Water Analysis

MACHEREY-NAGEL

NANOCOLOR® VIS II
NANOCOLOR® UV/VIS II

Quick guide

Smart photometry

Quick guide

Important information:

This separate quick guide is delivered together with the spectrophotometers NANOCOLOR® UV/VIS II and VIS II. The quick guide is not intended to be comprehensive operating instructions. Further information, including detailed operating procedures, can be found in the complete operating instructions of the device. Read these instructions in addition to this quick guide. Be sure to read the safety information in this quick guide before you put the device into operation.

MACHEREY-NAGEL
NANOCOLOR® *UV/VIS* II and *VIS* II are spectrophotometers for the stationary evaluation of MACHEREY-NAGEL test kits in analytical laboratories.

Read this quick guide carefully before you perform a measurement and follow the instructions in this guide.

Safety information

BE SURE TO READ THE FOLLOWING SAFETY INFORMATION CAREFULLY BEFORE YOU USE THE DEVICE.

Failure to comply with the information can lead to severe injuries to the operator, to malfunctions, or to damage to the device.

Keep this guide so you can also consult it later.

Follow the safety information and directions in the operating instructions and take note of the stickers and information on the device.

Work may not be performed on inner parts of the device. Noncompliance invalidates any warranty claims.

Use of the hazard information

DANGER

Identifies an impending or possible hazardous situation which, if not avoided, results in death or serious injuries.

WARNING

Identifies an impending or possible hazardous situation which, if not avoided, may result in death or serious injuries.

CAUTION

Identifies a possible hazardous situation which, if not avoided, may result in minor or moderate injuries.

NOTICE

Identifies a situation which, if not avoided, can lead to malfunctions or damage to the device. Information which explains the circumstances of the text and which must be observed in particular.

Explanation of symbols used:

	This symbol indicates that there is a hazard due to electrical shock.
	This symbol indicates that the chemicals used have a corrosive effect. Follow the safety measures in the laboratory and wear the required protective equipment. Observe the information in the current safety data sheets (SDS) of the products used.
	This symbol indicates that there is a hazard due to the use of flammable materials.
	Identifies a hazard due to laser radiation.
	Explanations about the text. Tips and tricks to work better.
	USB interface
	On/Off
LAN	LAN interface
COM	Serial (RS232) interface
SDHC	SDHC card slot
	CE denotes compliance with the applicable harmonization legislation of the European Community.
	DC voltage (12 V; 3.5 A)
	In accordance with 2012/19/EU, disposal of the device via public waste disposal systems is not permissible. See the section on disposal.
	Manufacturer

Technical data

Specification	*NANOCOLOR*® *UV/VIS* II	*NANOCOLOR*® *VIS* II
Type:	Spectrophotometer with reference detector technology (RDT)	
Light sources:	Halogen lamp (visible range) Deuterium lamp (UV range)	Halogen lamp
Optical system:	Monochromator	
Wavelength range:	190 – 1100 nm	320 – 1100 nm
Wavelength accuracy:	± 1 nm	
Wavelength resolution:	0.1 nm	
Wavelength calibration:	Automatic	

Specification	*NANOCOLOR*® *UV/VIS* II	*NANOCOLOR*® *VIS* II
Wavelength selection:	Automatic, barcode, manual	
Scan speed:	900 nm / < 1 min; 1 complete scan < 1 min	1 complete scan < 1 min
Spectral bandwidth:	< 2 nm	< 4 nm
Photometric range:	± 3.0 A in the wavelength range 200 – 900 nm	± 3.0 A in the wavelength range 340 – 900 nm
Photometric accuracy:	0.005 A at 0.0 – 0.5 A; 1% at 0.5 – 2.0 A	
Photometric linearity:	< 0.5% at 2 A; ≤ 1% at > 2 A	
Scattered light:	< 0.05%	< 0.5%
Measurement modes:	Over 200 preprogrammed tests and special methods; 100 freely programmable methods; absorbance; transmission; factor; kinetics; 2-point calibration; scan; nephelometric turbidity measurement	
Turbidity measurement:	Nephelometric turbidity measurement, 0.1 – 1000 NTU	
Cuvette slot:	Round cuvettes, 16 mm OD Rectangular cuvettes 2 mm, 10 mm, 20 mm, 40 mm and 50 mm	
Memory:	16 GB micro-SDHC card; 5000 measurement values/spectra; GLP-compliant	
Display:	Background-lit HD display; anti-glare cover glass with projected capacitive touch screen (PCAP)	
Operation:	Barcode technique, icon-based display menu navigation, touch screen	
Languages:	DE / EN / FR / ES / PT / PL / HU / NL / CZ / RO / IT / TK / DK	
Extraneous light:	Not sensitive; open shaft	
Interfaces:	LAN (CAT 6; use only shielded cable max. 20 m in length) 2 × USB (host), 1 × USB (function) and 1 × RS-232 (use only shielded cable max. 3 m in length)	
Update:	Via Internet/PC and USB stick	
Operating range:	10 – 40°C, max. 80% relative humidity (without condensate formation)	
Power supply:	110 / 230 V, ~ 50 / 60 Hz	12 V, DC 3.5A
Fuse:	2A TL	–
Dimensions (L / W / H):	400 / 440 / 170 mm	360 / 400 / 110 mm
Weight:	6.5 kg	4.0 kg
Warranty:	2 years	
Overvoltage category:	II	Device I, mains adapter II
Degree of contamination:	2	
Declaration of conformity:	EMC directive 2014–30-EU; EN 61326-1:2006; LVD directive 2014–35-EU; EN 61010-1:2010;	

Initial operation

Step 1: Power supply unit

CAUTION

Multiple hazards: Instructions in this step should be performed only by qualified staff.

WARNING

Risk of electrical shock: Ensure that the power cable does not show any signs of damage. Check the suitability of the voltage source used for the device.

CAUTION

Risk of injury because of tipping hazard due to slipping. Set up the device on an even surface. Do not stack the device.

NOTICE

The device is designed for indoor and outdoor use. Do not expose the device to direct sunlight. During use outdoors, protect the interfaces from exposure to humidity and moisture.

WARNING

Risk of fire: Ensure that the power outlet is not overloaded. There is a risk of overload and fire. Ensure that the power cable does not show any signs of damage. Check the suitability of the voltage source used for the device.

WARNING

Risk of injury: Familiarize yourself with the device before working with it and read this document carefully. Use the device only if you have been trained in how to handle it.

NOTICE

Defects to the power supply unit and the housing can lead to a malfunction of the device. If the device has an obvious crack in the housing or a damaged power supply unit, the device should be taken out of service.

WARNING

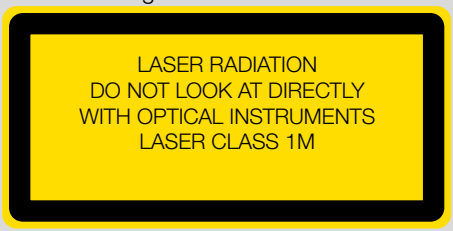
Eye damage: The deuterium lamp of the *NANOCOLOR*® *UV/VIS* II generates radiation in the ultraviolet range which can damage eyes. Therefore, never look directly into the radiation from this light source without suitable protective UV goggles. Also protect your skin from the direct effect of UV light.

CAUTION

Risk of injury because of tipping hazard due to slipping. Set up the device on an even surface. Do not stack the device.

NOTICE

Hazard due to laser radiation: The barcode scanner of the *NANOCOLOR*® spectrophotometer is subject to laser protection class 1M. Do not look directly into the beam of light from the barcode reader.



Rear view

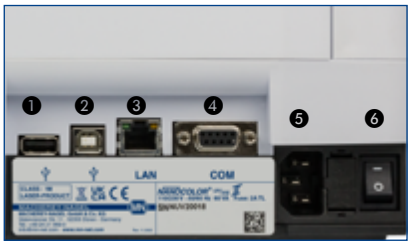


Fig. 1: Rear view *UV/VIS* II

The *NANOCOLOR*® *UV/VIS* II requires voltage of 110 / 230 V (~ 50 / 60 Hz). Insert the power plug into the power connection (Fig. 1 ❺) on the back of the device.

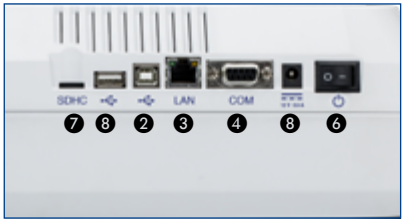


Fig. 2: Rear view *VIS* II

The *NANOCOLOR*® *VIS* II requires voltage of 12V (min. 3.5A). Insert the corresponding power adapter on the mains adapter and then connect the power supply unit to the power connection (Fig. 2 ❺) on the back of the device.

Insert the power plug into an outlet.

❶ USB A connection
❷ USB B connection
❸ Ethernet (LAN) interface
❹ RS 232 interface
❺ Power connection 110 / 230 V (~ 50 / 60 Hz)
❻ On/Off switch
❼ SDHC card slot (*UV/VIS* II underneath the lamp cover; see the operating instructions Fig. 1d)
❽ Power connection 12 V DC 3.5A

NOTICE

For the *VIS* II spectrophotometer, only the associated mains adapter GTM96600-6012-R2 (REF 919156) may be used.

The on/off switch of the *NANOCOLOR*® *UV/VIS* II (Fig. 1 ❻) / *NANOCOLOR*® *VIS* II (Fig. 2 ❻) is on the back of the device. Switch the device on. After it is switched on, a start screen showing the manufacturer's logo appears. The device performs a function test lasting approx. 1 minute.

After the function test is completed, a pop-up displays the result of the function test. The start screen of the device can be reached by pressing or . The device is now ready for operation. The status of the readiness for operation is shown in the upper left-hand corner of the display using a *UV/VIS* II / *VIS* II status icon. If this is lit and green, the device is ready for operation. If a red color is shown, the device is not ready for operation or is currently undergoing a measurement process.

Step 2: Operating the device

The spectrophotometer is operated using a 10.1″ HD display with projective, capacitive touch screen (PCAP). The cover glass has an anti-glare coating and can be easily cleaned with the enclosed display cleaning cloth or a soft cotton cloth.

Fig. 3: Start screen

The spectrophotometer is operated using a projective, capacitive touch screen (PCAP). This reacts to being touched with one or more fingers. In this way, the device can be operated by pressing and swiping on the touch screen. Operation can be carried out by touching with a finger or with the aid of a touch pen (special pen for projective, capacitive touch screens). Wearing gloves during operation is not a problem. By moving two fingers at the same time on the touch screen in opposite directions or towards each other, it is possible to enlarge or shrink views (only possible in selected menus). Numbers or text are entered in the corresponding number or text fields which react to touch and automatically open a pop-up with a number pad or a keyboard.

Task bar and status bar

The operating menu of the spectrophotometer comprises a status information bar on the upper edge of the screen and a task bar on the lower edge of the screen.

Both of these bars are always displayed. The upper bar shows the device status.

Fig. 4: Status bar

If special properties (e.g. memory, LAN, etc.) are activated, a corresponding status icon which shows that the function is active is displayed. The status icon in the upper left-hand corner shows whether the device is ready for measurement. If this is lit and green, the device is ready for operation. If a red color is shown, the device is not operational or is currently in a measurement process.

The device can be controlled using the task bar.

Fig. 5: Task bar

During the ongoing measurement process, the device cannot be operated via the task bar. In this status, the task bar is shown slightly darkened.

The icons in the task bar have the following meanings:


Home icon:
Pressing this icon always returns the user to the start screen of the device (see Fig. 3: Start screen, p. 7). It is not possible from here to access the most recently used application using the  icon.


Back icon:
This icon is used to always jump back to the previously selected level or application. The button is inactive in the start screen. After some menus have been exited, they cannot be accessed again using the  icon (such as the measurement menu), since the process was closed by exiting the menu.


Options icon:
Additional options – if they are available in the selected menu – can be accessed using this icon.


Test icon:
The basic functions, all *NANOCOLOR*® tests, and the special methods, scan, color measurement, and test number applications can be accessed using this icon.


Main menu icon:
The setting menu and the IQC menu as well as additional functionalities can be reached using this icon.


Save icon:
This icon leads to the measured value memory of the device. All measurements are stored in this memory and they can be accessed using the  icon.

Favorites bar

The Favorites bar comes with the icon for the *NANOCOLOR*® round cuvette tests as a factory default setting.

Fig. 6: Edit Favorites bar

Additional icons can be moved in this bar by holding and swiping in the blue area. To delete from the Favorites bar, hold down the corresponding icon and swipe it out of the blue area.

Radio buttons and checkboxes

Radio buttons contain selection options outlined in black. Selection options are shown as circles. Active selection options are filled in. Only one selection option is ever active in a radio button.

Touch a selection option to activate it. When the menu is exited, the selected options are saved.

Checkboxes are square boxes which are active once they have been checked. If you touch an empty checkbox, it will be marked with a check mark and activated.

If you touch a checkbox with a check mark, the check mark will be removed and the checkbox is deactivated.

It is possible to select multiple checkboxes at the same time.

List functions

When confirming text fields or number fields, there is an option for a selection list to appear instead of a keyboard. The contents of the list can be moved by swiping. Selections can be made by pressing the corresponding entry. The list entry that is currently active is shown highlighted in color. A distinction is made between two types of lists: in the case of predefined lists (such as region selection) there is no option to add an entry; conversely, dynamic lists can be edited by the user.

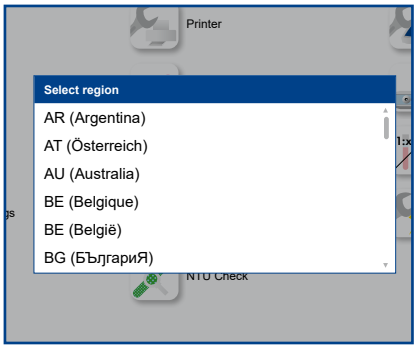


Fig. 7: Predefined list

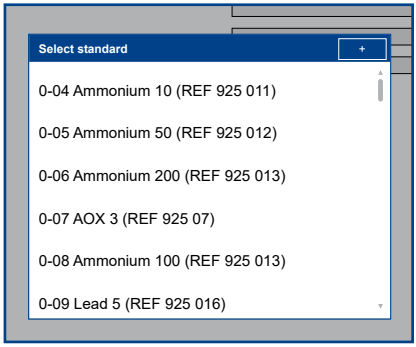


Fig. 8: Dynamic list

A new list entry can be created here by pressing + in the upper right-hand corner of the list. A number pad or a keyboard appears to input the new list entry. After successful input, the new entry appears in the list. Deleting entries is possible only in dynamic lists. To delete an entry, hold it down briefly. A trashcan icon appears. The list entry is deleted by pressing this icon.

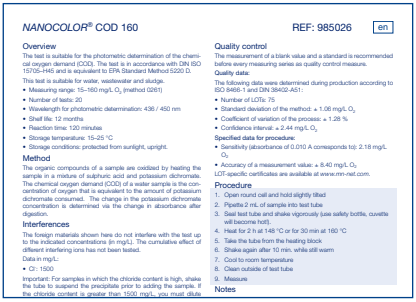
Step 3: Perform test

WARNING

Possible hazards upon contact with chemical and biological substances. Working with samples, reagents, and the corresponding accessories is associated with hazards.
When working with the cuvettes, it must be ensured that suitable protective equipment is worn. Observe the safety data sheet (SDS) of the test kit used.

NOTICE

Clean all cuvettes before insertion using a lint-free cloth to remove contamination or moisture on the cuvette and prevent soiling of the cuvette shaft.



NANOCOLOR® COD 160 REF: 985026 en

Overview

The test is suitable for the photometric determination of the chemical oxygen demand (COD). The test is in accordance with DIN ISO 15705–H45 and is equivalent to EPA Standard Method 5220 D.

This test is suitable for water, wastewater and sludge.

- Measuring range: 15–160 mg/L O_2 (method 0261)
- Number of tests: 20
- Wavelength for photometric determination: 436 / 450 nm
- Shelf life: 12 months
- Reaction time: 120 minutes
- Storage temperature: 15–25 °C
- Storage conditions: protected from sunlight, upright.

Method

The organic compounds of a sample are oxidized by heating the sample in a mixture of sulphuric acid and potassium dichromate. The chemical oxygen demand (COD) of a water sample is the concentration of oxygen that is equivalent to the amount of potassium dichromate consumed. The change in the potassium dichromate concentration is determined via the change in absorbance after digestion.

Interferences

The foreign materials shown here do not interfere with the test up to the indicated concentrations (in mg/L). The cumulative effect of different interfering ions has not been tested.

Data in mg/L:

- Cl^-: 1500

Important: For samples in which the chloride content is high, shake the tube to suspend the precipitate prior to adding the sample. If the chloride content is greater than 1500 mg/L, you must dilute

Quality control

The measurement of a blank value and a standard is recommended before every measuring series as quality control measure.

Quality data:

The following data were determined during production according to ISO 8466-1 and DIN 38402-A51:

- Number of LOTs: 75
- Standard deviation of the method: ≙ 1.06 mg/L O_2
- Coefficient of variation of the process: ≙ 1.26 %
- Confidence interval: ≙ 2.44 mg/L O_2

Specified data for procedure:

- Sensitivity (absorbance of 0.010 A corresponds to): 2.18 mg/L O_2
- Accuracy of a measurement value: ≙ 8.40 mg/L O_2

LOT-specific certificates are available at www.mn-net.com.

Procedure

1. Open round cell and hold slightly tilted
2. Pipette 2 mL of sample into test tube
3. Seal test tube and shake vigorously (use safety bottle, cuvette will become hot!).
4. Heat for 2 h at 148 °C or for 30 min at 160 °C
5. Take the tube from the heating block
6. Shake again after 10 min. while still warm
7. Cool to room temperature
8. Clean outside of test tube
9. Measure

Notes

Fig. 9: Test kit instructions

Perform the test according to the instructions of the respective test kit (Fig. 9). Read these instructions carefully in order to obtain precise and reliable results. Prepare the specimen according to the instructions.

Step 4: Perform measurement

NOTICE

Unclean cuvettes can contaminate the cuvette shaft and lead to incorrect measurement results.

All measurements can be started from the methods menu (Fig. 10).

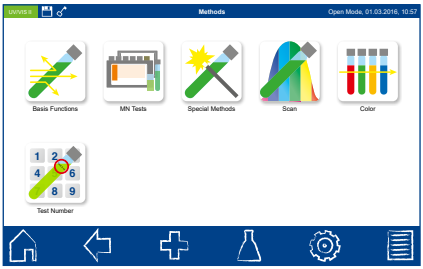


Fig. 10: Method

Absorbance measurement

The basic function absorbance offers the option of determining the absorbance of a sample solution as compared to a zero solution. After the method is called up, a window to enter the wavelengths at which the measurement is to be performed appears. The wavelengths are entered in a list by pressing the Add button. A maximum of 10 wavelengths can be added to the list. The selected entry is removed by pressing the Remove button. Pressing Clear deletes all of the list contents.

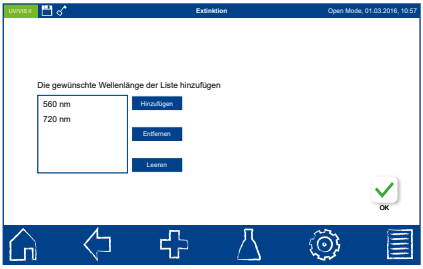


Fig. 11: Absorbance

After confirming with ✓ the measurement window is called up. A request for the zero solution appears. After inserting the cuvette, the measurement procedure is started by pressing 0. After the measurement of the zero solution is completed, a request to insert the sample solution appears. After inserting the cuvette, the measurement procedure is started by pressing ▶. After the measurement is completed, the measurement values are displayed in the measurement window.

Round cuvette tests

NANOCOLOR® round cuvette tests can be accessed in the device in various ways. All cuvettes are equipped with a barcode. When the start screen or a measurement menu is displayed, the cuvette can be inserted and the barcode is read fully automatically. The corresponding cuvette test is called up in the device and the measurement is automatically started (in the case of round cuvette tests which must be measured against a zero solution, no automatic measurement is performed). After the measurement is completed, the result is displayed in the measurement window. Various sample information can be entered using ✚ and the icons below the result field. Pulling out the cuvette or exiting the measurement menu via the remaining icons in the task bar ends the measurement procedure and saves the result in the measurement value memory of the device.

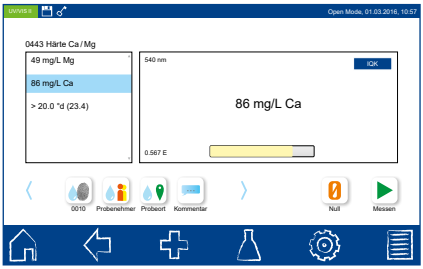


Fig. 12: Result

In addition to barcode recognition, the measurement menu of the cuvette tests can also be called up by selecting the corresponding test from a list with round cuvette tests or by entering the test number .

In the case of the latter two options, no automatic measurement of the result takes place upon insertion of the cuvette. The measurement is performed by pressing ▶.

NOTICE

The first time a method is called up, it is automatically called up in submethod 1. The submethod (chemical form) can be switched after the measurement by clicking on the "submethod" entry using the + icon.

Rectangular cuvette tests

NANOCOLOR® rectangular cuvette tests can be called up in the device in various ways. They cannot be called up via a barcode. The measurement menu of the rectangular cuvette tests can be called up by selecting the corresponding test from the list with rectangular cuvette tests or by entering the test number . Insertion of the cuvette with the zero solution is requested. After pressing the measurement of the zero solution is performed and then the insertion of the cuvette with the sample solution is requested. Confirming with displays the result in the measurement window. Various sample information can be entered using and the icons below the result field. Pulling out the cuvette or exiting the measurement menu via the remaining icons in the task bar ends the measurement procedure and saves the result in the measurement value memory of the device.

Scan

The spectrophotometer offers the option of recording the absorbance of a sample across the wavelength range of 190 – 1100 nm (for *NANOCOLOR*® *UV/VIS* II) or 320 – 1100 nm (for *NANOCOLOR*® *VIS* II). A scan with the halogen and/or the deuterium lamp is performed, depending on the selected wavelength range and the respective device type. The measurement is performed against a zero solution. After selecting the menu using , a sample name can be entered. The start and end wavelength of the measurement must be selected.

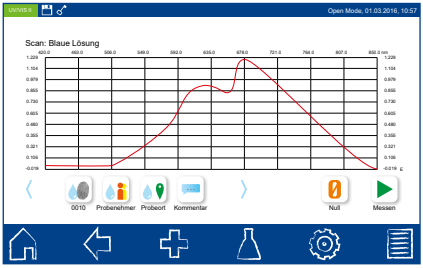


Fig. 13: Scan

After confirming with , the measurement window appears and the insertion of the zero solution is requested. Then the insertion of the sample solution is requested. A graph to show the absorbance over the wavelength opens. The scan over the entire wavelength range can be tracked live. Various sample information can be entered using and the icons below the result field. Pulling out the cuvette or exiting the measurement menu via the remaining icons in the task bar ends the measurement procedure and saves the result in the measurement value memory of the device. The menu for the scan analysis can be accessed by calling up an individual “scan” result in the measuring device memory and then pressing the icon. Alternatively the scan analysis menu can be reached by selecting the entry “scan analysis” from the selection list of the after performing a scan.

Color measurement

The spectrophotometer offers the option of determining various color numbers and comparing them with stored color references.

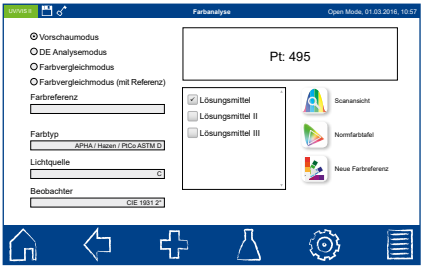


Fig. 14: Color analysis

After selecting the menu using a selection can be made with a radio button between a color measurement and a comparison with a color reference (if a color reference has already been defined via the color analysis menu). A sample name can be entered in the title field. After selecting the color measurement, the color type to be measured can be selected; the light source and observer fields are automatically filled out. These can also be manually changed at any time. However, in this case, the selection of the color number automatically returns to the setting CIE L*a*b. Confirming with ✓ opens the measurement menu. After measuring the zero solution and measuring the color solution, the result is displayed in the measurement window.

The menu for the color analysis can be accessed by calling up an individual “color measurement” result in the measuring device memory and then pressing the icon.

NTU check

The *NANOCOLOR*® *VIS* II and *UV/VIS* II enable a warning of interfering turbidity when measuring a test in the 16 mm round cuvette. The NTU check is enabled as a factory preset. The nephelometric turbidity is determined at the same time as the measurement by measuring at 860 nm at a 90° angle.

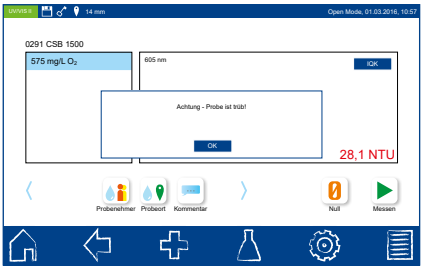


Fig. 15: NTU check

The NTU value is displayed together with the result. If the warning limit of 10 NTU is exceeded, a warning is displayed and the result is shown in red (Fig. 15. The measured turbidity value is stored together with the result.

Step 5: Enter sample information

The icons for entering sample information are below the measurement result. The following information is configured as a factory preset: comment, sample site, and dilution.

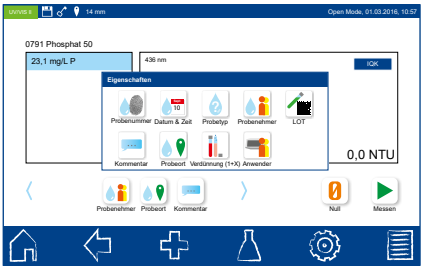


Fig. 16: Sample information

This selection can be changed and the sample information can be entered using the + icon. Using the “Properties” command, new sample information can be added under the measurement menu (Fig. 16). To do this, the desired icon in the dialogue box that opens must be held down and dragged using a swiping motion into the sample information line that is illuminated in blue. To remove the icon from the sample information bar, hold it down, drag it out of the illuminated, blue sample information line using a swiping motion and release it.

The information entered is stored together with the measurement result.

Step 6: View results memory and IQC memory

The measured value memory can store up to 5000 measurement data and 100 scans or color measurements. The measured value memory backs up the measurement results of the cuvette tests, color measurements, and scans. In addition to the measurement result, all sample information entered is also stored. During the storage process, the sample information is linked in a tamper-proof manner (GLP-compliant) with the measurement result.

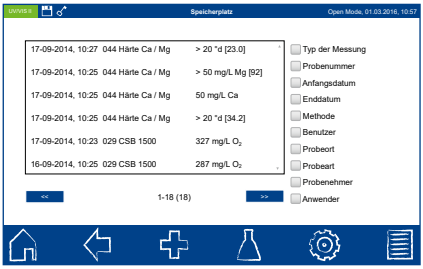


Fig. 17: Measured value memory

The measurement results are accessed using the icon in the task bar. All measurement results are displayed in a list, sorted by date.

There is the option to print the results, to export them as csv. files or .png files, or to select them. In the memory menu, a selection can be made according to various sample information and also according to the measurement method. After the data have been selected, they can also be printed out or exported. When printing multiple measurement results, the printout contains only the most important information of the respective measurement (date, time, method, result).

Detailed information of a measurement can be obtained by selecting an individual measurement result in the memory. In addition to the result, all sample information entered here is shown. The information received in this way can be printed or exported once again. In the case of

a scan, the spectrum recorded is shown in the detail view. Moreover, in the case of a color measurement and a scan, the respective analysis menus can be reached by pressing or .

The IQC memory backs up all measurement results that are generated via the IQC menu. These are results of internal quality control which are stored separately from the general measurement results.

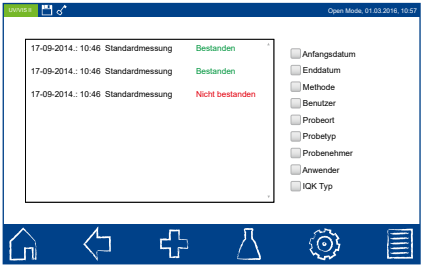


Fig. 18: IQC memory

The IPC memory is accessed using the icon in the task bar. Pressing followed by leads to the IQC memory. The IQC card 4, among other things, is created from the results stored here. Analogously to the measured value memory, the IQC memory can be printed, selected, or exported. To view detailed information, the same rules apply as in the case of the measured value memory.

Cleaning

DANGER

Risk of electrical shock: The device must be switched off and disconnected from the power supply during all cleaning work.

WARNING

Risk of fire: Do not use any flammable cleaning agents or organic solvents to clean the device

DANGER

Hazard due to the development of gases containing chlorine: Chlorine compounds can develop lethal gases under the influence of UV radiation. For cleaning, do not use any cleaning agents containing chlorine.

NOTICE

Do not clean the device with acetone or similar products.

NOTICE

Ensure that there is no cuvette in the cuvette shaft.

1. Wipe the outside of the device with a damp cloth. Use water or a mild cleaning agent for this purpose. Then dry the device with a soft cloth.
2. If necessary, clean or dry the touch screen with a soft, lint-free cotton cloth.
3. If necessary, clean or dry the cuvette shaft with a soft, lint-free cotton cloth.

Details on cleaning and maintaining the device can be found in the complete operating instructions of the device.

Quality control

Each laboratory or facility must define its own QC guideline.

To check the performance of the test kit and device used, we recommend measuring standard solutions with a known concentration within the measurement range.

The photometric accuracy of the *NANOCOLOR*® $^{UV}/_{VIS}$ II and *VIS* II can be verified using *NANOCONTROL* NANOCHECK 2.0 color solutions (REF 925703) provided by MACHEREY-NAGEL. The halogen lamp and the deuterium lamp can be checked using the internal lamp check (see detailed operating instructions of the device).

The wavelength accuracy can be checked using the integrated holmium oxide filter (see detailed operating instructions of the device).

Maintenance

NOTICE

Malfunction of or damage to the device due to incorrect maintenance. The maintenance of the device may be performed only by qualified staff.

⚠ WARNING

Incorrect measurements: A dirty cuvette shaft can lead to soiling of the cuvettes used and to incorrect results. Check the cleanliness of the cuvette shaft at regular intervals and during maintenance. Clean the cuvette shaft if it is soiled (see cleaning).

For information on maintenance, follow the instructions in the complete operating instructions of the device or contact MACHEREY-NAGEL.

Accessories and replacement parts

NOTICE

Use only accessories and replacement parts approved by the manufacturer. If parts not authorized by the manufacturer are used, the operator is responsible for the conformity of the device and the warranty is invalidated.

Replacement parts, accessories, and consumables

Designation	REF
Halogen lamp	919604
Deuterium lamp	919603
LAN cable (1.5 m)	919682
Barcode scanner	919134
Sipper pump FP-200	919180
Thermal printer	919655
Protective hood *NANOCOLOR*® *VIS* II	919651
Protective hood *NANOCOLOR*® $^{UV}/_{VIS}$II	919605
Calibration cuvette 16 mm	916908
Mains adapter for *NANOCOLOR*® *VIS* II	919156

Disposal

NOTICE

Disposal of the device via public waste disposal systems is not permissible. Contact your local MACHEREY-NAGEL contact person.

Disposal according to EU directive 2012/19/EU. In accordance with EU directive 2012/19/EU, MACHEREY-NAGEL takes back old equipment and disposes of it free of charge.

Troubleshooting

Various messages may be displayed, depending on the operating status. The source of the error may either be incorrect operation or a malfunction of the device. If errors recur, contact MACHERY-NAGEL.

Problem	Cause	Solution
The barcode could not be read.	The cuvette inserted does not have a barcode.	Call up the respective test manually and insert the cuvette according to the instrument's instructions.
	The barcode on the cuvette is damaged.	Manually enter the test number of the method used.
	The device does not recognize the test kit used.	Update your instrument to the latest firmware version (see operating instructions, chapter 6.3.).
The cuvette used is the wrong size.	The cuvette size programmed for the method does not match the cuvette size determined.	Check whether the correct cuvette size is used for the applied method. Check whether the cuvette was correctly inserted.
Device is not ready for measurements.	Automatic device tests display errors.	Restart device. If the error persists, copy the log file onto a USB drive (see operating instructions, chapter 6.2) and contact your local distributor or MACHEREY-NAGEL.
The wavelength is outside of the permissible range.	The wavelength entered is outside of the wavelength range of the device.	Enter a wavelength in the correct range (see operating instructions chapter 1.5).
You are not authorized to perform this action.	The user is not authorized to change this setting.	Change the user rights or contact the device administrator to change the setting.
The export failed.	Printing on a USB drive was not possible.	Check whether write protection of the USB drive is disabled. Try the export with a different USB drive. Try the export with a different USB-A interface.

Problem	Cause	Solution
It is only possible to define 10 wavelengths.	For list entries which allow more than one wavelength to be input, a maximum of 10 entries are possible.	Enter only 10 wavelengths in the list.
No backup is available.	The connected USB drive does not contain any backup file.	Copy a backup file to the highest level of the USB drive.
Recovery failed.	The backup could not be recovered. The backup file is damaged.	Copy the backup file once again to the USB drive. If the error persists, create a new backup, set the device to standard settings (see operating instructions, chapter 6.3.1) and try to install the failed backup once again.
Backup failed.		Retry after restarting the device. Change the backup memory type.
It is not possible to switch off the “open mode” since no administrator account is defined.		First create user accounts before you enable “user mode” (see operating instructions, chapter 6.7).
It is not possible to delete this user since no other administrator account is defined.	At least one administrator must be set in “user mode”.	Appoint another user as administrator before you delete the current user.
It is not possible to delete one’s own account.	Deleting the last administrator account is not possible in user mode.	Switch device to “open mode” (see operating instructions, chapter 6.7) and delete the user again.
Maximum entry for the absorbance: +/- 3.500 A.	It is not possible to enter absorbance values over this limit.	Enter a value within the range indicated.
LOT is expired.	The expiration warning is enabled. The LOT number of the test kits used is expired.	Check the dates in the LOT tracking menu (see operating instructions, chapter 6.10.2). The analysis may be incorrect; use new chemicals.
Measurement result with symbol > or <.	The measurement result is outside of the range programmed for this method.	Dilute the sample if the range is exceeded. Use a more sensitive test kit if the result is below the range. Enable the absorbance in the results screen. Together with the absorbance, an estimated result is displayed in parentheses after the measurement result.
Device update: The software version is already installed and active.	The selected software version is already installed in the device.	Check the installation file.
Please connect a USB drive to perform this action.	No USB derivative was connected.	Connect a USB drive via one of the USB-A interfaces.
	The device does not recognize the USB drive.	Please reconnect the USB drive. Try to connect the USB drive to the other USB-A interface and retry. Use a different USB drive.

Problem	Cause	Solution
The screen remains dark after switching on, the blue indicator light is lit.	The SD card was not recognized or is defective. The display cable is loose.	Remove SD card and switch on the device again. If the device starts up as usual, replace SD card. Contact MACHEREY-NAGEL regarding how to proceed.
The device stays at 10% in the lamp test after starting.	Halogen lamp defective	Remove and check halogen lamp. A defective halogen lamp can be identified, for example, by clouding or black discoloration. In this case, replace the halogen lamp.
No measured values are stored.	The measured value memory is disabled.	In the memory settings, enable the check mark for “save measurement results”.
Time and date are no longer current.	The installed button battery is soiled, empty, or defective.	Contact MACHEREY-NAGEL regarding how to proceed.
NANOCONTROL NANOCHECK batch (LOT) cannot be selected.	The batch is more current than the latest photometer update.	Manually transfer the data from the evaluation sheet of the batch into the photometer and perform the measurement once. For subsequent measurements, the data are stored and do not need to be entered again.
	The most current software update is not installed.	Update the software version of the spectrophotometer or proceed as described in the previous point and enter the data manually.
NANOCONTROL NANOCHECK batch (LOT) can be selected but the device goes back to the start screen.	Database conflict during the update.	Delete the NANOCHECK LOT in question from the list with available LOTs by holding down the LOT in the list for a few seconds and then confirming the trash can icon. Then manually transfer the data from the evaluation sheet of the batch into the photometer and perform the measurement once. For subsequent measurements, the data are stored and do not need to be entered again.
The device screen is frozen.	The software of the device is stuck.	Switch the device off, wait at least three seconds, and then switch the device back on.
After starting the device, the messages “Memory is nearly full. Please delete measurements that are no longer needed.” or “Memory is full” appear. “The oldest measurements will be overwritten” is displayed in red on the background of the main screen.	The memory with measured values (5000 measured values) will soon be full.	Depending on the message, delete the measurement data from the measured value memory. If the message is ignored, the oldest data set will be overwritten if the memory is full. Please note that during automatic overwriting, color references can also be overwritten.

Problem	Cause	Solution
After the device is started, the messages “Maximum number of scans and color measurements has been exceeded. The oldest scan and color measurements are overwritten” appear or “The number of scans and color measurements is near the limit. Please delete measurements which are no longer needed” is displayed in red on the background of the main screen.	The memory for scan and color measurements (100 results) is full or nearly full.	Depending on the message, delete the measurement data from the measured value memory. If the message is ignored, the oldest data set will be overwritten if the memory is full. Please note that during automatic overwriting, color references can also be overwritten.
An error occurred during the measurement. Please repeat the measurement.	The measurement was interrupted.	Wait until the measurement has been completed in full before you remove the cuvette.
Warning: Some system components were not found!	There is a problem with the internal USB hub.	Contact MACHEREY-NAGEL
No free method number available!	The maximum possible number of special methods has been created.	Remove special methods which are no longer needed in order to be able to create a new method.
Measurement cannot be performed (division by 0)! Please repeat the measurement!	Division by zero occurred during the measured value calculation.	Ensure that all cuvettes inserted were positioned according to the instructions for the corresponding method.
Barcode already linked in another method.	The linked barcode is already linked in another special method.	Delete the barcode link first in the other method before the barcode is to be linked in the new method.

MACHEREY-NAGEL GmbH & Co. KG

If you still have questions after reading the instructions or need technical assistance, contact:

MACHEREY-NAGEL GmbH & Co. KG
Valencienner Str. 11 · 52355 Düren · Germany
Telephone: +49 2421 969-0
Email: info@mn-net.com
www.mn-net.com

This product can be sold in the UK. The conformity is declared by the UKCA logo on the device type label and the product label. A separate declaration of conformity can be requested from MACHEREY-NAGEL or your responsible distributor.

Contact of our UK authorized representative:

COMPLY EXPRESS LIMITED
Unit C2 Coalport House, Stafford Court, Stafford Park 1, Telford
TF3 3BD, UK.

Spectrophotometer *NANOCOLOR*® $^{UV}/_{VIS}$ II and *VIS* II

Water Analysis

www.mn-net.com

MACHEREY-NAGEL

Management System EN ISO 13485:2016 ISO 9001:2015
www.tuv.com ID 9000008338

MACHEREY-NAGEL GmbH & Co. KG
Valencienner Str. 11
52355 Düren · Germany

DE Tel.: +49 24 21 969-0 info@mn-net.com
CH Tel.: +41 62 388 55 00 sales-ch@mn-net.com
FR Tel.: +33 388 68 22 68 sales-fr@mn-net.com
US Tel.: +1 888 321 62 24 sales-us@mn-net.com

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