

Vision Air Network and Server Pharma



Tutorial

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2.0

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1 Overview

1.1 What is Vision Air?

Vision Air is a modern, intuitive and easy-to-use software solution for routine Vis-NIR analysis and quality assurance. Vision Air is divided into 2 dedicated software parts.

While **Vision Air Routine** puts a focus on the needs of routine users, **Vision Air Manager** provides administrative functions to meet the requirements of laboratory managers and division managers.

Vision Air is available in 2 versions: **Vision Air Local** and **Vision Air Network**. Vision Air Local includes all the necessary routine applications as well as numerous management functions and enables the control of 1 Vis-NIR spectrometer.

In contrast to Vision Air Local, Vision Air Network enables users to control and configure any number of spectrometers. All data produced can be saved automatically, both locally and globally.

Vision Air Local

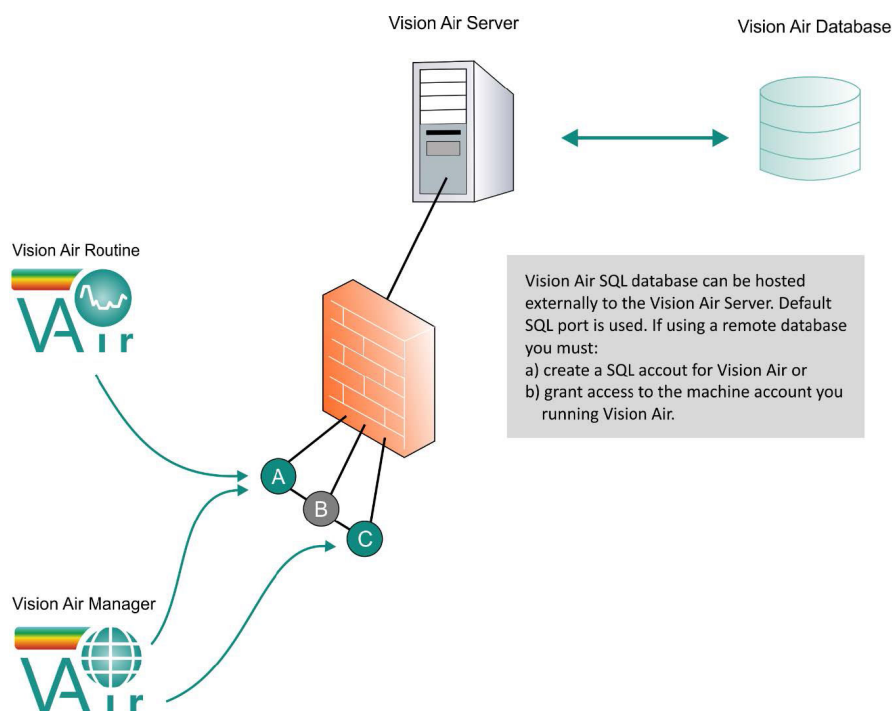


In Vision Air Local, the program parts Vision Air Routine and Vision Air Manager Local are both installed on 1 single computer.

This computer is directly connected to the instrument. The configuration of the instrument, which includes information such as new operating procedures and new parameters, is done by the local administrator in Vision Air Manager Local. All data, e.g. configurations, results and spectra is stored on the local PC.

Acquisitions are performed in Vision Air Routine.

Vision Air Network



In Vision Air Network, the program parts Vision Air Routine and Vision Air Manager Network are not installed on 1 single computer. Vision Air Routine is installed on the computer that is connected to the instrument. This can also be a multiple setup with several instruments and the corresponding computers. Vision Air Manager Network is installed on a computer that is connected to the network, e.g. on the computer of a laboratory manager.

For a network instrument, a network administrator configures the instrument with Vision Air Manager. In this setup, all data is stored on the local PC, but it is also transferred to the Vision Air server database during synchronization.

Acquisitions are performed in Vision Air Routine on the computer that is connected to the instrument.

Pharma versions of Vision Air Local and Vision Air Network

For working in regulated environments, both Vision Air versions can be purchased as pharma versions. Additional features, such as user management, audit trail and signing of objects are added to these versions.

1.2 Product versions

The product is available in the following versions:

Table 1 Product versions

Art. no.	Designation
6.6072.201	Vision Air 2.0
6.6072.202	Vision Air 2.0 Pharma
6.6072.203	Vision Air 2.0 Network Pharma
6.6072.204	Vision Air 2.0 Server
6.6072.205	Vision Air 2.0 Server Pharma
6.6072.206	Vision Air 2.0 Network
6.6072.207	Vision Air 2.0 Network Complete
6.6072.208	Vision Air 2.0 Complete
6.6072.209	Vision Air 2.0 Pharma Complete
6.6072.210	Vision Air 2.0 Pharma Network Complete

1.3 Symbols and conventions

The following formatting may appear in the documentation:

(5-12)	Cross-reference to figure legend
	The first number refers to the figure number. The second number refers to the product part in the figure.
1	Instruction step
	Numbers indicate the order of the instructions steps.
Method	Names of parameters, menu items, tabs and dialogs
File ► New	Menu path
[Continue]	Button or key

2 Safety

2.1 Intended use

Metrohm products are used for the analysis and handling of chemicals.

Usage therefore requires the user to have basic knowledge and experience in handling chemicals. Knowledge regarding the application of fire prevention measures prescribed for laboratories is also mandatory.

Adherence to this technical documentation and compliance with the maintenance specifications make up an important part of intended use.

Any utilization in excess of or deviating from the intended use is regarded as misuse.

Specifications regarding the operating values and limit values of individual products are contained in the "Technical specifications" section, if relevant.

Exceeding and/or not observing the mentioned limit values during operation puts people and components at risk. The manufacturer assumes no liability for damage due to non-observance of these limit values.

The EU declaration of conformity loses its validity as soon as modifications are carried out on the products and/or the components.

2.2 Responsibility of the operator

The operator must ensure that basic regulations on occupational safety and accident prevention in chemical laboratories are observed. The operator has the following responsibilities:

- Instruct personnel in the safe handling of the product.
- Train personnel in the use of the product according to the user documentation (e.g. install, operate, clean, eliminate faults).
- Train staff on basic occupational safety and accident prevention regulations.
- Provide personal protective equipment (e.g. protective glasses, gloves).
- Provide suitable tools and equipment to carry out the work safely.

The product may be used only when it is in perfect condition. The following measures are required to ensure the safe operation of the product:

- Check the condition of the product before use.
- Remedy defects and malfunctions immediately.
- Maintain and clean the product regularly.

2.3 Requirements for operating personnel

Only qualified personnel may operate the product. Qualified personnel are persons who meet the following requirements:

- Basic regulations on occupational safety and accident prevention for chemical laboratories are known and complied with.
- Knowledge of handling hazardous chemicals is present. Personnel have the ability to recognize and avoid potential dangers.
- Knowledge regarding the application of fire prevention measures for laboratories is available.
- Safety-relevant information is communicated and understood. The personnel can operate the product safely.
- The user documentation has been read and understood. The personnel operate the product according to the instructions in the user documentation.

2.4 Safety instructions

2.4.1 Danger from electrical potential

Contact with electrical potential can cause serious injuries or death. To avoid danger from electrical potential, observe the following:

- Operate the product only if it is in perfect condition. The housing must also be intact.
- Only use the product with the covers fitted. If covers are damaged or missing, disconnect the product from the energy supply and contact the regional Metrohm service representative.
- Protect live components (e.g. power supply unit, power cord, connection sockets) against moisture.
- Always have maintenance work and repairs on electrical components carried out by a regional Metrohm service representative.
- Disconnect the product from the energy supply immediately if at least one of the following cases occurs:
 - The housing is damaged or open.
 - Live parts are damaged.
 - Moisture penetrates.

2.4.2 Danger from biological and chemical hazardous substances

Contact with biological hazardous substances may cause poisoning from toxins or infections from microorganisms. Contact with aggressive chemical substances may cause poisoning or chemical burns. To avoid danger from biological or chemical hazardous substances, observe the following:

- Label the product according to regulations if it is used for substances that have a potential for chemical hazards and are generally subject to the Hazardous Substances Ordinance.
- Wear personal protective equipment (e.g. protective glasses, gloves).
- Use exhaust equipment when working with vaporizing hazardous substances.
- Dispose of hazardous substances in accordance with regulations.
- Clean and disinfect contaminated surfaces.
- Only use detergents that do not cause any unwanted side reactions with the materials to be cleaned.
- Dispose of chemically contaminated materials (e.g. cleaning material) in accordance with regulations.
- Proceed as follows in case of a return shipment to Metrohm AG or a regional Metrohm representative:
 - Decontaminate the product or product component.
 - Remove the labeling for hazardous substances.
 - Create a declaration of decontamination and enclose it with the product.

2.4.3 Danger from highly flammable substances

Using highly flammable substances or gases may cause fires or explosions. To avoid danger from highly flammable substances, observe the following:

- Avoid ignition sources.
- Use protective grounding.
- Use exhaust equipment.

2.4.4 Danger during transport of the product

Chemical or biological substances may be spilled during the transport of the product. Parts of the product may fall down or may be damaged. There is a risk of injury from chemical or biological substances and pieces of broken glass. To ensure safe transport, observe the following:

- Remove loose parts (e.g. sample racks, sample vessels, bottles) before transport.
- Remove liquids.
- Lift and transport the product with both hands on the base plate.
- Lift and transport heavy products only according to instructions.

2.5 Design of warning messages

There are 4 hazard levels for warning messages. The following signal words are used for classifying the hazard levels in warning messages:

- **DANGER** indicates a hazardous situation which, if not avoided, will result in serious injury or death.
- **WARNING** indicates a hazardous situation which, if not avoided, could result in serious injury or death.
- **CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
- **NOTICE** indicates a hazardous situation which, if not avoided, could result in property damage.

Warning messages differ in design (color and warning sign) depending on the hazard level:



DANGER

Type and source of danger

Consequences when not observing the notice: An irreversible injury that may result in death is very probable.

- Measures to avoid the danger



WARNING

Type or source of danger

Consequences when not observing the notice: A serious injury that may result in death is probable.

- Measures to avoid the danger



CAUTION

Type or source of danger

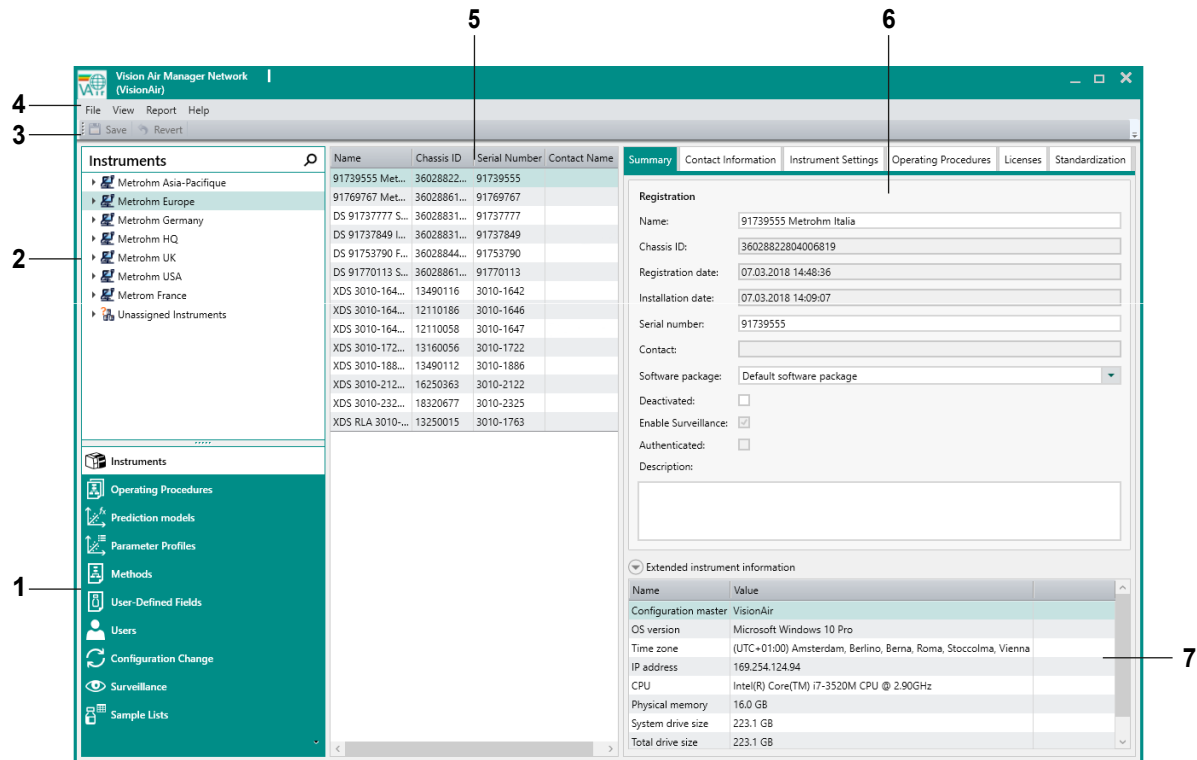
Consequences when not observing the notice: A minor to moderate injury is probable.

- Measures to avoid the danger

3 Vision Air – Functional description

3.1 Vision Air Manager Network

3.1.1 User interface



1 Navigation window

Options that enable the user to navigate through Vision Air Manager (*see "User interface", chapter 3.1.1, page 9*).

2 Structure window

Depending on the selection in the navigation window, the structure window shows a tree of all created and registered networks (with all instruments) or users.

3 Toolbar

5 Data window

The information in this window varies depending on the selection in the navigation window, e.g. for the navigation window **Prediction models** all available prediction models are displayed.

4 Menu bar

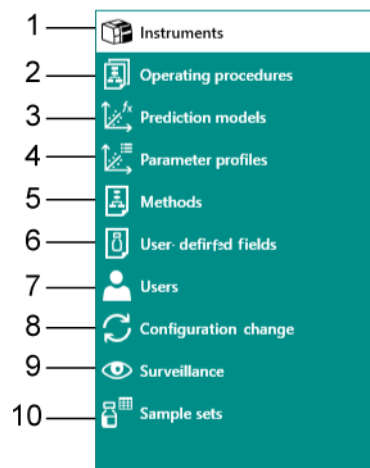
6 Work window

The information in the work window varies depending on the selection in the navigation window and the structure window. The text fields in the work window are either editable (white) or read-only (grey).

7 Functional area

The work window can be divided into several functional areas.

Navigation window



1 Instruments

Registering instruments and editing instrument properties.

2 Operating procedures

Operating procedures are key elements in Vision Air to conduct measurements. An operating procedure consists of 1 or several prediction models, a method as well as optional user-defined fields. Operating procedures are selectable in Vision Air Routine to conduct analysis.

3 Prediction models

Prediction models are algorithms that correlate NIR spectra to sample properties, e.g. water concentration.

4 Parameter profiles

Parameter profiles define the parameter to be analyzed in accordance with the linked prediction model, e.g. a parameter profile for a prediction model to quantify water content is water in %.

5 Methods

Methods describe the way how measurements are conducted, e.g. information on the sample vessel type used, number of repetitions or sample temperature during an analysis.

6 User-defined fields

User-defined fields allow users to create customized sample registration fields. During routine analysis, a user may need to enter additional information, e.g. the batch number.

7 Users

In the **Users** section the user permissions for the Vision Air Manager Network are defined.

8 Configuration change

The **Configuration Change** section lists all existing configuration changes. A change in the configuration needs to be uploaded to the individual clients. The individual clients are also managed in this section.

9 Surveillance

Overview of all measurements, events and instrument tests.

10 Sample lists

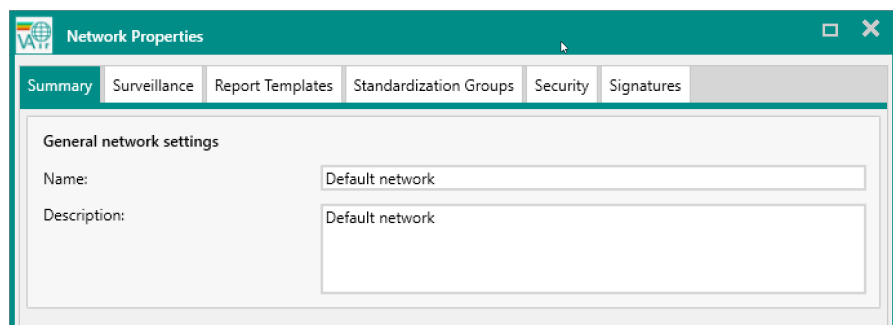
Sample lists are used to organize collected spectra and results. Sample lists are also used to conduct slope corrections and bias corrections.

3.1.2 Network group settings

The structure window displays the available networks, the instrument types and the instrument groups for all sections except the **Users** section.

To define network properties, right-click on a network and select **Properties**.

The network properties contain the following work tabs:

**Summary**

The network name and a description of the network can be entered in the **Summary** tab.

Surveillance

The calculation intervals (Maximum/Minimum) can be changed in the **Surveillance** tab. Calculation intervals handle the frequency of updating automatic flags in **Surveillance**. Automatic calculation takes place when the server receives new data from the instrument according to the following examples:

- **Minimum intervals [minutes]:** If set to 5, the server will not recalculate flags in spite of the fact that the instrument uploads lots of samples, logs, etc. It will delay the recalculation 5 minutes.
- **Maximum intervals [minutes]:** If set to 15, even if no data was received from the instrument it will recalculate after 15 minutes.



Report Templates

On this tab, customer-designed report templates can be linked to the network. The new report templates are accessible only in the Vision Air Manager Network but not in the Vision Air Routine (client).

When a template has been imported or linked, a report based on the template can be generated in the **Report** menu.

Press **[Remove]** to remove a template.

Press **[Export...]** to save the template file and to use it on other networks.

Standardization Groups

This functionality is not used with the current Metrohm product line.

For DS2500 instruments, standardization groups can be defined to define a set of DS2500 instruments that use the same standardization file. Use standardization files to apply instrument adjustments to prediction models that were developed in other softwares. Prediction models that can be used in more than 1 software are called **combined prediction models**. When a standardization file is imported, it is linked to the prediction model of the instrument.

Security

On the **Security** tab Vision Air has support for **Authenticated mode** for Vision Air Manager. This means that prediction models on the individual instrument will become unusable unless the instrument is connected with the Vision Air Server within a given time frame. It is based on time limited licenses for authenticated prediction models. This means that the prediction will no longer work if these licenses are not renewed by the Vision Air Server in due time.

Authentication model level:

- The use of authenticated mode is optional and off by default.
- An entire Vision Air Network or individual instrument groups in the network can be authenticated.

If an authenticated prediction model fails on Vision Air because the instrument has not been in contact with the Vision Air Server within the grace period (default setting is 14 days), then the following message appears:

Authenticated prediction model: <PM> has not been authenticated by the Vision Air Server within the grace period.

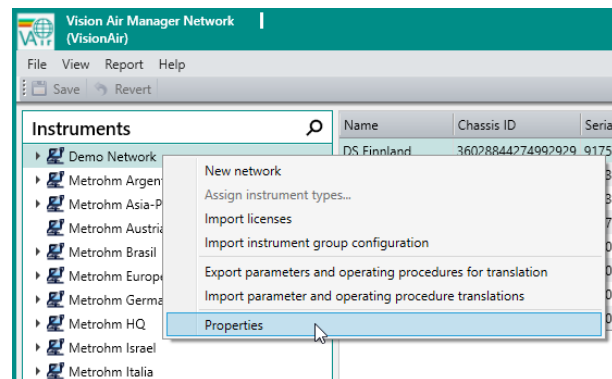
Check that instrument is connected to the Vision Air Server and contact your Network Manager if the problem persists.

Signatures

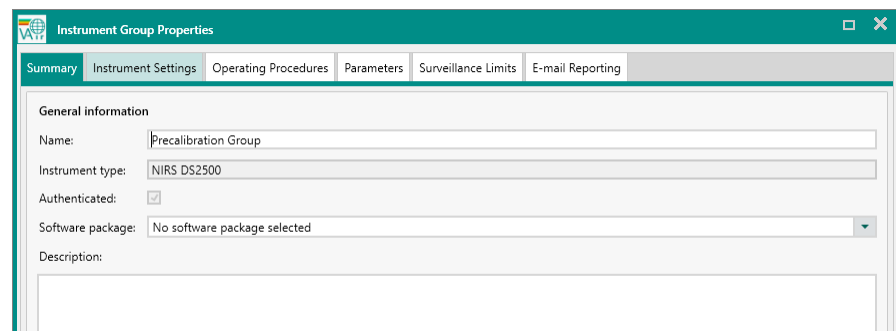
On the **Signatures** tab the user can sign objects. The tab is explained in detail in a separate chapter (*see "Signing", chapter 3.3.9, page 78*).

3.1.3 Instrument group settings

To define instrument group settings, right-click on an instrument group and select **Properties**.



The instrument group properties contain the following work tabs:



Summary

The **Summary** tab displays the following information about the group:

- **Name**
Name of the instrument group.
- **Instrument Type**
This field is read-only and cannot be changed.
- **Authenticated**
If this option is activated, then DS2500 instruments in an instrument group require regular connection with the Vision Air Server to use the provided operating procedures.
In the work tab **Summary**, this option is read-only. Activate or deactivate **Authentication** under **Network Properties** on the work tab **Security** (see "Network group settings", chapter 3.1.2, page 11).
- **Software Package**
Only 1 default software package is available for Vision Air.
- **Description**
Optional description that can be added by the user.

Common hardware selftest limits (only available for DS2500 instruments)

Read-only view for self test limits. These parameters are defined within the firmware of the instrument.

Data cleanup

Settings to define if and when normal samples or check samples should be automatically deleted.

Diagnostic test reminders

Settings to enable an automatic reminder in Vision Air Routine to conduct a low-flux test, a wavelength certification or a photometric test. The following options are available:

- Enabled: If active, the user is reminded to perform the instrument diagnostic test.
- Interval: Frequency of instrument diagnostic tests (in days).
- Grace period: Time that remains until the user has to perform the instrument diagnostic test (in hours).
- Action on expiration or failure: Definition of what happens if no test was performed after the defined time. This ensures that data is only measured with properly working instruments. The user can either disable the measurement completely or flag the measured samples with an error.

Instrument diagnostics

Settings for the instrument diagnostic test that is conducted in Vision Air Routine. If the automatic instrument diagnostic test is deactivated, then the automatic test does only run if the last conducted test failed, was canceled or was never performed.

If the instrument diagnostic test reminder is enabled, it reminds the user to perform an instrument diagnostic test in the given interval (default setting: every 8 days). The user has a grace period to perform a successful test (default setting: 2 hours). If the user fails to perform a successful test, the normal samples are marked with a warning or the measurement is disabled. This depends on the selected option in Vision Air Manager.

Run start-up test.

- XDS instruments:
 - Always: The start-up test runs on every startup of Vision Air Routine.
 - After unsuccessful diagnostic test: The start-up test only runs if a diagnostic test failed.

- DS2500 instruments:
After unsuccessful diagnostic test or instrument restart: The start-up test only runs if a diagnostic test failed or the instrument has been restarted.
After unsuccessful diagnostic test: The start-up test only runs if a diagnostic test failed.

Report templates

Section for the import of report templates that are available in the **Tools** section in Vision Air Routine. Only sample-related templates can be imported in this section (the same restrictions apply as for report templates that are imported in the automatic export and print format sections).

Operating procedures

The **Operating procedures** tab lists the linked operating procedures.

Operating procedures can be added and removed (**[Add...]** / **[Remove]**) by the user. By clicking **[Apply]**, changes are applied immediately (window is not closed). By clicking **[OK]**, changes are applied immediately and the window is closed.

Parameters

The order of parameters (**Parameter display order**) is defined in **Parameter profiles** and is global for a given network. Under the **Parameters** tab it is also possible to define a display order for an instrument group. I.e. to accommodate different customers that participate in a network.

Surveillance Limits

The surveillance limits are settings that define when a flag in the surveillance section is displayed. Parameters regarding the following topics can be set:

- Connectivity
 - Ping limit
 - Download limit
 - Upload limit
- Analysis results
 - Outlier limit
 - Product limits = Operating procedure limits
- General events
 - Error limits
 - Warning event limits

E-mail Reporting

In the upper section of this tab the user can select the settings for the automatic e-mail report. The e-mail report is sent to the instrument contact persons. Select a report interval (**Never/Weekly/Monthly**) and a report (**Instrument status/Flags log**).

The lower section of this tab lists e-mail alert recipients. An e-mail alert is sent to the recipients when a surveillance limit has reached a warning/error limit. Click **[Add...]** or **[Remove]** to add/remove recipients from the list.

Instrument Search

In the **Instruments** and **Surveillance** area it is possible to search for specific instruments. Clicking on the magnifier icon will bring up the instrument search view. Here it is possible to search by using a combination of instrument type, name and serial number.

3.1.4 Instruments section

Registration	
Name:	DS Finland
Chassis ID:	36028844274992929
Registration date:	13.09.2018 14:15:35
Installation date:	13.09.2018 13:53:04
Serial number:	91753790
Contact:	
Software package:	Default software package
Deactivated:	☐
Enable Surveillance:	☒
Authenticated:	☒
Description:	NIRS DS2500

Extended instrument information	
Name	Value
Configuration master	VisionAir
OS version	Microsoft Windows 10 Home
Time zone	(UTC+01:00) Sarajevo, Skopje, Warszawa, Zagreb
IP address	169.254.23.230
CPU	Intel(R) Celeron(R) CPU N2840 @ 2.16GHz
Physical memory	4.0 GB
System drive size	102.1 GB
Total drive size	109.6 GB

All instrument related settings are made in the **Instruments** section in Vision Air Manager.

The **Instruments** section contains the following work window tabs:

Summary

The **Summary** tab contains the general information on the instrument. Here, the instrument name can be defined and a description of the instrument can be added. The following instrument specific information is displayed as read-only:

Chassis ID

Specific instrument ID.

Registration date

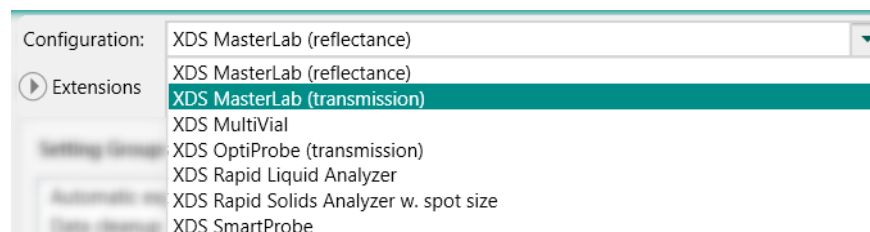
Date of the registration of the instrument with the server. In Vision Air Network, the registration date and the installation date may differ.

Installation date

Date of the first connection of the instrument with Vision Air Routine.

settings are done in the instrument group setting area (see *"Instrument group settings", chapter 3.1.3, page 13*).

If different XDS modules have been connected with Vision Air Server in the past, the individual modules are selectable in the configuration drop-down list.



The following instrument settings are available:

Automatic export and print formats

Settings to define which templates should be printed automatically and which templates should be created automatically after a measurement in Vision Air Routine. Set the storage location and the final activation of this procedure in Vision Air Routine under **Tools ► Settings ► Export or print**.

You can import additional report templates for automatic export options with the **[Import]** button. The newly imported reports are available for selection for automatic export. Only sample related templates can be imported in this section.

Check samples (only available for DS2500)

Settings to define the behavior when using operating procedures with check samples.

If **Check sample reminders enabled** is activated, the user is reminded to analyze a check sample in the given interval (default setting: every 48 hours). The user has a grace period in which a successful check sample should be analyzed (default setting: 2 hours). If the user fails to analyze a successful check sample, the normal samples are marked with a warning if **Mark samples after unsuccessful check sample** is activated.

Check samples are physical samples that can be considered stable over some period of time. They are used as an additional verification of the instrument performance (see *"Check samples", chapter 3.3.4, page 68*).

Common hardware self-test limits (only available for DS2500)

Read-only view for self-test limits. These parameters are defined within the firmware of the instrument.

Data cleanup

Settings to define if and when normal samples or check samples should be automatically deleted.

Read-only view for instrument specific settings. The settings are defined within the firmware of the instrument. The current DS2500 product line does not use the settings.

Instrument calibration settings (only available for DS2500)

Read-only view for instrument specific settings. The settings are defined within the firmware of the instrument.

Instrument diagnostics

Settings for the instrument diagnostic test that is conducted in Vision Air Routine. If the automatic instrument diagnostic test is deactivated, then the automatic test does only run if the last conducted test failed, was canceled or was never performed.

If the instrument diagnostic test reminder is enabled, it reminds the user to perform an instrument diagnostic test in the given interval (default setting: every 8 days). The user has a grace period to perform a successful test (default setting: 2 hours). If the user fails to perform a successful test, the normal samples are marked with a warning or the measurement is disabled. This depends on the selected option in Vision Air Manager.

Run start-up test.

- XDS:
 - Always: The start-up test runs on every startup of Vision Air Routine.
 - After unsuccessful diagnostic test: The start-up test only runs if a diagnostic test failed.
- DS2500:
 - After unsuccessful diagnostic test or instrument restart: The start-up test only runs if a diagnostic test failed or the instrument has been restarted.
 - After unsuccessful diagnostic test: The start-up test only runs if a diagnostic test failed.

Local Vision Air settings

Read-only view for file storage options in Vision Air Routine. Define the settings directly in Vision Air Routine.

Performance test parameters (only available for XDS instruments)

Settings for the total amount of test runs, noise (reference) and number of wavelength (WSR) scans that are performed during the instrument diagnostic test.

Report templates

Section for the import of report templates that are available in the **Tools** section in Vision Air Routine. Only sample-related templates can be imported in this section (the same restrictions apply as for report templates that are imported in the automatic export and print format sections).

Stability test limits (PbS, Si or InGaAs)

Noise test limits for the individual detectors.

- Drift noise limit
- Random noise limit

Do not change factory settings yourself. Ask a Metrohm representative for assistance.

Stability test parameters

Settings for duration and acceptance limits for stability tests that are conducted during the instrument diagnostic test. The following options are available:

- Maximum test time: Maximum run time for the stability test. The maximum test time defines the maximal testing time for both stability tests: The lamp temperature stability test and the stability test (noise values).
- Number of reference subsans: Average of subsans.
- Number of scans: Number of measurements.
- Wait for a stable bias timeout (only available for XDS instruments): Noise test.

The tests can end before the total test time is reached if the test values, e.g. noise values, are below the set acceptance criteria. The maximum test time includes the test time for lamp stabilization and for noise bias.

With the DS2500 series, the number of scans and subscans can be defined.

Subscan settings (only available for DS2500)

Read-only view for subscan settings. The settings are defined within the firmware of the instrument.

User-defined field values

Handling of values in user-defined fields. If the check box is activated, the values entered by the user are stored. Set the period how long a user-defined value is stored in the input field during sample registration.

Wavelength test limits (PbS, Si or InGaAs)

Wavelength test limits for the individual detectors. For the DS2500 series, the bandwidth limits can also be set. The following options are available:

- Bandwidth accuracy limit
- Bandwidth repeatability limit
- Wavelength accuracy limit
- Wavelength repeatability limit

Do not change factory settings yourself. Ask a Metrohm representative for assistance.

Wavelength test parameters (only available for DS2500)

Settings for the instrument diagnostic test. The following options are available:

- Number of reference scans: Average of scans.
- Number of test runs: Number of measurements.
- Number of WSR (wavelength standard reflectance) subsamples: Average of WSR scans.

Operating procedures

The working tab **Operating Procedures** displays operating procedures that are linked to the selected instrument.

Licenses

In this section, licenses for the instrument can be imported and deleted.

Licenses can be imported to enable routine measurement and to activate secured prediction models that are provided with Metrohm pre-calibrations. Licenses, except demo licenses, are always instrument (monochromator) specific.

Standardization (DS2500 only)

By using a standardization file, it is possible to apply instrument adjustments to prediction models that were developed in other softwares. Prediction models that can be used in more than 1 software are called combined prediction models. When a standardization file is imported, it is linked to the prediction model of the instrument.

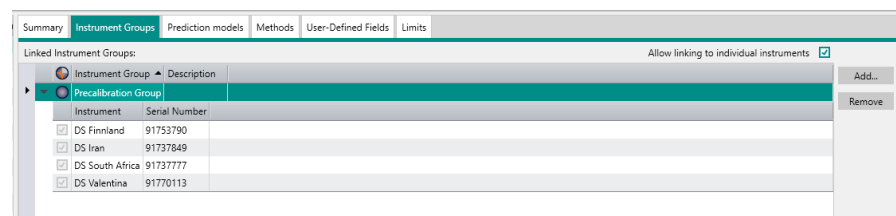
Click on **[New group]** if multiple instruments should use the same standardization. Delete groups by clicking **[Delete group]**.

Click on **[Link file]** to browse and link a prediction model to a standardization file (*.std).

Remove a linked file by selecting a file under the standardization tab and click on **[Remove file]**.

This functionality is not used with the current Metrohm product line.

3.1.5 Operating procedures section



All settings related to operating procedures are set in the **Operating procedures** section.

Prediction models, methods and user-defined fields are linked with the respective operating procedure in the **Operating procedures** section.

Lower and upper warning limits and intervention limits are defined in the **Operating procedures** section.

The structure window lists all available operating procedures and operating procedure groups (📁) of the instrument.

Operating procedure groups can be created by right-clicking on the structure window and selecting **New operating procedure group**. Operating procedures can be assigned to operating procedure groups by right-clicking on the individual operating procedure and selecting **Move to operating procedure group**. Operating procedure groups allow to structure operating procedures.

The **Operating procedures** section contains the following work window tabs:

Summary

The **Summary** tab shows the following general information on the highlighted operating procedure in the structure window.

- The name of the selected operating procedure.
- The operating procedure code. It must be defined to export operating procedures via **File ► Export ► Configuration**. We recommend naming the code identically to the operating procedure.
- The sample type. It defines the kind of sample to be measured. The following sample types are available.
 - Normal: Standard samples for quality control.
 - Check sample (only available for DS2500 instruments): Physical samples that can be considered stable over a period of time. Check samples are used as an additional verification of the instrument performance (*see "Check samples", chapter 3.3.4, page 68*).
 - Standardization (only available for DS2500 instruments): Standardization samples are used for instrument calibration. Currently, Vision Air does not support this functionality.

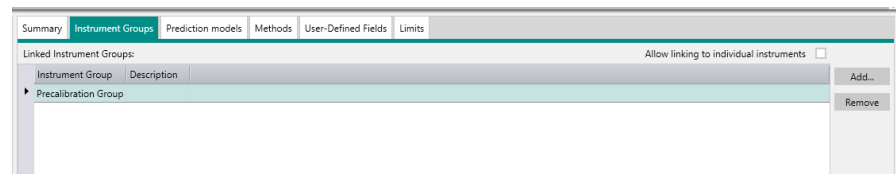
Select the appropriate operating procedure type from the **Type** drop-down list.

The selected type determines the list of icons. Any icon can be selected if the **Show all icons** check box is activated.

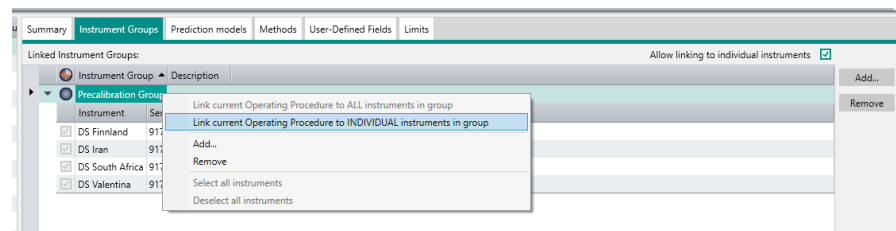
An icon can be selected with the **Icon** drop-down list. The selected icons are displayed in Vision Air Routine.

By default, all new operating procedures are active. The check box **Active** is activated. When the user deactivates an operating procedure, the operating procedure is no longer displayed in Vision Air Routine.

Instrument groups

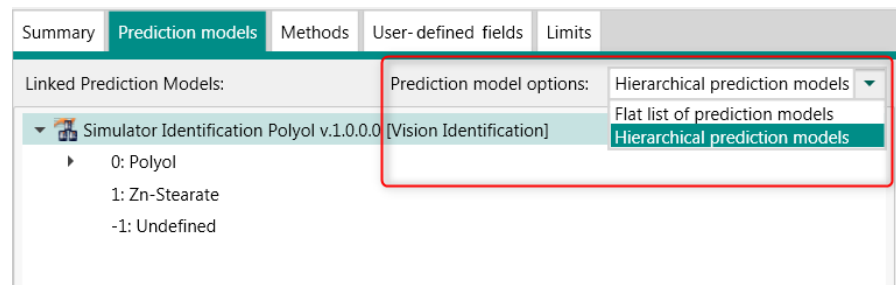


In this working tab the selected operating procedure can be added to the individual instrument groups. If the checkbox **Allow linking to individual instruments** is active, then the operating procedure can be linked to an individual instrument. After activating the checkbox, the instrument groups are displayed as drop-down lists. The drop-down lists show all available instruments in a group. To activate individual selection, right-click on a group and select **Link current Operating Procedure to INDIVIDUAL instruments in group**.



Prediction models

Prediction models can be linked to operating procedures. The hierarchical prediction model view allows to link prediction models with products or other prediction models.



In the displayed example, on the first level, a sample identification is conducted. On the second level, if identified as a polyol, Vision Air conducts a quantification of the hydroxyl number and the moisture.

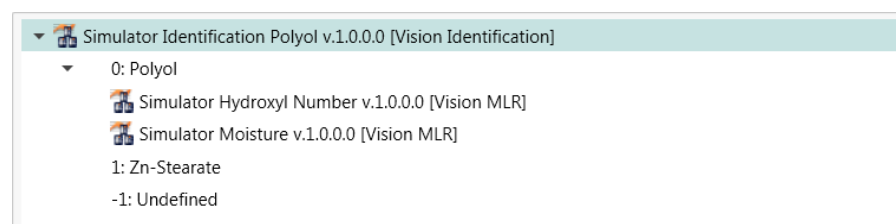


Table 3

1	Absolute upper warning limit = 15
2	Relative upper warning limit = 50%
3	Differential upper warning limit = 5
4	Upper intervention
5	Upper warning
6	Target
7	Lower warning
8	Lower intervention

The target value is always absolute. The differential limit is essentially a distance between corresponding absolute limit and target.

- Absolute Upper Action = Target + Differential Upper Action
- Absolute Upper Warning = Target + Differential Upper Warning
- Absolute Lower Action = Target - Differential Lower Action
- Absolute Lower Warning = Target - Differential Lower Warning

A target value needs to be defined for a relative limit. When using check samples and a check sample operating procedure, the target value is defined by the value of the check sample operating procedure ([see "Check samples", chapter 3.3.4, page 68](#)).

Example of relative limits:

Prediction Model	Parameter Profile	Type	Lower Action	Lower Warning	Target	Upper Warning	Upper Action
lacfruc	Lactose Content	Relative 	9,00	6,00	10,00	6,00	9,00

- Lower Action Level: $10 - 9\% = 10 - (0.09 \times 10) = 9.1$
- Lower Warning Level: $10 - 6\% = 10 - (0.06 \times 10) = 9.4$
- Upper Warning Level: $10 + 6\% = 10 + (0.06 \times 10) = 10.6$
- Upper Action Level: $10 + 9\% = 10 + (0.09 \times 10) = 10.9$

Limits of prediction models can be imported/exported as .csv files. Highlight a prediction model and press **[Import]** and **[Export]** from the **File** menu to open the browser window.

Summary

The Summary tab contains general information and settings of the prediction models.

The **General information** field shows the following parameters.

- Name of the selected prediction model.
- The standardization group setting is only available for imported prediction models and user-defined prediction models.
A standardization group is a logical group of instruments with linked standardization files. The standardization group defines a standardization file for each instrument that belongs to the group. This function is not needed for the current Metrohm product line.
- The wavelength range of the system is displayed for imported quantitative prediction models, e.g. 400 - 2499.5 nm for a reflection XDS instrument or DS2500 instrument.
- The version number is automatically updated when an existing prediction model is imported again and updated.
- The part number displays a serial number for protected prediction models.
- The imported and updated dates display the date when the prediction model was imported and updated. If no update has been conducted yet, the imported and updated date are identical.
- Method displays which algorithm was used to create the prediction model.
- Engine displays which software was used to create the prediction model.

The **Linked parameter profiles** area shows a list of the linked parameter profiles.

The link to a parameter can be changed by clicking on **[Change...]** and selecting another parameter profile in the pop-up window.

When the check box in the column **Hidden** is checked, Vision Air Routine does not show the parameter information.

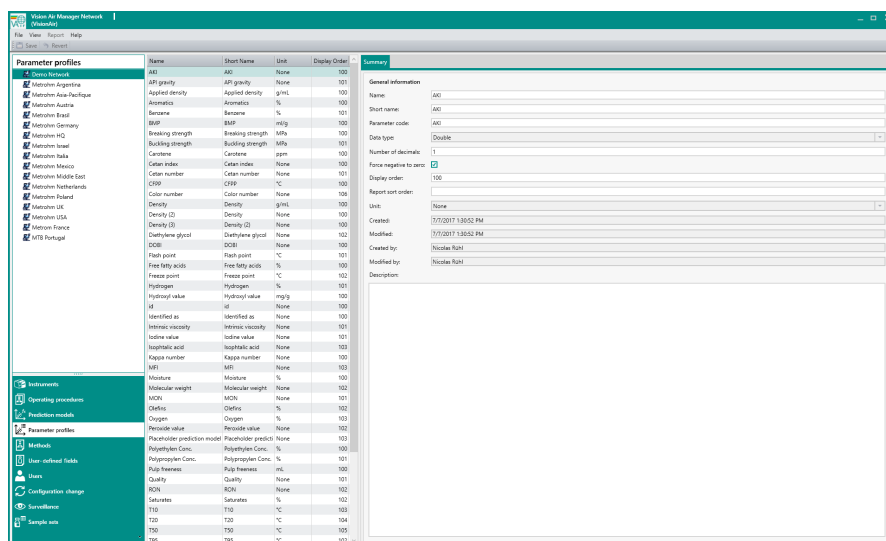
Click on **Parameter unit** to display a list of all available Vision Air units.

In order to select a new unit, an appropriate parameter profile that uses the new unit must be selected by clicking on **[Change]**. Changing the unit does not affect prediction values or samples that were already analyzed with this parameter (unit is just a parameter attribute displayed with the prediction value).

Parameter settings

Quantitative prediction models

3.1.7 Parameter profiles section



Parameter profiles define the parameter to be analyzed in accordance with the linked prediction model, e.g. a parameter profile for a prediction model to quantify water content is water in %.

The **Parameter profiles** section contains the following work window tab:

Summary

The summary tab contains general information and settings of the parameter profiles. The **General information** field shows the following parameters:

- The name is displayed in Vision Air Manager Network.
- The short name is displayed during result display in Vision Air Routine.
- The parameter code is used to import reference values with .csv files in Vision Air Routine (*see "Importing reference values with a .csv file", chapter 3.3.3, page 67*).

In Vision Air Manager for XDS, a method can be created for the different available modules.

In Vision Air Manager for DS2500, only methods for DS2500 can be created.

Methods are added by right-clicking on the  icon of the individual module or instrument and selecting **[Add method]**.

The **Methods** tab contains the following work window tabs:

Summary

- Definition of the method name.
- Definition of the sample vessel in the drop-down menu sample handling.

Settings

The Setting tab contains detailed settings of the method with respect to the selected sample vessel.

The following settings are available.

- Analysis

The user can define whether the instrument should perform an autolinerization (x-axis correction) before each scan. We suggest to keep this setting active.

The number of reference subscans can be defined. The default value is 32. The frequency of a reference scan (y-axis correction) can be defined. The default value is 0. 0 represents a reference scan before each measurement. Warm-up time refers to the time period when Vision Air Routine is first started. The user can modify the length of the warm-up time (only available with XDS). The default value is 120 minutes. During warm-up time, a reference scan is conducted before each measurement by default.
- Automatic start control (only available for DS2500 Liquid Analyzer)

If the checkbox **Automatic start** is checked, the measurement starts automatically after closing the lid of the DS2500 Liquid Analyzer.
- Display options

The user can define which information is displayed about the sample vessel and outliers during a routine analysis. Comment fields can be activated or deactivated during sample registration. Comment fields can be set as mandatory.

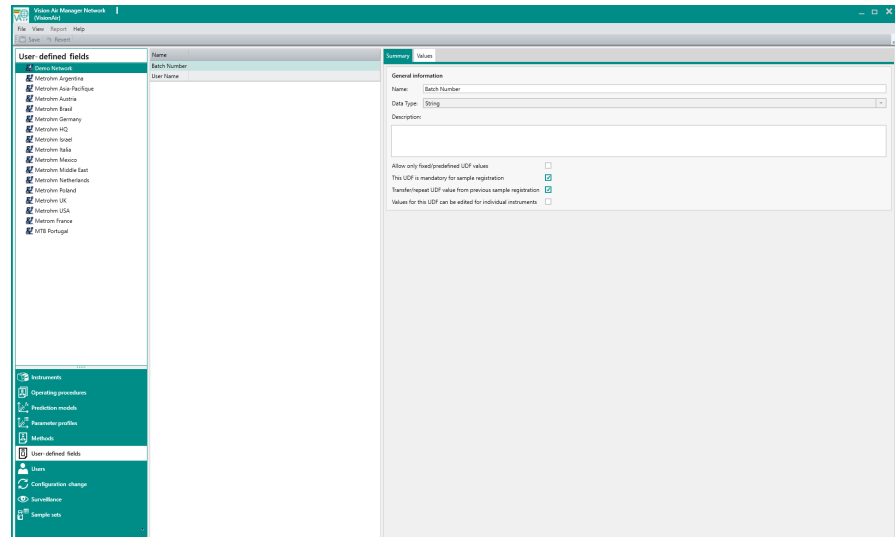
- Liquid setup (only available for DS2500 Liquid Analyzer)
If the checkbox **Check sample vessel type** is enabled, the system checks whether the inserted sample vessel matches with the sample vessel defined in the method.
Defines options regarding the temperature of the sample holder and the sample (*see "Heating and cooling the sample", page 83*).
Defines whether there is a delay before a scan starts and the length of the delay. With a delay before a scan, you can ensure that the sample has the same temperature as the sample holder.
- Illumination (only available for XDS instruments)
Setting to adjust the spot size.
- Repetition
Definition of the number of subscans per measurement. The default value is 32. For the DS2500 with a large cup, small cup moving and slurry cup the number of subsamples (additional measuring points) can be defined.
If the user wants to average multiple cups or vials, the user can define the number of cups/vials per sample.
- Sample numbering
Defines the procedure during sample registration in Vision Air Routine. Manual or automatic sample numbering is possible. The codes that define strings during automatic sample numbering are described in detail *in chapter 3.3.1, on page 62*.
- Storage options
Defines which information about spectra should be stored. Beside the spectra (read only), subsamples and the full raw data can be stored. Subsamples are created when multiple positions are analyzed within 1 measurement, e.g. with the DS2500 large cup. The full raw data is not accessible with the current Metrohm product line.

When activating the advanced option view under **View ► Options ► Display advanced settings**, additional settings are available.

- Automatic export and print
Allows to activate/deactivate automatic print and export procedures. This option applies to operating procedures that are linked with a method.
- Check sample definition (DS only)
Defines how many measurements from a check sample are taken to define the target value.
- Compatibility (DS only)
Allows all spectra to be collected to be compatible with old 6500/5000 System II series. This functionality is not used anymore with the current Metrohm product line.

- RFID (DS only)
Activation and deactivation of RFID recognition. This functionality is not used with the current Metrohm product line.

3.1.9 User-defined fields section



The **User-defined fields** section contains the following work window tabs:

Summary

- The name of the user-defined field.
- Settings that affect the behavior of the user-defined field during sample registration.

Values

Creating, deleting and editing values of user-defined information.

Add or remove networks, instruments groups or instruments with **[Add]/[Remove]**.

Check **Is System Administrator** to grant administrator rights to the selected user.

Users whose user role has been removed are displayed in the **Not assigned users** section in the structure window.

User roles and descriptions

By right-clicking on a user role in the structure window, a new user can be created. 4 different user roles exist:

- **Instrument User**
Access to an instrument in Vision Air Routine. Which instrument the Instrument User has access to is defined by the Network Manager or the System Administrator. Per default, Instrument users have signature permissions on level 1. Per default, functions in the tool section of Vision Air Routine are limited for Instrument Users. Instrument Users do not have access to Vision Air Manager. System Administrators and Network Managers can create/modify Instrument User accounts.
- **Group Manager**
Access to group(s) of instrument(s) in Vision Air Manager. Which group(s) and instrument(s) the Group Manager has access to is defined by the System Administrator. A Group Manager can modify his/her own account but no other Group Manager accounts. Per default, Group Managers have signature permissions on level 1 and 2 and can disable Instrument Users. Per default, Group Managers cannot withdraw signatures. Group Managers cannot create methods. System Administrators can create and modify Group Manager accounts.
- **Network Manager**
Full access to network(s) with group(s) of instrument(s) in Vision Air Manager. Which network(s), group(s) and instrument(s) the Network Manager has access to is defined by the System Administrator. Per default, Network Managers have signature permissions on level 1 and 2, can withdraw signatures and can disable Instrument Users and Group Managers. System Administrators can create and modify Network Manager accounts. A Network Manager can modify his/her own account but no other Network Manager accounts.
- **System Administrator**
Full access to all networks with group(s) of instrument(s) in Vision Air Manager. Per default, System Administrators can withdraw signatures and have signature permissions on level 1 and 2. Only System Administrators can create and modify other System Administrator accounts.

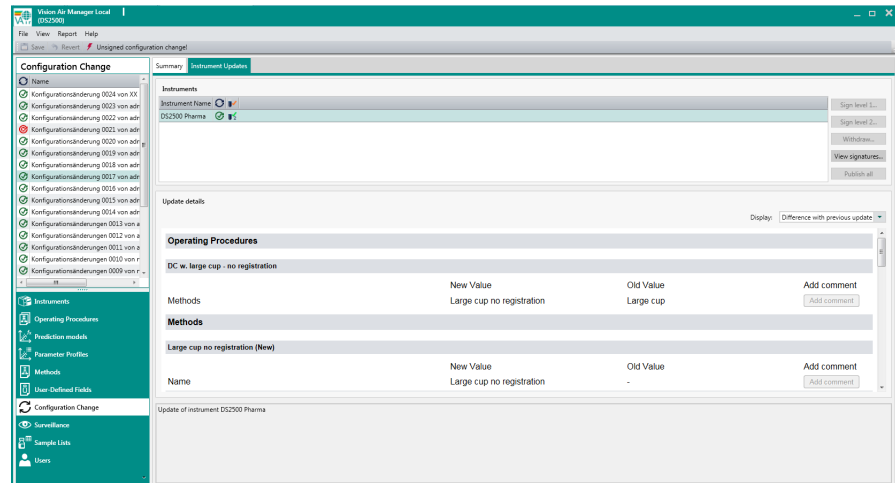
User permissions

To access the user permissions, right-click on a user role in the structure window.

- Use upper and lower case letters
If activated, the password must contain upper and lower case letters.

3.1.11 Configuration change section

The **Configuration Change** section lists all existing configuration changes. In order to apply changes to clients a configuration change needs to be published (see *"Manage signature settings", chapter 5.10, page 147*).



In a configuration change all changes, e.g. a parameter within an operating procedure, are listed and can be compared with an earlier state of the configuration.

Symbol	Description
	Pending
	Published
	In progress
	Cancelled
	Failed
	Completed

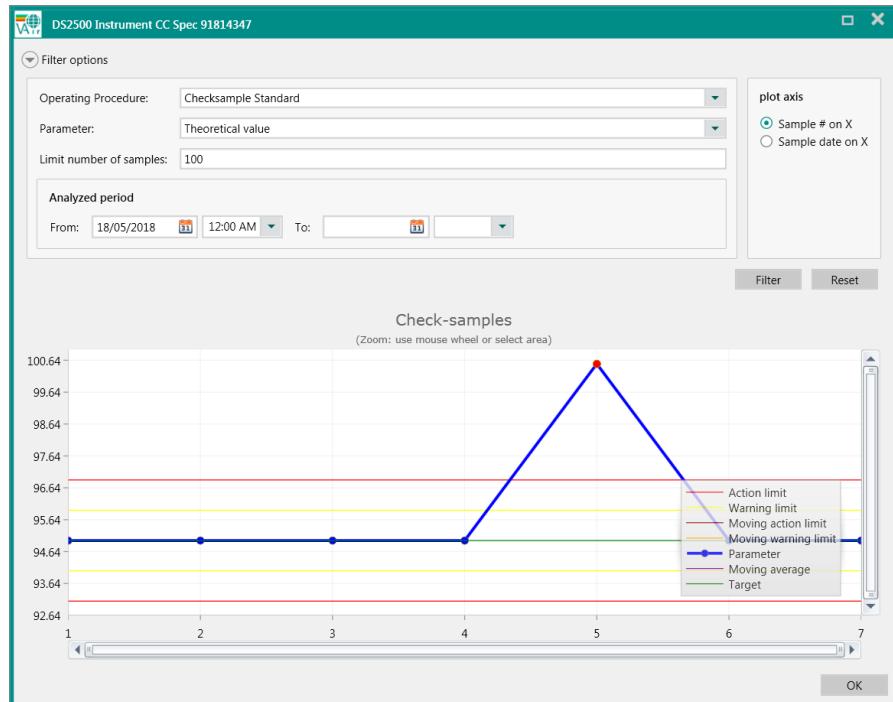
The **Configuration Change** section contains the following work window tabs:

Summary

Information about the selected configuration change is displayed.

Instrument Updates

In this tab the content of the configurations changes is displayed.



Enable/Disable surveillance

It is possible to disable the surveillance of an instrument. After disabling, the instrument is not flagged anymore, for example after a failed instrument diagnostic test. This function can be used when there is a known problem with an instrument and there is no need for surveillance prior to corrective maintenance. To do this, right-click on the instrument in the structure window and select **Disable surveillance**.

The **Surveillance** tab contains the following work window tabs:

Samples

In the **Samples** tab, the user is given an overview over all the measured samples within the set filter settings.

Depending on the situation, status symbols can be shown in the raw data (🔧), reference data (👤), events (⚡), outlier (📉) and operating procedure limit (🛑) columns. These symbols are summarized in the **Status symbols** section.

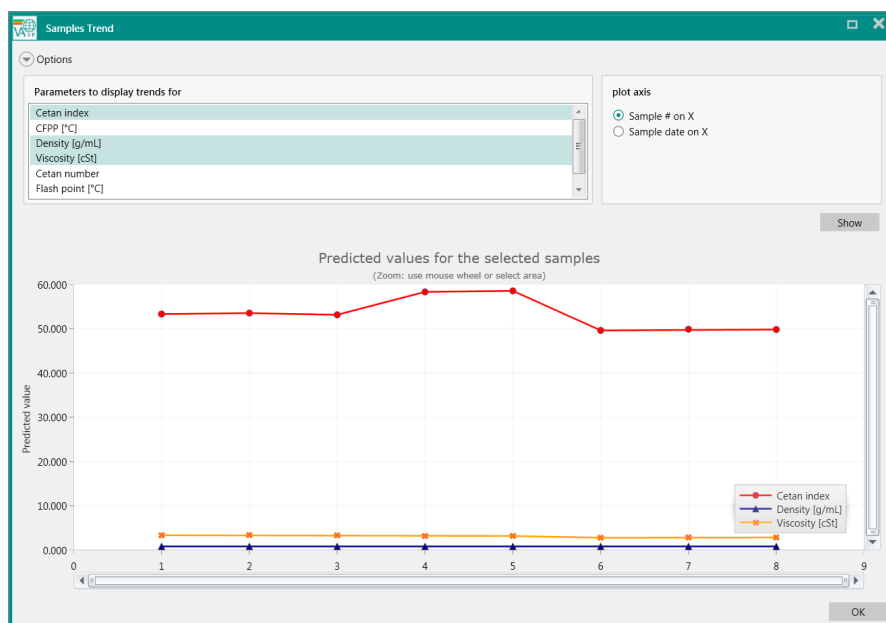
Samples for which outlier limits and/or operating procedure limits are exceeded are colored yellow (warning limits) or red (intervention limits).

i Filtering is not case-sensitive, e.g. 'A' and 'a' are treated equally.

i Always click on **[Save]** after changing a sample number and before initiating a new filter search.

By activating the check box **Show sample information**, extra information such as method used and user-defined fields input are immediately

By right-clicking on a selected sample, a context menu (samples graph) is available that allows to plot the predicted quantitative results in a trend chart. Contrary to Vision Air Routine, more than 2 quantitative parameters can be displayed in parallel.



i It is possible to view more than 1 sample in the Samples trend window. To do this, press the **[CTRL]** key and select a number of samples in the sample list. Then click on the **[Samples trend...]** button.

Sample details

By double-clicking on a sample in the sample list, the **Sample details** window appears. Alternatively, the **Sample details** window is accessible by right-clicking on the sample and selecting **[Details]**. The upper section of the window shows general information and sample information values.

The **Sample details** window contains the following tabs.

the diagnostic test and selecting **Details**. The upper section of the window shows general information and steps that are conducted during the test.

The diagnostic test contains the following steps:

1. Lamp test
Tests whether the voltage is ok and the lamp uses the expected current.
2. Grating test
Tests whether the grating moves smooth and with the correct speed.
3. Detector 1
Tests the functionalities of the individual detectors of the spectrograph.
4. Main hardware test
Checks whether a sample holder is present and which type of sample holder it is. Measures the temperature of the sample holder and estimates the sample temperature.
5. Stability test
Tests whether the system is running stable. The noise value of the spectrometer is used for the stability test.
6. Wavelength test
Tests whether the wavelength axis is within the allowed tolerances.

By selecting a step and going to the **Data** tab, the collected data is shown respectively. Not all steps include data. Some tests, e.g. wavelength tests, show absorbance spectra and tables with respective acceptance values. Acceptance values are displayed when hovering over the individual columns of the table.

Events

In the **Events** tab, an overview over all events within the set filter settings is displayed. There are 3 kinds of events.

- Instrument specific
E.g. instrument diagnostic test canceled.
- User specific
E.g. user logged into Vision Air Manager.
- Software specific
E.g. new instrument configuration is created.

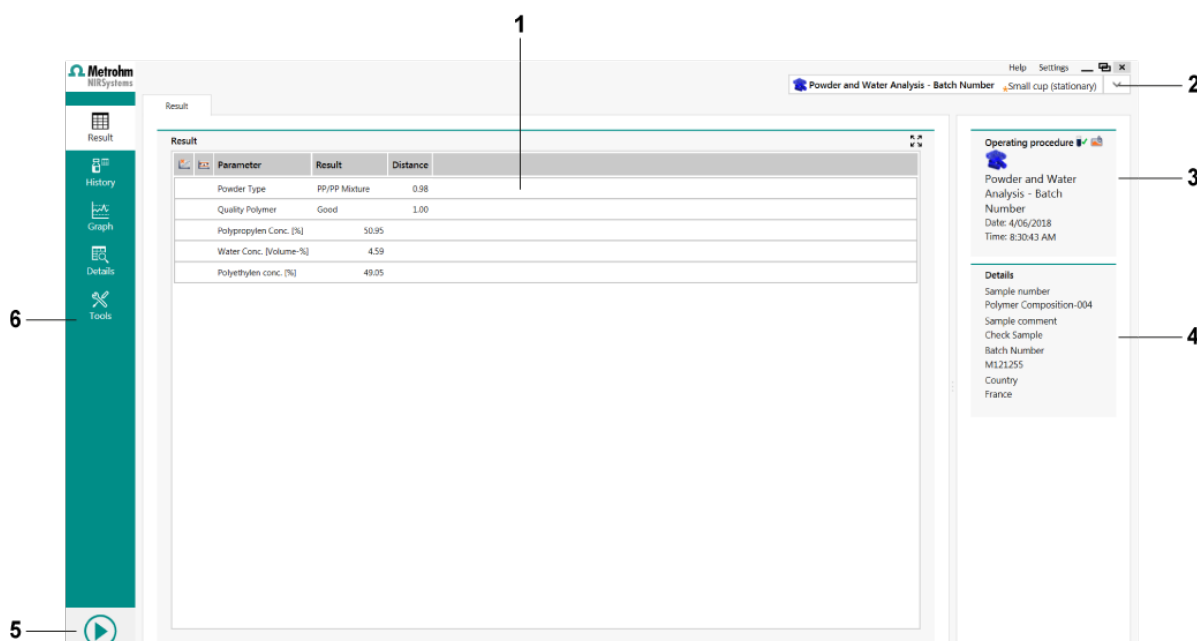
values can be added within this window. When users try to enter a reference value for a sample that was not measured with the respective parameter profile, reference values are not stored after clicking on the **[Save]** button.

Slope/intercept

Adjustment of quantitative prediction models by using a slope correction and intercept correction (*see "Slope/intercept calculations", chapter 3.3.8, page 75*).

3.2 Vision Air Routine

3.2.1 User interface



1 Data window

3 Information field

Operating procedure name and time when the sample was measured.

5 Start button

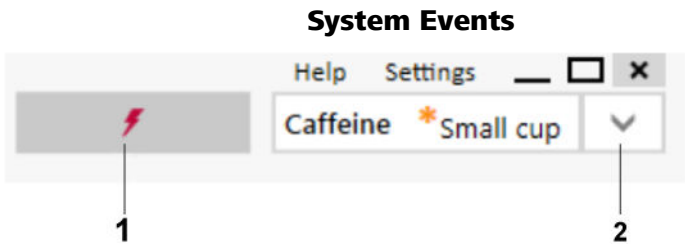
2 List of operating procedures

4 Sample registration details field

Additional information that was entered during sample registration.

6 Navigation window

Options that enable the user to navigate through Vision Air Routine.

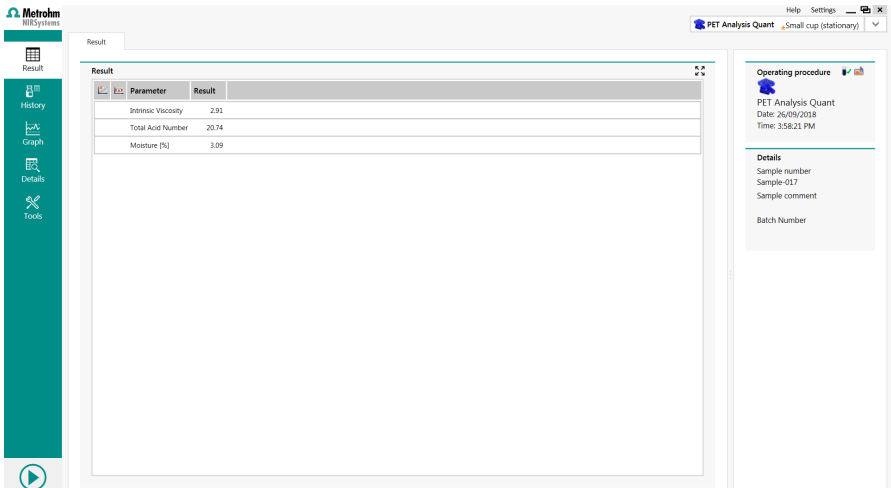


- 1 System event indicator**

The system event indicator flashes yellow (🟡) when 1 or more system warnings in the list are waiting for a user action. If the list also contains errors, the system event indicator flashes red (🔴) and the **[Start]** button becomes inactive.

To open the system events list, click on the system event indicator (🔴/🟡) in the top right corner of the screen.
- 2 List of operating procedures**

3.2.2 Results section



Result tab

In the **Result** section, the result that was selected in the history view is displayed. Normally, this is the sample that was analyzed last. This view includes column headers that show the name of primary and possibly secondary parameters of the selected operating procedure.

Parameter	Value
-----------	-------

The header is divided into the following column fields. See next section for a description.

3.2.3 History section

Operating procedure	Time	Sample number	Intrinsic Viscosity	Total Acid Number	Moisture [%]
PET Analysis Quant	26/09/2018 3:58 PM	Sample-017	2.91	20.74	3.09
PET Analysis Quant	26/09/2018 3:58 PM	Sample-016	3.15	24.41	4.01
PET Analysis Quant	26/09/2018 3:57 PM	Sample-015	3.15	24.41	4.01
PET Analysis Quant	13/06/2018 6:11 PM	Sample-0014	3.15	24.41	4.01
PET Analysis Quant	13/06/2018 6:11 PM	Sample-0013	2.98	21.76	3.42
PET Analysis Quant	13/06/2018 6:11 PM	Sample-0012	2.55	16.04	1.00
PET Analysis Quant	13/06/2018 6:11 PM	Sample-0011	2.74	18.69	1.99
PET Analysis Quant	13/06/2018 6:10 PM	Sample-0010	2.91	20.74	3.09
PET Analysis Quant	13/06/2018 6:10 PM	Sample-0009	3.15	24.41	4.01
PET Analysis Quant	13/06/2018 6:10 PM	Sample-0008	2.98	21.76	3.42
PET Analysis Quant	13/06/2018 6:10 PM	Sample-0007	2.55	16.04	1.00
PET Analysis Quant	13/06/2018 6:10 PM	Sample-0006	2.74	18.69	1.99
PET Analysis Quant	13/06/2018 6:10 PM	Sample-0005	2.91	20.74	3.09
PET Analysis Quant	13/06/2018 6:10 PM	Sample-0004	3.15	24.41	4.01
PET Analysis Quant	13/06/2018 6:10 PM	Sample-0003	2.98	21.76	3.42
PET Analysis Quant	13/06/2018 6:10 PM	Sample-0002	2.55	16.04	1.00
PET Analysis Quant	13/06/2018 6:07 PM	Sample-0001	2.74	18.69	1.99

History section

The **History** view shows a list of sample results that were measured with the selected operating procedure.

Operating procedure	Time	Sample number	ID_Polymer	Polyethylen Conc. [%]
---------------------	------	---------------	------------	-----------------------

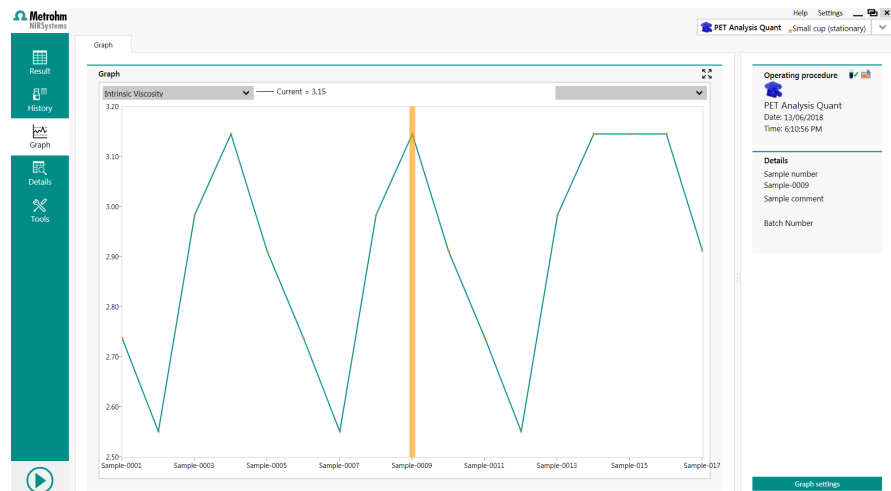
Sample event icons and further information in the data window:

- Raw data status: The type of icon indicates what kind of data has been stored to the database. When extra data is attached to the sample result, a data type icon is displayed in the left column: Sensor and pre-processed data (📊), Pre-processed data (📄, default data type).
- Reference data status (📋): When a reference value has been added to a sample, a reference icon is displayed.
- Sample events status (⚡): A warning (⚠️) or error (❌) icon is displayed for hardware specific issues, e.g. if the lid of the DS2500 instrument was open during measurement.
- Outlier status (📊): A warning (⚠️) or error (❌) icon is displayed if a sample has been identified as an outlier.
- Operating procedure limits status (📊): A warning (⚠️) or error (❌) icon is displayed if a quantitative result has been identified to be outside of the warning limit or intervention limit.
- Operating procedure: Sample number of the operating procedure.
- Time: Indicates at which time the sample was analyzed.
- Sample number: User-defined or automatically generated sample number.
- Parameter name: Parameter names, e.g. "Water content", are mentioned in the order that has been set for that operating procedure.

Reference data

It is possible to add reference values to predicted parameter values.

3.2.4 Trend section



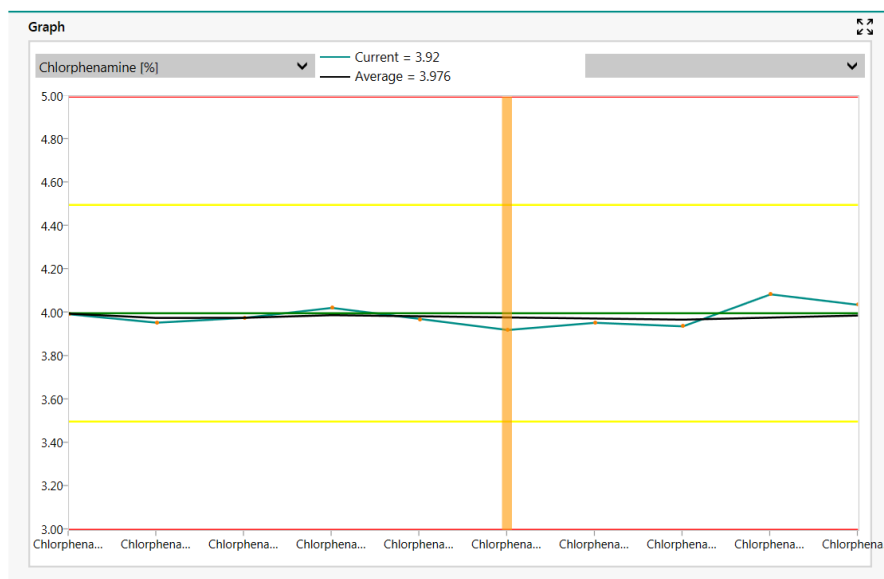
The trend graph shows quantitative values for the selected parameters of the current operating procedure.



Figure 1 Main graph

The trend graph can show 1 or 2 parameter plots. Parameters are selected by using the "Green Plot" and "Orange Plot" drop-down lists on top of the graph. The lists contain all the parameters that were investigated with the currently selected operating procedure.

If only 1 graph is displayed, a graph for the running average can be displayed. If upper and lower warning limits, intervention limits and a target value have been defined in Vision Air Manager, they are also shown, so that up to 5 horizontal lines are displayed.



If a measured value is selected in the graph, a vertical orange line is displayed that highlights the selection. The upper middle part of the window shows the quantitative result(s) of the selected measurement.

Trend settings

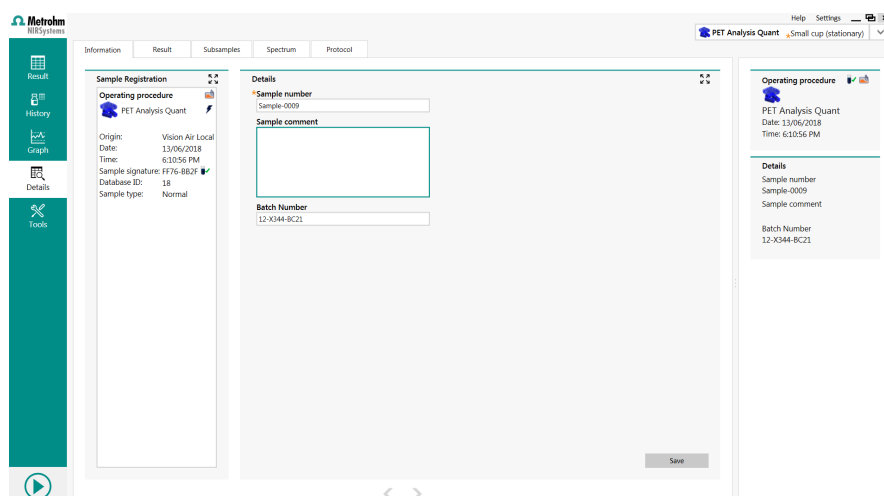
The settings field contains the **[Trend settings]** button that gives access to the **Trend settings** dialog window.

The following trend settings are available:

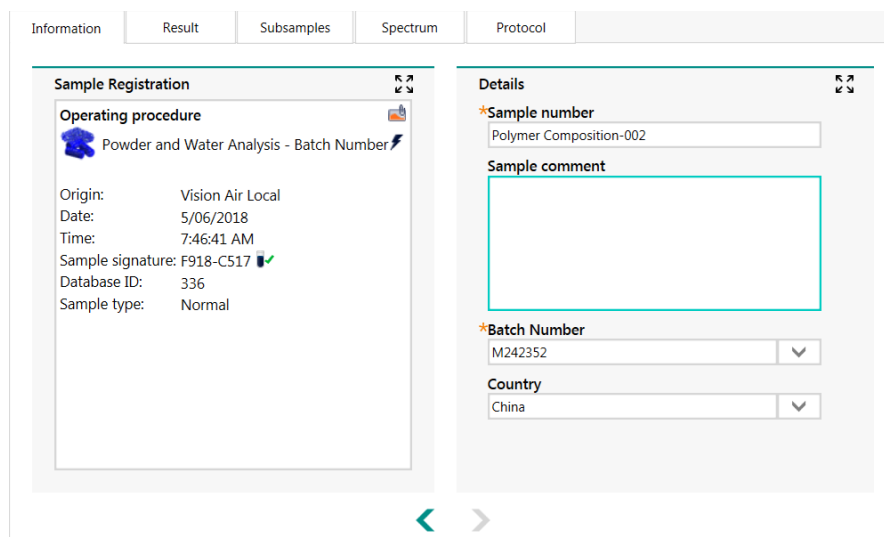
- Parameter graph options
 - Show moving average curves: This defines if a moving average should be calculated and displayed as well as the number of recent samples to include in the calculation.
 - Number of samples for average calculation: The running average calculation is based on the defined number of samples.

- X-axis options
 - Use an equally spaced scale, i.e. the x-axis distance between samples must be equal.
 - Use a true time scale, i.e. the x-axis distance between samples is proportional to the time between the measurements.
 - Max. samples, i.e. the graph shows "max." sample results, from the most recent samples.
- Set default
 - By clicking the **[Set default]** button, the last graphical settings are saved and used thereafter.

3.2.5 Details section

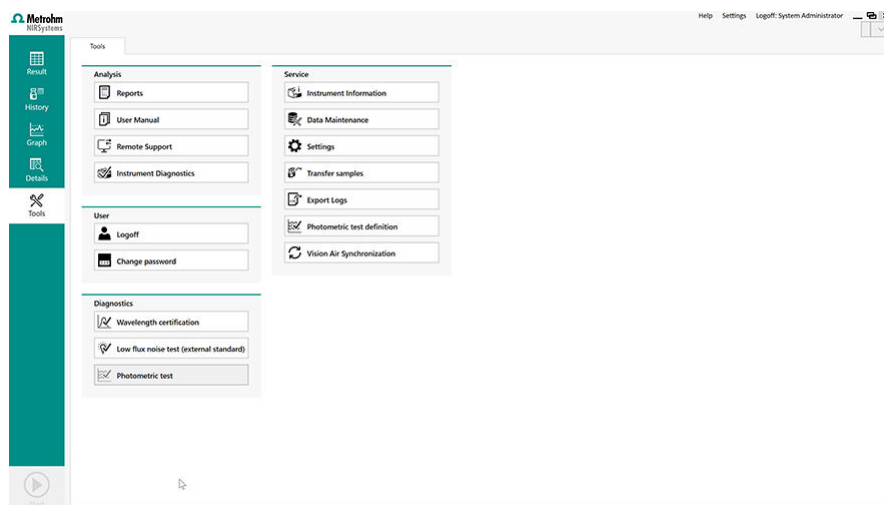


Information tab



In the **Information** tab, extended information is available for a specific sample. It is also possible to edit or add additional information (depending on the operating procedure settings).

3.2.6 Tools section



The following functions exist in the **Tools** section. The user role determines which functions are accessible (see *"Users section", chapter 3.1.10, page 36*).

- **Reports**
Predefined reports, e.g. for sample details, instrument diagnostics or sample lists, are accessible by clicking on **[Reports]**.
A sample detail report displays a report for the selected measurement in the **History** view. If no selection is made, the report is created for the last conducted measurement.
An instrument diagnostic report displays the results of the last instrument diagnostic.
Additional reports can be added in Vision Air Manager (see *"Reports and report management", chapter 3.3.2, page 64*).
- **User manual**
The **[User manual]** button opens the manual for the currently connected instrument.
- **Remote support**
The **[Remote support]** button allows you to initiate a remote support session via TeamViewer.
- **Instrument diagnostics**
The **[Instrument diagnostics]** button initiates the instrument diagnostic test, which verifies the hardware performance of the analyzer.
- **Logoff**
The active user is logged off. The **Access** window appears. Enter a user ID and password to log in.
- **Change password**
The **[Change password]** button allows you to change the password for the current user.

- Settings

The **[Settings]** button grants access to different settings.

- Vision Air sync
In the **Vision Air sync** section, the user can define a connection to a Vision Air Manager Network system.
- Import
In the **Import** section, the user can import configuration files or directly access Vision Air Manager.
- Export
In the **Export** section, the user can define the storage locations for reports and results and allow an automatic export set in Vision Air Manager.
- Print
In the **Print** section, automatic print can be activated. Automatic print is set in Vision Air Manager. Additionally, the print template and the printer itself can be selected.
- Protocol
In the **Protocol** section, the user can select a storage location for information that is displayed in the **Protocol** section, in the **Details** section of Vision Air Routine.
- Backup
In the **Backup** section, the user can set an automatic backup plan and define the storage location.
- Instrument
In the **Instrument** section, the user can modify a global counter that can be used during automatic sample numbering.

- Export samples

The **[Export samples]** button allows you to export collected measurements. A folder with an .xml file is created in the selected destination.

- Export logs

The **[Export logs]** button allows you to export log files for trouble shooting purposes.

- Photometric test definition (only available for XDS instruments and DS2500 Solid Analyzer)

The **[Photometric test definition]** button allows you to define reference values for the photometric test by using external standards.

- Vision Air synchronization

The **[Vision Air synchronization]** button allows to manually synchronize results that were collected in Vision Air Routine with Vision Air Manager Network (*see "Synchronize with Vision Air Server", page 129*).

Automatic sample numbering

If the automatic sample numbering option is selected, the sample number is generated automatically during measurement using the defined mask. The mask should be entered into the text field and may contain the following formatting codes, which are substituted by real data:

- [INSTRUMENTNAME] – name of the current instrument
- [PRODUCTNAME] – name of the current operating procedure
- [PRODUCTCODE] – code of the current operating procedure (numeric value)
- [HH] – hours in 24 hour format
- [HHHH] – hours in 12 hour format (AM/PM)
- [MM] – minutes
- [SS] – seconds
- [YY] – year (13)
- [YYYY] – year (2013)
- [Y] – year (3) #-##### – consecutive sample counter. Number can have 1(#) to 6 (#####) digits. Number starts with 0...01 and increments on every measurement.

Truncation:

It is possible to truncate strings in [PRODUCTNAME], [PRODUCTCODE] and [INSTRUMENTNAME] by appending the %n sign, e.g. [INSTRUMENTNAME %3]. If the string is longer than the defined number, it is truncated to the corresponding length (3 in the example) otherwise it is padded with spaces.

Example:

"[PRODUCTNAME%10] Sample-### [HH]:[MM]"

Mask creation rules

- All formatting codes, except number sequence, must be written in square brackets [].
- All formatting codes must be upper case.
- It is allowed to have only 1 number sequence (###) in the mask.
- It is allowed to not have any number sequence in the mask at all.

- If the formatting code was misspelled, it is not substituted by any value during sample number generation, and it is just left as is.

General sample numbering rules

- A sample number is generated on every measurement using the defined mask. The registration form is not shown to the user if only the sample number is required. If user-defined fields or sample comments should also be entered, the registration form is shown with the sample number already entered.
- The number in sequence (####) is incremented on every subsequent measurement.
- An automatically generated sample number can be changed by the user if the **Allow edit** setting is selected in Vision Air Manager.
- Automatic sample numbering is always mandatory; so it is not allowed to change it to an empty string.
- If the mask was changed in Vision Air Manager, the number generation starts from the initial number (the number sequence is reset to 0...01).
- When the maximum number is reached e.g. 99 for a ## mask, the initial number is applied on the next measurement (01).
- If the sample number was changed manually by the user, then it is checked during the next measurement if the entered number matches the mask. If yes, the entered number is used as a base when generating the subsequent number, e.g. with the following number sequence: 001, 002, 003, when 003 is changed to 123, the next sample number is 124.
If the entered sample number does not match the mask, the previous valid number is used when generating the next number. Another example, with the following number sequence: 001, 002, 003, when 003 is changed to abc, the next sample number is 004.
- If the sample numbering mode is changed from manual to automatic, generation is started from the initial number even if the manually entered value matches the mask.
- The user can define when the sample number sequence is reset: never, when a date changes, when a month changes or when a year changes. If the date/month/year changes, the number in the sequence is reset to the initial number.

3.3.2 Reports and report management

Reports can be created for Vision Air Routine and Vision Air Manager. Not all reports that are available in Vision Air Manager can be accessed in Vision Air Routine.

According to the current navigation window and current work window tab, the report menu shows different entries:

- Instrument detail
This report is available when **Instruments** is selected in the navigation window.
- Prediction model list
This report is available when **Prediction models** is selected in the navigation window.
- Prediction model list with details
This report is available when **Prediction models** is selected in the navigation window.
- Instrument slope/intercept 30 days
This report is available when **Surveillance** is selected in the navigation window.
- Instrument status
This report is available when **Surveillance** is selected in the navigation window.
- Flags log
This report is available when **Surveillance** is selected in the navigation window.
- Instrument check samples 5 days
This report is available when **Surveillance** is selected in the navigation window.
- Instrument group events 30 days
This report is available when **Surveillance** is selected in the navigation window.
- Instrument group audit events 30 days
This report is available when **Surveillance** is selected in the navigation window.
- Sample list
This report is available when a sample is selected in the sample work window of the **Surveillance** navigation window.
- Sample list (landscape mode)
This report is available when a sample is selected in the sample work window of the **Surveillance** navigation window. The report will be displayed in landscape format.
- Sample detail
This report is available when **Surveillance** is selected in the navigation window.
- Simple single sample
This report is available when a sample is selected in the sample work window of the **Surveillance** navigation window.
- Instrument diagnostics
This report is available when **Surveillance** is selected in the navigation window and a self test is selected on the **Diagnostics** tab.
- Low flux test
This report is available when **Surveillance** is selected in the navigation window and Low flux test is selected on the **Diagnostics** tab.

For automatic export in Vision Air Routine, report templates must be imported under **Instruments ► Instrument settings ► Automatic export and print formats**.

Configuration: NIRS DS2500

Extensions

Setting Groups

Automatic export and print formats

Check-samples
Common hardware selftest limits
Data cleanup
Diagnostic test limits
Diagnostic test parameters
Diagnostic test reminders
Hardware self test limits
Hardware sensor limits
Instrument calibration settings
Instrument diagnostics
Local Vision Air settings
Report templates
Stability test limits (PbS)
Stability test limits (Si)
Stability test parameters
Subscan settings
User-defined field values
Wavelength test limits (PbS)
Wavelength test limits (Si)
Wavelength test parameters

In Method settings automatic export and printing after each measurement can be enabled. The actual options are defined here at instrument level.

Automatic printing options

☒ No printing
☐ Print using report template

Sample detail

Automatic export options

Export file names format: [PRODUCTNAME]_[REPORTNAME_]YYYY-MM-DD[HH]-[MM]-[SS]

☒ No export
☐ Native CSV export
☐ Native CSV export including secondary parameters
☐ Export using report template

Sample detail CSV

Additional spectral export: No spectral export

Import additional reports: Import...

3.3.3 Importing reference values with a .csv file

Reference data can be imported from a .csv file that matches the structure of the displayed reference table.

	A	B	C	D
1	Sample Number	<i>Parametercode 1</i>	<i>Parametercode 2</i>	...
2	Sample name 1	10.1	0.5	...
3	Sample name 2	22.5	0.7	...
4	Sample name 3	40.3	1.1	...
5	Sample name 4	50.3	2.3	...

The list separator follows the PC's regional setting e.g. semicolon, comma, dot.

In the heading of the table, the sample number and the parameter code for reference values are defined.

The bold string **Sample number** is fixed and does not need to be modified.

For the strings **Parameter code x**, enter the appropriate parameter code that is defined in Vision Air Manager.

Sample names must be identical to the sample names that were used during sample registration. Sample names must not be listed in the same order as they were measured.

3.3.6 Calculated prediction models

Calculated prediction models are defined formulas that allows you to postprocess results and to decide which result is presented to the user.

Creating a calculated prediction model

The **Create calculated prediction model** editor is used to create a formula. The editor can be accessed when creating a new calculated prediction model. To access the editor, right-click in the structure window of the **Prediction models** section and select **Create calculated prediction model**. A formula can be added in the **Prediction models** section on the **Formula** tab.

Adding a formula

i It is important that the operating procedure for the calculated prediction model also contains prediction models that include the parameters referenced in the calculated prediction model formula. Otherwise, an error message is displayed at synchronization.

Prediction models				
Calculation API				
Calculation API - Demo				
Data Collection				
Qual WL Standard Mahal				
Qual WL Standard ResV				
Qual WL Standard Wavecorr				
Qual WL Standard Wavedist				
Quant WL Standard				
Simulator API 1				
Simulator API 2				
Simulator Hydroxyl Number				
Simulator Identification Chlorophena				

Summary				
General Information				
Name:	Calculation API			
Wavelength:				
Version:	1.0.6			
Part Number:	0			
Imported:	18/06/2018 9:46:56 PM	Method:	CALC	
Updated:	18/06/2018 9:46:56 PM	Engine:	Calculator	
Comment:				
Description:				

Linked Parameter Profiles				
Hidden	Parameter name	Parameter unit	Parameter profile	Display order
☒	Calculation	%	API	101

Example 2

The example describes how to use calculated prediction models for automatic selection of the optimal prediction model and result display during routine analysis. This scenario is important, e.g. if a broad concentration range should be predicted. Typically, instead of using 1 prediction model for the whole concentration range, multiple prediction models are used. This increases the accuracy of the prediction. For this case, If-Then-Else-formulas are used.

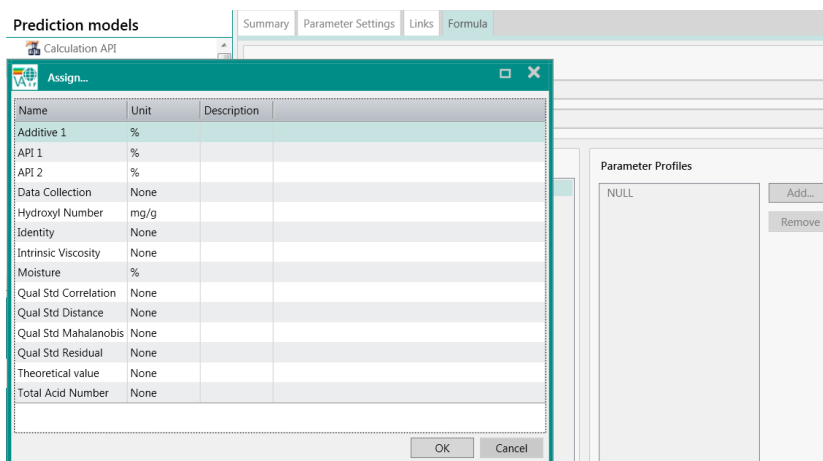
In the following example, a user has 3 prediction models.

- API Full
Parameter profile for the prediction model that is predicting a concentration of API from 0 - 30%.
- API 1
Parameter profile for the prediction model that is predicting a concentration of API from 0 - 10%.
- API 2
Parameter profile for the prediction model that is predicting a concentration of API from 10.01 - 30%.

Only 1 result is displayed where the software chooses whether it displays the API 1 result or the API 2 result.

To start a prediction model, proceed as follows:

- 1 Add the parameter profile of the prediction model that you want to postprocess by clicking on **[Add]** in the **Formula** tab.



- 2 Enter the formula. The following screenshots show the syntax for the example.

Expression

if ([API Full] > 10 ; [API 2] ; [API 1])

Parsing results: Formula is valid.

if ([API Full] > 10 ; [API 2] ; [API 1])
 Parameter 1 Then Parameter 2 Else Parameter 3

"If" expressions are put in brackets, the parameter profile names are written in brackets and "then" and "else" expressions are written with ";".

- 3 Save the calculated prediction model. Add the calculated prediction model to the operating procedure that you want to use for postprocessing.

Make sure that the operating procedure includes the prediction model for which the postprocessing should be conducted. If the result of the prediction model shall not be displayed, select the prediction model, go to the **Summary** tab and check **Hidden** in the **Linked parameter profiles** window.

Hidden	Parameter name	Parameter unit	Parameter profile	Display order	Change...
☒	Calculation	%	API	101	

i Make sure that the **Parsing results** field indicates that the entered formula is valid. If the formula is not valid, the prediction model cannot be saved.

3.3.7 User-defined prediction model

i An operating procedure can never consist of user-defined prediction models only.

It is possible to manually add sample parameter data that is measured with other instruments.

User-defined prediction models can be created by right-clicking on an element in the structure Window and selecting **[Create User-defined Prediction Model...]**.

If you create an operating procedure with 2 user-defined prediction models, the sample results include positions for both user-defined prediction models.

During a measurement, a dialog window pops up and the user can type in the values.

3.3.8 Slope/intercept calculations

Slope/intercept data can be displayed for quantitative prediction models in the **Prediction models** section, **Slope/intercept** tab.

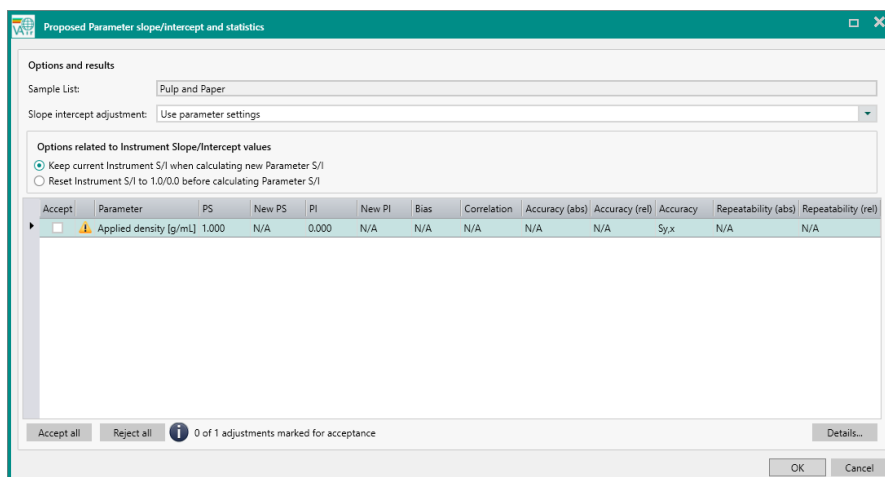
Values for slope and intercept can be changed manually in the **Prediction models** section on the **Slope/intercept** tab.

The slope/intercept can be changed for a single prediction model or for an instrument. The option to adjust the slope/intercept for an instrument is sometimes required when the same prediction model is used on multiple

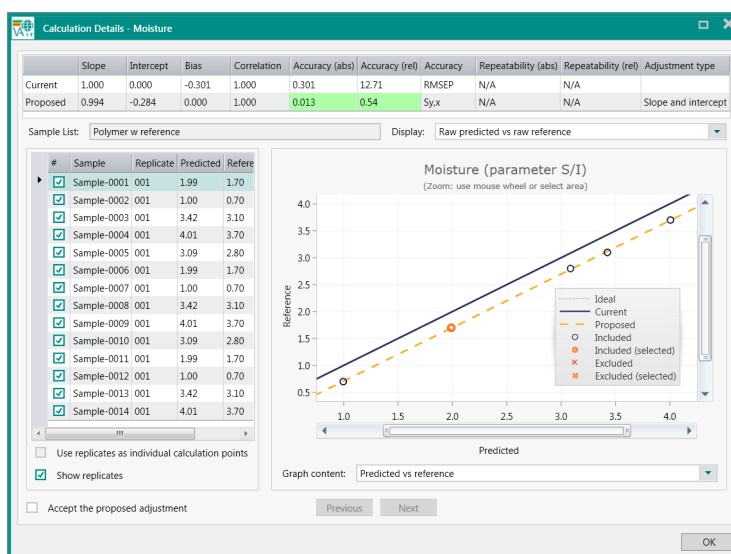
The procedure for the correction is explained for the parameter moisture.
To start a parameter correction, proceed as follows:

- 1 Select the parameter you want to correct and click on **[Calculate slope/intercept]**.

A window with suggested adjustments is displayed.



- 2 Click on **[Details...]** to see the current correlation plot and the new correlation proposal.



The graph section displays the samples as dark blue dots on the gray reference lines. The plot gives an overview of the correlation, the bias, the slope and the presence of outliers.

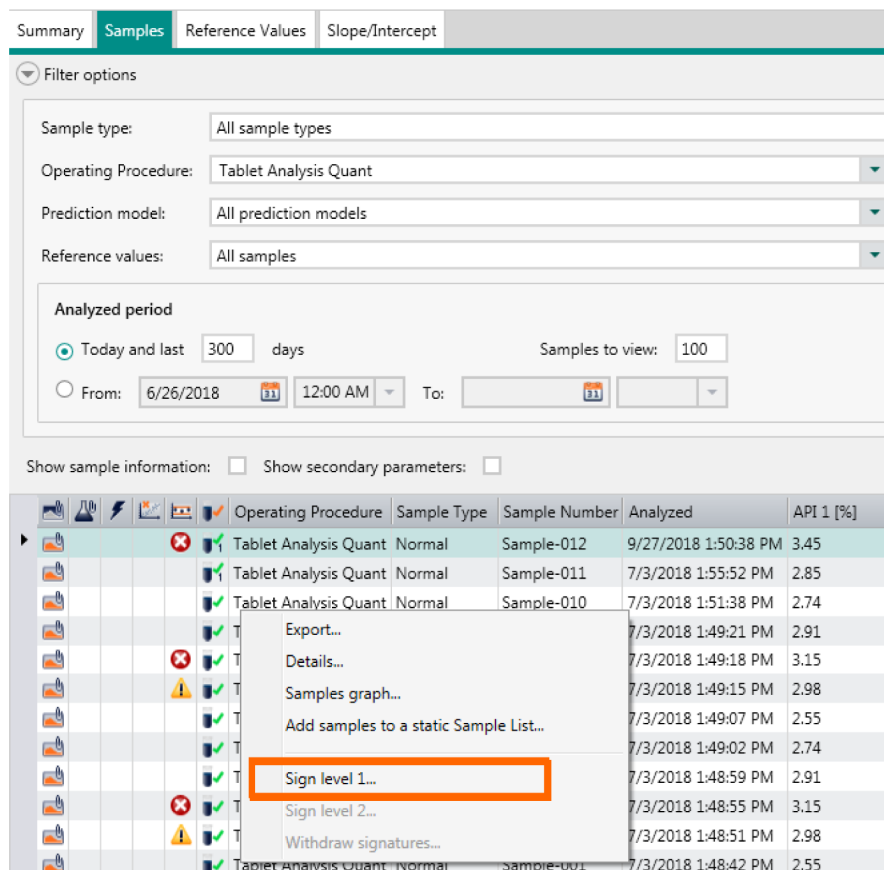
In this example, predicted values are biased by -0.301. Correction of the slope and mainly the intercept correct for this deviation between predicted values and reference values.

If activated, a multiple selection of samples with **[CTRL + SHIFT]** cannot be signed in one step at the instrument (Vision Air Routine).

Sign each sample separately in Vision Air Manager:

If activated, a multiple selection of samples with **[CTRL + SHIFT]** cannot be signed in one step in Vision Air Manager.

Samples or diagnostic tests are signed by right-clicking on the individual sample or diagnostic test and selecting **Sign level 1**.



Samples, diagnostic tests, and configurations can be signed multiple times on level 1. Each signature must be done with a different user ID.

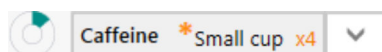
After a successful signature, the sample, diagnostic test, or configuration is marked with the number '1'.



Samples, diagnostic tests and configurations can only be signed on level 2 after being signed on level 1.

Configurations have to be signed when changed. The signing is conducted in the section configuration change. A configuration change is trig-

During the analysis, the expected number of cups is displayed in Vision Air Routine:



When starting the analysis in Vision Air, the sample registration view is displayed as usual but the user is prompted for the next cup. Finally, the mean result for the cups is displayed.

Multisample Cup

The Multisample Cup is supported with Vision Air 2.0.2.25.

To select trays in Vision Air Manager, proceed as follows:

- 1 Go to the **Methods** section.
- 2 Select the method for which you want to configure the tray.
- 3 Go to the **Summary** tab in the data window and make sure that the **Sample vessel** field has the value: **Tray**.
- 4 Go to the **Settings** tab in the data window and select the menu item **Tray configuration**.
- 5 Select a pre-defined tray from the drop-down list.
If a customized tray has been ordered together with Vision Air, a configuration file is provided by Metrohm. Import this configuration file by using the **Custom tray configuration** import.
- 6 Click on **[Save]** in the toolbar.

Calibrating the instrument in Vision Air Routine

2 different processes for instrument calibration are available. One process uses the internal built-in wavelength filter. The other process uses the external wavelength filter. For intensity corrections, the DS2500 Solid Analyzer uses the external reflection standard as reference standard. Only external wavelength filters can be certified.

2 In the **Method** structure window, select the method for which you want to configure the number of sample vessels and positions.

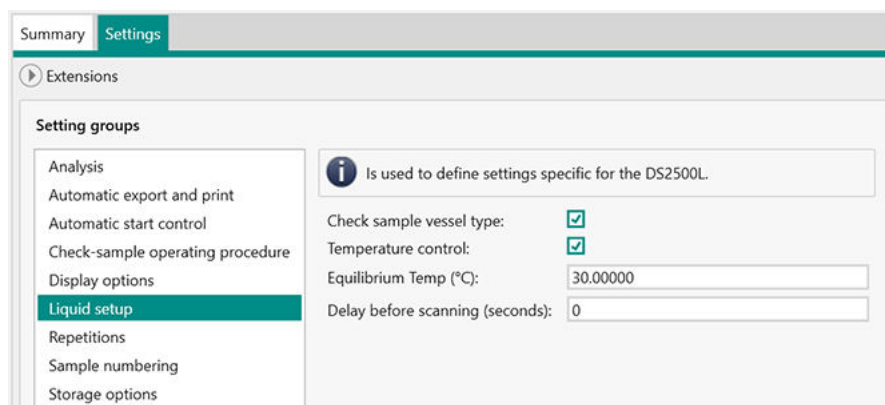
3 Go to the **Summary** tab.

Select a sample vessel type that supports the desired functionality from the **Sample vessel** drop-down list.

Table 5

Sample vessel type	Intended purpose
Disposable vials	One-time use No sample vessel cleaning
Cuvettes	High precision measurements
Flow cell cuvette	Automatization
Transmission wavelength standard	External calibration of the instrument

Heating and cooling the sample



The DS2500 Liquid Analyzer supports a temperature range between 25 °C and 80 °C. The minimum temperature that can be set must be 10 °C above the ambient temperature $T_{\min} = T_{\text{ambient}} + 10 \text{ °C}$

To achieve a temperature of 25 °C, the ambient temperature must be 15 °C. As the ambient temperature in most laboratories is approx. 25 °C, Metrohm recommends to set the temperature to a minimum of 35 °C.

To define the target temperature during an analysis, go to the **Methods** section in Vision Air Manager. Go to **Settings ► Liquid setup**. Enable **Temperature control**. Enter the desired temperature in **Equilibrium Temp (°C)**.

A delay before starting a scan ensures that the sample has the same temperature as the sample holder. To define a delay before each scan, go to

4 Enable **Automatic start**.

The measurement starts as soon as the lid is closed.

After the measurement, the lid opens automatically.

Calibrating the instrument in Vision Air Routine

The DS2500 Liquid Analyzer is calibrated with an external wavelength standard (see *"Calibrating the instrument with an external wavelength calibration standard"*, page 85) and with an internal wavelength standard (see *"Calibrating the instrument with an internal wavelength standard"*, page 86).

The external calibration is usually carried out by a regional Metrohm service representative during the start-up of the instrument. If necessary, the external standard can also be obtained separately (article number 6.7494.000). The user can repeat the external calibration if needed. Only external wavelength filters can be certified.

The internal calibration uses the internal built-in wavelength filter. Carry out the internal calibration once a different type of sample vessel to the one used in the previous measurement is inserted. The path length is relevant. Carry out an internal calibration after a DS2500 Holder for 2 mm disposable vials was replaced with a DS2500 Holder for 8 mm disposable vials, for example.

For intensity corrections, the DS2500 Liquid Analyzer uses air as reference standard.



WARNING

Hot surface

Danger of burning due to hot components. The sample holder can be heated to a maximum of 80 °C. After operation, the sample compartment, the sample holder and the sample vessel are very hot.

- Wear protective gloves when handling sample holders and samples.

Calibrating the instrument with an external wavelength calibration standard

Accessories

- DS2500 liquid wavelength calibration standard (6.7494.000)

Precondition

- The instrument must be running for 2 hours before starting the instrument calibration. For external instrument calibration, have the corresponding external wavelength filters ready.

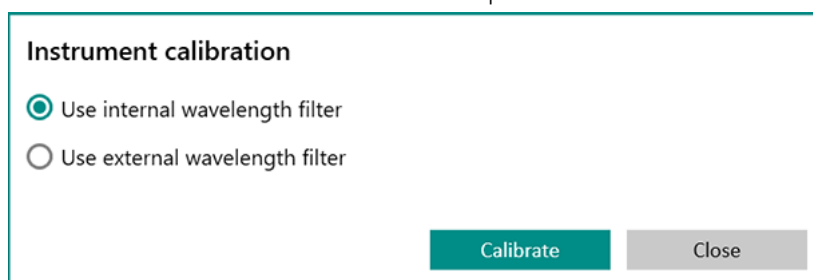
1 Inserting the sample vessel

- Define with which sample vessel the next measurement is to be carried out.
- Insert the selected sample vessel.

 If an incorrect sample vessel was inserted for the calibration with the internal wavelength standard, the error **auto linearity failed** may be displayed during the routine analysis.

2 Calibrating the instrument

- In Vision Air Routine, go to the **Tools** section.
- Click on **[Instrument calibration]**.
A window opens that prompts the user to enter the PIN code.
- Enter your PIN code. The default PIN code is 1234. Click on **[OK]**.
The **Instrument calibration** window opens.



- Select **Use internal wavelength filter**.
- Click on **[Calibrate]**.

The instrument is calibrated.

A message confirms the successful calibration. The instrument is ready to measure samples.

3 Repeating the calibration

Once a sample vessel with a different path length has been inserted, repeat the internal calibration. To do this, start with Step 1 again.

3.3.12 Specific functions for XDS MasterLab

Two measurement modes are possible with the XDS Masterlab Analyzer. On start-up of Vision Air Routine that is connected to an XDS Masterlab Analyzer, you are asked which mode to use.

To start up Vision Air Routine, choose between **Reflectance mode** or **Transmission mode**.

4 Installation

4.1 Vision Air Server

4.1.1 System requirements

Table 6 Vision Air Server

Operating system	Windows Server 2012 R2 Full Edition with Service Packs / Windows Server 2016 / Windows Server 2019 Operating System Language must be English (during installation only)
CPU	Dual 2 GHz processors
Memory (RAM)	8 GB
HDD	80 GB free space (dependent on data storage needs) NTFS File System
Video	SVGA at 1024x768, 16 bit color
NIC	1 Gbit Ethernet
Database Server	Microsoft SQL Server 2014 / 2016 / 2017
Connectivity	2-5 open ports on firewall (Incoming). The number of ports depends on the instrument type and proxy server configuration. External IP address or DNS address (recommended) for external clients to be able to communicate with the Vision Air Server. SMTP account for emailing reports and Vision Air Manager download links (optional).
Additional software and requirements	Internet Information Services (IIS) Server role .NET 4.8 Framework Extended Crystal Reports 13.01 runtime (included) MATLAB Compiler Runtime 8.0 (installed separately)

 All needed software can be found on the provided DVD.

Both features are optional and will require an SMTP Server, a SMTP port and a user name and password (when anonymous relaying is prohibited).

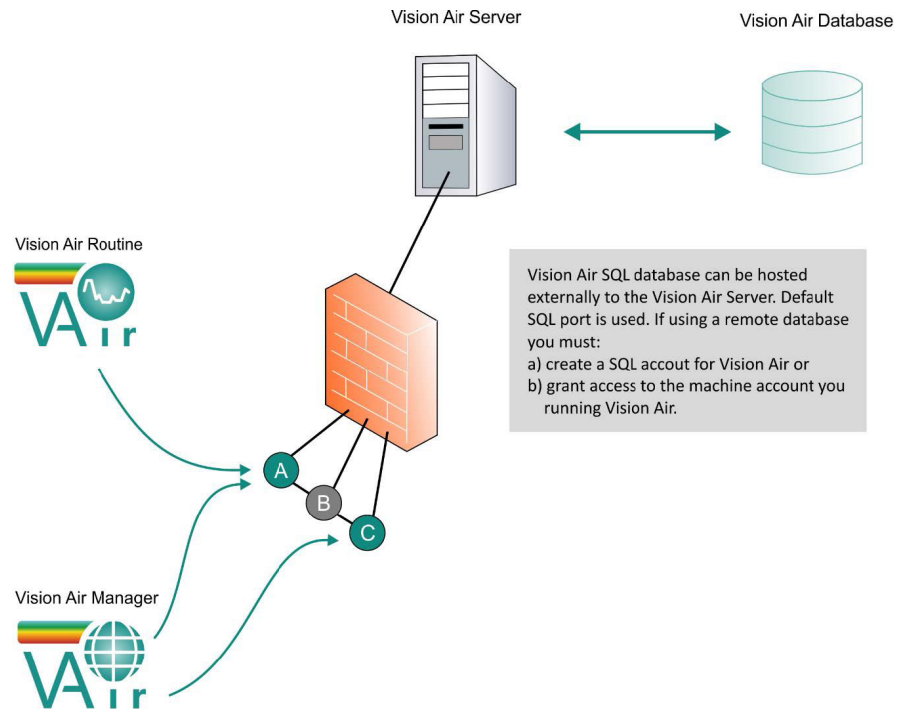
Computer virus prevention

Metrohm NIRSystems recommends that our customers maintain continuous protection of their computers and network infrastructure from threats posed by computer viruses, worms, and other types of hostile computer programs.

This can be implemented by installing and frequently updating an appropriate anti-virus program on the PCs and connecting the PCs in a minor closed network.

Protection against computer viruses is solely the responsibility of the customer and Metrohm NIRSystems can not be held responsible for any damage these types of programs may cause including lost and corrupted data or data theft.

Server ports



- ❗ **CLIENT-SIDE PORTS:** Communication is always initiated from the client. The same ports opened on the Vision Air Server must be open for outgoing traffic on the client. The ports do need to be opened on the client (or external client site) for incoming communication.
- ❗ Please contact your IT department for any firewall port issues. Metrohm NIRSystems cannot make any changes to your firewalls.

Table 7

Metrohm NIRSystems strongly recommends that the Vision Air Server SQL database is backed up on a reoccurring and timely schedule, at a minimum daily, in order to safeguard the data from loss. This can be done by using any software capable of performing full system backups, full system snapshots or SQL Server backups. The Vision Air Server software does not contain any backup functionality.

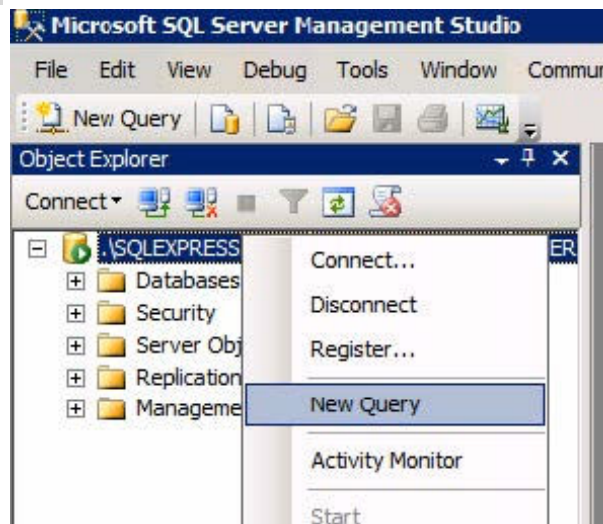
Additionally, it is recommended that each SQL Server have an automated SQL maintenance plan to help ensure the health and optimization of the SQL Server. Please consult the local IT department for assistance in creating SQL maintenance plans.

SQL Server configuration

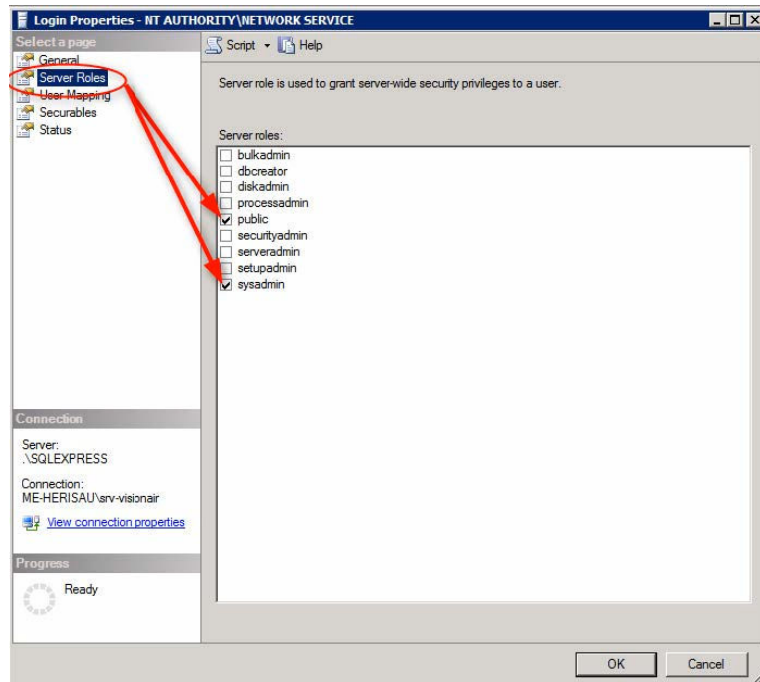
i Before you begin to install Vision Air Server, purchase and install Microsoft SQL Server and SQL Server Management Studio separately. Metrohm does not supply or install SQL Server.

Configure SQL Server

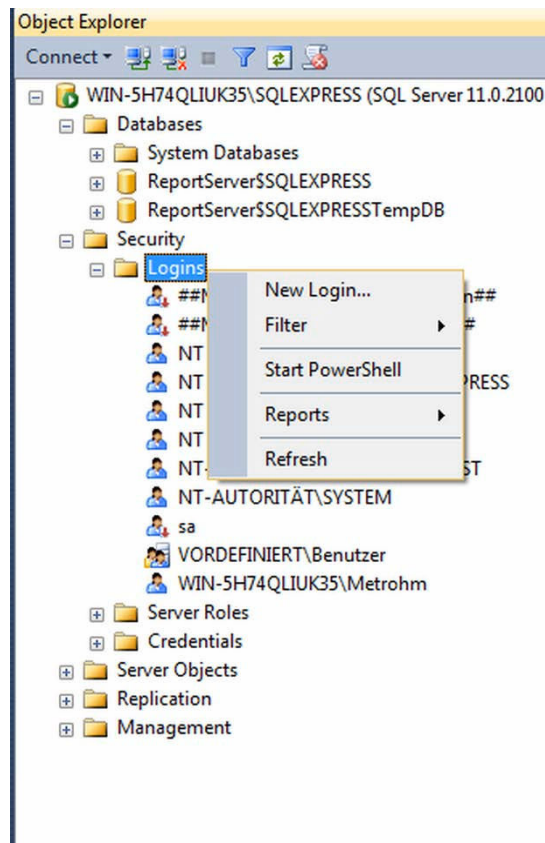
- 1 Open **SQL Server Management Studio**.
- 2 Connect to SQL Server instance created during SQL Server Installation.
- 3 Right-click on the SQL Server instance and select **New Query**.



- 3 Expand **Security** ► **Logins**. Right-click on **NT AUTHORITY\SYSTEM** ► **Properties**. If this login is not existing, create a login ([see "Create the Login", page 98](#)).
- 4 Click on **Server Roles**. Verify that **public** and **sysadmin** are selected (checked). If not, select them.



- 5 Click on **User Mappings**. Verify that the **Database master** is selected and the roles are **db_owner** and **public**.



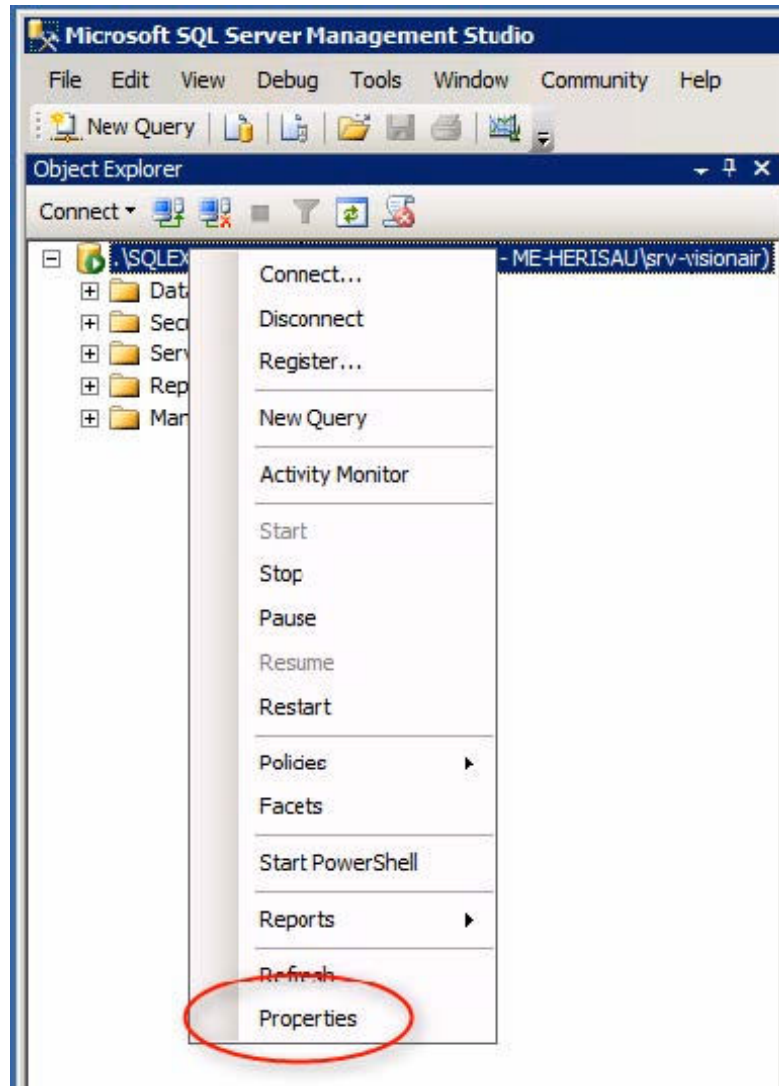
4.1.4 Remote SQL Server configuration

This chapter describes the installation procedure if the SQL Server and the Vision Air Server are installed on different hardware devices.

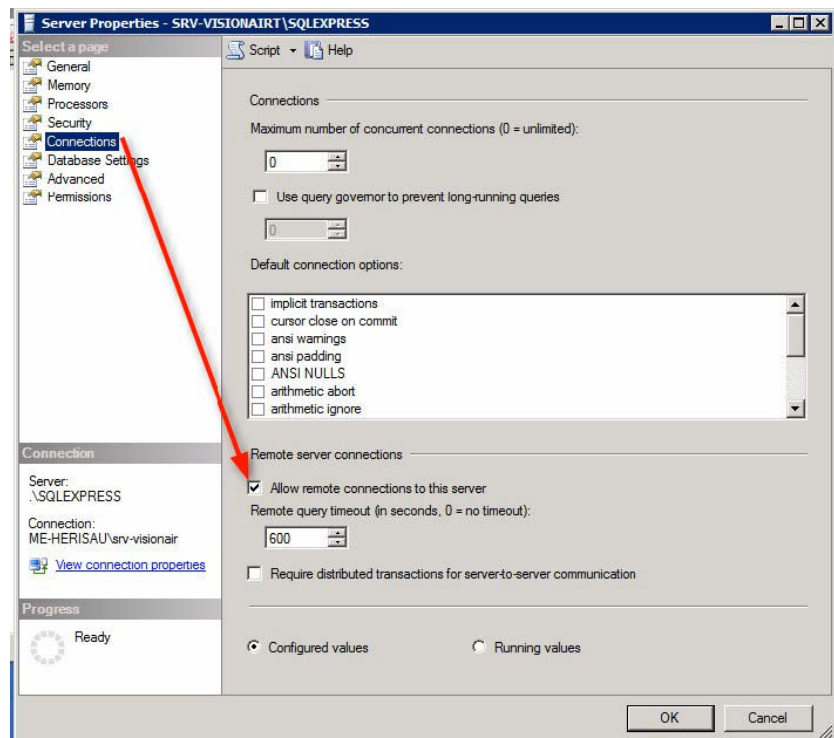
Configuring the SQL Server

Allow remote connection to the SQL Server

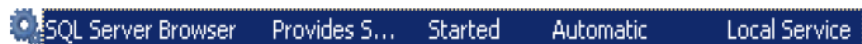
- 1 Open SQL Management Studio and log in.
- 2 Right-click on the **server name** and select **Properties**.



- 3 Select the **Connections** page and place a check in **Allow remote connections to this server** checkbox. Click **[OK]**.



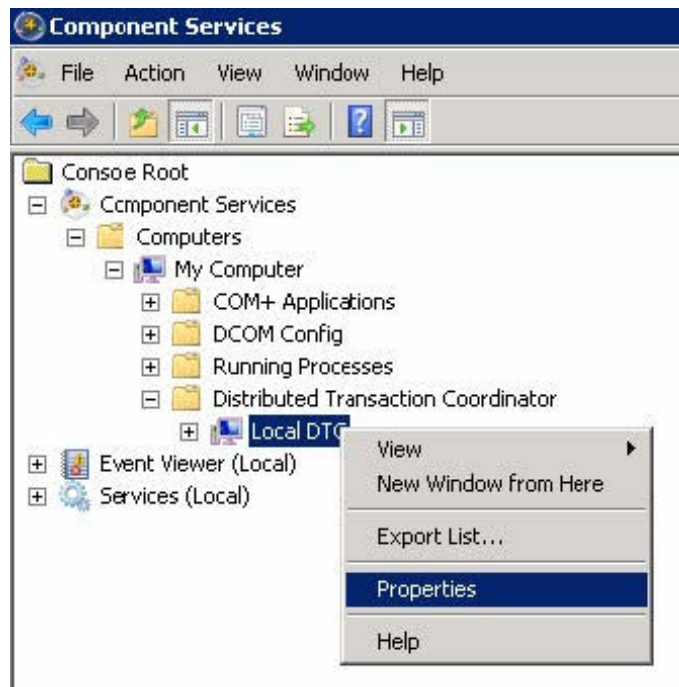
- 4 Close **SQL Management Studio**.
- 5 Click **Start ► Administrative Services ► Services**.
- 6 Verify the **SQL Server Browser** service Startup Type is **Automatic** and Status is **Started**.



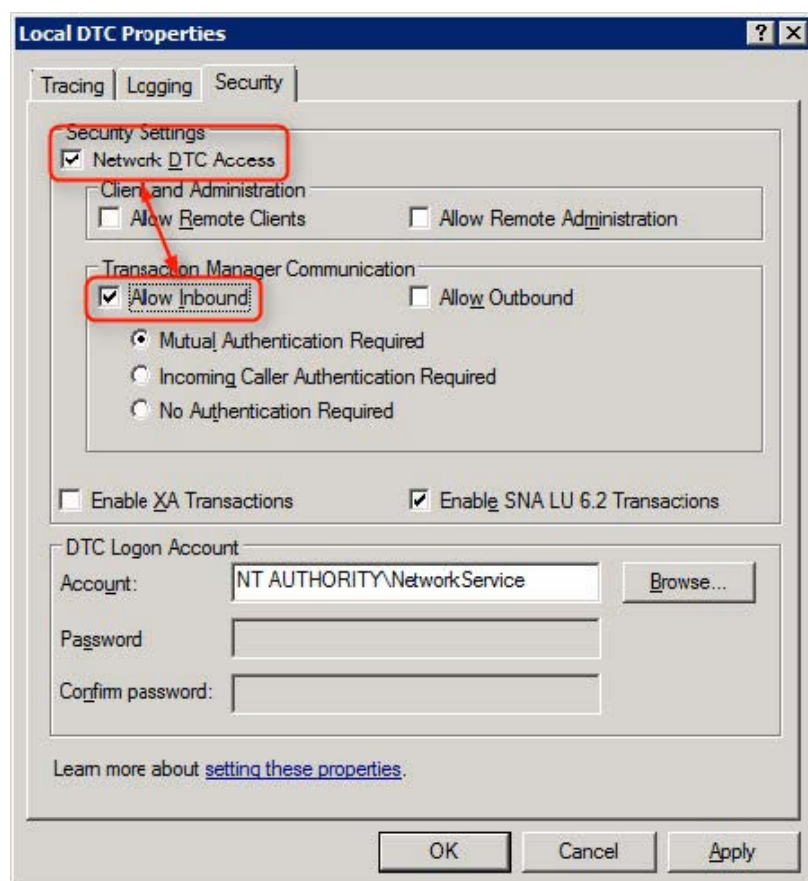
- 7 Verify the **Distributed Transaction Coordinator** service Startup Type is **Automatic** and Status is **Started**.



- 8 Configure DTC on the SQL Server to allow inbound transactions:
 - Click **Start ► Administrative Tools ► Component Services**.
 - Expand to locate **Local DTC**. Right-click on **Local DTC** and select **Properties**.



- Click on the **Security** tab.
Place a check in **Network DTC Access** and **Allow Inbound**.



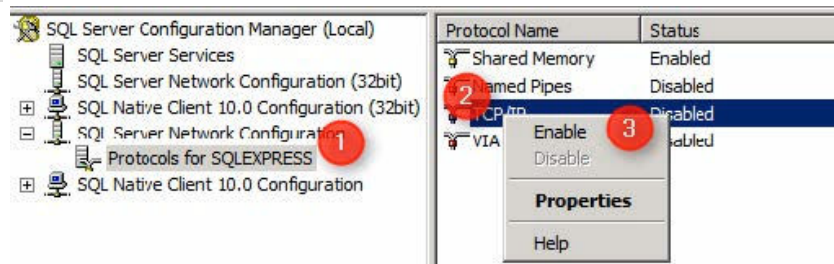
- In case of cross-domain setup select **No Authentication Required**.
- Click **[OK]** and close **Component Services**.
- Restart all the SQL services.

To check if DTC is working there are several options:

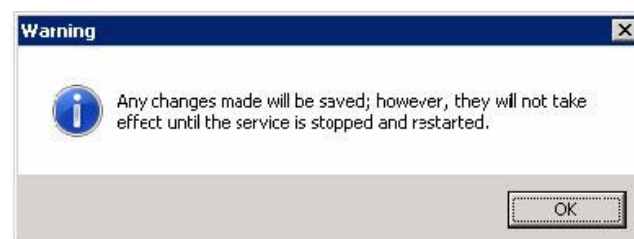
- Use DTCTester (tool from Microsoft).
- Use SQL Management Studio to try to create distributed transactions if you have a local SQL Server.

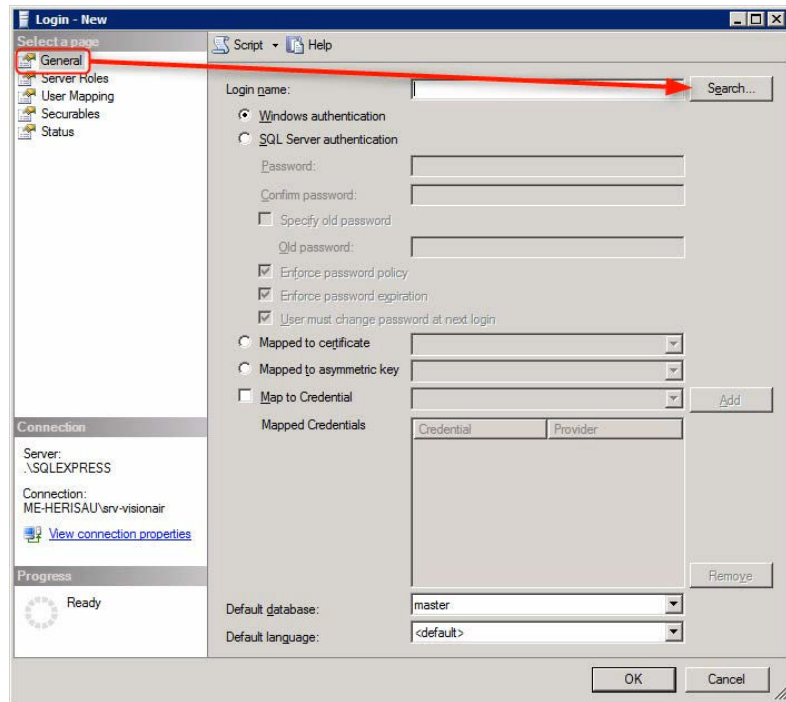
Enable TCP/IP protocol in SQL Server Configuration Manager

- 1 Click **Start ► All Programs ► Microsoft SQL Server 2008 ► Configuration Tools** and select **SQL Server Configuration Manager**.
- 2 Expand **SQL Server Network Configuration**.
- 3 Highlight Protocols for **SQL Server Name**.
- 4 Right-click on **TCP/IP** and select **Enable**.

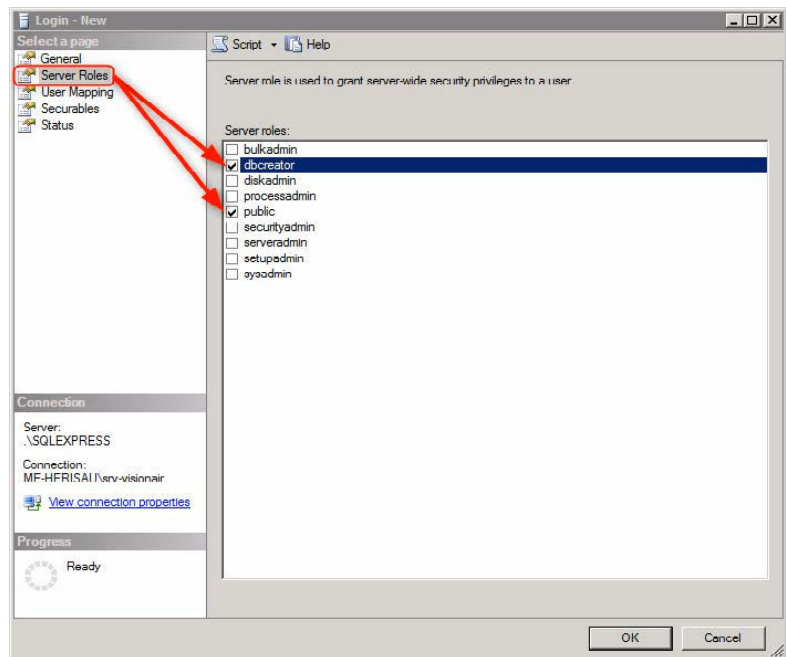


- 5 Click **[OK]**, close the **SQL Configuration Manager** and restart the SQL services.

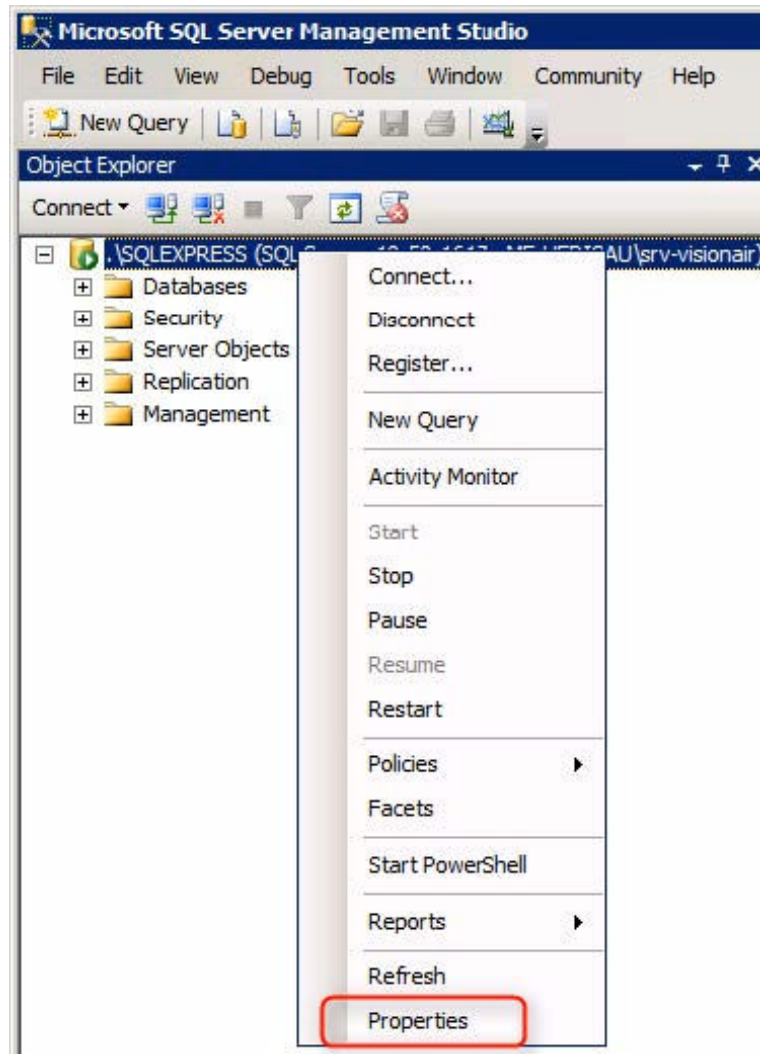




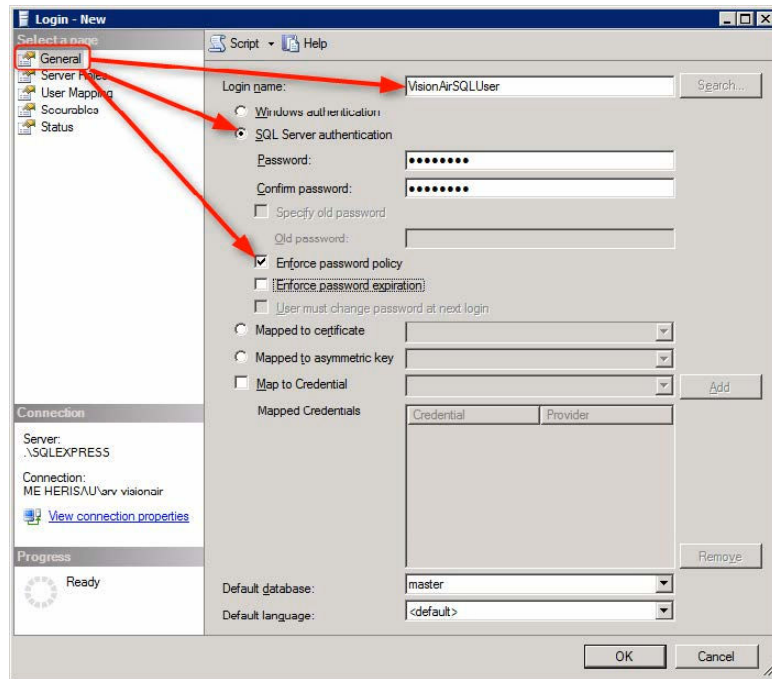
- 5 Click on **Server Roles** page and place a check next to **dbcreator** and **public**.



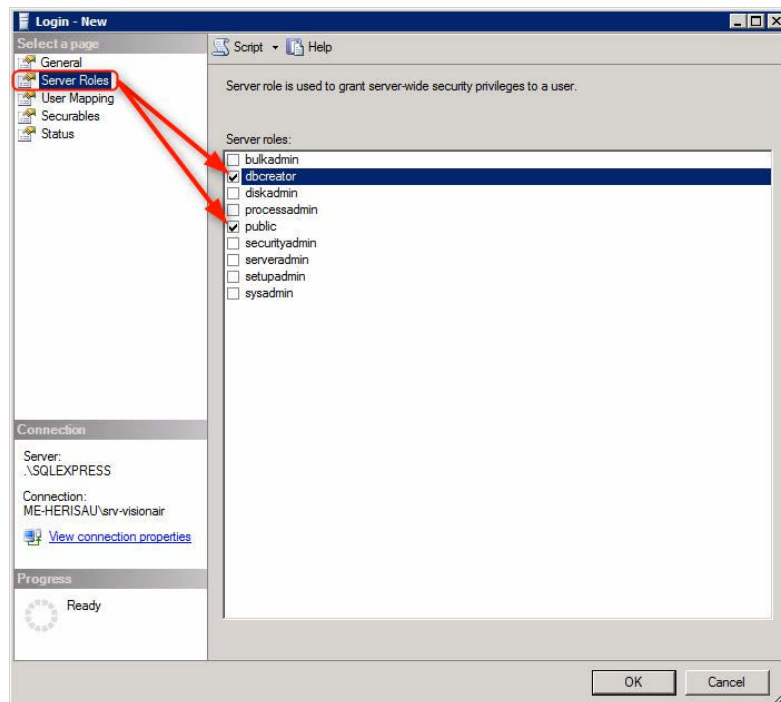
- 6 If the database already exists, click on **User Mapping** page. Add a check next to the database name and then **db_owner** and **public** in the role membership pane.



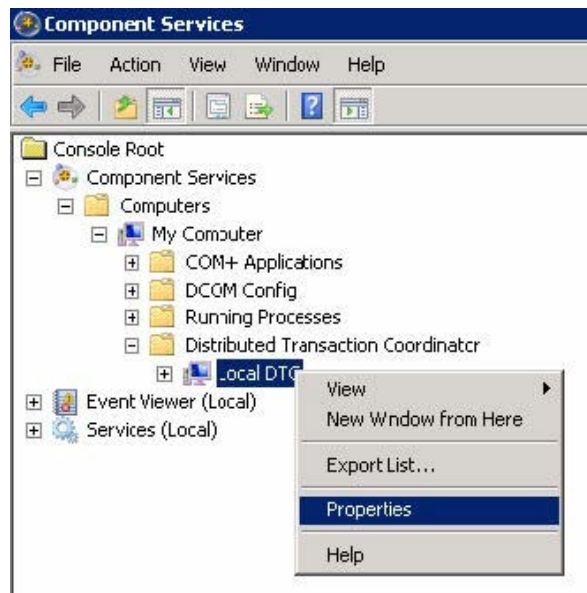
- 3 Click on the **Security** page. Enable **SQL Server and Windows Authentication mode** radio button. Click **[OK]**.



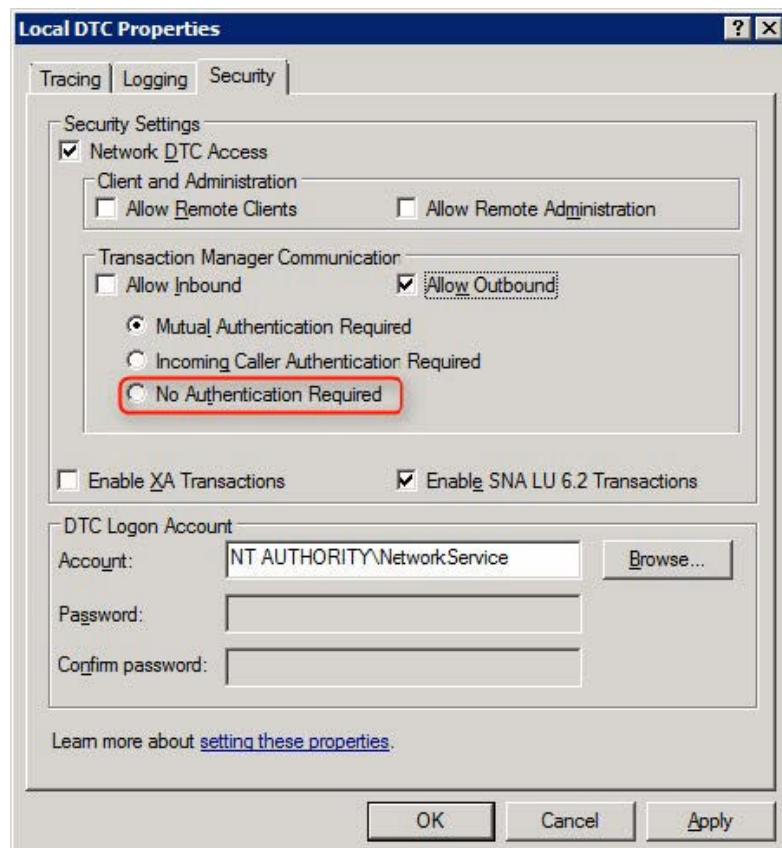
- 6 Click on **Server Roles** page and place a check next to **dbcreator** and **public**.



- 7 If the database already exists, click on **User Mapping** page. Add a check next to the database name and then **db_owner** and **public** in the role membership pane.



- Place a check in **Network DTC Access** and **Allow Outbound**.
- In case of cross-domain setup select **No Authentication Required**.
- Click **[OK]** and close **Component Services**.



- Restart the Vision Air Server.

- 6** To verify the SQL Server no longer appears under dependencies type *SC QC "Vision Air Service name"* and press **[Enter]**.

 To configure the Vision Air service to depend on SQLEXPRESS and Distributed Transaction Coordinator: *sc config "Vision Air Service name" depend = MSDTC/MSSQL\$SQLEXPRESS*.

Configure access to SQL Server

Depending on the account used for SQL Connection, you may need to configure Vision Air service to run as a specific domain account (which needs to be an administrator on the Vision Air Server) or to modify hosting.exe.config for SQL Authentication.

If you are using SQL authentication then update Vision AirConnection-String in hosting.exe.config so it looks like:

- Open C:\Program Files (x86)\Metrohm\Vision Air\VISIONAIR\VISIONAIR\Hosting.exe.config using Notepad.
- Search for MosaicConnectionString.
- Change the section after connectionString= to "Server=SERVERNAME\sqlexpress;Database=Vision AirXXX;pooling = false;User Id=USERNAME;Password=PASSWORD;Connection Timeout= 30".
- Vision AirXXX is the Service System Name of the Vision Air database.
- USERNAME is the SQL Login name set up in the previous section.
- PASSWORD is the password set for the SQL Login account.
- Verify the " " symbols are included and the line ends with \>.

4.1.5 Installation of Vision Air Server

Site preparation

- The Site Preparation Check List (8.105.8026EN) must be completed before installation of any Vision Air component or interfacing software program.
- Verify that the firewall has been updated to allow incoming and outgoing traffic on new ports.
- Verify that DNS has been configured for Vision Air Server URL.
- Verify that the SSL certificate has been acquired and installed.
- Verify that the account used for installation is a full administrator account.

System and database backup

Metrohm NIRSystems strongly recommends that a full system backup or server snapshot is performed prior to running the Vision Air Server installation whenever upgrading the Vision Air software. In addition, it is strongly recommended to create a full SQL database backup of the Vision Air database before beginning the installation.

Configuration

- 1 The Config Tool is designed as a wizard, but each section can be accessed directly as well.

Click on **[Next]** to go through the different windows.

- 2 **Vision Air Server** tab:

Table 9

Field	Description
Vision Air Server DNS Name or IP address	Define a network name.
Vision Air TCP port	Defines the port number for Vision Air Routine. This port has to be open (firewall).
Vision Air HTTP port	Alternative port when using a proxy server.
Vision Air HTTPs port	Alternative port when using a proxy server.
ClickOnce port	Used for installing Vision Air Manager via network installer.

- 3 **SQL Server** tab:

Table 10

Field	Description
Server Address	Address of the server.
Server Instance Name	<server name> <SQL instance name>.
Database	Choose an existing database catalog or define a new name.

- 4 **Mail** tab: Define e-mail server settings. Fields can be left empty if e-mail service will not be used.

Table 11

Field	Description
Mail server address	Ask your local IT department, e.g. mail.metrohm.com.

- 5 Enter the instance Name of the target instance. This MUST be identical to the name typed in the installer.
- 6 Fill in the port number as required.
- 7 Click on **[Save package]** and save the package on the file system.

Offline configuration - Load a configuration package

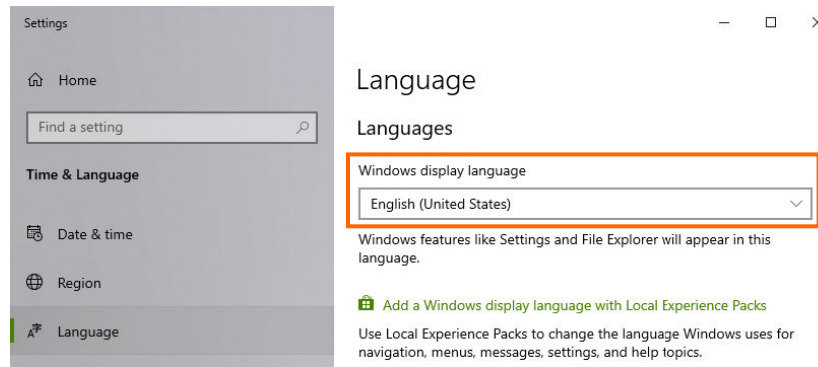
- 1 Copy the package file to the computer where Vision Air Server has been installed (without internet connection).
- 2 Launch Config Tool.
- 3 Go to the **Current settings** tab.
- 4 Click on **[Load package]** and select the package on the file system.
- 5 Go to the **Install Service** tab.
Click on **[Save and Restart Vision Air]** to complete the configuration process.

The server will now start up. After successful installation an icon will be displayed in the Windows task bar.

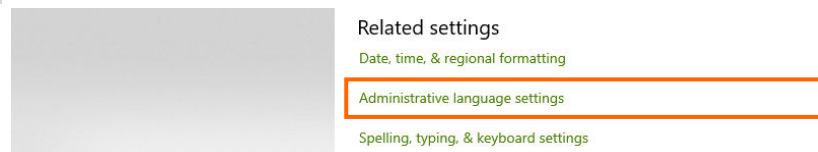
Table 13

Icon	Description
	Vision Air Server is starting up.
	Vision Air Server started successfully and is ready.

With the installation of the Vision Air Server the Vision Air Manager Network is installed. The Vision Air Manager Network is used to manage all instrument configurations and data that was collected by the clients (Vision Air Routine). Multiple Vision Air Manager Network installations can be installed on different devices. [See Distribution of the Vision Air Manager Network on page 118](#), for information on how to distribute the Vision Air Manager Network.

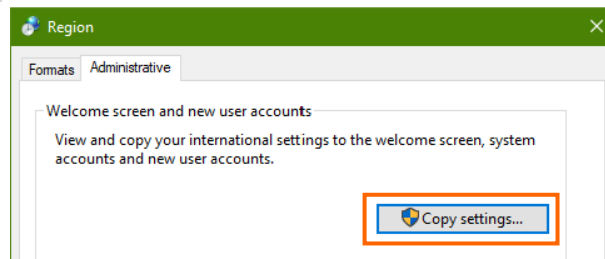


- 3 Click on **Administrative language settings**.



The **Region** window opens.

- 4 In the tab **Administrative**, click on **Copy settings...**



- 5 Copy the current settings to the system accounts by activating the check box **Welcome screen and system accounts**.

The first time Vision Air is installed on a PC, all these software components are installed one after the other. Follow the on-screen instructions and click on **[OK]** when prompted. When re-installing Vision Air at a later stage (for example when upgrading to later versions), most of these components needed are already installed and these steps are skipped automatically during the installation.

3 Click on **[Install]**.

4 Select the version of Vision Air you want to install according to the following table.

Regulated environment?		
Yes		No
Client/server setup?		
Yes	No	
Vision Air Routine Network Pharma	Vision Air Pharma	Vision Air / Vision Air Network
A client installation with pharma features. Installation of Vision Air Routine.	A local installation with pharma features. Installation of Vision Air Routine and Vision Air Manager Local.	A local or client version without pharma features. Installation of Vision Air Routine and Vision Air Manager Local.
The Vision Air Server and the Vision Air Manager Network must be installed separately. Refer to the Vision Air Network and Server Pharma tutorial (8.105.8038EN).	Refer to the Vision Air Local Pharma tutorial (8.105.8034EN).	For the local version, refer to the Vision Air Local tutorial (8.105.8032EN). For the client/server version, the Vision Air Server and the Vision Air Manager Network must be installed separately. Refer to the Vision Air Network and Server tutorial (8.105.8036EN).

4.3.4 Installation of the Unscrambler Prediction Classification Engine

The Unscrambler Prediction Classification Engine is a plug-in that allows to use the third-party software Unscrambler in Vision Air.

Proceed as follows to install the Unscrambler Prediction Classification Engine:

Vision Air must already be installed on your computer.

- 1 Double-click on the file **setup.exe**.
- 2 Click on **[Execute]**.
The installation wizard opens.
- 3 Follow the instructions of the installation wizard.
- 4 In the **Personal Information** window, enter the following information.
 - Name
 - Company
 - Activation Key for Prediction Engine
 - Activation Key for Classification Engine

The scope of delivery for Vision Air includes a license CD. Find your activation keys in the **License Certificate.pdf** file on the license CD.

The wizard continues.

- 5 After installing the Unscrambler Prediction Classification Engine, go to **C ► CAMO Software ► Unscrambler X Engine 10.4.1**.

Copy the following files:

5 Start-up

5.1 Configuration

7 configuration steps need to be carried out before using Vision Air Network with the Vision Air Server for quality control.

1. Calibration of the instrument.
2. Connecting the instrument to Vision Air Routine.
3. Changing the password.
4. Register the user and instruments to the Vision Air Server.
5. Import of Vision Air licenses.
6. Importing or creating operating procedures.
7. Adding operating procedures to an instrument group and updating instruments.

5.2 Calibration of the instrument

XDS instruments

Make sure your instrument is calibrated according to *Vision Tutorial – Instrument Calibration (81058054EN)*. Use either Vision or Vision Air Setup for the instrument calibration. Vision Air Setup can be found on the Vision Air installation DVD and needs to be installed manually.

DS2500 instruments

Calibrate the instrument with Vision Air instrument calibration.

To calibrate the DS2500 Solid Analyzer, see [Calibrating the instrument in Vision Air Routine, page 81](#).

To calibrate the DS2500 Liquid Analyzer, see [Calibrating the instrument in Vision Air Routine, page 85](#).

Before starting the instrument calibration, connect the instrument to Vision Air Routine (see ["Connecting the instrument to Vision Air Routine", chapter 5.3, page 128](#)).

4

Network properties

Network

Name: VisionAir

Vision Air Server

Address:

Port: 8007

Test Connection Proxy Settings

Data upload settings

☒ Upload sample data

☒ Upload troubleshooting info

OK Cancel

Fill in the needed server details and click **[Test Connection]**.

If you do not know your server details, you will find the necessary data within the Config Tool of Vision Air Server.

A window will open and confirm the successful connection.

- 5** Click on **[OK]** to finish the server configuration.

Synchronize with Vision Air Server

A connection to Vision Air Server must be configured first.

- 1** Go to section **Tools**.
- 2** Click on **[Vision Air Synchronization]**.
- 3** Click on **[Synchronize]**.

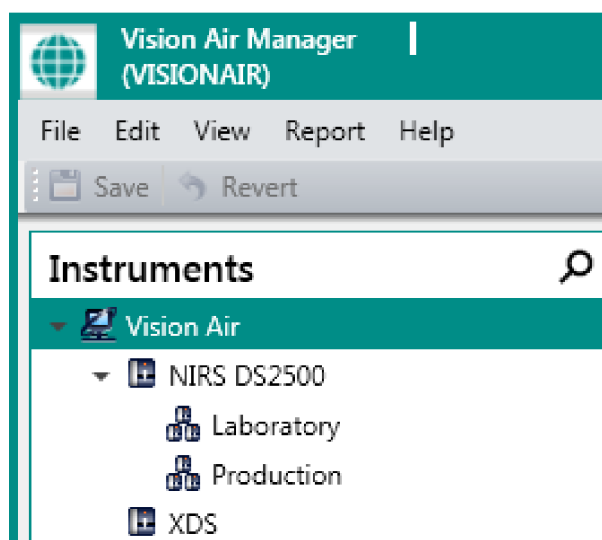
A successful synchronization is confirmed with a dialog window.

An information is displayed. It says that the registration in the Vision Air Manager Network is required.

After synchronizing, the instruments appear in Vision Air Manager, **Instruments** tab under **Unassigned Instruments**.

- 4** A pop-up window appears. The pop-up window asks for the login information.

It is not yet possible to log in. Before logging in, activate the user **Admin** in Vision Air Manager (see chapter 5.4, page 130) and Register the user and instruments to the Vision Air Server (see chapter 5.5, page 130).

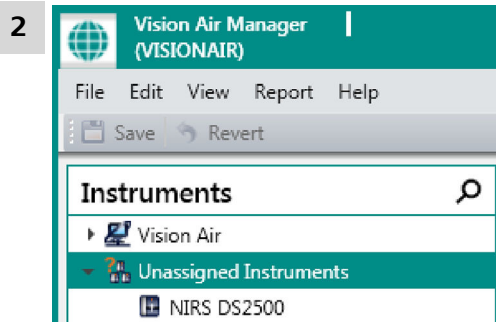


The instrument groups are displayed in the structure window.

Assign an instrument

The instrument must be connected to the network in Vision Air Routine (see *"Connecting the instrument to Vision Air Routine", chapter 5.3, page 128*).

- 1 Go to **Instruments** section.



Open the entry **Unassigned instruments** in the structure window.

- 3 Right-click on an unassigned instrument in the data window and click on **[Register...]**.

5.6 Import of Vision Air licenses

i To conduct the next steps, Vision Air Routine needs a one time connection with the instrument.

To add a license to an instrument, proceed as follows:

- 1** Double-click on the Vision Air Manager Network program icon.
- 2** Go to the **Instruments** tab in the navigation window.
- 3** Select the instrument you want to add a license to.
- 4** Select the **Licenses** tab in the work window.
- 5** Click on **[Import]**. Choose the file that was provided with the Vision Air License CD. Click on **[OK]**.
- 6** Click on **[Save]** in the toolbar.

5.7 Operating procedures

After setting up the system, operating procedures need to be defined to conduct measurements in Vision Air Routine.

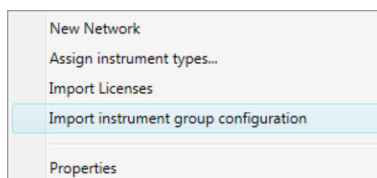
An operating procedure consists of 1 or several prediction models, a method and optional user-defined fields. Operating procedures are selectable in Vision Air Routine to conduct an analysis.

Prediction models are algorithms that correlate NIR spectra to properties of the sample, e.g. water concentration. Each prediction model is linked to 1 parameter profile.

Parameter profiles define the parameter to be analyzed in accordance with the linked prediction model, e.g. a parameter profile for a prediction model to quantify the water content is water in %.

Methods describe the way how a measurement is conducted, e.g. number of repetitions or temperature.

The following chart illustrates the structure and the workflow to create full functional operating procedures. It is explained in detail in the following chapters:



- 3 Select the .xml-file in the dialog window and click on **[Open]**.

5.9 Creating a complete configuration of operating procedures

Carry out the following actions to create a complete configuration of operating procedures.

1. Import prediction models (*see "Importing prediction models", chapter 5.9.1, page 137*).
2. Create methods (*see "Creating methods", chapter 5.9.2, page 139*).
3. Create user-defined fields (*see "Creating user-defined fields", chapter 5.9.3, page 140*).
4. Create and configure operating procedures (*see "Creating and configuring operating procedures", chapter 5.9.4, page 142*).

5.9.1 Importing prediction models

Prediction models that were created in Vision, The Unscrambler or PLS_Toolbox can be imported into Vision Air Manager as follows:

- 1 Click on **[Prediction models]** in the navigation window.
- 2 Select the instrument type where you want to add a prediction model.
- 3 Right-click in the data window on the instrument type (NIRS DS2500 Liquid, NIRS DS2500 Solid or XDS) and select **[Import prediction models]**.

Define a new parameter profile name, short name, parameter code and unit. The unit can only be defined with quantitative prediction models.

The screenshot shows a web form titled 'Summary' for creating a new parameter profile. The form is organized into a 'General information' section. It includes the following fields and values:

- Name: new parameter profile
- Short name: parameter
- Parameter code: parameter
- Data type: Double (dropdown menu)
- Number of decimals: 2
- Force negative to zero: ☐
- Display order: 100
- Report sort order: (empty field)
- Unit: None (dropdown menu)
- Created: 7/2/2015 9:34:30 AM
- Modified: 7/2/2015 9:34:30 AM
- Created by: Oliver Leipnitz
- Modified by: Oliver Leipnitz
- Description: (empty text area)

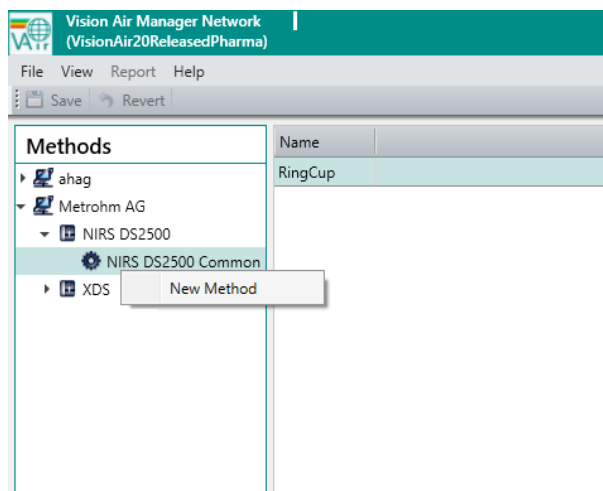
Go to the **Prediction models** section for a detailed description of the individual functions (*see "Prediction models section", chapter 3.1.6, page 28*).

Go to the **Parameter profiles** section for a detailed description of the individual functions (*see "Parameter profiles section", chapter 3.1.7, page 31*).

5.9.2 Creating methods

To create a new method, proceed as follows:

- 1 Go to the **Methods** section.
- 2 Select a network. Open the drop-down menu of the instrument type where you want to add the method. Right-click on the gear icon next to the instrument type to which you want to add the method.



- 3 In the **Summary** tab, enter the name and optionally a description.

Summary

Settings

General information

Name:

Sample handling:

Description:

- 4 Choose a suitable sample vessel that you want to use for your analysis.
- 5 Save the settings with the **[Save]** button in the toolbar.

Additional settings that are available for methods are described in the methods section (see "Methods section", chapter 3.1.8, page 32).

5.9.3 Creating user-defined fields

User-defined fields provide additional information on samples and can be added optionally.

To create user-defined fields, proceed as follows:

- 1 Go to the **User-defined fields** section.
- 2 Right-click in the structure window on the network and select **New user-defined field**.

The new user-defined field is displayed in the data window.

3

Switch to the **Summary** tab and enter the name and a description.

The following settings are available:

When activating the check box **Allow only fixed/predefined UDF values** (defined on the **Values** tab), only predefined values can be selected during sample registration in Vision Air Routine.

If the check box **This UDF is mandatory for sample registration** is checked, the user is not allowed to do a sample registration without filling out this user-defined field.

By checking **Transfer/repeat UDF value from previous sample registration**, the last user-defined field entry that was made during sample registration in Vision Air Routine is reselected automatically for the next sample registration. The user-defined field entry can always be changed.

4 Switch to the **Values** tab.

5 Click on **[Add value]**.

The new value is displayed in the work window.

6 Enter a name for the new value and save it with the **[Save]** button.

Switch to the **Prediction models** tab.

2 Click on **[Add...]**.

The **Link prediction model to operating procedure** window opens.

3 Select the desired prediction models and assign them with **[OK]**.

 Multiple items can be selected by keeping the **[CTRL]** key pressed down.

Summary	Prediction models	Methods	User-defined fields	Limits			
Linked Prediction Models:		Prediction model options:			Flat list of prediction models		
	Prediction model	Type	Part number	Version	Imported	Description	Add...
▶ 	caffeine	User-Entered Predictio...	0	1.0.0	30.05.2018 08:11:43		
	gasoline	User-Entered Predictio...	0	1.0.0	30.05.2018 08:11:43		Remove
	lactose	User-Entered Predictio...	0	1.0.0	30.05.2018 08:11:43		

The prediction models are displayed in the work window.

4 Save the settings with the **[Save]** button.

To link methods, proceed as follows:

1

Summary	Prediction models	Methods	User-defined fields	Limits
Linked Methods:				
Name	Configuration	Description		
				Add...
				Remove

Switch to the **Methods** tab.

2 Click on **[Add...]**.

The **Link methods to operating procedure** window opens.

3 Select the desired method and link it with **[OK]**.

Summary	Prediction models	Methods	User-defined fields	Limits
Linked Methods:				
Name	Configuration	Description		
Small Cup	NIRS DS2500 Common			Add...
				Remove

The method is displayed in the work window.

2

Summary Prediction models Methods User-defined fields **Limits**

Allow instrument specific Operating Procedure limits ☒

Instrument Group	Description	Group specific limits
▶ All groups	Operating Procedure specific limits	☐
▶ Laboratory		☐
▶ Production		☐

Operating Procedure limits:

Prediction Model	Parameter Profile	Type	Lower Action	Lower Warning	Target	Upper Warning	Upper Action
▶ lactruc	Lactose_Content	Absolute ▼					

Import... Export...

Switch to the **Limits** tab.

- 3 Select the desired operating procedure.
- 4 In the table in the **Limits** tab, fill in the following information:
 - **Lower intervention**: Lower intervention limit
 - **Lower warning**: Lower warning limit
 - **Target**: Target value
 - **Upper warning**: Upper warning limit
 - **Upper intervention**: Upper intervention limit
- 5 Save the settings with the **[Save]** button.

5.9.5 Adding operating procedures to an instrument group and updating instruments

- 1 Open the **Instruments** section.
- 2 Right-click on the instrument group and select **Properties**.

The status update session is displayed in the **Configuration Change** section (see "*Configuration change section*", chapter 3.1.11, page 39).

i After synchronizing in Vision Air Routine, operating procedures are available in Vision Air Routine. The status for the configuration change has changed to **completed**.

5.10 Manage signature settings

In pharma mode, several objects need to be signed on 2 levels. Each signature needs a pre-defined reason. This can be defined in Vision Air Manager.

- 1 Select the **Instruments** tab in the navigation window.
- 2 Right-click your network and click on **[Properties]**.
- 3 Go to the **Signatures** tab.
- 4 Define options for electronic signatures:

Table 16

Action	Description
Sign each sample separately at instrument:	If active, a multiple selection of samples (with CTRL/SHIFT) cannot be signed in one step at the instrument.
Sign each sample separately in Vision Air Manager:	If active, a multiple selection of samples (with CTRL/SHIFT) cannot be signed in one step in Vision Air Manager.

- 5 Configure signature reasons:

In the drop down list **level**, select the signature type you want to edit the reasons.

- Click in the text to edit the existing reasons.
- Activate the checkbox **Comment** to force a comment entry.
- Click on **[Add reason]** to add a new reason.
- Click on **[Remove reason]** to delete a reason.

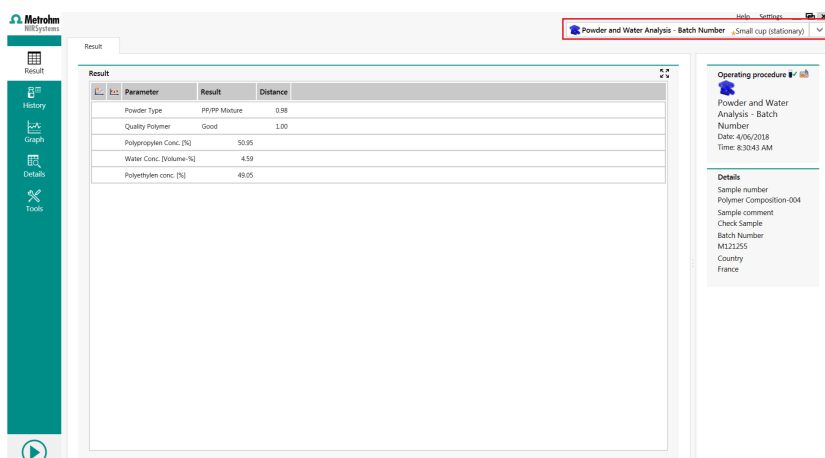
6 Operation and control

6.1 Data acquisition

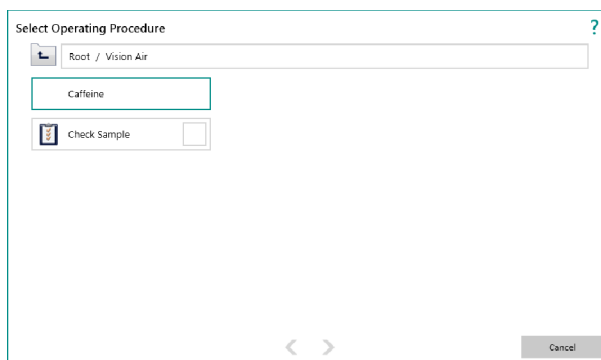
6.1.1 Selecting an operating procedure

To select an operating procedure, proceed as follows:

- 1 Open Vision Air Routine.
- 2 Ensure that you use the most recent operating procedure. To synchronize with the server, go to the **Tools** section and click on **Vision Air Synchronization**.
- 3 Click on the **[Operating procedure]** drop-down list.



- 4 Select the desired operating procedure.



 The  button is available if operating procedure groups were defined in Vision Air Manager.

6.1.2 Analyzing a sample

To analyze a sample, proceed as follows:

- 1 Click on the **[Start]** button.

The sample is analyzed. The progress indicator shows the progress of the analysis.

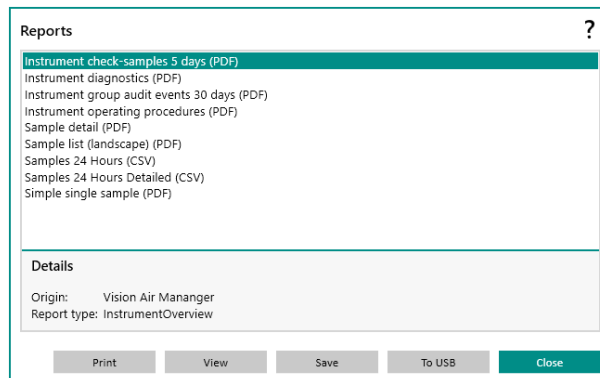


- If sample registration information needs to be entered, a window opens that asks for the missing information.
- If the **Tools** section is selected, the **[Start]** button is not active.

6.2 Creating reports in Vision Air Routine

To export and print reports in Vision Air Routine, proceed as follows:

- 1 Go to the **Tools** section.
- 2 Click on the menu item **[Reports]**.



The **Reports** window opens.

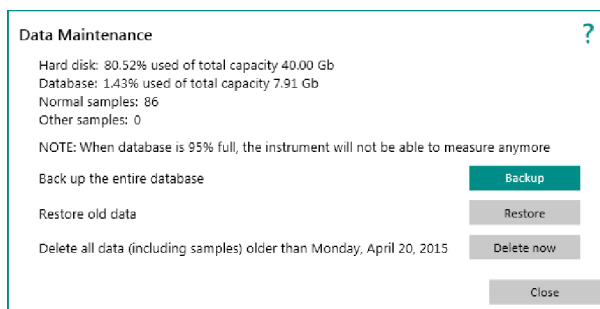
- 3** Select the desired report type and click on 1 of the following buttons:
- **[Print]**: Prints the report.
 - **[View]**: Displays the report.
 - **[Save]**: Saves the report.
 - **[To USB]**: Saves the report to a USB device.
 - **[Close]**: Closes the window.

6.3 Data maintenance

Data can be backed up, restored and deleted. In addition, the capacity of the hard disk and the database as well as the total number of measured samples can be displayed.

To back up data, proceed as follows:

- 1 Click on **[Data maintenance]**.



The top of the dialog box displays the system memory status.

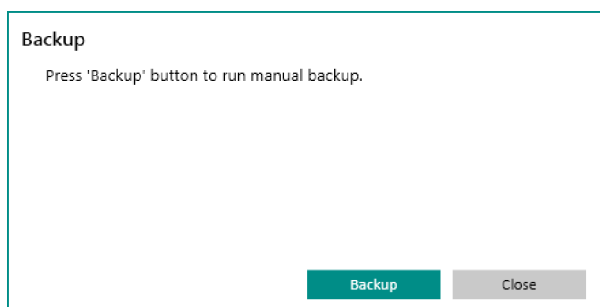
Hard disk: Memory size left for all applications on the PC.

Database: Memory size left in the database for Vision Air data.

Normal samples: Number of analyzed samples.

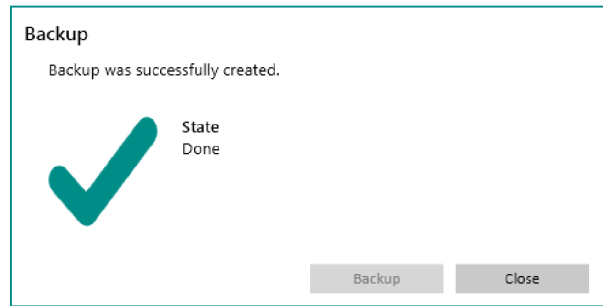
Other samples: Number of analyzed samples that do not belong to the normal type e.g. check sample, check sample operating procedures.

- 2 Click on **[Backup]**.



The **Backup** window opens.

- 3 Click on **[Backup]**.



The backup is created.

- 4** Click on **[Close]** after the backup has been completed.

The storage location is defined under **Tools ► Settings ► Export** in Vision Air Routine (see "Tools section", chapter 3.2.6, page 59).

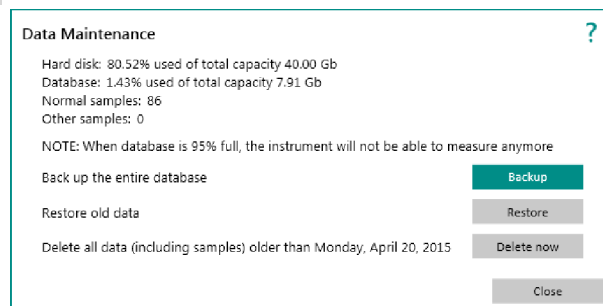
Backup files can be restored in Vision Air. Be aware that database restoration overwrites the existing database. Be careful not to overwrite valuable information.

To restore data, proceed as follows:

Preconditions:

- You are logged in on the PC as an administrator.
- Windows User Account Control (UAC) is turned off.

- 1 Click on **[Data maintenance]**.



- 2 Click on **[Restore]**.

- Click on **[Browse]** and select the backup file that should be restored.

- 4** Click on **[Data restore]** to open the backup file that should be restored.

If a power loss occurs during database restoration, proceed as follows:

Preconditions:

- 1 Open the installation folder. This is typically **C: ► Program Files (x86) ► Metrohm ► <instrument name>**.
- 2 Start **ServiceRoutinesExecutor**.
The **Restore** dialog window opens.
- 3 In the **Restore** dialog window, click on **[Browse]** to select the database backup.
- 4 Click on **Restore** to start database restoring.

- 5** Select the wavelength test. Click on data to view the results.

To monitor instrument events and user related events (login, logout, locking of users etc.), proceed as follows:

- 1 Go to the **Surveillance** section in Vision Air Manager.
- 2 Go to the **Events** tab.
- 3 Define the filter options, e.g. only show errors.
- 4 Define the time period of the data.
- 5 Click on **[Filter]**.

6.4.2 Sample lists

To create sample lists and sample list groups, proceed as follows:

- 1 Select the **Sample lists** section in the navigation window.
- 2 Right-click in the structure window and select **[New sample list group]**.
- 3 Right-click on the new sample list group and click on **[Sample list]** to create a sample list.
- 4 Select the **Samples** tab and add filter settings to filter measurements accordingly.

 Multiple sample lists can be created with different filter settings to conveniently manage large data sets and track conducted measurements.

Sample lists are also used for slope/intercept correction (*see "Slope/intercept calculations", chapter 3.3.8, page 75*).

6.4.3 Signing Configuration changes

Create a Configuration change

Any changes e.g. at a used parameter profile, have been performed.

- 1 Go to the **Configuration Change** section.

- A dialog window opens.

- In the dropdown list you can choose between:

Table 17

Option	Description
Difference with previous update	Lists only the changes compared to the last successful configuration change.
All update contents	Lists all recorded configuration entries.

Click on **[OK]** to close the dialog window.

- A new, pending configuration change is displayed in the data window.

Sign a configuration change

A pending configuration change exists.

-  Not every user role is allowed to sign configuration changes.

- 3 In the data window, select the configuration change you want to sign.

- 5 Click on **[Sign Level 1...]**, log in and sign on level 1.

-  The 2 signatures must be done by different users.

- 7** By clicking on **[Withdraw...]**, a signature can be withdrawn.

Publish a configuration change

A signed configuration change (on both levels) must exist.

- 1 Go to the **Configuration Change** section.
 - 2 In the data window, select the configuration change you want to publish.
 - 3 Select the **Instrument Updates** tab.
 - 4 Click on **[Publish all]**.
- The configuration change will be send to Vision Air Routine and the icon changes to a green checkmark. According to your system, a manual synchronization may be performed in Vision Air Routine.

6.4.4 Sign samples

Sign samples

- 1 Go to the **Surveillance** section.
 - 2 Go to the **Samples** tab.
 - 3 Define the filter options, e.g. only show samples measured with a specific operating procedure.
 - 4 Define the time period of the data.
 - 5 Click on **[Filter]**.
 - 6 Right-click on the sample and click on **[Sign Level 1...]**,
Log in, select a reason and click on **[OK]**.
 - 7 Right-click on the sample and click on **[Sign Level 2...]**.
Log in with another user, select a reason and click on **[OK]**.
-  The 2 signatures must be done by different users.

- 8 Right-click on the sample and click on **[Withdraw...]**, to withdraw a signature.

 How to manage signatures (*see "Manage signature settings", chapter 5.10, page 147*).

How to manage user permissions for signing (*see "Users section", chapter 3.1.10, page 36*).

6.4.5 Sign diagnostics tests

Sign diagnostics tests

- 1 Go to the **Surveillance** section.
- 2 Go to the **Diagnostics** tab.
- 3 Define the filter options.
- 4 Define the time period of the data.
- 5 Click on **[Filter]**.
- 6 Right-click on the entry and click on **[Sign Level 1...]**,
Log in, select a reason and click on **[OK]**.
- 7 Right-click on the entry and click on **[Sign Level 2...]**.
Log in with another user, select a reason and click on **[OK]**.

 The 2 signatures must be done by different users.

- 8 Right-click on the entry and click on **[Withdraw...]**, to withdraw a signature.

 How to manage signatures (*see "Manage signature settings", chapter 5.10, page 147*).

How to manage user permissions for signing (*see "Users section", chapter 3.1.10, page 36*).

7 Malfunctions and troubleshooting

7.1 Exporting log files

To export log files, proceed as follows:

- 1 Open Vision Air Routine.
- 2 Go to the **Tools** section.
- 3 Click on the **[Export logs]** menu item.

?

Export Logs

Comments

If exporting to USB memory device, please insert device now

☐ Include database backup (estimated size: 116 Mb)

☒ Send logs to Vision Air

Target path: ...

Collect Logs

Close

The **Export logs** window opens.

- If desired, enter comments regarding the export in the **Comments** field and select the option **Include database backup**. The **Send logs to Vision Air** option is only needed in a client/server setup. Please refer to the tutorials for Vision Air Network Tutorials for details.
- Specify the target path and click on **[Collect logs]**.

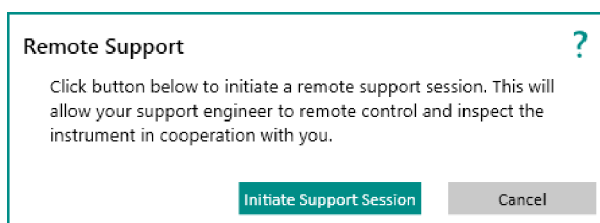
7.2 Remote support

With the **Remote support** functionality, a remote access can be set up with an external program. This remote access enables Metrohm employees to access the instrument in case of an error or for maintenance.

i To use this functionality, a full version of the TeamViewer software needs to be installed on the computer.

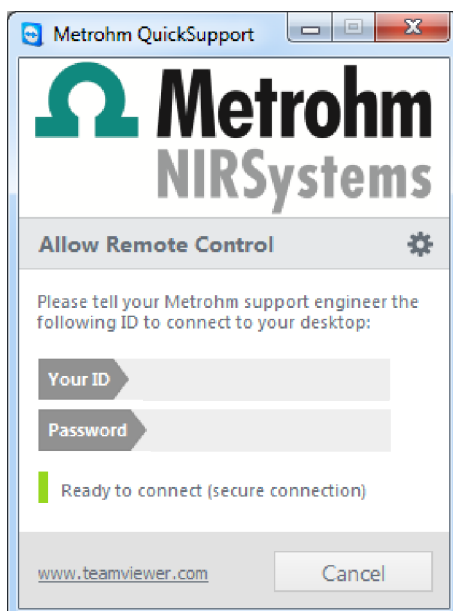
To set up the remote support, proceed as follows:

- 1 Open Vision Air Routine.
- 2 Go to the **Tools** section.
- 3 Click on the **[Remote support]** menu item.



The **Remote Support** window opens.

- 4 Click on **[Initiate support session]**.



The **TeamViewer** software is started and the **Metrohm QuickSupport** window opens.

- 5 Tell the Metrohm employee the displayed ID and the password.
The Metrohm employee can now access your computer and will perform the remote support.

7.3 Settings for database and SQL Server

Move database and security

- 1 If you have an existing database, then make a backup. Restore that backup on the target SQL Server instance.
- 2 Grant SQL Server "db_owner" rights for the user representing machine where Vision Air Service is running.
- 3 Set the Vision Air database as default 1 for the user mentioned in step 2.

Redirect Vision Air to use another SQL Server (on an already installed system)

- 1 Stop Vision Air service.
- 2 Edit hosting.exe.config, set connectionString property to the correct server.
- 3 Move the database (either backup and restore or detach, move and attach).
- 4 Start Vision Air Service again.

If Vision Air fails to start, then check the logfiles located in Vision Air installation folder, subfolder logs (like **C:\Program Files (x86)\Metrohm\Vision Air\VISIONAIR\VISIONAIR\Logs**). Start with the newest hosting.exe-??e2e and possibly also SchemaManagement-??e2e.

If you are trying to run an old (older than 1.0) Vision Air host with a remote database, you need to copy the CLR assembly to the PC where SQL Server is installed (see the next paragraph).

If you have problems with MSDTC (it is mentioned in exception text in server logs), try enabling **Allow Inbound** and **Allow Outbound** on

both, SQL and application servers (see *"Remote SQL Server configuration", chapter 4.1.4, page 99*).

7.4 Troubleshooting Vision Air Routine

Problem	Cause	Remedy
Vision Air does not start.	On the Vision Air Routine PC, the Windows language is not set to English.	Set the Windows language to English (see <i>"Pre-installation", chapter 4.3.2, page 120</i>).
	Vision Air Services are not started after restarting the PC.	Restart the Vision Air Services manually, e.g. as follows: In the Windows search box on the taskbar, type services, and then select Services. 2 services must be started, the respective names may begin with: ▪ Vision Air (XDS Series)... ▪ Vision Air (DS2500 Series)... ▪ Vision Air (DS2500 L Series)... If the Start and Stop commands are grayed out, proceed as follows: ▪ Disable the Vision Air services via context menu ► Properties. ▪ Restart the computer. ▪ Backup the SQL database. ▪ Uninstall Vision Air. ▪ Uninstall the Microsoft SQL Server. ▪ Log on to the PC with full administrator rights and install Vision Air.
	During installation, no database (XDS , DS2500 or DS2500L) was created in the SQL Server Express instance.	Make sure that no SQL Server 2019 is on the PC. Make sure you have full administrator rights during the installation.
	If a turkish operating system is used, the collation settings defined during the SQL Server installation will not fit the requirements.	2 remedies are available: ▪ Uninstall the Microsoft SQL Server. Install the same Microsoft SQL Server version manually and change the collation settings to English during the installation process.

8 Accessories

Up-to-date information on the scope of delivery and on optional accessories can be found on the Metrohm website. Download this information as follows:

Downloading the accessories list

- 1 Go to <https://www.metrohm.com>.
 - 2 Enter the article number of the product (e.g. **2.1001.0010**) into the search field.
The search result is displayed.
 - 3 Click on the product.
Detailed information regarding the product is shown on various tabs.
 - 4 On the **Included parts** tab, click the link to download the PDF.
The PDF file with the accessories data is loaded.
-  Metrohm recommends downloading the accessories list from the Internet and keeping it for reference purposes.