ... 64 characters

Tab: **Manual** ▶ **Manual Control** - 'Device name' ▶ 'Remote Box MSB'

Input signal

Output signal

Displays the current status of the 14 output lines.

Input signal



Only templates without asterisks * are recognized.

Output signal

0 = line inaktiv

1 = line active

* = retain line status

p = set pulse (pulse length = 200 ms). If an impulse with a different length is to be emitted, a corresponding template must be defined.

The outputs are always numbered from right to left: 13 12 11 10 9 8 7 6 5 4 3 2 1 0.

Example: *****1* sets the output line 1 to active (= set),
*****0* sets the line to inactive.



Note

We recommend masking the irrelevant output lines with an asterisk * so as not to alter these line conditions.

Input	0, 1, *, p (14 characters)
Default value	*****
Selection	Select a predefined signal template

[Apply]

Setting the binary pattern defined under **output signal**.

7.18 Barcode reader

7.18.1 Barcode reader - General

A barcode reader is used to enter sample and other data in **MagIC Net**.



Note

A barcode reader only needs to be configured as a **device** in **MagiC Net** if the functions for automatic data import into sample tables are to be used. If a USB barcode reader not configured as a device is connected to the PC, it will be recognized (in the same way as a keyboard) as being an **HID** (Human Interface Device) that can be used for data entries in all fields.

Barcode reader as device



Note

If the functions of a barcode reader for automatic data import into sample tables are to be used, then it must be added to **MagIC Net** as a device and configured in such a way that during each data transfer the following preamble and postamble check characters are also transmitted:

Preamble #1: **02hex** (^B, STX)

Preamble #2: **02hex - 09hex** (different identification code **02hex - 09hex** for each barcode reader connected)

Postamble #1: **04hex** (^D, EOT)

Finish: **<CR> <LF>**

Refer to the barcode reader manual for instructions regarding its configuration.

Barcode reader as HID



Note

If a barcode reader is to be used as HID it must be configured in such a way that it does not transmit any preamble check characters.

Refer to the barcode reader manual for instructions regarding its configuration.

7.18.2 Barcode reader - Overview

Dialog window: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name'**

The parameters for a **barcode reader** are set on the following tabs:

- *General*
General device information such as device name, device type, serial number, etc.
- *Settings*
Settings for the barcode reader.
- *GLP*
Information on GLP tests and GLP monitoring.

active**on | off** (Default value: **on**)

With this check box, monitoring with the connected leak sensor can be switched on or off. This parameter is displayed only with the ion chromatographs **850 Professional IC**, **881 Compact IC pro** and **882 Compact IC plus**.

**Note**

If a leak is detected when the monitoring is on, the following actions are triggered automatically:

- All ongoing determinations that are using this device are interrupted.
- For all ongoing methods that are using this device, **[Stop HW]** is triggered.

Remarks

Remarks about the device.

Input	1000 characters
Default value	empty

7.18.4 Properties - Settings

Tab: **Configuration ▶ Device ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ Settings**

Barcode reader ID

Shows the identification of the barcode reader.

Input target

Selection of the field into which the output from the barcode reader is to be entered.

Selection	Active input field Method Ident Sample type Position Injections Volume Dilution Sample amount Info 1...4 Value 1...4
Default value	Active input field

[Connect]

Establishes a connection to the barcode reader. The dialog window **Establish connection** (see Chapter 7.18.6, page 1027) appears.

[Disconnect]

Disconnects the connection to the barcode reader (only then the device can be deleted out of the configuration).

7.18.5 Properties - GLP

Tab: **Configuration** ▶ **Device** ▶ **[Edit]** ▶ **Properties...** ▶ **'Properties - 'Device type' - 'Device name'** ▶ **GLP**

GLP test date

Date of the last GLP test. This date can be selected by clicking on  in the dialog window **Select date** (see Chapter 2.5.1, page 77).

Comment GLP test

Comment on GLP test.

Input	1000 characters

Monitoring of GLP validity

Monitoring of GLP validity

on | off (Default value: **off**)

If this option is switched on then the time interval for the GLP test will be monitored.

Monitoring can only be switched on when a date has been entered in the field GLP test date.

GLP test interval

Time interval to next GLP test. If a value is entered here then the date in the field **Next GLP test** will be adapted automatically.

Only editable when the monitoring is activated.

Range	1 ... 999 Days
Default value	999 Days

Next GLP test

Date on which the next GLP test is to be carried out. The date can be selected by clicking on the symbol  in the dialog window **Select date** (see Chapter 2.5.1, page 77). After the date has been entered, the field **GLP test interval** will be adapted automatically.

Only editable when the monitoring is activated.

Default value	GLP test date + 999 days

Message

The message options can only be edited if monitoring is switched on.

Data

Read-in data.

7.19 RS-232 device

The generic device **RS-232 device** allows any RS-232-conforming device to be used with MagIC Net. The time program command **Transfer** (see Chapter 7.19.2.2, page 1035) is used for communicating with the device.



Note

Overview of which MagIC Net version are supported by the RS-232 device:*Versions*

7.19.1 RS-232 device - Configuration



Note

Devices which are to be integrated in MagIC Net as generic RS-232 devices, will **not** be recognized automatically. They must be added **manually** to the table of devices (see Chapter 6.5.2.2, page 538).

If a device type **RS-232 device** is selected in the device table, then menu item **[Edit] ▶ Properties...** can be used to open the dialog window **Properties - 'Device name' - 'Device type'** with the device-specific tabs.

7.19.1.1 Properties - General

Tab: **Configuration ▶ Devices ▶ [Edit] ▶ Properties... ▶ Properties - 'Device type' - 'Device name' ▶ General**

General properties of the RS-232 device are displayed on the **General** tab.

Device name

Designation of the device (can be freely defined by user).

Input	50 characters
Default value	RS-232 device #

Device type

Display of the device type.

Optional text input.

Input	50 characters
Default value	empty

Device serial number

The device serial number to be entered by the user when registering the device. A **unique** device serial number must be entered for each device of the type **RS-232 device**.

Input	50 characters

Start-up

Shows the date on which the RS-232 device was manually added to the device table.

Remarks

Remarks about the RS-232 device

Input	1000 characters
Default value	empty

7.19.1.2 Properties - RS-232

Tab: **Configuration** ▶ **Devices** ▶ **[Edit]** ▶ **Properties...** ▶ **Properties - 'Device type' - 'Device name'** ▶ **RS-232**

The properties of the RS-232 interface are defined on this tab.

COM Port

Selection of the serial interface on the PC to which the device is connected.

Selection	COM1 COM2 ... COMn
Default value	COMn

COMn
First free COM port.

Baud rate

Transmission rate. The baud rate selected here must also be set on the device itself.

Selection	300 600 1200 2400 4800 9600 19200 38400 57600 115200
Default value	9600

Data bit

Number of data bits.

Selection	7 8
Default value	8

Parity

Type of parity testing.

Selection	None Odd Even
Default value	None

Stop bit

Number of stop bits.

Selection	1 2
Default value	1

Handshake

Type of data transmission protocol.

Selection	None HW SW
Default value	None

Timeout

Maximum waiting time for receiving characters. If this time is exceeded, receiving will be stopped.

Range	1000 ... 9999 ms
Default value	2000 ms

Terminator for send

Terminator for send in hexadecimal code.

Selection	<code>\OD \OD\OA \OD\OA\OA \OD\OD\OA</code>
Default value	<code>\OD\OA</code> (<code>\OD</code> = CR, <code>\OA</code> = LF)

Terminator for receiving

Final character for receiving in hexadecimal code.

Selection	<code>\OD \OD\OA \OD\OA\OA \OD\OD\OA</code>
Default value	<code>\OD\OA</code> <code>(\OD = CR, \OA = LF)</code>

Code page

Code page used for the data transfer.

Selection	Cp437 Cp850 Cp852 ASCII
Default value	Cp437

A message is displayed and you can choose whether you want to continue the run or cancel it. If the run is continued then the message that the validity period has expired will be automatically saved with the determination.

Stop determination

The running determination will be automatically terminated. The following message must be confirmed with **[OK]**.

7.19.1.4 Establish a connection to the RS-232 device

Dialog window: **Configuration** ▶ **Devices** ▶ **Properties** ▶ **RS-232** ▶ **Connect**

In order to establish a connection to a RS-232 device the button **[Connect]** has to be pressed on the tab **RS-232**.

If then a message is entered in the field besides the button **[Send]** and is sent, the message received by the device appears in the large text field.

Text field

The messages sent to and received by the device are shown in the large text field.

Input field

Input field for a message to be sent to the device.

[Send]

Sends the message shown in the input field to the device.

7.19.2 RS-232 device - Method

Subwindow: **Method ▶ Devices**

Start parameters can be defined for the **RS-232 device** in the program part **Method**. The **Transfer** command of the RS-232 device can be used in time programs.

7.19.2.1 RS-232 device - Start parameters

A sequence of up to 10 device-specific instructions can be defined as the start parameter(s) of the RS-232 device. These will be sent to the connected RS-232 device by pressing **[Start HW]**. This way, the RS-232 device is able to react to instructions when the IC hardware begins the equilibration.



Note

Only instructions of the type **Write** are possible in the start parameters of the RS-232 device.

Command

Input	1 ... 250 characters

Method **Method** ▶ **Time program**

Method **Time program** ▶ **Edit** ▶ **'Device' - 'Module' - Transfer**

Variables generated by the Transfer command

Variable name	Description	Data type
BSY	Command status; 1 = BUSY, HOLD or ERROR; 0 = READY; invalid (variable not available) = Command has never been started	Number
FIN	Command status; 1 = Command has ended at least once, 0, invalid (variable not available) = Command has never ended	Number
TOU	Timeout status: 1 = Timeout expired; 0 = Timeout not expired	Number

7.19.2.2.1.1 Table of Single Instructions

The table lists the single instructions which are sent to the respective RS-232 device in the **Transfer** command. Up to 10 single instructions are possible. The table contains the following columns, which are described in detail in *Table of Single Instructions*:

The name of the instruction to be entered by the user.

One of 4 predefined actions which more closely define the behavior of the instruction.

If the function **[New]** or **[Edit]** is selected in the table of the **Transfer** instructions (see *Table of Single Instructions*), then the dialog **Transfer - 'Instruction #'** will open.

Name

The name of the instruction to be entered by the user. This name must be unique within the same **Transfer** command.

Input	1 ... 50 characters
Default value	Instruction #

Action

Selection from 4 predefined actions. The action describes the behavior after the instruction has been sent to the device.

Selection	Read Write Wait for Poll
Default value	Read

Read

An answer from the device will be expected and evaluated within the "Max. waiting time" defined in the *Configuration*(see *Chapter 7.19.1.2, page 1029*).

Write

No answer will be waited for.

Wait for

Waiting will take place within the "Max. waiting time" defined in the *Command* until a character string is received which corresponds to the Regular Expression in the "Comparison" parameter. If this answer is not received within the "Max. waiting time" defined in the *Command*, then the command will be canceled.

Poll

An answer from the device will be expected and evaluated within the "Max. waiting time" defined in the *Configuration*(see *Chapter 7.19.1.2, page 1029*). This action will be repeated until a character string received corresponds to the Regular Expression in the parameter "Comparison". If this answer is not received within the "Max. waiting time" defined in the *Command*, then the command will be canceled.

Command

Instruction which is sent to the device. The instruction can be entered literally here. As an alternative, the instruction can be defined with the help of the formula editor  (see *Chapter 2.4, page 28*). If this is the case, then the effective instruction that is sent to the device will be determined during the method run.

0 ... 250 characters



Note

All ASCII characters can be entered with its two-digit hex code after backslash (e.g. **\1B = Escape**).

Comparison

Optional comparison pattern for the answer sent back by the device. Can be entered only in connection with instructions with the action **Read**, **Wait for** and **Poll**. The comparison pattern can be either a literal text or a *Regular Expression* (see Chapter 7.19.2.2.1.3, page 1038).

Variables created by an instruction of a Transfer command

Each single instruction with the action **Read**, **Wait for** or **Scan** generates one or more variables of the form **TP.'Command number'.'Name of the instruction'.'DATA{x}'** (x=1,2, etc.). These variables contain the data and/or the data segments in accordance with the Regular Expression defined in the parameter **Comparison**.

The **Transfer** command itself generates, independent of the number of single transfer instructions, 3 variables (see "*Variables generated by the Transfer command*", page 1035).

7.19.2.2.1.3 Regular Expressions



Note

If external devices are actuated via RS-232 with the aid of Metrohm PC software such as **MagIC Net** and **tiamo**, then Regular Expressions can be used in order to examine and process the text data read by the RS-232 device.

Regular Expressions are used for browsing texts. A Regular Expression is a pattern. The text is investigated to determine whether or not and at which points the pattern matches. Sometimes it is sufficient to have the information as to whether or not and at which points the pattern matches the text being investigated; sometimes the user wishes to "extract" the matches found in the text in order to use them for a particular purpose. Both is possible with Regular Expressions.

In the simplest case, a literal text can be used as a Regular Expression. For example, a text can be searched through using the sample "hello". The pattern will match 0, 1 or n times.

"Real" Regular Expressions, which are much more expressive than literal patterns such as "hello", are written in standardized form and manner

(syntax). Metrohm PC software such as **MagIC Net** and **tiamo** support Regular Expressions in accordance with **Java™ Platform Standard Edition**.

In order to familiarize yourself more with Regular Expressions, we recommend that you look up **Regular Expression** at <http://www.wikipedia.org/>.

Simple Examples for Regular Expressions

The following table shows several (very simple) examples of Regular Expressions.



Note

Certain characters such as ****, **.** or ***** have special meanings in Regular Expressions (see table). If such characters are to be understood literally, i.e. if their special meanings are to be canceled, then a backslash **** must be placed before them.

Expression	Significance	Example
hello	Literal text	Matches every incidence of hello , but not, for example, Hello (large H)
[hH]	Every specified character	Matches every incidence of h or H
[hH]allo	Literal text with small or large initial letter	Matches hello and Hello
[a-z0-9]	All characters in the specified range	Matches every small letter of the alphabet a, b, ..., z , as well as every digit 0, 1, ..., 9
^hello	Text at the beginning of the line	Matches hello at the beginning of the line
hello\$	Text at the end of the line	Matches hello at the end of the line
.	Any single character	Matches, for example, c or 4 or ! etc.
.*	Any number of characters	abcd or 41 or -\$=\$, etc.
\.	Word period	Matches the character . (period)
\d	One digit	Matches, for example, 3 , 47 (also contains one digit!), but not X
\d+	At least 1 digit	324567
\d{4}	Sequence of four digits	Matches not only 3143 , but also 12345 (also contains 4 digits!), but not 123 .

\D	A character that is not a digit	Matches, for example, A or , or %
\w	A digit or a letter of the alphabet, including _; same meaning as [a-zA-Z_0-9]	Matches, for example, a or 3 , but not \$
\W	A character that is not a digit and not a letter of the alphabet.	Matches, for example, \$ or +
\s	An empty space, a tab, a line break	
\S	Every single character except empty space, tab, line break	

Regular Expressions with which something useful can be accomplished are in practice longer and "more complicated" than these simple examples. A more practice-oriented example can be found in the next Section.

Match extraction

When a Regular Expression is used, matches can not only be *found*, they can also be *extracted*. This functions with the use of **parentheses** in the Regular Expression.

The following Regular Expression contains no parentheses: **\w+@\w+\.[a-zA-Z]{2,}**. It can be used to *find* E-mail addresses in a text. This means that this pattern matches, for example, the E-mail address **info@metrohm.com**.

If parentheses are used in the expression, e.g. `(\w+)(\w+)\.([a-zA-Z]{2,})`, then the fragments which match the pattern in the parentheses can be "extracted". 4 (!) individual matches are obtained when this version of the Regular Expression is applied to the text **info@metrohm.com**:

- 1st match: the *entire* matching text = **info@metrohm.com**
- 2nd match: matching fragment in accordance with the 1st pair of brackets = **info**
- 3rd match: matching fragment in accordance with the 2nd pair of brackets = **metrohm**
- 4th match: matching fragment in accordance with the 3rd pair of brackets = **com**

The characters @ and . (period) were not extracted, they are only contained in the full match.

This extraction technique is useful, for example, when it is necessary to analyze and break down the "feedback" from a device (a character string) in order to reuse data in the context of communicating with an RS-232 device.

7.19.3 RS-232 device - Manual Control

The generic RS-232 device has no functions that can be performed manually.

The desktop of the program part **Manual control** comprises the following elements:

- ### 8.3 Selecting device

The device selection is located in the left of the Manual Control; this can be used to specify which devices are operated.

Selection of the devices which are to be operated manually. Depending on the selection, the **Device tree** and the **Device window** will be updated.

Workplace

All devices

Device tree

The device currently selected is shown with a colored background. Devices which are currently assigned because they are being used in a method run or in which manually initiated actions are running, are shown with **red** lettering.

Stops all devices of the Global Manual Control, active only if **All devices** has been selected.



■■■■■■■ 1043

8.4 Device window

Program part: **Manual Control**

The Device window is located in the right area of the Manual Control.

Depending on the setting in the **Device selection** field, the devices which can be operated manually are shown graphically:

- For **Device selection = Workplace:**
Manual Control of the Workplace: The Device window is surrounded by a frame with the color of the workplace selected. Only those devices are displayed which are used in the method of the selected workplace.
- For **Device selection = All devices:**
Global Manual Control: The Device window has a **gray** frame. This displays the device that is selected in the device tree.

The functions of the Manual Control are shown in the lower area of the window. The functions of a module are summarized in each tab. The required device/module can be selected using the tab or by clicking on the graphic.

Devices with Manual Control

- 850 Professional IC - Manual Control
- 881 Compact IC pro - Manual Control
- 882 Compact IC plus - Manual Control
- 883 Basic IC plus - Manual Control
- 814 USB Sample Processor and 815 Robotic USB Sample Processor XL - Manual Control
- 858 Professional Sample Processor - Manual Control
- 863 Compact Autosampler - Manual control
- 889 IC Sample Center - Manual Control
- 886 Professional Thermostat / Reactor - Manual Control
- 887 Professional UV/VIS Detector - Manual Control
- 872 Extension Module IC Pump - Manual Control
- 872 Extension Module IC Module - Manual Control
- 872 Extension Module Sample Prep - Manual Control
- 872 Extension Module Liquid Handling - Manual control
- 872 Extension Module Suppression - Manual Control
- 872 Extension Module Suppression - Manual Control
- 771 IC Compact Interface - Manual control
- High-pressure gradient pump - Manual Control
- 800 Dosino - Manual Control
- Stirrer - Manual Control
- Remote Box MSB - Manual Control

The Manual Control of the **891 Professional Analog Out** (*see Chapter 7.1.4.11, page 656*) is assigned to the main device it is connected to.

Double click on the desired field with the left-hand mouse key.

The contents of the field selected in the table will be set as a filter condition and this filter will be applied directly to the table.



Note

The quick filter can be used again within the filtered table, so that the number of entries can be limited step by step.

Defining and using special filter

- 1 Click on the symbol  or menu item **Filter ► Special filter**.
The dialog window **Special filter** opens for defining user-specific filters.
- 2 Use the **Edit ► Edit line** menu to open the dialog window **Edit filter criterion New filter**.
- 3 Enter the filter criteria and confirm with **OK**.
- 4 In the **Special filter** dialog window, click on **[Apply filter]**.
The table will be filtered.

Using special filter

- 1 In the **Special filter** dialog window, select the desired special filter from the list box **Filter**.
The table will be filtered.

9.1.3 Exporting Audit Trail

How to proceed?

- 1 Select program part **Configuration**.
- 2 Click on the symbol  or the menu item **Tools ► Audit Trail...**

- The entries selected in the Audit Trail table will be archived as a text file.



Note

The text files generated by archiving are no longer protected and can be manipulated. If you want to ensure that these files are archived in an unaltered condition you must use a suitable external backup or archiving program.

How to proceed?



The dialog window **Audit Trail** opens.



- 3 Archive desired Audit Trail entries.
- 4 With the menu item **File ► Delete** the dialog window **Delete Audit Trail** opens.
- 5 Under **Selection**, select the desired option (**All archived records** or **Archived records until** including date selection).
- 6 User 1: Enter **User name** and **Password**.
- 7 User 2: Enter **User name** and **Password**.
- 8 Click on **[OK]**.

The archived entries selected in the Audit Trail table will be deleted.

9.2 Backup

9.2.1 Backing up database

How to proceed?

General

In **MagIC Net**, **determination databases** that in contrast to the **configuration database** can be generated by the user and contain the determination data are referred to as databases. Included among such determination data is the method data used for the determination, the measuring data generated during the determination and the results calculated from it.

In local server systems (**MagIC Net professional**) the databases are stored on the drives administered by the computer and are only available to those users registered on that computer who have the appropriate access rights. In client/server systems (**MagIC Net multi**) the databases are stored on drives administered centrally by the server and are available globally throughout the entire Client/Server system, i.e. all users with the appropriate access rights can use these databases.

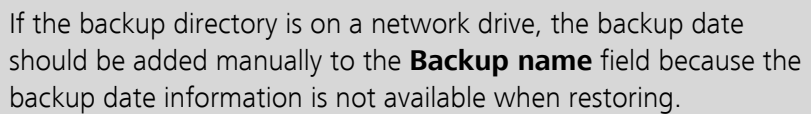


Note

Each determination database has to be backed up separately. Afterwards, it is recommended that all backed-up files be copied to an external directory or to a CD/DVD.

Backing up database manually

- 1 Select program part **Database**.
- 2 Click on the symbol  or menu item **File ► Database manager...**
The dialog window **Database manager** opens.
- 3 Select database.
- 4 Click on **[Backup]** in the dialog window **Database manager**.
The dialog window **Backup database 'Database name'** is opened.
- 5 Select the directory for the backup in the field **Backup directory**.
- 6 Select or enter the name for the **Backup file**. If an existing backup file is selected it will be overwritten.



- 7** Click on **[Start]**.
- The manual backup of the database is started and the database is backed up to the selected directory.

Backing up database automatically

- 1 Select program part **Database**.
- 2 Click on the symbol  or menu item **File ► Database manager....**
The dialog window **Database manager** opens.
- 3 Select desired database and click on **[Properties]**.

The dialog window **Properties - Database - 'Database name'** opens for editing the database properties.

- 4 On the tab **General** enter a comment on the database in the field **Comment**.
- 5 On the tab **Backup** enable the check box **Backup monitoring**.
- 6 Enter **Interval** for backup monitoring or date for the next backup in the field **Next backup**.
- 7 Activate the **Start backup automatically** check box.
- 8 Select the directory for the backup in the field **Backup directory**.
- 9 Click on **[OK]**.

The dialog window **Properties - Database** is closed and the database will be backed up to the selected directory at the desired time.

9.2.2 Restoring database

How to proceed?

- 1 Select program part **Database**.
- 2 Click on the symbol  or menu item **File ► Database manager...**
The **Database manager** window opens.
- 3 Click on **[Restore]** in the **Database manager** dialog window.
The **Restore databases** dialog window opens.
- 4 Select the directory in the **Backup directory** in which the desired database was backed up.
- 5 Select or enter the name for the desired backup file in the **Backup name** list box.
- 6 Enter the name under **Save as** under which the database is to be restored.
- 7 Click on **[Start]**.



Existing databases cannot be overwritten, i.e. they must first be deleted so that the database can be recovered under its old name.

How to proceed?

The configuration data in **MagIC Net** is saved in the **Configuration database**. Under configuration data is to be understood all cross-method settings for devices, columns, eluents, solutions, accessories, common variables and rack data, in addition to **Methods**, **Security settings** (see Chapter 6.2.2.1, page 490), **User administration** (see Chapter 6.2.1.1, page 481), **Program administration** (see Chapter 6.2.3.1, page 500), Templates and **Audit Trail** (see Chapter 6.4, page 519).

For local server systems (**MagIC Net Professional**) the configuration database is located in the program folder of the computer on which the program has been installed. In Client/Server systems (**MagIC Net Multi**) the configuration database is stored centrally on the server and saves and contains all the configuration data of all computers (clients) that are connected to this server.



It is strongly recommended that the configuration database be backed up periodically.

1 Select program part **Configuration**.

- 2** Click on the menu item **File ► Backup ► Manually**.

The dialog window **Backup configuration data manually** opens.

- 3** Select the directory for the backup in the field **Backup directory**.

- 4** Select or enter a new name for the backup file in the **Backup name** list box. If an existing backup file is selected it will be overwritten.



Note

If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** because the backup date information is not available when the directory is restored.

- 5** Click on **[Start]**.

The manual backup is started and the configuration database is backed up to the selected directory.

Backing up configuration data automatically

- 1** Select program part **Configuration**.

- 2** Click on menu item **File ▶ Backup ▶ Automatically**.

The dialog window **Backup configuration data automatically** opens.

- 3** Activate the **Automatic backup** check box.

- 4** Enter **Interval** for backup monitoring or date for the next backup in the field **Next backup**.

- 5** Select the directory for the backup in the field **Backup directory**.

- 6** Click on **[OK]**.

The dialog window **Backup configuration data automatically** is closed and the configuration database will be backed up to the selected directory at the desired time.

9.2.4 Restoring configuration data

How to proceed?

MagIC Net Professional

- 1** Exit **MagIC Net**.

- 2 Start the **ConfigRestore.exe** file in the program directory ...
\MaqIC Net\bin.

The dialog window **Restore configuration data** opens (see Chapter 6.3.2.3, page 510).

- 3 Select the directory in the **Backup directory** field in which the desired database was backed up.
- 4 Select or enter the name for the desired **Backup file**.
- 5 Start **[Start]**.

The restoring of the configuration database is started.

MagIC Net multi

- 1 Make sure that **MagIC Net** is closed on all clients connected to the server and on the server itself.
- 2 Start the file **ConfigRestore.exe** in the program directory...
\MagIC Net\bin on the server.

The dialog window **Restore configuration data** opens.

- 3 Select the directory in the **Backup directory** field in which the configuration database was backed up.
- 4 Select or enter the name for the desired backup file in the **Backup name** list box.
- 5 Click on **[Start]**.

The restoring of the configuration database is started.

9.2.5 Backing up methods

How to proceed?

General

Methods are stored in the configuration database and globally accessible for all clients. This means that in order to save methods the configuration data must be saved manually or automatically. A further possible way is to export the methods and then to save these files externally from **MaqIC Net**.

Backing up configuration data manually

- 1 Select program part **Configuration**.
- 2 Click on the menu item **File ► Backup ► Manually**.
The dialog window **Backup configuration data manually** opens.
- 3 Select the directory for the backup in the field **Backup directory**.
- 4 Select or enter the name for the desired backup file in the **Backup name** list box. If an existing backup file is selected it will be overwritten.



Note

If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** because the backup date information is not available when the directory is restored.

- 5** Click on **[Start]**.
- The manual backup of the configuration database is started.

Backing up configuration data automatically

- 1 Select program part **Configuration**.
- 2 Click on menu item **File ► Backup ► Automatically**.
The dialog window **Backup configuration data automatically** opens.
- 3 Activate the **Automatic backup** check box.
- 4 Enter **Interval** for backup monitoring or date for the **Next backup**.
- 5 Select the directory for the backup in the field **Backup directory**.

- The dialog window **Backup configuration data automatically** is closed.

Exporting methods

- The dialog window **Method manager** opens.

- The dialog window **Select directory for export** opens.

- The selected methods are each exported as files named '**Method name**'.imet.



The exported methods are stored uncoded but with a checksum. If a file stored in this manner is manipulated, then it cannot be imported again.

9.2.6 Archive Audit Trail

How to proceed?



 **Note**

Audit Trail entries can be backed up and restored together with the configuration data.

- 1** Select program part **Configuration**.



- 2 Click on the symbol  or the menu item **Tools ▶ Audit Trail...**

The dialog window **Audit Trail** opens.

- 3** Click on the menu item **File ► Archive...**

The dialog window **Archive Audit Trail** opens.

- 4** Enter or select directory and file name for saving the archive file in the field **Save file as**.

- 5** In the field **Selection** select the desired option (**All records** or **Records until** including date selection).

- 6** Click on **[OK]**.

The entries selected in the Audit Trail table will be archived as a text file.



Note

Archiving Audit Trail entries is identical to export, i.e. the Audit Trail entries are stored in text format. They cannot be imported back into the Audit Trail table. The difference between this and exporting is that the archived entries can be marked in the column **Archive** and then deleted.



Note

The text files generated by archiving are no longer protected and can be manipulated. If you want to ensure that these files are archived in an unaltered condition you must use a suitable external backup or archiving program.



Note

If several injections have been defined for a sample line, then a multiple determination will be carried out. If so defined in the method, the statistical results will be calculated by means of the determinations that are part of the multiple determination.

9.3.3 Search for determinations

How to proceed?

- 1 Select program part **Database**.
- 2 Click on the symbol  or the menu item **File ► Open....**
The dialog window **Open database** opens.
- 3 Select desired database or enter name in the field **Database name**.
- 4 Click on **[Open]**.
The selected database opens and its data sets are displayed in the **Determination overview**.
- 5 Click on the symbol  or the menu item **Determination ► Find....**
The dialog window **Search - Database 'Database name'** is opened.
- 6 Enter or select desired search terms and search options.
- 7 Click on **[Search next]**.
The next determination containing the search term is marked in the **Determination overview**.

9.3.4 Filter determinations

How to proceed?

Opening the database

- 1 Select program part **Database**.
- 2 Click on the symbol  or the menu item **File ► Open...**

The dialog window **Open database** opens.

- 3 Select desired database or enter name in the field **Database name**.

- 4 Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**.

Filtering can now be done via quick filter or special filter in the **Determination overview** window:

Quick filter

- 1 Click on the symbol  or on **Filter ► Quick filter** in the context menu.

After this function has been selected, the field in which the cursor is located will have a yellow background when navigating in the determination table.

- 2 Double click on the desired field with the left-hand mouse key.

The contents of the field selected in the table will be set as a filter condition and this filter will be applied directly to the table.



Note

The quick filter can be used again within the filtered table, so that the number of entries can be limited step by step.

Defining and using special filter

- 1 Click on the symbol  or on **Filter ► Special filter** in the context menu

The dialog window **Special filter** opens for defining user-specific filters.

- 2 Use the **Edit ► Edit line** menu item to open the dialog window **Edit filter criterion New filter**.

- 3 Define filter criteria.

- Click on **[Save filter]**.
- Click on **[Apply filter]**.
The table will be filtered.

Using special filter

- 1 In the list box **Filter**, select the desired special filter.
The table will be filtered.

9.3.5 Displaying determinations of a batch

How to proceed?

- 1 Select program part **Database**.
- 2 Open desired **database**.
The selected database opens and its data sets are displayed in the **Determination overview**.
- 3 Select the desired batch in the **Batch** field.
The table shows the determination series of the batch.

9.3.6 Signing determination

How to proceed?

Selecting determination

- 1 Select program part **Database**.
- 2 Click on the symbol  or the menu item **File ► Open...**
The dialog window **Open database** opens.
- 3 Select desired database or enter name in the field **Database name**.
- 4 Click on **[Open]**.
The selected database opens and its data sets are displayed in the **Determination overview**.

- ### Signature 1



1 Click on the symbol or menu item **Determinations ► Sign ► Signature 1...**

2 Enter or select **User**, **Password**, **Reason** and **Comment**.

- 3** Click on **[Sign]**.

Note

Signature 2



1 Click on the symbol  or menu item **Determinations ► Sign ► Signature 2...**

The window **Signature Level 2** opens. If the selected determination can be signed, **Signature possible** is displayed in the field **Info**.

- 2** Enter or select **User**, **Password**, **Reason** and **Comment** and click on **[Sign]**.

The selected determination will be signed on level 2.



Note

Determinations that can be signed at level 2 are **blocked**, i.e. they can neither be reprocessed nor deleted. In order to be able to edit such determinations again the signatures at level 2 must first be deleted.

9.3.7 Export determinations

How to proceed?

Defining export template

- 1 Select program part **Database**.
- 2 Click on menu item **Tools ► Templates ► Export templates....**

The window **Export templates** opens.

- 3** Click on **[New]**.

The window **Export templates – 'New file'** opens.

- #### 4 Define the properties of the new export template.

- 5** Click on **[OK]**.

The dialog window is closed.

- 6** Click on **[Close]**.

The dialog window **Export templates** is closed.

Selecting determinations

- 1** Select program part **Database**.

- ## Export determinations

- How to proceed?

- 1065

- 5** Click on the menu item **Determinations ► Import....**

The window **Import determinations** opens.

- 6** Select desired determinations.

- 7** Click on **[Open]**.

The selected determinations are imported into the open database.



Note

Exported determinations can be imported in the file format ***.idet** and ***.cdf**.

9.3.9 Deleting determinations

How to proceed?

- 1** Select program part **Database**.

- 2 Click on the symbol  or the menu item **File ▶ Open....**

The dialog window **Open database** opens.

- 3** Select desired database or enter name in the field **Database name**.

- 4** Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**.

- 5** Select desired determinations.

- 6** Click on the symbol  or the menu item **Determination ► Delete**.

- 7** Confirm deleting.

The selected determinations with all **Determination versions** are deleted.



If the option **Comment on modification of determinations** in the **Security settings** is enabled, then the window **Modification comment determination** will appear before the modification is saved.

9.3.10 Make the determination version current

How to proceed?

- 1** Select program part **Database**.

- 2 Click on the symbol or the menu item **File ▶ Open...**

The dialog window **Open database** opens.

- 3** Select desired database or enter name in the field **Database name**.

- 4** Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**.

- 5** Select desired determination.

- 6 Click on the symbol  or menu item **Determinations ▶ Show history...**

Only the currently selected determination in the **determination table** as well as all the previous versions of this determination will be shown.

- 7** Select desired determination that is to be made current.

- 8** Click on the symbol  or the menu item **Determination ► Make current**.

The determination version selected in the determination table will again be made the current determination version. This creates a new determination, the version number of which is increased by **+1** compared with the last version to have been saved.

9.3.11 Reprocessing determinations

9.3.11.1 Reprocessing determinations - General

How to proceed?



Note

Determinations that have a signature at level 2 cannot be reprocessed.

- 1 Select program part **Database**.
- 2 Open desired database.
The selected database opens and its data sets are displayed in the **Determination overview**.
- 3 Select desired determinations.
- 4 Click on the symbol  or menu item **Determinations ► Reprocess**.

The dialog window **Reprocessing** opens and the first of the selected determinations is displayed.

- 5 Change desired properties.
 - Sample data is edited in the subwindow **Reprocessing table**.
 - Other columns and eluents are assigned with **[Method...] ▶ Change column** or **[Method...] ▶ Change eluent**.
 - The properties of the evaluation are changed in the subwindow **Evaluation parameters**.
 - Chromatograms are edited manually in the subwindow **Chromatograms**.

- 6** Click on **[Reprocess]**. The **Reprocessing** dialog opens; it is here that calibration in reprocessing is determined.

Click on **[OK]** and the determinations will be reprocessed. The result of the reprocessing will be displayed in the subwindows **Results** and **Chromatograms**.

- 7** In the **Reprocessing** window, click on **[OK]**.

9.3.11.2 Reprocessing - Application instances

9.3.11.2.1.1 Samples or standards have an incorrect ID

- 1 Open samples with the associated standards in reprocessing.

3 Start reprocessing with the calibration option **From standards of reprocessing table**.

How to proceed?

- 1 Open samples with the associated standards in reprocessing.

2 Correct **Volume** in the sample data.

3 Start reprocessing with the calibration option **From standards of reprocessing table**.

How to proceed?

- 1 Open samples with the associated standards in reprocessing.

2 Correct the **Dilution** in the sample data.

3 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.1.4 Samples or standards have incorrect sample amount

How to proceed?

- 1 Open samples with the associated standards in reprocessing.
- 2 Correct the **Sample amount** in the sample data.
- 3 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.2 Incorrect integration

9.3.11.2.2.1 Samples are incorrectly integrated - Standards are OK

How to proceed?

- 1 Open samples in reprocessing.
- 2 Set new integration parameters, or integrate them manually.
- 3 Mark the determination of which the calibration is to be used.
- 4 Start reprocessing with the calibration option **From selected determination**.

9.3.11.2.2.2 Samples and standards are incorrectly integrated

How to proceed?

- 1 Open samples with the associated standards in reprocessing.
- 2 Set new integration parameters, or integrate them manually.
- 3 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.2.3 Standards are incorrectly integrated - Samples are OK

How to proceed?

- 1 Open samples with the associated standards in reprocessing.
- 2 Set the correct integration parameters for the standards.
- 3 Start reprocessing with the calibration option **From standards of reprocessing table**.

Open only the incorrectly integrated samples in reprocessing.

6 Mark the determination of which the calibration is to be used.

Reasonable integration parameters can be found

1 Open samples with the associated standards in reprocessing.

3 Start reprocessing with the calibration options **From standards of reprocessing table** and **Keep manual integration**.

How to proceed?

- 2 Open blank and samples with the associated standards in reprocessing.

4 In the method of the marked determination, under **Evaluation ► Integration ► Peak detection**, activate the check box **Subtract blank**.

1071

9.3.11.2.2.6 No blank is to be taken into account

How to proceed?

- 1 Open samples with the associated standards in reprocessing.
- 2 In the method of the marked determination, under **Evaluation ► Integration ► Peak detection**, deactivate the check box **Subtract blank**.
- 3 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3 Incorrect calibration

9.3.11.2.3.1 A single point in the calibration curve is not correct

How to proceed?

- 1 Open the incorrectly calibrated determinations in reprocessing.
- 2 Delete the incorrect point from the calibration curve in one determination. Have this determination marked.
- 3 Start reprocessing with the calibration option **From selected determination**.

9.3.11.2.3.2 None of the calibration points of a particular standard are correct

How to proceed?

- 1 Record the standard once more
- 2 Open the newly recorded standard, the old correct standards and the samples that are to be calibrated with them in reprocessing.
- 3 Move the newly recorded standard in the reprocessing table to the position at which the incorrect standard used to be located.
- 4 Start reprocessing with the calibration option **From standards of reprocessing table.**

How to proceed?

- 1

How to proceed?

- 1

How to proceed?

- 1

How to proceed?

- 1

9.3.11.2.3.7 One standard was not measured correctly

How to proceed?

- 1 Record the standard once more
- 2 Open the newly recorded standard, the old correct standards and the samples that are to be calibrated with them in reprocessing.
- 3 Move the newly recorded standard in the reprocessing table to the position at which the incorrect standard used to be located.
- 4 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3.8 Samples should be calibrated with standards that were recorded according to the samples

How to proceed?



Note

Relevant only with the calibration modes **Replace**, **Average** and **Moving average**.

- 1 Open samples with the standards in reprocessing which are to be used for calibration.
- 2 Move the standards in the reprocessing table in front of the samples.
- 3 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.3.9 Samples should be calibrated with existing calibration

How to proceed?

- 1 Open samples in reprocessing with one determination that contains the desired calibration.
- 2 Mark the determination with the desired calibration.
- 3 Start reprocessing with the calibration option **From selected determination**.

How to proceed?

- 1 Define in the method additional standards in the required concentration range.
- 2 Determine the additional standards.
- 3 Open samples with the associated standards and with the additionally measured standards in reprocessing.

4



Note

Relevant only with the calibration modes **Replace**, **Average** and **Moving average**.

Move the additionally measured standards in front of the samples.

- 5** Start reprocessing with the calibration option **From standards of reprocessing table**.

How to proceed?

- 1 Open samples with the associated standards in reprocessing.
- 2 Change the calibration mode.
- 3 Start reprocessing with the calibration option **From standards of reprocessing table**.

How to proceed?

- 1 Open all standards in reprocessing that have contributed to a calibration.
- 2 Mark the determination with the desired calibration.



Note

As a rule, that is the last determination.

- 3** Start reprocessing with the calibration option **From selected determination**.

9.3.11.2.4 Incorrect recovery rates

9.3.11.2.4.1 One check standard has the wrong sample type

How to proceed?

- 1 Open check standard with the associated standards in reprocessing.
- 2 Correct the **Sample type** for the check standard in the sample data.
- 3 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.5 Incorrect recovery rates (spiking)

9.3.11.2.5.1 Spiking has the wrong sample type

How to proceed?

- 1 Open sample, spiking and the the associated standards in reprocessing.
- 2 Correct the **Sample type** for the standard addition solution in the sample data.
- 3 Start reprocessing with the calibration option **From standards of reprocessing table**.

9.3.11.2.5.2 Spiking was not measured correctly

How to proceed?

- 1 Record the spiking once again
- 2 Open in reprocessing the newly recorded standard addition solution, the sample and the associated standards.
- 3 Slide the newly recorded standard addition solution in the reprocessing table to the correct position.

- #### 9.3.11.2.5.3 Spiking was not measured correctly

- 1 Record the spiking once again
- 2 Open in reprocessing the newly recorded standard addition solution, the sample and the associated standards.
- 3 Slide the newly recorded standard addition solution in the reprocessing table to the correct position.
- 4 Start reprocessing with the calibration option **From standards of reprocessing table.**

How to proceed?

- 1 Select program part **Database**.
- 2 Open desired database.
The selected database opens and its data sets are displayed in the **Determination overview**.
- 3 Select incomplete determinations.
- 4 Click on the menu item **Determinations ► Complete...**
The incomplete determinations will be completed.

How to proceed?

- 1 Select program part **Database**.
- 2 Click on the symbol  or the menu item **File ► Open...**.
The dialog window **Open database** opens.
- 3 Select desired database or enter name in the field **Database name**.

4 Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**. The database name is displayed in the title bar of the program, the number of currently opened databases is displayed in the left upper corner of the database symbol.



Note

A maximum of 4 databases can be opened, but only 2 can be displayed at the same time. Databases that are open at the time the program is ended will be automatically opened the next time the program is started.

5 Select desired determinations.

6 Click on the menu item **File ► Print ► Report....**

The dialog window **Report output** opens.

7 Under **Selection**, select desired determinations.

8 Under **Report type**, select the option **Original report** or **Report template**.

9 Under **Output target**, enable the check box **Printer** and/or select **PDF file**.



Note

If several reports are produced simultaneously as a PDF file then an index will be automatically appended to the file name.

10 In the dialog window **Report output**, click on **[OK]**.

The reports of the selected determination are put out.

9.3.14 Printing determination overview

How to proceed?

- 1 Select program part **Database**.
- 2 Click on the symbol  or the menu item **File ► Open....**

The dialog window **Open database** opens.

- 3** Select desired database or enter name in the field **Database name**.

- 4** Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**. The database name is displayed in the title bar of the program, the number of currently opened databases is displayed in the left upper corner of the database symbol.



Note

A maximum of 4 databases can be opened, but only 2 can be displayed at the same time. Databases that are open at the time the program is ended will be automatically opened the next time the program is started.

- 5 Select desired determinations.
- 6 Click on menu item **File ► Print ► Determination overview....**

The dialog window **Print determination overview (PDF)** opens.

- Under **Selection**, select desired determinations.
- Under **Orientation**, select the option **Portrait format** or **Landscape format**.
- Click on **[OK]**.

The determination overview is opened as PDF file.



A maximum of 4 databases can be opened, but only 2 can be displayed at the same time. Databases that are open at the time the program is ended will be automatically opened the next time the program is started.

9.4.3 Close database

How to proceed?

Closing single database

- 1 Select program part **Database**.
- 2 Click on the symbol  or the menu item **File ► Close...**
The focused database will be closed.

Closing all databases

- 1 Select program part **Database**.
- 2 Click on menu item **File ► Close all...**
All opened databases will be closed.

9.4.4 Create database

How to proceed?

- 1 Select program part **Database**.
- 2 Click on the symbol  or menu item **File ► Database manager....**
The dialog window **Database manager** opens.
- 3 Click on the menu item **Edit ► New....**
The dialog window **New database** opens.
- 4 Enter a name for the new database.
- 5 Click on **[OK]**.

The dialog window **Properties - Database - 'Database name'** opens for editing the database properties.



Note

The database name must be unambiguous in the whole Client/Server system.

- On the tab **General** enter a comment on the database in the field **Comment**.
- On tab **Access rights**, define access rights for reading and editing the new database for the different user groups.
- On tab **Backup**, define backup monitoring and automatic backup for the new database.
- On tab **Monitoring**, define monitoring of size and number of data sets.

9.4.5 Backing up database

How to proceed?

Backing up database manually

- 1 Select program part **Database**.
- 2 Click on the symbol  or menu item **File ► Database manager....**
The window **Database manager** opens.
- 3 Click on **[Backup]**.
The window **Backup database** opens.
- 4 Select the directory for the backup in the field **Backup directory**.
- 5 Select or enter the name for the **Backup file**. If an existing backup file is selected it will be overwritten.



If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** because the backup date information is not available when the directory is restored.

- The manual backup is started and the database is backed up to the selected directory.

Backing up database automatically

- 1 Select program part **Database**.
- 2 Click on the symbol  or menu item **File ► Database manager....**
The dialog window **Database manager** opens.
- 3 Select desired database.
- 4 Click on **[Properties]**.
The dialog window **Properties - Database - 'Database name'** opens for editing the database properties.
- 5 On the tab **General** enter a comment on the database in the field **Comment**.
- 6 On the tab **Backup** enable the check box **Backup monitoring**.
- 7 Enter **Interval** for backup monitoring or date for the **Next backup**.
- 8 Activate the **Start backup automatically** check box.
- 9 Select the directory for the backup in the field **Backup directory**.
- 10 Click on **[OK]**.
- 11 The dialog window **Properties - Database** is closed.

The database is automatically saved in the selected directory at the desired time.

9.4.6 Restoring database

How to proceed?

- 1 Select program part **Database**.
- 2 Click on the symbol  or menu item **File ► Database manager....**
The dialog window **Database manager** opens.
- 3 Click on **[Restore]**.
The **Restore databases** dialog window opens.
- 4 Select the directory in the **Backup directory** in which the desired database was backed up.
- 5 Select or enter the name for the desired **Backup file**.
- 6 Enter the name under **Save as** under which the database is to be restored.
- 7 Click on **[Start]**.
The database restoring is started.



Note

Existing databases cannot be overwritten, i.e. they must first be deleted so that the database can be recovered under its old name.

9.4.7 Delete database

How to proceed?

- 1 Select program part **Database**.
- 2 Click on the symbol  or menu item **File ► Database manager....**
The dialog window **Database manager** opens.
- 3 Select desired database.

- 4 Click on the menu item **Edit ► New....**

The selected database is deleted.



Note

Databases that are open cannot be deleted.

9.5 Configuration data

9.5.1 Configuration data in general

The configuration data in **MagIC Net** is saved in the **Configuration database**. Under configuration data is to be understood all cross-method settings for devices, columns, eluents, solutions, accessories, common variables and rack data, in addition to **Methods**, **Security settings** (see Chapter 6.2.2.1, page 490), **User administration** (see Chapter 6.2.1.1, page 481), **Program administration** (see Chapter 6.2.3.1, page 500), Templates and **Audit Trail** (see Chapter 6.4, page 519).

For local server systems (**MagIC Net Professional**) the configuration database is located in the program folder of the computer on which the program has been installed. In Client/Server systems (**MagIC Net Multi**) the configuration database is stored centrally on the server and saves and contains all the configuration data of all computers (clients) that are connected to this server.

9.5.2 Export configuration data

How to proceed?

- 1 Select program part **Configuration**.

- 2 Click on the menu item **File ► Export....**

The dialog window **Export configuration data** opens.

- 3 Select desired configuration data.

- 4 Click on **[OK]**.

The dialog window **Export configuration data** is closed and the dialog window **Save** opened.

- 5 Select or enter name and directory for the export file. If an existing export file is selected it will be overwritten.

- 6** Click on **[Save]**.

The export of the configuration data is started.

The selected configuration data is then saved in a file with the extension **.mcfg**.

9.5.3 Importing configuration data

How to proceed?

- 1** Select program part **Configuration**.

- 2** Click on the menu item **Determinations ► Import....**

The dialog window **Open** opens.

- 3** Select or enter a new name and directory for the import file **MCFG**.

- 4** Click on **[Open]**.

The dialog window **Import configuration data** opens.

- 5** Select desired configuration data.



Note

Data that is not present in the export file cannot be selected.

- 6** Click on **[OK]**.

The import is started and the selected configuration data is imported.

9.5.4 Backing up configuration data

How to proceed?



Note

It is strongly recommended that the configuration database be backed up periodically.

Backing up configuration data manually

- 1** Select program part **Configuration**.

- The dialog window **Backup configuration data manually** opens.

- 4** Select or enter the name for the **Backup file**. If an existing backup file is selected it will be overwritten.



Note

If the backup directory is on a network drive, the backup date should be added manually to the **Backup name** because the backup date information is not available when the directory is restored.

- The manual backup is started and the configuration database is backed up to the selected directory.

Backup configuration data automatically

- The dialog window **Backup configuration data automatically** opens.

- The dialog window **Backup configuration data automatically** is closed.

The configuration database is automatically saved in the selected directory at the desired time.

9.5.5 Restoring configuration data

How to proceed?

MagIC Netprofessional

- 1 Exit **MagIC Net**.
- 2 Start the **ConfigRestore.exe** file in the program directory ...
\MagIC Net\bin.

The dialog window **Restore configuration data** opens (*see Chapter 6.3.2.3, page 510*).
- 3 Select the directory in the **Backup directory** field in which the configuration database was backed up.
- 4 Select or enter the name for the desired **Backup file**.
- 5 Start configuration database recovery with **[Start]**.

MagIC Netmulti

- 1 Make sure that **MagIC Net** is closed on all clients connected to the server and on the server itself.
- 2 Start the file **ConfigRestore.exe** in the program directory...
\\MagIC Net\\bin on the server.
The dialog window **Restore configuration data** opens.
- 3 Select the directory in the **Backup directory** field in which the configuration database was backed up.
- 4 Select or enter the name for the desired **Backup file**.
- 5 Click on **[Start]**.
The restoring of the configuration database is started.
- 6

Close all methods

- 1 Select program part **Method**.
- 2 Click on menu item **File ► Close all...**

All opened methods will be closed. A request to save the method as a new version will appear for each method having been modified.

9.6.3 Create method

How to proceed?

- 1 Select program part **Method**.
- 2 Click on the symbol  or the menu item **File ► New...**
The dialog window **New method** opens.
- 3 Select **Empty method** or a fixed **Method template**.
- 4 Click on **[OK]**.

Opens the selected method template for editing.

9.6.4 Save method

How to proceed?

Saving method under the same name

- 1** Click on the symbol  or the menu item **File ► Save**.

The existing, selected method is newly saved under its name. A new **Method version** with a new method identification is created.

If the check box **Comment on modification of methods** is activated in the **Security settings**, the dialog window **Modification comment method** is displayed before the method is saved.

Saving method under a new name

- 1** Click on the menu item **File ► Save as....**

The dialog window **Save method** opens.

- The selected method is saved under the desired method name in the selected method group as method version **1**.

9.6.5 Deleting method

4 Select the desired method from the table or enter a name in the field **Method name**.

- If the check box **Comment on modification of methods** is activated in the **Security settings**(see Chapter 6.2.2.4, page 496), the window **Modification comment method** is displayed first when deleting methods.. In this window, a reason and a comment on deleting can be entered, which is logged in the **Audit Trail**.

Locked methods cannot be deleted.

9.6.6 Exporting method

How to proceed?

- 1 Select program part **Method**.
- 2 Click on the symbol  or menu item **File ► Method manager....**
The dialog window **Method manager** opens.
- 3 In the list box **Method group** select the desired method group.
- 4 Select the desired method from the table or enter a name in the field **Method name**.
- 5 Click on the menu item **File ► Export....**
The dialog window **Select directory for export** opens.
- 6 Select the directory where the method should be exported and click on **[OK]**.
The selected methods are each exported as files named '**Method name**'.imet.



Note

The exported methods are stored uncoded but with a checksum. If a file stored in this manner is manipulated, then it cannot be imported again.

9.6.7 Import methods

How to proceed?

- 1 Select program part **Method**.
- 2 Click on the symbol  or menu item **File ► Method manager...**
The dialog window **Method manager** opens.
- 3 In the list box **Method group** select the desired method group.
- 4 Click on the menu item **Edit ► Import...**
The dialog window **Select files to import** opens.

- The selected methods are imported in the currently opened method group.

How to proceed?



Note

Methods can be signed more than once at level 1 and can also be edited and deleted. If the method is edited and saved again, a new version is created and all the signatures will be deleted i.e. the method must be signed again.

Signature 2



Note

Methods can only be signed at level 2 if the user belongs to a user group with the corresponding authorization (*see Chapter 6.2.1.2.3, page 484*).

- 1 Click on the menu item **Sign ► Signature 2....**

The dialog window **Signature Level 2** opens. If the selected method can be signed, **Signature possible** is displayed in the field **Info**.

- 2** Enter or select **User**, **Password**, **Reason** and **Comment**.

- 3** Click on **[Sign]**.

The selected method will be signed on level 2.



Note

Methods signed at level 2 are **locked**, i.e. they can neither be edited nor deleted. In order to be able to edit such methods again the signatures as level 2 must first be deleted (*see Chapter 2.3.5, page 27*).

9.6.9 Making previous method version current

How to proceed?

- 1** Select program part **Method**.

- 2 Click on the symbol  or menu item **File ► Method manager...**

The dialog window **Method manager** opens.

- 3 In the list box **Method group** select the desired method group.
- 4 Select desired method.
- 5 Click on **[History]**.

The dialog window **Method history** showing a table with all **versions** of the selected method is opened.

- 6 Select desired method that is to be made current.
- 7 Click on Make **current**.

The selected method version is set as the current method version. The method will be saved, the version number is increased by **+1** compared to the last method version that was saved.

9.6.10 Print method report

How to proceed?

- 1 Select program part **Method**.
- 2 Click on the symbol  or the menu item **File ► Open....**

The dialog window **Open method** opens.

- 3 In the list box **Method group** select the desired method group.
- 4 Select desired method or enter name in the field **Method name**.
- 5 Click on **[Open]**.

The selected method is opened in the main window in the place of a method that is already opened. The method name is displayed in the title bar of the program; the number of currently opened methods is displayed in the left upper corner of the method symbol.

- 6** Click on menu item **File ► Print (PDF)....**

The dialog window **Print method reports (PDF)** (see Chapter 5.2.10, page 352) opens.

- 7** Select desired report and orientation and click on **[OK]**.

The desired report is opened as PDF file.

9.6.11 Backup methods

How to proceed?

General

Methods are stored in the configuration database and globally accessible for all clients. This means that in order to save methods the configuration data must be saved manually or automatically. A further possible way is to export the methods and then to save these files externally from **MagIC Net**.

Manual configuration data backup

- 1 Select program part **Configuration**.
- 2 Click on the menu item **File ► Backup ► Manually**.
The dialog window **Backup configuration data manually** opens.
- 3 In the field **Backup directory** select a directory for the backup.
- 4 Select or enter the name for the **Backup file**. If an existing backup file is selected it will be overwritten.



Note

If the backup directory is on a network drive the backup date should be added manually to the **Backup name** because the backup date information is not available when restoring.

- Click on **[Start]**.
- The manual backup of the configuration database is started.

Automatic configuration data backup

- 1 Select program part **Configuration**.
- 2 Click on menu item **File ► Backup ► Automatically**.

3 Activate the **Automatic backup** check box.

5 In the field **Backup directory** select a directory for the backup.

The dialog window **Backup configuration data automatically** is closed.

2 Click on the symbol or menu item **File ► Method manager....**

4 Select desired methods.

- 6 Select the directory where the method should be exported and click on **[OK]**.

The selected methods are each exported as files named '**Method name**'.imet.



The exported methods are stored uncoded but with a checksum. If a file stored in this manner is manipulated, then it cannot be imported again.

9.7 Method groups

9.7.1 Creating method group

How to proceed?

- 1 Select program part **Method**.
- 2 Click on the symbol  or the menu item **File ► Method groups....**
The dialog window **Method groups** opens.
- 3 Click on **[New]**.
The dialog window **Properties - Method group - New Group** opens.
- 4 On the tab **General** in the field **Name**, enter a new name for the method group and in the field **Comment** enter a comment.
- 5 On tab **Access rights**, assign access rights for method groups and their methods per **User group**.



Note

The user group **Administrators** always has both access rights, i.e. they cannot be disabled.

- 6** Click on **[OK]**.
- The dialog window **Properties - Method group - New Group** is closed.

9.7.2 Deleting method group

How to proceed?

- 1 Select program part **Method**.
- 2 Click on the symbol  or the menu item **File ► Method groups...**
The dialog window **Method groups** opens.

- 3

How to proceed?

- 1

2

3

4

5

6

7

8

Click on **[Apply]**.

- The dialog window **Edit line** opens.

How to proceed?

- The dialog window **Load sample table** opens.

The dialog window **Save sample table** opens.

- 14** In the field **Name** enter a name.

- 15** Click on **[Save]**.

The working sample table will be saved under the name entered as sample table.

9.9 Reports

9.9.1 Creating report template

How to proceed?

- 1 Select program part **Database**.

- 2**  **Note**

A database must be open in order to carry out subsequent steps.

Click on the menu item **Tools ▶ Report templates ▶ New ▶ Form report**.

The program window **Report template** with an empty report template opens.

- 3** Click on the menu item **File ► Page setup...** in the program window **Report template**.

The dialog window **Page setup** opens.

- 4** Define desired settings for the report format.

- 5** Click on **[OK]**.

The dialog window **Page setup** is closed.

- 6** In the program window **Report template**, click on the menu item **Tools ► Options...**

The dialog window **Options for report templates** opens.

- 7** Define desired settings for the report template.

- 8** Close the dialog window with **[OK]**.
- 9** Select desired module symbol on the Module bar and place it on the report template by creating a field with the left mouse button.
The properties window for the corresponding module opens automatically.
- 10** Enter desired settings for the module.
- 11** Click on **[OK]**.
The properties window is closed.
- 12** Repeat steps **7** and **8** for each desired module.
- 13** Click on the symbol  or the menu item **File ► Save as...**.
The dialog window **Save report template** opens.
- 14** In the field **Name** enter a name.
- 15** Click on **[Save]**.
The report template is saved under the name entered.

9.9.2 Edit report template

How to proceed?

- 1 Select program part **Database**.
- 2 Click on the symbol  or on the menu item **Tools ► Report templates ► Open....**
The program window **Open report template** opens.
- 3 Open desired report template.
- 4 Click on **[Open]**.
The program window with the selected report template opens.
- 5 Click on the menu item **File ► Page setup....**
The dialog window **Page setup** opens.

- 6 Define desired settings for the report format.
- 7 Close the dialog window with **[OK]**.
- 8 In the program window **Report template**, click on the menu item **Tools ► Options....**
The dialog window **Options for report templates** opens.
- 9 Define desired settings for the report template.
- 10 Close the window with **[OK]**.

Editing existing modules

- 1 Select the symbol  on the module bar and double-click on the desired module in the report template.
The properties window of the selected module opens automatically.
- 2 Enter desired settings for the module.
- 3 Close the properties window with **[OK]**.
- 4 Repeat steps **1** and **2** for each desired module.

Creating new modules

- 1 Select desired module symbol on the Module bar and place it on the report template by creating a field with the left mouse button.
The properties window for the corresponding module opens automatically.
- 2 Define desired settings for the module.
- 3 Close the properties window with **[OK]**.
- 4 Repeat steps **1** and **2** for each desired new module.
- 5 Click on the symbol  or the menu item **File ► Save**.

The report template is saved.

9.9.3 Printing determination report

How to proceed?

- 1 Select program part **Database**.
- 2 Click on the symbol  or the menu item **File ► Open...**.
The dialog window **Open database** opens.
- 3 Select desired database or enter name in the field **Database name**.
- 4 Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**. The database name is displayed in the title bar of the program, the number of currently opened databases is displayed in the left upper corner of the database symbol.



Note

A maximum of 4 databases can be opened, but only 2 can be displayed at the same time. Databases that are open at the time the program is ended will be automatically opened the next time the program is started.

- 5 Select desired determinations.
- 6 Click on the menu item **File ► Print ► Report....**
The dialog window **Report output** opens.
- 7 Under **Selection**, select desired determinations.
- 8 Under **Report type**, select the option **Original report** or **Report template**.
- 9 Under **Output target**, enable the check box **Printer** and/or select **PDF file**.



- The reports of the selected determination are put out.

9.9.4 Printing determination overview

How to proceed?

- 1** Select program part **Database**.

- 2 Click on the symbol or the menu item **File ▶ Open...**

The dialog window **Open database** opens.

- 3** Select desired database or enter name in the field **Database name**.

- 4** Click on **[Open]**.

The selected database opens and its data sets are displayed in the **Determination overview**. The database name is displayed in the title bar of the program, the number of currently opened databases is displayed in the left upper corner of the database symbol.



- 5** Select desired determinations.

- 6 Click on menu item **File ▶ Print ▶ Determination overview...**

The dialog window **Print determination overview (PDF)** opens.

- 7** Under **Selection**, select desired determinations.

Index

Numbers/Symbols

- 10-port valve
 - Commands 943
 - Manual control 946
 - Start parameters 939
- 21 CFR 11 19, 490, 491, 496, 497
- 771 IC Compact Interface
 - Commands 975
 - Configuration 970
 - Data channels 974
 - Manual control 977
 - Method 974
 - Start parameters 974
- 800 Dosino
 - Commands 988
 - General 987
 - Manual Control 1003
 - Start parameters 988
- 801 Magnetic Stirrer 1011
 - Commands 1012
 - Manual Control 1013
 - Start parameters 1011
- 803 Ti Stand 1011
 - Commands 1012
 - Manual Control 1013
 - Start parameters 1011
- 804 Ti Stand 1011
 - Commands 1012
 - Manual Control 1013
 - Start parameters 1011
- 814 USB Sample Processor
 - Configuration 775
 - Device type 774
 - Manual Control 795
 - Method 786
- 814 USB Sample Processor Processor
 - Commands 788
 - Start parameters 786
- 815 Robotic USB Sample Processor XL
 - Commands 788
 - Configuration 775
 - Device types 775
 - Manual Control 795
 - Method 786
 - Start parameters 786
- 846 Dosing Interface
 - Configuration 1006
- Manual Control 1010
- Method 1010
- 850 Professional IC
 - Commands 628
 - Configuration 598
 - Data channels 624
 - Device type 596
 - Manual Control 648
 - Method 610
 - Start parameters 610
- 858 Professional Sample Processor
 - Commands 814
 - Configuration 800
 - Device type 800
 - External positions 785, 810
 - Manual Control 823
 - Method 811
 - Robotic arm 784, 809
 - Start parameters 811
- 863 Compact Autosampler
 - Commands 835
 - Configuration 829
 - Manual control 839
 - Method 834
 - Start parameters 834
- 872 Extension Module IC Module
 - Commands 918
 - Configuration 910
 - Data channels 918
 - Manual Control 924
 - Method 915
 - Start parameters 915
- 872 Extension Module IC Pump
 - Commands 905
 - Configuration 898
 - Data channels 905
 - Manual Control 909
 - Method 903
 - Start parameters 903
- 872 Extension Module Liquid Handling
 - Commands 941
 - Configuration 934
 - Manual control 946
 - Method 938
 - Start parameters 938
- 872 Extension Module Sample Prep
 - Commands 931
 - Configuration 926
- Manual Control 934
- Method 929
- Start parameters 930
- 872 Extension Module Suppression
 - Commands 953
 - Configuration 948
 - Manual Control 956
 - Method 951
 - Start parameters 951
- 872 Extension Module Suppression – MCS
 - Commands 964
 - Configuration 958
 - Manual Control 967
 - Method 961
 - Start parameters 962
- 881 Compact IC pro
 - Commands 685
 - Configuration 659
 - Data channels 681
 - Device types 659
 - Manual Control 698
 - Method 671
 - Start parameters 671
- 882 Compact IC plus
 - Commands 728
 - Configuration 705
 - Data channels 725
 - Device types 705
 - Manual Control 741
 - Method 716
 - Start parameters 716
- 883 Basic IC plus
 - Commands 762
 - Configuration 747
 - Data channels 758
 - Device type 747
 - Manual Control 771
 - Method 753
 - Start parameters 753
- 886 Professional Thermostat / Reactor
 - Commands 881
 - Configuration 873
 - Data channels 881
 - Device type 872
 - Manual Control 881
 - Method 879
 - Start parameters 879

- Results 464
- Standard deviation (percent-
age) 465
- Standard deviation X 466
- Variables 464
- Calibration mode
 - Average 423
 - Bracketing 423
 - Moving average 423
 - Overview 423
 - Replace 423
 - Total 423
- Capacity factor 440
- Case 74
- Change layout 107, 195, 479
- Change polarity 647, 697, 739
- Change port 943, 1000
- Change range 646, 696, 739
- Check standard 410
 - Creating 413
 - Editing 414
 - Recovery 467
- Chromatogram
 - Calculating 472
 - General 471
 - Graphics window 471
 - Properties 91
 - Update 471
- Client 503
- Color
 - Choosing 98
- Column
 - Adding new column 543
 - Assign 384
 - Column display 543
 - Column table 541
 - Configuration 541
 - Deleting 543
 - Edit column properties 544
 - Export 504
 - General 541
 - Import 506
 - Monitoring 548
 - Parameters 545
 - Precolumn 547
 - Print column list 544
 - Properties 546
 - Subwindow 541
- Column display
 - Accessories 575
 - Audit Trail 525
 - Columns 543
 - Common variables 591
 - Determination overview ... 262
- Eluents 555
- Solutions 563
- Column heater
 - Commands 694
 - Data channel 682
 - Manual Control 702
 - Start parameters 677
- Column thermostat
 - Commands 644
 - Data channels 625
 - Start parameters 620
- Command 390
 - Aspirate 991, 1002
 - Aspirate (Syringe) 853
 - Calculation 396
 - Change polarity 647, 697, 739
 - Change port 1000
 - Change port (10-port valve)
..... 943
 - Change port (Syringe) 855
 - Change range . . 646, 696, 739
 - Compensate 1001
 - Device-dependent commands
..... 391, 398
 - Dispense (Syringe) 854
 - Dosing 989
 - Edit 389
 - Eject (Syringe) 852
 - Eject to end volume 995
 - Eject to stop 996
 - Empty 1002
 - Exchange position 998
 - Fill (Dosing unit) 993
 - Fill (Injection valve)
636, 689, 732, 766, 819, 851
, 923, 932, 945
 - Fill (Syringe) 852
 - Flow (high-pressure gradient
pump) 981
 - Flow (High-pressure pump)
. 629, 685, 729, 762, 906, 919
 - Flow (Low-pressure gradient
pump) 632
 - Full loop injection 857
 - General 390
 - Gradient (high-pressure gradi-
ent pump) 981
 - Gradient (High-pressure pump)
. 629, 686, 729, 763, 906, 920
 - Gradient (low-pressure gradi-
ent pump) 633
 - High-pressure pump
. 628, 685, 728, 762, 905, 919
 - Initialize 793, 818
- Inject (Injection valve)
636, 689, 733, 766, 819, 851
, 923, 933, 945
- Insert 388
- Lift 791, 816, 837
- Loop 394
- Measure absorbance 894
- Measure conductivity
..... 644, 694, 737, 769
- Measure drift
. 645, 695, 738, 770, 895, 976
- Measure noise
. 645, 695, 737, 770, 895, 976
- Measure temperature (Column
thermostat) 644, 881
- Measure temperature (Cool-
ing) 856
- Measure temperature (Thermo-
stat) 644, 881
- Measuring analog signal ... 975
- Measuring pressure (high-pres-
sure gradient pump) 984
- Measuring pressure (High-pres-
sure pump)
. 631, 688, 731, 765, 908, 922
- Measuring temperature (Col-
umn heater) 694
- Modify channel 893
- Move (needle) 849
- Move (Rack) 788, 814, 835
- Move to position (rack) 848
- Off/On (High-pressure gradient
pump) 980
- On/Off (801 Magnetic Stirrer)
..... 1012
- On/Off (803 Ti Stand) 1012
- On/Off (804 Ti Stand) 1012
- On/Off (Compressor) 856
- On/Off (Degasser)
..... 643, 693, 924
- On/Off (Low-pressure gradient
pump) 632
- On/Off (MCS)
..... 642, 692, 736, 964
- On/Off (Peristaltic pump)
637, 690, 733, 767, 820, 837
, 931, 942, 955, 966
- On/Off (Stirrer) 1012
- Parallel 393
- Partial loop injection 858
- Pickup injection 860
- Pump # On/Off 793, 821
- Release
631, 635, 637, 638, 639, 641

- , 642, 648, 688, 689, 691, 692
 , 698, 732, 733, 734, 736, 740
 , 765, 766, 768, 769, 795, 820
 , 821, 823, 838, 862, 909, 922
 , 923, 932, 933, 942, 944, 945
 , 954, 955, 966, 967, 984,
 1002, 1013, 1020
 Reset baseline
 647, 697, 740, 893
 Scanning lines 1015
 Sequence 393
 Setting lines 1018
 Start data acquisition 395
 Start IC Net 394
 Step (MSM)
 638, 640, 641, 691, 735, 768
 , 953, 965
 Step (MSM-HC)
 638, 640, 641, 691, 735, 768
 , 953, 965
 Step (SPM)
 638, 640, 641, 691, 735, 768
 , 953, 965
 Swing 791, 817
 Time program 390
 Tower stirrer On/off .. 794, 822
 Transfer (RS-232 device) . 1035
 Wait 391
 Wait for injection 861
 Waiting for IC Net 395
 Waiting for injection IC Net
 975
 Wash 862
 Commands
 814 USB Sample Processor
 788
 815 Robotic USB Sample Pro-
 cessor XL 788
 886 Professional Thermostat /
 Reactor 881
 887 Professional UV/VIS Detec-
 tor 892
 889 IC Sample Center 848
 Analog Out 646, 696, 738
 Aux1, Aux2 646, 696, 738
 Out1, Out2 646, 696, 738
 Common logarithm 58
 Common variable
 Add new common variable
 590
 Column display 591
 Delete 591
 Editing properties 592
 Export 504
 General 588
 Import 506
 Monitoring 594
 Parameters 592
 Print list 591
 Subwindow 588
 Table 589
 Use in the formula editor 42
 Common Variable
 Assigning 438
 Result 431
 Communication 6
 Compensate 1001
 Completing 320
 Component
 Component table 406
 Editing 408
 General 405
 Identification 407
 Name 439
 Component result 38
 Compressor
 Commands 856
 Manual Control 866
 Start parameters 847
 Concentration
 Concentration results 449
 Concentration calculation 449
 Calibration with external stand-
 ard 449
 Calibration with internal stand-
 ard 452
 Concentration ratio 456
 Conductivity detector
 Commands
 644, 694, 737, 769
 Data channel
 625, 682, 725, 759
 Properties . 601, 662, 708, 750
 Start parameters
 620, 677, 721, 758
 Configuration
 Backup automatically 509
 Backup manually 510
 Configuration database 473
 Configuration symbol . 18, 473
 Definition 473
 Desktop 18, 473
 Devices 535
 Export 504
 Functions 477
 General 473
 Menu bar 474
 Options 516
 Subwindow 476
 Toolbar 476
 View 106, 194, 478
 Configuration data 504
 Backing up 1053, 1086
 Export 1085
 Importing 1086
 Restoring 1054, 1088
 Conformity 7
 Connect
 RS-232 device 1033
 Connections
 Barcode reader 1027
 Properties
 602, 664, 709, 750, 781, 806
 , 876, 1007
 Cont key 153
 Control chart
 Detail overview 292
 Managing templates 249
 Print 296
 Properties 250
 Control chart template
 Export 504
 Cooling
 Commands 855
 Manual Control 866
 Start parameters 846
 CSV export 255
 Curve
 Database subwindow 339
- ## D
- Daisy-chain
 602, 664, 709, 750, 781, 806,
 876, 1007
 Database
 Access rights 203
 Backing up 1050, 1082
 Backup 204, 206
 Close 199, 1081
 Create 201, 1081
 Curves 339
 Definition 186
 Delete 202, 1084
 Desktop 17, 186
 Display next to one another
 199
 Display one below the other
 199
 Display single database 199
 Function 193
 General 186
 General information 203

- Graphics window 79
- Information 321
- Introduction 5
- Manage 200
- Menu bar 187
- Monitoring 205
- Open 197, 1059, 1080
- Organization 186
- Print report 286
- Properties 202
- Rename 202
- Restore 207
- Restoring 1052, 1084
- Results 336
- Save result 428
- Select 198
- Selecting 433
- Subwindow 192
- Toolbar 191
- View 106, 194, 478
- Data channel
 - Column heater 682
 - Column thermostat 625
 - Conductivity detector
..... 625, 682, 725, 759
 - High-pressure gradient pump
..... 980
 - High-pressure pump
..... 624, 681, 725, 759, 905, 918
- Data channels
 - 771 IC Compact Interface . 974
 - 886 Professional Thermostat /
Reactor 881
 - 887 Professional UV/VIS Detec-
tor 892
 - 889 IC Sample Center 848
 - Low-pressure gradient pump
..... 625
- Data import 128, 150, 175
- Data source
 - Analog Out 621, 678, 722
- Date 77
- Decimal place
 - Define 433
- Default reason 498
- Degasser
 - Commands 643, 693, 924
 - Manual Control 656, 701, 926
 - Monitoring
..... 606, 608, 667, 669, 712, 714
 - Properties 602, 663, 913
 - Start parameters
..... 619, 676, 918
- Demo curve
 - Output 625, 682, 725, 759
- Detail overview
 - Control chart 292
 - General 289
 - Print results overview 295
 - Results 289
 - Selection 289
 - Zooming 295
- Detector
 - Calculation of the absorbance
..... 891
 - Commands 893
 - Editing channel 891
 - Editing the reference channel
..... 891
 - Manual Control 896
 - Properties 885
 - Settings 887
 - Start parameters 889
- Determination
 - Batch 271, 1062
 - Comment 267, 336
 - Complete 1077
 - Completing 320
 - Curves 339
 - Delete 320, 1066
 - Detail overview 289
 - Determination overview ... 261
 - Displaying history 288
 - Display signatures 282
 - Examples 285
 - Export 1064
 - Exporting 285
 - Filter 273, 1060
 - Functions 266
 - Import 285, 1065
 - Information 321
 - Make current 1067
 - Make old version current .. 288
 - Messages 336
 - Modification comment
..... 319, 496
 - Print report ... 286, 1077, 1106
 - Reason for modification 319
 - Repeating automatically ... 150
 - Reprocessing 301, 1068
 - Results 336
 - Search 1060
 - Searching 268
 - Selection 266
 - Send to 284
 - Show method 288
 - Sign 1062
- Signature rights 484
- Signatures 321
- Start 142, 152
- Status 321
- Stop 142, 152
- Update 267
- Variables 37
- Version 288, 321, 1067
- Determination overview
 - Batch selection 264
 - Column display 262
 - Data display 261
 - Data record selection 266
 - Filter selection 263
 - Functions 266
 - General 261
 - Navigation bar 264
 - Print 285, 1079, 1107
 - Table navigation 265
 - Update 261, 267
- Determination parameters
 - Display 123, 170
- Determination run
 - Determination series 157
 - Single determination 148
- Determinations
 - Make old version current .. 288
 - Version 288
- Determination series
 - Comment 129, 177
 - Data import 128, 175
 - Determination run 157
 - Display 123, 170
 - Edit 124, 172
 - Operating elements 152
 - Overview 152
 - Process 127, 174
 - Properties 170
 - Run test 140, 168
 - Sample data 153, 161
 - Status display 153
- Device
 - 771 IC Compact Interface . 970
 - Add 372
 - Adding new device 538
 - Column display 538
 - Configuration 535
 - Deleting 538
 - Device information 183
 - Device name 535
 - Device selection 538
 - Device table 535
 - Device type 535
 - Edit 375

- Export 504
 Functions 372
 General 535
 Import 506
 Initializing 535
 Load new program version
 605, 667, 712
 Peripheral devices 535
 Printing device list 540
 Properties 540
 Rack 779, 804
 RS-232 535
 RS-232 device 1028
 Settings 1025
 Status 535
 Subwindow 535
 Subwindow (Method) 371
 Tower 777, 802
 USB-Devices 535
 Device-dependent commands 398
 Device-independent commands
 391
 Devices
 Connect 3
 Device type
 814 USB Sample Processor
 774
 815 Robotic USB Sample Pro-
 cessor XL 775
 850 Professional IC 596
 858 Professional Sample Pro-
 cessor 800
 881 Compact IC pro 659
 882 Compact IC plus 705
 883 Basic IC plus 747
 886 Professional Thermostat /
 Reactor 872
 887 Professional UV/VIS Detec-
 tor 882
 889 IC Sample Center 841
 Dialog language 516
 Division 47
 Dosing 989
 Dosing unit
 Configuration 566
 Parameters for preparing . . 566
 Tubing parameters 566
 Valve disk 566
- E**
 Editing gradient
 630, 634, 687, 731, 764, 908,
 921
 Eject to end volume 995
 Eject to stop 996
 Electronic signature 497
 Eluent
 Adding new eluent 554
 Column display 555
 Deleting 555
 Editing properties 556
 Eluent table 553
 Export 504
 General 553
 Import 506
 Mixing ratio 985
 Monitoring 557
 Printing eluent list 555
 Subwindow 553
 E-mail
 Edit template 514
 Export template 504
 Login 499
 Manage templates 514
 Send 99
 Templates 514
 Emergency stop 517
 Empty 1002
 Equal to 51
 Equilibration 141
 Error (Function) 75
 Error handling 517
 Evaluation
 Calculations 439
 General 398
 Integration 399
 Toolbar 398
 Evaluation parameter variables . 34
 Exchange position 998
 Exponential function 57
 Export
 Audit Trail 531
 Configuration data . 504, 1085
 Determinations 285, 1064
 Export templates 254
 Method 1092
 Export setting 433
 Export template
 Edit 255
 Field selection 257
 Manage 254
 Options for for CSV format
 258
 Options for measurement point
 list 259
 Properties 255
 Request at file export 259
 Selection 285
- Export templates
 Export 504
 Import 506
 External position
 777, 785, 802, 810
- F**
 FDA 19
 Audit Trail/Modifications ... 496
 Login/Password protection
 491
 Security settings 490
 Signature 497
 Fill
 636, 689, 732, 766, 819, 851,
 923, 932, 945, 993
 Filter
 Audit Trail 526
 Delete 275
 Determinations 273
 Filter condition 276
 Filter selection 263
 Last filter 273
 Quick filter 273
 Save 275
 Savitzky-Golay 403
 Special filter 274
 Fixed report 235
 Form report 210
 Formula editor
 ASCII table 75
 Calculation algorithms 29
 Common variables 42
 Determination variables 37
 Function buttons 28
 Functions 43
 Input field 28
 Operators 43
 Overview 28
 System variables 42
 Variables 31
 Fraction 60
 Fronting 444
 Full width at half maximum 440
 Function
 Absolute value 59
 Case 74
 Common logarithm 58
 Configuration 477
 Database 193
 Determination overview . . 266
 Error 75
 Exponential function 57
 Fraction 60

- Integer 60
Natural logarithm 58
NumberToText 66
NumberToTime 66
Overview 43
Quantiles of the Student's t-distribution 62
Rounding integer 61
Sign 61
Square root 59
SubText 72
TextPosition 71
TextToNumber 67
TextToTime 67
Time() 63
Time(Date) 63
Time(Date+Time) 64
TimeToNumber 68
TimeToText 69
Tinv 62
Trim 73
- Functions
Audit Trail 523
- G**
Gauss factor 443
General
Commands 857
Manual Control 867
GLP
551, 558, 571, 579, 603, 665,
710, 751, 782, 807, 832, 843, 877
, 885, 901, 913, 928, 936, 949,
960, 972, 1008, 1026, 1031
Gradient
629, 686, 729, 763, 906, 920,
981
Low-pressure 633
Gradient pump
Add 377
Assigning pump 379
Edit 378
Pump selection 377
- Graphics window
Calibration curve view 84
Elements 80
General 79
Move curve 89
Properties 91
Spectrum view 87
Visualization 91
Working with cursor 89
Zoom 88, 90
- Graphic window
Chromatogram view 82
Greater than 52
Greater than or equal to 53
Group field
Group field 236
- H**
Hardware variables 37
Help 13
High-pressure gradient pump
Commands 980
Configuration 977
Data channel 980
Defining start parameters . 978
General 977
Gradient 981
Manual Control 985
Measuring pressure 984
Off/On 980
Setting flow 981
High pressure pump
Start parameters
. 610, 671, 717, 753, 903, 915
High-pressure pump
Commands
. 628, 685, 728, 762, 905, 919
Data channel
. 624, 681, 725, 759, 905, 918
Manual Control
. 648, 698, 741, 771, 909, 924
Properties
. 600, 661, 707, 749, 900, 912
History
Determinations 288
Hva 446
Hvb 446
Hyperlink 79
- I**
Ignored devices
Editing 539
Import
Configuration data 506
Determinations 285, 1065
Method 1092
Importing
Configuration data 1086
Information
Comment 336
Determination 321
Messages 336
Method 325
Overview 321
- Sample 326
Initialize
Rack 793, 818
Initial position
Properties 780, 805, 831
Inject
636, 689, 733, 766, 819, 851,
923, 933, 945
Injection valve
Assign 384
Commands
636, 689, 732, 766, 819, 851
, 923, 932, 945
Manual Control
651, 699, 742, 772, 825, 926
, 934, 947
Start parameter
614, 673, 718, 755, 811, 917
, 931, 941
Injector
Manual Control 865
Properties 843
Start parameters 846
Input line
Template 511
Integer 60
Integration
..... 399
Events 402
General 399
Peak detection 400
Settings 400
Integration event
Definition 402
Edit 403
Table 402
Internal standard
Edit 423
- L**
Last filter
Audit Trail 526
Determinations 273
Less than 54
Less than or equal to 55
License
Add 503
License code 503
Show 503
Lift 791, 816, 837
Lift rate 777, 802
Live display
Analyses 179
Application note 180

Measured value offset	
Analog Out	623, 680, 723
Measure noise	
.....	645, 695, 737, 770, 895, 976
Measuring analog signal	975
Measuring pressure	
631, 688, 731, 765, 908, 922,	
984	
Menu bar	342
Audit Trail	520
Configuration	474
Database	187
Methods	342
Report template	212
Workplace	101
Message	
Watch window	184
Method	
Application note	355
Backup	1096
Check	348
Close	1089
Closing	353
Comment	355
Copying	360
Create	1090
Creating new	345
Definition	341
Delete	1091
Deleting	361
Desktop	18, 341
Devices	371
Display signatures	366
Editing	348
Equilibration	141
Export	1092
Exporting	362
Functions	344
General	341
Graphics window	79
Import	1092
Importing	362
Information on determination	
method	325
Introduction	341
Make current	1094
Making current	368
Managing	358
Menu bar	342
Method groups	369
Method report	352
Method selection by assign-	
ment ID	150
Method symbol ..	18, 341, 347

- Method template 345
- Modification comment 352, 496
- Modification reason 352
- Moving 360
- Open 1089
- Opening 345
- Properties 354
- Renaming 360, 362
- Reports 1095
- Sample data 115, 143, 161
- Sample methods 362
- Save 1090
- Saving 350
- Selection 347
- Sending to 361
- Show determination method 288
- Showing history 368
- Sign 1093
- Signature rights 484
- Signatures 325
- Status 325
- Structure 341
- Toolbar 343
- Version ... 325, 350, 368, 1094
- Method editor 4
- Method group
- Access rights 370
 - General parameters 370
 - Manage 369
 - Properties 370
 - Standard method group ... 486
- Method groups
- Create 1098
 - Delete 1098
- Methods
- Backing up 1055
- Modification comment
- Determination 319, 496
 - Method 352, 496
 - Sample data 151, 178, 496
- Modification reason
- Determination 496
 - Method 352, 496
 - Sample data 151, 178, 496
- Modify channel 893
- Module
- Calibration curve 246
 - Curve field 245
 - Curves + Result table 240
 - Data field 226
 - Date field 228
 - Edit 220
 - Fixed report 235
 - Group field 236
 - Image 241
 - Insert 219
 - Line 243
 - Module bar 215
 - Number of pages 233
 - Page number 231
 - Rectangle 244
 - Result table 237
 - Single result 239
 - Spectrum + Maxima table . 247
 - Text field 225
 - Time field 230
 - Toolbar 214
- Molar mass calculator 76
- Monitor
- Audit Trail 534
- Monitoring
- Calibration 419
 - Column 548
 - Common variables 594
 - Database 205
 - Date 606, 667, 712
 - Defining 435
 - Degasser 606, 667, 712
 - Eluents 557
 - MCS CO₂ Suppressor 606, 667, 712
 - Result 430
 - Results 41
 - Solution 564
 - Working hours . 608, 669, 714
- Move (Rack) 788, 814, 835
- MSB device
- Edit name 376
 - Enter name 376
 - Select connection 376
- MSB Device
- Configuration 987, 1011, 1014
- MSM
- Commands 638, 691, 735, 768, 953, 965
 - Manual Control 652, 653, 654, 700, 743, 773, 956, 968
 - Start parameters 615, 674, 720, 756, 951, 962
- MSM-HC
- Commands 640
 - Manual Control 652, 653, 654, 700, 743, 773, 956, 968
- Start parameters 617
- Multiplication 46
- N**
- Natural logarithm 58
- Navigation
- Audit Trail 522
 - Determination overview ... 265
 - Report template 221
- Needle
- Commands 849
 - Manual Control 864
 - Properties 843
- Not equal to 56
- NumberToText 66
- NumberToTime 66
- O**
- Offset
- Analog Out 623, 680, 723
- Online help 13
- Operating elements
- Determination series 152
 - Single determination 142
- Operation 2
- Operator
- Addition 44
 - AND 48
 - Division 47
 - Equal to 51
 - Greater than 52
 - Greater than or equal to 53
 - Less than 54
 - Less than or equal to 55
 - Multiplication 46
 - Not equal to 56
 - OR 50
 - Overview 43
 - Potential 48
 - Subtraction 45
- Options
- Configuration 516
 - Dialog language 516
 - Emergency stop 517
 - Error handling 517
 - Save 518
- OR 50
- Out1, Out2
- Commands 646, 696, 738
 - Start parameters 621, 678, 722
- Output line
- Templates 512

Polarity

Q

R

Rack properties	583
Rack table	581
Rack data	
Adding new rack	582
Attached rack	779, 804
Configuration	581
Deleting rack	583
Editing properties	583
Edit special beaker	587
Export	504
General	581
Import	506
Lift positions	585
Printing list of racks	583
Rack parameters	584
Rack table	581
Special beaker	586
Standard racks	581
Subwindow	581
Rack offset	
Rack parameters	584
Range/Volt	
Analog Out	621, 678, 722
Reactor unit	
Editing reactor	878
Properties	874
Reason for modification	
Determination	319
Recovery	
Check standard	467
Standard addition solution	467
Release	
631, 635, 637, 638, 639, 641,	
642, 648, 688, 689, 691, 692, 698	
, 732, 733, 734, 736, 740, 765,	
766, 768, 769, 795, 820, 821, 823	
, 838, 862, 909, 922, 923, 932,	
933, 942, 944, 945, 954, 955, 966	
, 967, 984, 1002, 1013, 1020	
Remark	144, 153
Remarks	146, 157
Remote Box MSB	
Commands	1015
General	1014
Manual Control	1021
Method	1014
Output signals	1019
Start parameters	1014
Remote control	1019
Report	
Define	432
Print	286, 1077, 1106
Report table	427

- Report (subwindow at workplace)
- General 181
 - Latest report 181
 - Properties report overview 183
 - Report overview 181
 - Selected report 181
- Report template
- Calibration curve 246
 - Comment 222
 - Copy 209
 - Create 1103
 - Create new 210
 - Curve field 245
 - Curves + Result table 240
 - Data field 226
 - Date field 228
 - Default font 223
 - Define sections 218
 - Delete 209
 - Desktop Editor 212
 - Edit 211, 1104
 - Edit modules 220
 - Export 209
 - Fixed report 235
 - Form report 210, 218
 - Functions 216
 - General 211
 - Grid 223
 - Image 241
 - Import 210
 - Insert modules 219
 - Insert pages 219
 - Line 243
 - Manager 208
 - Menu bar 212
 - Module bar 215
 - Navigate 219
 - Number of pages 233
 - Open 210
 - Options 223
 - Overview 211
 - Page format 216
 - Page number 231
 - Page preview 221
 - Page setup 216
 - Rectangle 244
 - Rename 209
 - Result table 237
 - Save 224
 - Side margins 216
 - Single result 239
 - Spectrum + Maxima table 247
 - Tabular report 210
 - Text field 225
 - Time field 230
 - Toolbar 214
 - Unit 223
 - Zoom 221
- Reprocess
- Graphics window 79
- Reprocessing
- Application instances 1069
 - Calibration curves 308
 - Change column 312
 - Change eluent 314
 - Chromatograms 308
 - Editing lines 310
 - Evaluation parameters 307
 - General 301
 - Proceed 1068
 - Reprocessing table 305
 - Results 306
 - Rules 302
 - Sample data 310
 - Subwindow 305
 - Table 305
 - Trigger 317
 - Window 303
- Reset baseline 647, 697, 740, 893
- Resolution 441
- Restore
- Configuration data 510
 - Database 207
- Result
- Calculations 439
 - Common Variable 431
 - Component result 437
 - Database 428
 - General 427
 - Monitoring 41, 430
 - Overview 336
 - Report table 427
 - Selecting 434
 - Single result 437
 - Statistics 41, 429
 - User-defined results 430
- Results statistics 41
- Result variables 38
- Retention time 439
- Rinse position 777, 802
- Lift position 585
- Robotic arm
- Configuration 784, 809
- Rounding integer 61
- RS-232
- Start parameters 1033
- RS-232 device
- Commands 1035
- Configuration 1028
- Connect 1033
- Manual Control 1041
- Method 1033
- Transfer 1035
- Run
- Determination series 152
 - Equilibration 141
 - Single determination 142
 - Start 142, 152
 - Stop 142, 152
- Run test 140, 168
- S**
- Sample assignment 136, 137
- Sample assignment table
- General 136
- Sample data
- Determination series 153
 - Display 123, 170
 - Duplicate 119, 165
 - Editing 115, 161
 - Exporting (*.csv) 120, 166
 - Fixed values 355
 - Importing 119, 165
 - Information 326
 - Live modification 146
 - Monitoring 355
 - Properties 354
 - Sample table 113
 - Single determination 143
 - Use 355
 - Working sample table 161
- Sample data variables 33, 34
- Sample identification
- Information 326
 - Sample data 143, 161
 - Text templates 138
- Sample position
- Sample data 161
- Sample table 112
- Column display 123, 170
 - Comment 129, 177
 - Copying 131
 - Create 1099
 - Creating new 112
 - Data import 128, 175
 - Deleting 131
 - Edit 124, 172, 1100
 - Editing 113
 - Editing lock 124, 172
 - Exporting 131
 - Importing 132
 - Manager 130

- Opening 112
- Print 122, 169
- Process 127, 174
- Properties 122
- Renaming 131, 132
- Save 121, 167
- Searching
 - Determination 268
- Security settings
 - Audit Trail 496
 - Default reasons 498
 - Export 504
 - Import 506
 - Log-in 491
 - Modifications 496
 - Overview 490
 - Password protection 491
 - Signatures 497
 - Test login 495
- Sensitivity 400
- Series
 - Continue 152
 - Pause 152
- Set flow
 - 629, 632, 685, 729, 762, 906, 919
- Setting flow 981
- Shift position
 - Lift position 585
- Sign 61
 - Determination 1062
 - Display signatures 366
 - Method 1093
- Signature
 - Delete Signatures 2 27, 283, 367
 - Display signatures 282
 - Procedure 23
 - Rules 22, 279, 363
 - Security settings 497
 - Signature 1 24, 280, 363
 - Signature 2 25, 281, 365
 - Signature rights 484
- Single determination
 - Data import 150
 - Determination run 148
 - Live modification 146
 - Operating elements 142
 - Overview 142
 - Process 150
 - Properties 149
 - Repeating determination automatically 150
 - Run test 140, 168
- Sample data 143
 - Start 1059
 - Status display 143
- Single result 38
- SLK export 255
- Smoothing 400
- Solution
 - Add new solution 562
 - Column display 563
 - Delete 563
 - Dosing unit 566
 - Editing properties 564
 - Export 504
 - General 560
 - Import 506
 - Monitoring 564
 - Parameters 564
 - Print list of solutions 563
 - Solution table 561
 - Subwindow 560
- Special beaker 586
 - Parameters 587
- Special filter
 - Audit Trail 527
 - Determinations overview .. 274
- Special position
 - Lift position 585
- SPM
 - Commands 641
 - Manual Control
 - 652, 653, 654, 700, 743, 773, 956, 968
 - Start parameters 618
- Square root 59
- Standard
 - Check standard 410
 - Creating 412
 - Editing 413
 - Edit internal standard 423
 - General 409
 - Standard addition solution 411
- Standard addition solution 411
 - Creating 414
 - Editing 415
 - Recovery 467
- Standard concentration 456
- Start Hardware 141
- Start key 142, 152
- Start parameter
 - 800 Dosino 988
 - Conductivity detector 620, 677, 721, 758
 - High pressure pump 610, 671, 717, 753, 903, 915
- Injection valve
 - 614, 673, 718, 755, 811, 917, 931, 941
- Start parameters
 - 10-port valve 939
 - 814 USB Sample Processor 786
 - 815 Robotic USB Sample Processor XL 786
 - 850 Professional IC 610
 - 858 Professional Sample Processor 811
 - 863 Compact Autosampler 834
 - 881 Compact IC pro 671
 - 882 Compact IC plus 716
 - 883 Basic IC plus 753
 - 886 Professional Thermostat / Reactor 879
 - 887 Professional UV/VIS Detector 888
 - 889 IC Sample Center 845
 - Analog Out 621, 678, 722, 890
 - Aux1, Aux2 621, 678, 722
 - Column heater 677
 - Column thermostat 620
 - Compressor 847
 - Cooling 846
 - Degasser 619, 676, 918
 - Detector 889
 - Injector 846
 - Low pressure gradient pump 612
 - MCS 619, 676, 721, 962
 - MSM 615, 674, 720, 756, 951, 962
 - MSM-HC 617
 - Out1, Out2 621, 678, 722
 - Peristaltic pump 615, 674, 719, 756, 812, 834, 930, 938, 952, 963
 - Rack 786, 811, 846
 - Remote Box MSB 1014
 - RS-232 device 1033
 - SPM 618
 - Stirrer 1011
 - Thermostat 879
 - UV lamp 888
 - VIS lamp 888
- Start password
 - Entering 21
 - Set 488, 489

- Statistics
 - Defining 434
 - Result 429
 - Start determination series with statistics 1059
 - Start single determination with statistics 1059
 - Status display
 - Determination series 153
 - Single determination 143
 - Stirrer
 - 801 Magnetic Stirrer 1011
 - 803 Ti Stand 1011
 - 804 Ti Stand 1011
 - Commands 1012
 - Manual Control 1013
 - Start parameters 1011
 - Stop Hardware 141
 - Stop key 142, 152
 - Stroke path 777, 802
 - Subprogram
 - Insert 389
 - Rename 389
 - Subprogram variables 36
 - SubText 72
 - Subtraction 45
 - Subwindow
 - Chromatograms 471
 - Configuration 476
 - Database 192
 - Device 371
 - Eluents 553
 - Presentation 476
 - Quick access 476
 - Subwindow Run 139
 - Time program 385
 - Workplace 104
 - Swing 791, 817
 - Swing Head
 - Parameters 777, 802
 - Robotic arm configuration 784, 809
 - Swing position 777, 802
 - Syringe
 - Commands 851
 - Manual Control 865
 - Properties 843
 - System variables 42
- T**
- Tabular report 210
 - Tailing 444
 - Template
 - E-mail 514
 - Input lines 511
 - Output lines 512
 - Text editor 78
 - TextPosition 71
 - Text templates 138
 - TextToNumber 67
 - TextToTime 67
 - Theoretical plates
 - Per meter 443
 - Thermostat
 - Commands 881
 - Manual Control 656, 882
 - Start parameters 879
 - Time() 63
 - Time(Date) 63
 - Time(Date+Time) 64
 - Time program
 - Change time 389
 - Command 390
 - Commands with feedback 385, 386
 - Commands without feedback 385, 386
 - Device-dependent commands 385, 386, 391, 398
 - Device-independent commands 385, 386
 - Edit 387
 - Edit line 389
 - Insert new line 388
 - Insert subprogram 389
 - Main program 385
 - Menu 387
 - Rename subprogram 389
 - Subprogram 385
 - Subwindow 385
 - Subwindow (workplace) ... 185
 - Time program table 386
 - Time program variables 35
 - Timer 132
 - TimeToNumber 68
 - TimeToText 69
 - Toolbar
 - Audit Trail 521
 - Configuration 476
 - Database 191
 - Evaluation 398
 - Methods 343
 - Report template 214
 - Switch on/off 474
 - Workplace 104
 - Tower 777, 802
 - Commands 788, 814, 835
 - External positions 777, 785, 802, 810
 - Lift positions 585
 - Manual Control 795, 823, 839
 - Swing Head 777, 802
 - Tower parameters 777, 802
 - Tower stirrer On/off 794, 822
 - Transfer 1035
 - Trim 73
- U**
- Unit
 - Sample data 161
 - Selection 516
 - User
 - Access rights 483
 - Add 489
 - Details 488
 - Full Name 488
 - General 481
 - Options 486
 - Short name 488
 - Signature rights 484
 - Status 488
 - User administration
 - Access rights 483
 - Export 504
 - Functions 481
 - General 481
 - Import 506
 - Options 486
 - Signature rights 484
 - User groups 482
 - User-defined results 38
 - User group
 - Access rights 483
 - Add 486
 - Copy 487
 - Delete 487
 - Details 482
 - General 481
 - Options 486
 - Rename 487
 - Signature rights 484
 - User name
 - Short name 20
 - UTC 63, 64
 - UV/VIS
 - Edit spectrum 469
 - Evaluation of the absorbance maximum 470
 - General 468
 - Spectra 468

