



Smart photometry



NANOCOLOR[®] VIS II NANOCOLOR[®] UV/VIS II Quickstart guide

MACHERY-NAGEL

www.mn-net.com



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1. Introduction

Welcome and thank you for deciding on a spectrophotometer from MACHEREY-NAGEL. The *NANOCOLOR*[®] *UV/VIS* II / *VIS* II is a powerful, fast and compact spectrophotometer for water analysis, which is able to evaluate MACHEREY-NAGEL *NANOCOLOR*[®] tube and standard tests. In addition, the instrument is also capable of determining the nephelometric turbidity measuring of a sample by light diffusion at a 90° angle. The combination of a 10.1" HD display with an intuitive, icon based menu structure enables a fast, comfortable and enjoyable handling of the spectrophotometer. Thus, the spectrophotometer is the ideal laboratory photometer for the entire spectrum of water analysis.


1.1 Technical description

A halogen lamp and a deuterium lamp cover the wavelength range from 190–1100 nm in the *NANOCOLOR*[®] *UV/VIS* II. A halogen lamp covers the wavelength range from 320–1100 nm in the *NANOCOLOR*[®] *VIS* II. The light of the respective lamp is diffracted via a concave grating and sent through a slit into the instrument's cuvette slot. After the light has passed through the sample, the amount of absorbed light is calculated by detecting the remaining light.

Matching the measured absorbed light with a pre-set calibration, the instrument can calculate the concentration of the sought analyte.

1.2 Technical details

	<i>NANOCOLOR</i> [®] UV/VIS II	<i>NANOCOLOR</i> [®] 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	
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 E in wavelength range 200–900 nm	± 3.0 E in wavelength range 340–900 nm
Photometric accuracy:	0.005 E bei 0.0–0.5 E; 1 % bei 0.5–2.0 E	
Photometric linearity:	< 0.5 % bei 2 E; ≤ 1 % bei > 2 E	
Stray light:	< 0.05 %	< 0.5 %
Measuring modes:	More than 200 preprogrammed tests and special methods, 100 user defined methods, absorbance, transmission, factor, kinetics, 2-point calibration, scan, nephelometric turbidity measurement	
Turbidity measurement:	Nephelometric turbidity measurement, 0.1–1000 NTU	
Cuvette slot:	Test tubes 16 mm OD Rectangular cuvettes 2 mm, 10 mm, 20 mm, 40 mm and 50 mm	
Data memory:	16 GB Micro SDHC card, 5000 measured data sets/spectra, GLP conform	
Display	HD 10.1 inch, anti-reflective cover glass with projected capacitive touch screen (PCAP) and background LED lighting	
Operation:	Barcode technology, icon-based menu guidance, touch screen	
Languages:	DE / EN / FR / ES / PT / PL / HU	
External light:	Insensitive, open cuvette slot	
Interfaces:	LAN (CAT 6; only use shielded cable of max. 20 m length) 2 x USB (Host), 1 x USB (Function) and 1 x RS 232 (only use shielded cable of max. 3 m length)	
Update:	Via Internet/ PC and USB stick	
Operating range:	10–40 °C, max. 80 % relative humidity (without condensation)	
Power supply:	110–240 V, ~ 50/60 Hz	12 V, DC 3A

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	
Housing protection type:	IP20	
Protection rating:	class 1	class 3
Declaration of conformity: 	EMC directive 2014-30-EU; EN 61326-1:2006; LVD directive 2014-35-EU; EN 61010-1:2010; EN 61010-2-81:2002+A1:2003; EN 60529 (IP20)	

2. Safety precautions

Please read the instruction manual carefully before setting up and using the instrument. In case instructions are disregarded, the instrument may malfunction or get damaged. To ensure perfect performance of the instrument, it may only be used as described in this manual. Please pay particular attention to the following warning notices, which indicate special dangers when using the instrument.



Caution:
Imminent danger of an electric shock.



Attention:
Indicates actions that pose a potential threat to instrument performance or may cause instrument damage.



Warning:
Indicates actions that pose a threat to the user. In case of not adhering to the advice, slight or serious injuries may occur.



Caution:
Indicates danger by laser radiation.

2.1 Input supply



To ensure safe functioning of the instrument, please use the included power cable or power adapter only.

2.2 Biological risk

When using the instrument, it may be necessary to handle hazardous chemicals or biologically harmful samples. Please adhere to the following guidelines while using the instrument:

- Please read all information concerning hazards and safety measures in the material safety data sheets and on the packages you work with.
- All utilized compounds need to be disposed in accordance with national rules and regulations.
- The type of safety equipment utilized needs to be in line with the concentration and hazard potential of the given substance used.

2.3 Protective clothing

As protective clothing we recommend to wear protection gloves and a laboratory coat.

2.4 Improper handling and warranty

In case of improper handling or handling operation by untrained personnel, MACHEREY-NAGEL declines any warranty claims.

2.5 Damage of casing

If the housing is damaged, the instrument needs to be sent in for repair. In such a case, the proper functioning of the instrument as well as the correctness of the measurement results cannot be guaranteed anymore.

2.6 Damage of cable

In case of a damaged cable, switch off the instrument and replace the cable immediately.

2.7 Transport

For transporting the instrument, the cardboard box used for the initial shipment as well as the protective inner parts are perfectly appropriate. Therefore, we recommend keeping the box. In case the original box is not available anymore, a large cardboard box and plenty of soft packing material, which prevents the instrument from shifting during transport, can be used.

2.8 Lamps



The *NANOCOLOR*[®] *UV/VIS* II features a halogen and a deuterium lamp. The *NANOCOLOR*[®] *VIS* II features a halogen lamp. Both get very hot during operation. Hence, there is a risk of severe burns. Before exchanging the lamps, let them cool down for at least 30 minutes.



Please disconnect the instrument from the power source before starting any maintenance work in order to avoid electric shock.



The deuterium lamp of *NANOCOLOR*[®] *UV/VIS* II generates ultraviolet radiation, which can harm your eyes. Never look directly into the light source without suitable UV protection glasses. Also, protect your skin against direct UV light.



The barcode reader of *NANOCOLOR*[®] spectrophotometer is subject to laser projection class 1M.



3. Instrument set-up

3.1 Set-up location



Only use the instrument in a suitable location. It should be placed on a dry, clean, leveled and horizontal surface. The operating temperature is between 10–40 °C. Make sure to protect the instrument from drastic changes in temperature. Avoid positioning the instrument close to windows, hot plates, ovens etc. To ensure correct functioning and reliable results, the instrument should not be exposed to direct sunlight or other bright, focused light sources. For optimal performance, humidity should be between 20–80 %

3.2 Package content

Please open the shipping box carefully with a sharp tool. Make sure not to damage its contents. Remove the instrument and all other parts carefully. Check the package, instrument and accessories for visible damages. In case a part is damaged, please contact your distributor or MACHEREY-NAGEL's technical support (*see 8.5 Contact, p. 32*).

The following list contains all items inside the package. Please ensure that your shipment is complete. In case of missing items, please also contact your local distributor or MACHEREY-NAGEL's technical support.

Note: Keep the original box as well as the packaging material from the initial shipment to optimally protect the instrument in case of a return-shipment.

Package content

- *NANOCOLOR*[®] *UV/VIS* II or *NANOCOLOR*[®] *VIS* II
- Protective covering
- Power plug (only for *NANOCOLOR*[®] *UV/VIS* II)
- Power adapter (only for *NANOCOLOR*[®] *VIS* II)
- USB connection cable
- This quickstart guide
- Calibration cuvette
- Microfiber cloth
- USB stick
- Touch pen

4. Outer appearance

4.1 Front and side view



Fig. 1: Front view $UV/VIS II$



Fig. 3: Front view $VIS II$



Fig. 2: Side view $UV/VIS II$



Fig. 4: Side view $VIS II$

- Ⓐ Stereo speakers
- Ⓑ 10,1" HD touch screen with PCAP
- Ⓒ Universal cuvette slot for tube tests of 16 mm OD and rectangular cuvettes of 2 mm, 10 mm, 20 mm, 40 mm and 50 mm
- Ⓓ Lamp compartment with halogen and deuterium lamp (SDHC card slot)
- Ⓔ 2D bar code scanner
- Ⓕ USB A interface

4.2 Back view



Fig. 5: Back view UV/VIS II

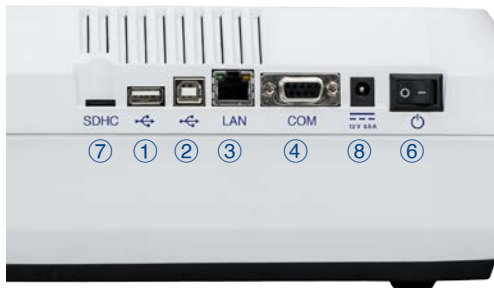


Fig. 6: Back view VIS II

- ① USB A interface
- ② USB B interface
- ③ Ethernet (LAN) interface
- ④ RS 232 interface
- ⑤ Connection for power supply 110-240 V (~ 50/60 Hz)
- ⑥ Main switch
- ⑦ SDHC card slot (UV/VIS II refer to Fig. 1④)
- ⑧ Connection for power supply 12 V DC 3A

5. Operating instruction



The *NANOCOLOR*[®] *UV/VIS* II requires a voltage of 110–240 V (~ 50/60 Hz). Plug in the power cable into the connection for power supply (Fig. 5 ⑤) on the instrument's back side.



The *NANOCOLOR*[®] *VIS* II requires a voltage of 12V (min. 3A). Plug in the power adapter into the power supply and establish the connection to power supply (Fig. 6 ⑧) on the instrument's back side afterwards.

Then, plug the power plug into the electrical outlet. Please ensure that the power plug or power adapter is intact with neither cable break nor other damages. Otherwise, there is an imminent danger of an electric shock.

5.1 Connectivity

Next to the electrical connection (Fig. 5 ⑤), 4 more types of interfaces are available within the *NANOCOLOR*[®] *UV/VIS* II as indicated on page 10:

2 x USB Host (Fig. 5 ① and Fig. 2 ①f)

1 x USB function (Fig. 5 ②)

1 x Ethernet (LAN) (Fig. 5 ③)

1 x RS 232 (Fig. 5 ④) for the connection of different devices as well as laboratory information management systems (LIMS))

Next to the electrical connection (Fig. 6 ⑧), 5 more types of interfaces are available within the *NANOCOLOR*[®] *VIS* II as indicated on page 10:

1 x SDHC-card slot (Fig. 6 ⑦)



2 x USB Host (Fig. 6 ① and Fig. 4 ①f)

1 x USB function (Fig. 6 ②)

1 x Ethernet (LAN) (Fig. 6 ③)

1 x RS 232 (Fig. 6 ④) for the connection of different devices as well as laboratory information management systems (LIMS))

5.2 Turning on the instrument

The main switch of *NANOCOLOR*[®] *UV/VIS* II (Fig. 5 ⑥) / *NANOCOLOR*[®] *VIS* II (Fig. 6 ⑥) can be found on the instrument's back side. Turn on the instrument. Subsequently, a boot screen appears displaying the MACHEREY-NAGEL logo. Afterwards, the instrument performs a self test which takes about one minute. Next, a pop-up informing about the results of the performance check will be displayed. Press  or  to move to the start screen. Now the instrument is ready to use. The instrument's operating state can be checked in the upper left corner of the display by pressing the status-icon. A green icon indicates that the instrument is ready to use. A red icon indicates that the instrument is not ready to use or for example performing a measurement.

5.3 Operation and user guidance

The spectrophotometer features a 10.1" HD display with a projective, capacitive touch screen (PCAP). The instrument's cover-glass is non-reflecting. It can be easily and conveniently cleaned with the microfiber cloth included in your package or with a soft cotton cloth.

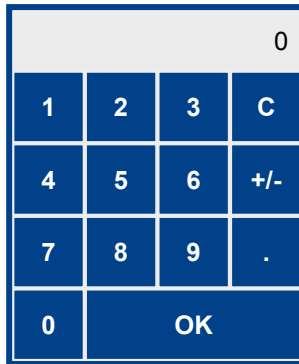


Fig. 7: Start screen

5.3.1 Operation of the touch screen

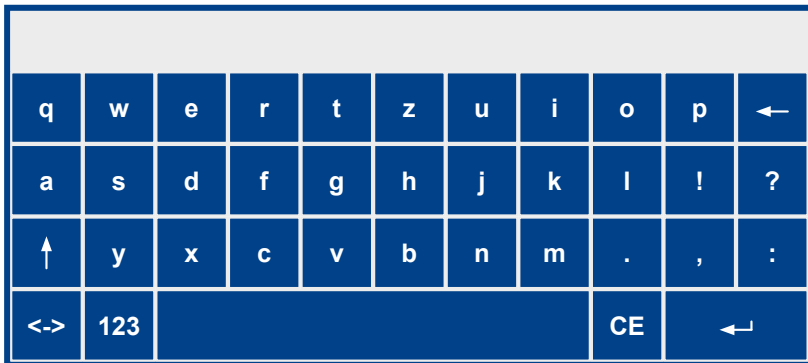
The spectrophotometer features a 10.1" HD display with a PCAP touch screen sensitive to touches of one or more fingers. This enables handling by means of pressing or wiping on the screen with either fingers or a touchpen (special pen for projective, capacitive touch screens). Wearing protective gloves does not impair handling the instrument properly.

In selected menus, you can zoom in and out by moving two fingers in opposite directions or towards each other. Numbers or texts can be inserted to the respective number or text fields, by touching the respective field which automatically opens a pop-up displaying a text and numeric keypads.



0			
1	2	3	C
4	5	6	+/-
7	8	9	.
0	OK		

Fig. 8: Numeric keypad



q	w	e	r	t	z	u	i	o	p	←
a	s	d	f	g	h	j	k	l	!	?
↑	y	x	c	v	b	n	m	.	,	:
<->	123						CE	↶		

Fig. 9: Text keypad

5.3.2 Task and status bar

The spectrophotometer menu is equipped with a status information bar at the top and a task bar at the bottom of the display.

Both bars are always displayed. The upmost bar displays the instrument's operating status.



Fig. 10: Status bar

In case of having activated special features (e.g. memory, LAN, etc.), a status icon appears. The status icon in the upper left corner displays whether the instrument is ready to use. A green icon indicates that the instrument is ready to use. A red icon indicates that the instrument is currently busy, e.g. with a measurement process.

The instrument can be operated via the task bar.




Fig. 11: Task bar

During the measuring process the bar is inactive (shaded appearance).

Task bar functions:




Home icon:

By pressing this icon at any position in the menu, one is guided back to the start screen (see Fig. 7: Start screen, p. 14). From the start screen, it is not possible to get back to the last application via the  icon.



Back icon:

By pressing this icon, one goes back to the application or level that was used last.

Please consider that some menus cannot be retrieved by pressing the  icon (e.g. measurement menu), as the process has been ended by leaving the respective menu.



Feature icon:

By pressing this icon, one can activate additional features as long as they are available in the selected menu.



Test icon:

By pressing this icon, basic features as well as MACHEREY-NAGEL tests and applications, such as special methods, scan, color measurement or test number can be selected in the method menu.




Main menu icon:

By pressing this icon, one can get to the main menu, including settings, the IQC menu as well as other functions.



Memory icon:

By pressing this icon, the measurement memory is opened. The results of measurements available via the  icon are stored here.

5.3.3 Favorites bar

The instrument allows you to add favorites to the start screen to personalize the instrument and to provide quick access to the most preferred functions. Initially, the favorites bar features the icon for *NANOCOLOR*[®] tube tests. Other icons can be added to the favorite bar by holding and moving them to the blue colored area. Removal of icons from the favorites bar is done by holding an icon and moving it out of the blue colored area.



Fig. 12: Editing the favorites bar

5.3.4 Option buttons and check boxes



Option buttons are framed in black. Activated option buttons are filled with a black dot. Please consider that only one selection point can be activated at a time.

You can activate a selection point by touching it. By leaving the menu, the selected options will be saved automatically.



Check boxes are square shaped. Touching an empty check box or its text will set a checkmark and activate the box. It is possible to select more than one check box at once. Touching a checkbox with a checkmark deactivates the box and removes the checkmark.

5.3.5 List functions

When editing text or numeric fields, it is possible that a selection window with a list will be opened instead of a keyboard. This list can be scrolled down by finger movement on the display. A suitable field can be selected by touching it. The background of the currently selected entry will be colored. There are two kinds of lists: pre-defined lists (e.g. choice of region) cannot be edited and complemented, while dynamic lists can be adjusted.

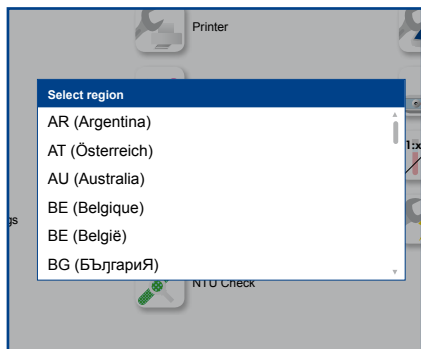


Fig. 13: Predefined list

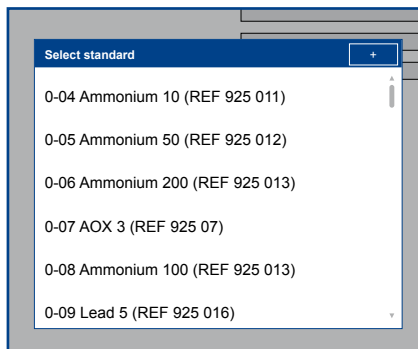




Fig. 14: Dynamic list

A new entry can be added by pressing  at the upper right corner of a dynamic list. A numeric or text keypad will appear in order to add the new entry. Confirming the entry will add it to the list. Entries can only be deleted in dynamic lists by pressing the respective entry for a moment until a recycle bin appears. Pressing  will remove the entry from the list.

6. Methods

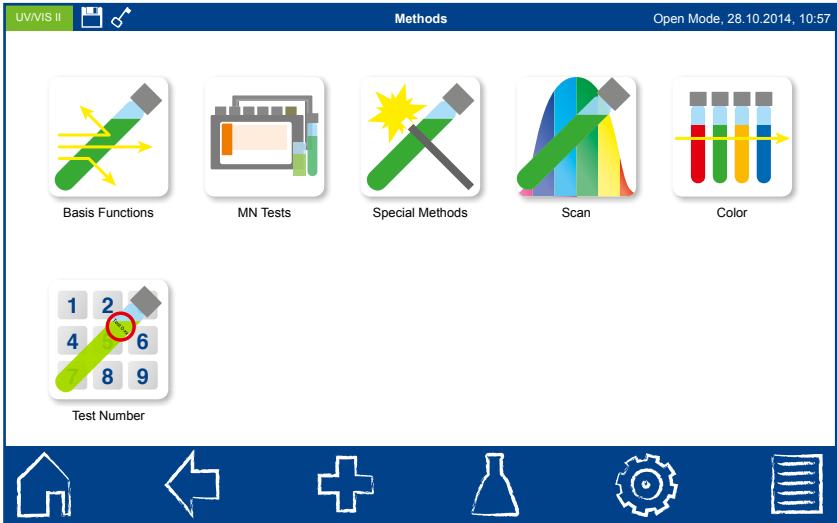





Fig. 15: Methods

6.1 Basic functions

6.1.1 Factor






The basic function “Factor” enables the determination of measurement results through the multiplication of an absorbance with a user defined factor. After having selected this method, a window will appear asking for the factor and the wavelength for the measurement and calculation.



Confirming with  opens the measurement window. Inserting the zero solution and pressing  will initiate the zero measurement. After the successful measurement of the zero solution, the sample solution needs to be inserted. Pressing  will start the measurement process. After the measurement has been completed, the measurement result will be displayed in the result window.

6.1.2 Standard



The basic function “Standard” enables the definition of a sample’s concentration on basis of the concentration of a standard solution and a zero solution. After having selected this method, a window will appear asking for the standard concentration and the wavelength for the measurement.

Confirming the entries by pressing  will open the measurement window. Inserting the zero solution and pressing  will initiate the zero measurement. Then, the standard solution needs to be inserted. Pressing  will start the sample measurement.

After the standard solution the sample solution has to be inserted. Pressing  will start the sample measurement. After the measurement has been completed, the measurement result will be displayed in the result window. In case more samples need to be investigated the next sample can be inserted. Pressing  will start the measurement of the next sample.

6.1.3 Absorbance



The basic function “Absorbance” enables the measurement of a sample’s absorbance against a zero solution. After having selected this method, a window will appear asking for the wavelength of the measurement. By pressing the **Add** button a set of wavelengths can be selected. It is possible to add up to 10 wavelengths to the list. The wavelengths list can be cleared or selected entries can be deleted by pressing the **Remove** button.

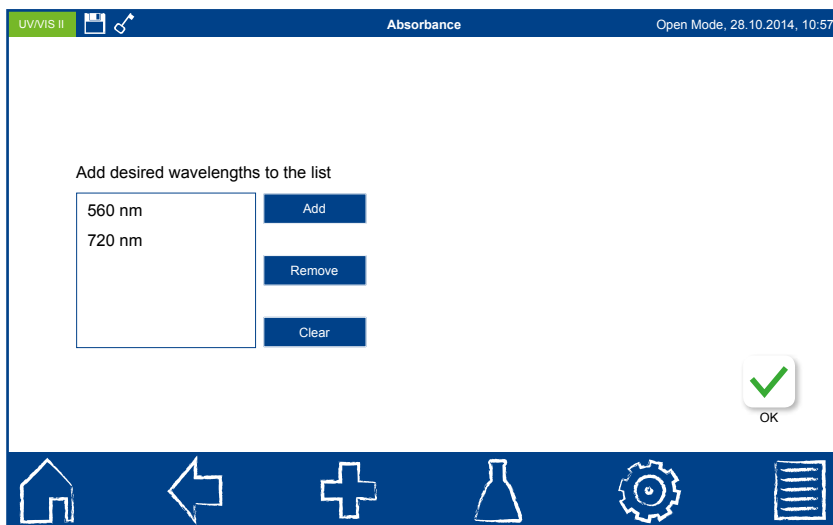





Fig. 16: Absorbance




Confirming with  will open the measurement window. The instrument asks for a zero measurement. Inserting the zero solution and pressing  will initiate the zero measurement. After the successful measurement of the zero solution, the sample solution need to be inserted. Pressing  will start the measurement process. After the measurement has been completed, the measurement result is displayed in the result window.

It is possible to perform more than one measurement in a row. The results are then listed in a list on the left side of the result window.

Detailed information for each measurement can be called up by choosing an entry from the list.




6.1.4 Kinetics



The basic function “Kinetics” enables the measurement of a sample’s kinetics against a zero solution. After having selected this method, a window will appear asking for the measurement time, a time interval and the measurement wavelength. Confirming the entries with  opens the measurement window. Inserting the zero solution and pressing  will initiate the zero measurement. After the successful measurement of the zero solution, the sample solution needs to be inserted. Pressing  starts the measurement process. A diagram will be displayed showing the live-recording of the measurement results.

6.1.5 Transmission




The basic function “Transmission” enables the measurement of a sample’s transmission against a zero solution. After having selected this method, a window will appear asking for the wavelength of measurement. By pressing the **Add** button a set of wavelengths can be added to the list. It is possible to add up to 10 wavelengths to the list. The wavelengths list can be cleared or selected entries can be deleted by pressing the **Remove** button. Confirming with  will open the measurement window. A request for a zero solution will appear. Inserting the zero solution and pressing  initiates the zero measurement. After the successful measurement of the zero solution, the sample solution needs to be inserted. Pressing  starts the measurement process. After the measurement has been completed, the measurement result will be displayed in the measurement window.

It is possible to perform more than one measurement in a row. The results are then listed in a list on the left side of the result window.

Detailed information for each measurement can be called up by choosing an entry from the list.

6.1.6 Turbidity




The basic function “Turbidity” enables the measurement of a samples nephelometric turbidity. Insertion of the test tube and pressing  initiates the measurement. After the measurement has been completed, the measurement result will be displayed in the result window.

6.2 MN tests

6.2.1 Tube tests



With the spectrophotometer MACHEREY-NAGEL tube tests can be selected in different ways. All test tubes are labeled with a barcode. When the start screen is active or the device is in measuring mode, the barcode of the inserted test tube will be scanned automatically. The instrument detects the tube test and the measuring process is initiated automatically (tube tests which need to be measured against a zero solution cannot be measured automatically).

After the measurement has been completed, the measurement result will be displayed in the result window. Via  and the icons below the result window, different sample information can be added. Removal of the cuvette or leaving the menu via the remainder of the task bar icons quits the measurement process and stores the measurement result in the measurement memory of the device.

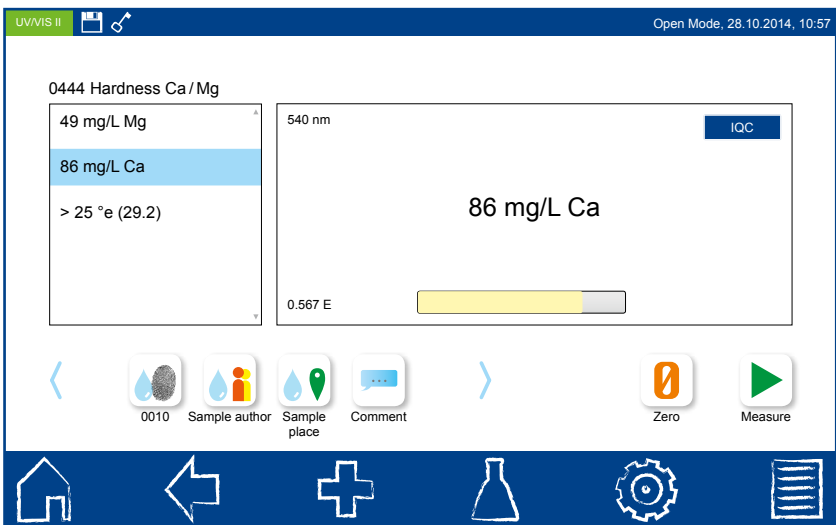







Fig. 17: Result




In addition to opening the measurement menu through barcode identification, in the test menu it is possible to manually select the tube test from a list through  or to manually insert the test number through .

In case of these two options, the measurement will not be triggered automatically after insertion of the test tube. In these cases you can initiate the measurement by pressing .

6.2.2 Standard tests











MACHEREY-NAGEL standard tests can be selected in different ways. It is, however, not possible to select a standard test by barcode identification. The appropriate measurement menu for a specific standard test can be manually selected in the test menu from a list through . Additionally, the test number can be manually inserted through .

A request for a zero solution will appear. After insertion of the rectangle cuvette, the measurement is initiated by pressing . After the successful measurement of the zero solution, the sample solution needs to be inserted. Pressing  starts the measurement process. After the measurement has been completed, the measurement result will be displayed in the result window. Via  and the icons below the result window, different sample information can be added. Removal of the cuvette or leaving the menu via the remainder of the task bar icons quits the measurement process and stores the measurement result in the measurement memory of the device.

6.3 Scan



The spectrophotometer enables to record a sample's absorbance in the range of 190–1100 nm (for *NANOCOLOR*[®] *UV/VIS* II) or 320–1100 nm (for *NANOCOLOR*[®] *VIS* II). Dependent on the selected wavelength range, the scan is performed with the light from the halogen and /or the deuterium lamp. The measurement is defined against a zero solution. After having selected this method through , a sample description can be inserted. Furthermore, the wavelengthrange needs to be specified. Confirming with  opens the measurement window. A request for a zero solution will appear. Inserting the zero solution and pressing  will initiate the scan of the zero solution. After the successful measurement of the zero solution, the sample solution needs to be inserted. Pressing  starts the measurement process. A graphic depicting the wavelengths will appear. The scan of the whole wavelength range can be observed live. After the measurement has been completed, the complete scan will be displayed in the result window. Via  and the icons below the result window, different sample information can be added. The scan title can be edited via the function "Edit title", accessible via the  icon. Removal of the cuvette or leaving the menu via the remainder of the task bar icons quits the measurement process and store the measurement result in the measurement memory of the device. To analyse the scan choose the entry "Scan analysis" from the list accessible via the  or select the result from the memory and press .

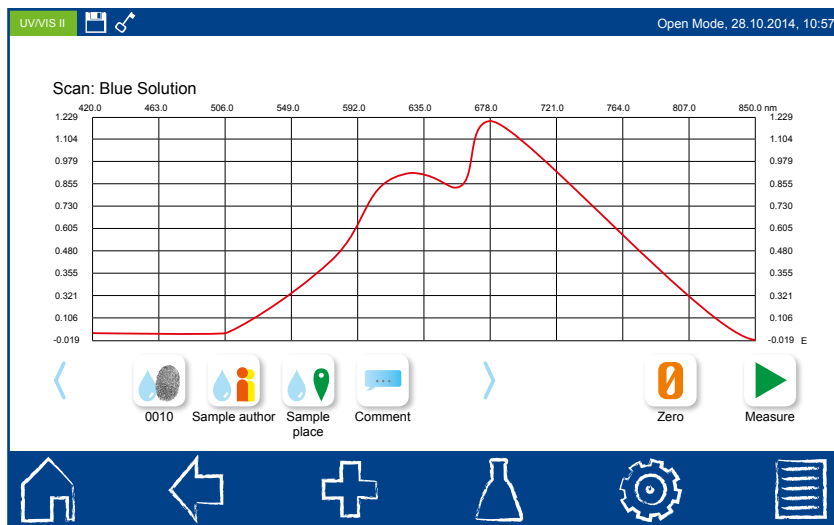




Fig. 18: Scan

6.4 Color measurements



The spectrophotometer provides the possibility to determine different color types and furthermore allows the comparison of these with stored color references.

After having selected this menu through , one can decide via option buttons to perform either a color measurement or a color comparison against a reference (as far as a color reference has been defined via the color analysis menu already). A sample description can be inserted in the field “title”. After selecting the button “color measurement”, one can decide on the color type to be measured; the field “light source” and “observer” are automatically filled in. These can always be manually changed. In this case, however, the selection of the color number automatically indicates the preference CIE L*a*b. Confirming with  opens the measurement window. After measurement of the zero solution and the color sample, the result will be displayed in the result window.

To analyze the color measurement select the result from the memory and press .

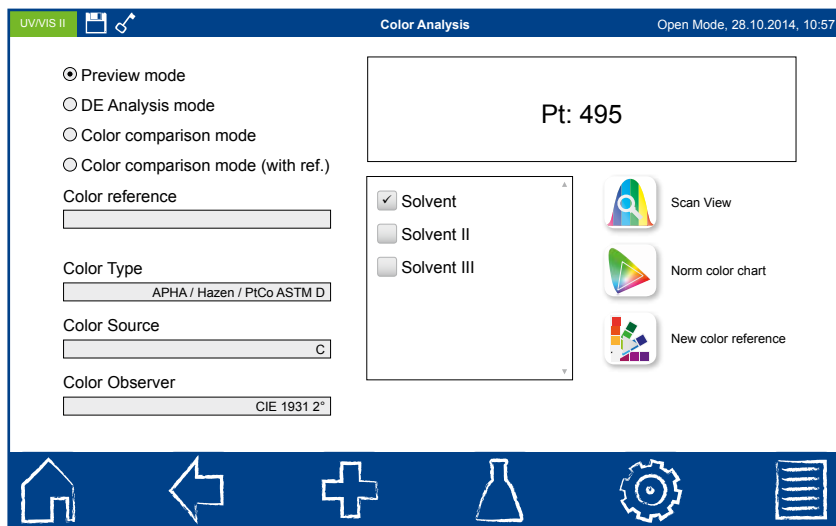




Fig. 19: Color measurement

6.5 Test number



The spectrophotometer provides the possibility to call up preprogrammed or user defined tests via the test number. After selecting the menu through , the test's number can be inserted via the numeric keypad (for example: insert 044 for the *NANOCOLOR*[®] Hardness Ca / Mg test).

If the number is correct, information about the test will appear on the display. Confirming with  will open the measurement window. Dependent on the method, the sample can now be measured directly or against a zero solution.

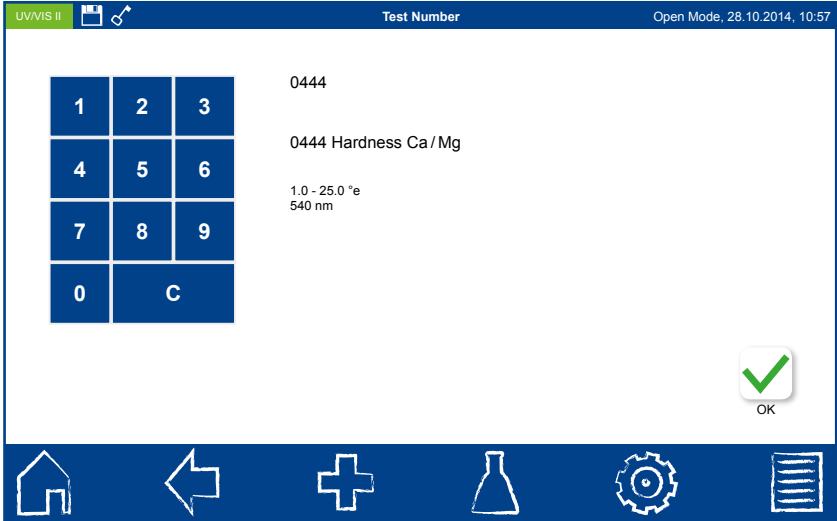



Fig. 20: Inserting the test number

7. Data memory

The spectrophotometer features an internal memory as well as a slot for a micro SDHC card. All measurement results produced by the instrument are saved on this internal memory. The memory is subdivided into the IQC memory (see 7.2 IQC memory, p. 30) and the measuring memory (see 7.1 Measurement memory, p. 29). All measurement-independent data (background image, avatars, etc.) are saved on the factory-installed 16 GB micro SDHC card. Furthermore, a data backup can be performed through the menu option . In this case, internal data are saved on the SDHC-card.

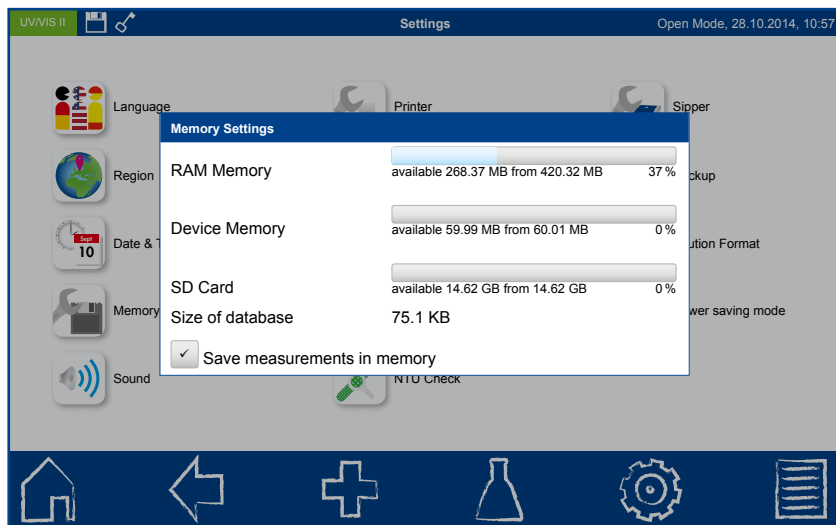



Fig. 21: Data memory settings

7.1 Measurement memory

The measurement memory can save up to 5000 measuring results from cuvette tests, color measurements and scans. Together with the measurement results, all other sample information will be saved. This information will be linked to the measurement results in a tamperproof way, ensuring GLP conformity. By pressing the  icon in the task bar, the measurement results can be retrieved. All measuring results are arranged by date.

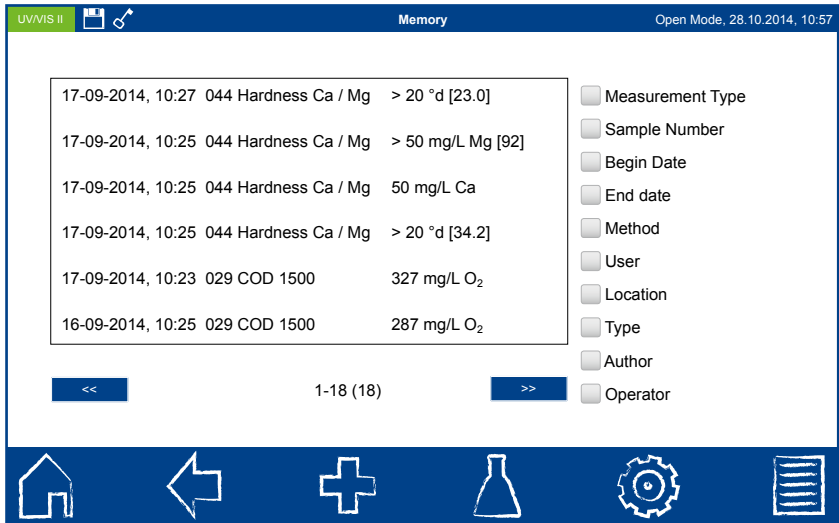




Fig. 22: Measurement memory

Measurement results can be printed, selected or exported as csv.-file. The memory menu assists with the selection according to different sample information, dates and measurement methods. This selection can also be printed or exported. If more than one measuring result is printed, the hardcopy only contains the most important information of each measuring result (date, time, method, result). Detailed information can be retrieved by selecting the individual result in the measurement memory. With the measuring result, all other specified sample information are displayed. If a scan is selected, a detailed view of the spectrum is displayed. These detailed information can now be printed or exported.

In case of a color measurement and a scan, one can enter the respective analysis menus by following the above-mentioned steps. In the measurement memory it is also possible to analyze color measurements and scans by pressing  or .

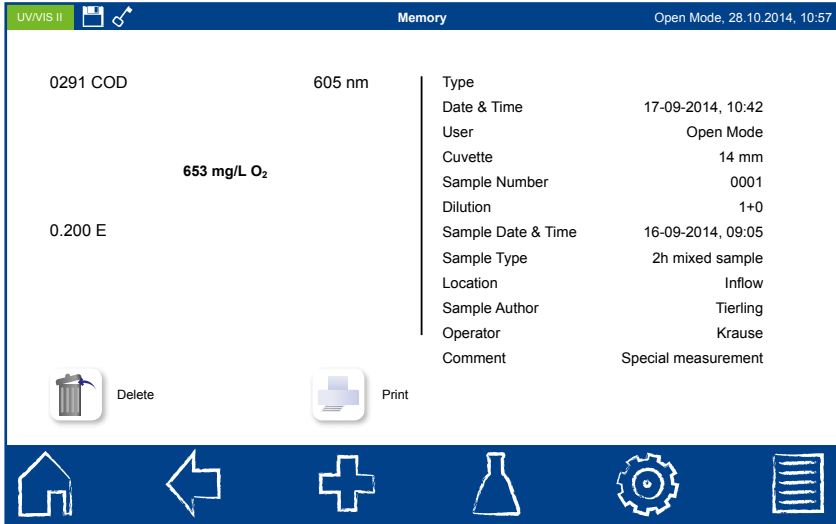


Fig. 23: Individual result

7.2 IQC memory

The IQC memory saves all measuring results generated via the IQC menu (which are flagged as IQC measurements). The IQC menu can be entered by pressing . Subsequent selection of opens the IQC memory. The results saved in this memory provide—amongst others—the basis for the IQC control charts. It is possible to print, export or select data of the IQC memory just as those of the measurement memory. For inspection of detailed information, the same rules apply for the IQC memory as for the measurement memory (see 7.1 Measurement memory, p. 29).

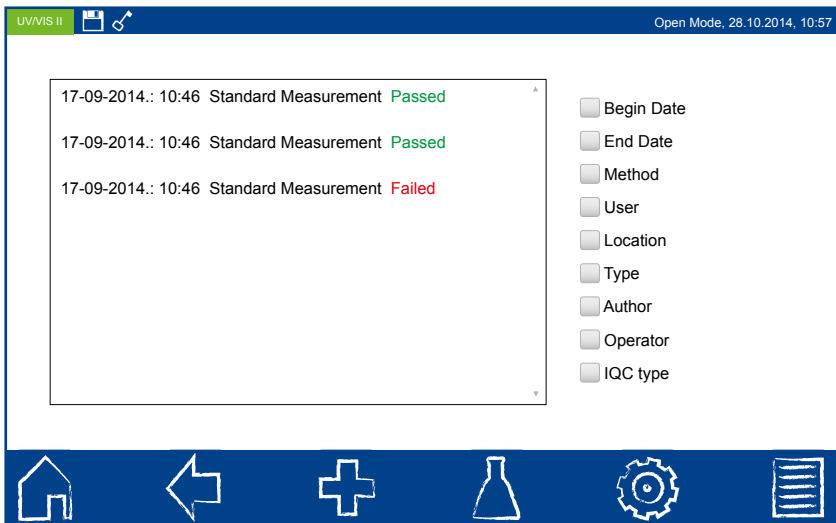




Fig. 24: IQC memory

7.3 Backup

The data stored on the instrument can be saved by performing a backup. This can be necessary for purposes of a data storage or due to safety concerns.

Via  and the submenu  one can access the backup function. Here it is possible to save the data stored on the instrument's internal SDHC card or a connected USB-drive. Additionally one can recover an existing backup from the SDHC card. Please note that in case of recovering an existing backup the complete instrument storage will be overwritten and all unsaved data will be erased.

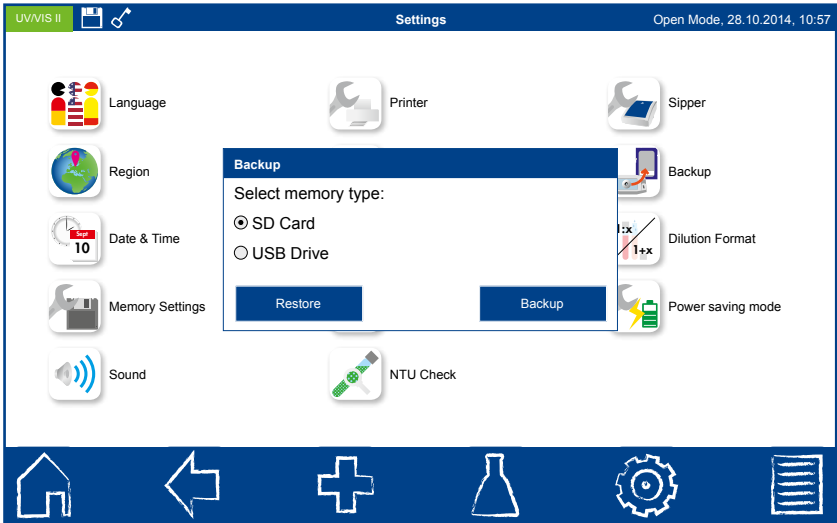


Fig. 25: Backup

8. Service

8.1 Spare parts, accessories and consumables

Description	REF
Halogen lamp	919 604
Deuterium lamp	919 603
LAN cable (1.5 m).....	919 682

8.2 Error messages

The instrument displays several kinds of error messages. The source of error can either be wrong handling or the instrument's malfunctioning. In case of exercising wrong actions within a method, a pop-up will appear hinting at the kind of mistake. In case the instrument detects that the measuring ability cannot be guaranteed, an error message will be displayed.

In case of permanent errors, please contact your distributor or tech support of MACHEREY-NAGEL.

8.3 Waste disposal



In compliance with local and national legal regulations (EU Directive 2012/19/EU), MACHEREY-NAGEL disposes old instruments free of charge.

Note: Disposal using public waste disposal facilities is not permitted. In case of disposal, please contact your MACHEREY-NAGEL representative.

8.4 Cleaning the instrument

The instrument's housing can be cleaned with a wet cloth. Splashes and spillings need to be immediately removed from the instrument. The cuvette slot can be cleaned and dried with a soft cotton cloth. In general, both, the instrument and the cuvette slot, always need to be kept clean. Before inserting the cuvettes into the slot, they need to be cleaned with a lint-free cloth. For cleaning the display, the complementary cleaning cloth included in the package can be used.

8.5 Contact

MACHEREY-NAGEL GmbH & Co. KG
Valenciener Str. 11
52355 Düren
Germany
Tel.: +49 24 21 969-0
info@mn-net.com · www.mn-net.com