Photometers

Heating blocks

Reflectometer

Luminometer

Devices


NANOCOLOR® VIS II

PF-3

Compact photometer for mobile water analysis

The compact photometer PF-3 is the smallest member of the MACHEREY-NAGEL photometer family. The device completes our product portfolio and perfectly fits our tradition of reliability, user friendliness and innovation. The instrument comes in multiple versions, equipped with three LEDs and interference filters, designed to meet the analysis requirements of specific applications. Together with the approved *VISOCOLOR® ECO* and high quality *NANOCOLOR®* tube tests from MACHEREY-NAGEL, the PF-3 is perfectly suited for mobile analysis directly at the place of sampling. Optionally, the device comes in a practical case with pre-equipped test kits, in a cardboard box or in an empty case for the individual combination with our *VISOCOLOR® ECO* test kits.

Small, strong, smart

The handy and compact design makes this lightweight the ideal companion for mobile analysis. Its simple operation allows measurements within seconds. Besides the measurement accuracy, simplicity and user friendliness are key features of all MACHEREY-NAGEL devices. The interaction of context-sensitive icons and only four buttons guarantees a smart, clear and language-independent operation.

Fast and reliable results

The centerpiece of the PF-3 is its high-quality optic with the specially selected LEDs and corresponding interference filters. The unique “open slot” technology allows measurements without cuvette slot cover, thus emphasizing the high technical standard of the instrument. This yields into a simple and quick operation for the user, together with highly reliable results. MACHEREY-NAGEL provides free PC software, for an even more comfortable operation. The software makes data management convenient, simple and efficient. Additionally it guarantees a forgery-proof data management.

Be prepared

The variable power supply is of particular convenience for the user and enables reliable measurements in all situations. Besides batteries and an accu-pack, the device can also be powered directly via an USB cable or a power adaptor.

Good to know

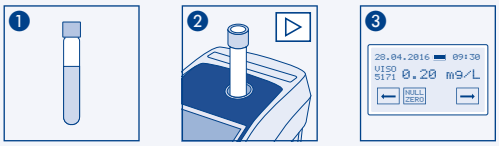
Manifold case solutions are available for the PF-3, which can be individually equipped with test kits. An overview of the available cases is given on page 154.

Good to know

An overview of *VISOCOLOR® ECO* and *NANOCOLOR®* tube tests compatible with the PF-3 is given on page 76 and page 88.

How it’s done

Photometric determination with the PF-3



Prepare sample | Measure | Read result

Simple

- Intuitive operation with only four keys
- Flat menu structure
- Bright display for safe readings

Robust

- Glass fiber reinforced housing for extreme durability
- Water- and dustproof according to IP 68
- Shock-resistant optics

Flexible

- Various case solutions including reagents
- Additional parameters available f.o.c.
- Compatible with *VISOCOLOR*® *ECO* and *NANOCOLOR*® tests

PF-3

Ordering information

Description	REF
Compact photometer PF-3 Pool (Cl_2, pH, Cya, TA), in a cardboard box for evaluation of *VISOCOLOR® ECO* tests and *NANOCOLOR®* tube tests incl. manual, batteries and certificate	919 340
Compact photometer PF-3 Soil (NH_4, K, NO_3, PO_4), in a cardboard box for evaluation of *VISOCOLOR® ECO* tests and *NANOCOLOR®* tube tests incl. manual, batteries and certificate	919 341
Compact photometer PF-3 COD (COD), in a cardboard box for evaluation of *NANOCOLOR®* tube tests incl. manual, batteries and certificate	919 342
Compact photometer PF-3 Drinking Water (Cl_2, pH, F, Fe, ClO_2), in a cardboard box for evaluation of *VISOCOLOR® ECO* tests and *NANOCOLOR®* tube tests incl. manual, batteries and certificate	919 343
Compact photometer PF-3 Fish (NH_4, Cl_2, pH, Fe, SiO_2, PO_4, NO_3, NO_2, O_2, Cu), in a cardboard box for evaluation of *VISOCOLOR® ECO* tests and *NANOCOLOR®* tube tests incl. manual, batteries and certificate	919 345

Additional versions and tests will follow successively. All current options can be found at *www.mn-net.com/PF-3*.

Technical data

PF-3	
Type	LED photometer with microprocessor control, self-test and auto-calibration
Optics	LED + interference filters Insensitive to external light for fast measurements without cuvette slot cover
Wavelengths	3 wavelengths; depending on version Pool / Drinking Water: 450 nm / 530 nm / 590 nm Soil: 365 nm / 450 nm / 660 nm COD: 365 nm / 450 nm / 595 nm Fish: 450 nm / 530 nm / 660 nm
Wavelength accuracy	± 2 nm, bandwidth at half transmission 10 nm–12 nm
Light source	LED
Detector	Silicon-photodiode
Compatible test kits	*NANOCOLOR*® tube tests (see page 88) *VISOCOLOR*® *ECO* tests (see page 76)
Cuvette slot	Tubes 16 mm OD
Memory	50 results
Display	Backlit graphic display, 128 x 64 pixels, all important data at a glance: result with unit, date, time
Auto-off function	Inactive or automatic shutdown after 5 min, 10 min, 15 min, 20 min
Quality control	With *NANOCONTROL* NANOCHECK
Operation	Self-explanatory menu guidance, foil keypad, test selection via parameter lists
Interface	Mini-USB
Update	Free of charge via Internet / PC
Operating range	10 °C–40 °C, up to 80 % relative humidity (non-condensing)
Power supply	3 AA batteries, rechargeable batteries, USB interface; optional internal accu-pack
Housing	Shock-resistant; waterproof and dustproof, according to IP 68
Dimensions	170 mm x 95 mm x 68 mm
Weight	0.5 kg
Warranty	2 years
CE	CE certified

PF-12^{Plus}

Compact photometer for mobile water analysis

The photometer PF-12^{Plus} is a device tailored for the mobile water analysis. The icon-based menu guidance and clear taskbar make the PF-12^{Plus} an easy to use photometer for all fields of water and wastewater analysis without the need for extensive training. The device comes in a rugged case equipped with useful accessories and is therefore particularly popular with users for the direct analysis at the point of sampling.

Easy implementation

Measurement results are obtained very quickly with the PF-12^{Plus}, thanks to its simple operation. Equipped with more than 100 preprogrammed methods, it is the ideal companion for analysis on the road. The PF-12^{Plus} comes with easy to understand pictogram instructions in a practical manual for the evaluation of *VISOCOLOR® ECO* test kits.

Free programming

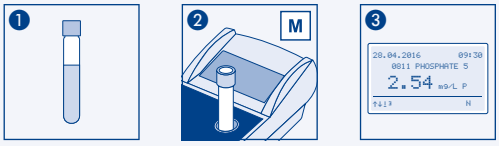
In addition to the preprogrammed methods, the PF-12^{Plus} offers the possibility to create up to 50 special methods for customized applications. Equations up to 4th degree and logarithmic functions can be programmed systematically.

Turbidity measurements

With its especially positioned 860 nm LED the PF-12^{Plus} enables nephelometric turbidity measurements (NTU) in the range of 1–1000 NTU. Therefore, disturbing turbidities will be detected reliably in parallel to a measurement of tube tests - a huge PLUS on measurement safety. Furthermore, the PF-12^{Plus} offers the possibility to accurately determine the turbidity in transmitted light from 4–350 FAU.

How it's done

Photometric determination with the PF-12^{Plus}



Good to know

Manifold case solutions are available for the PF-12^{Plus}, which can be individually equipped with test kits. An overview of the available cases is given on page 154.

Good to know

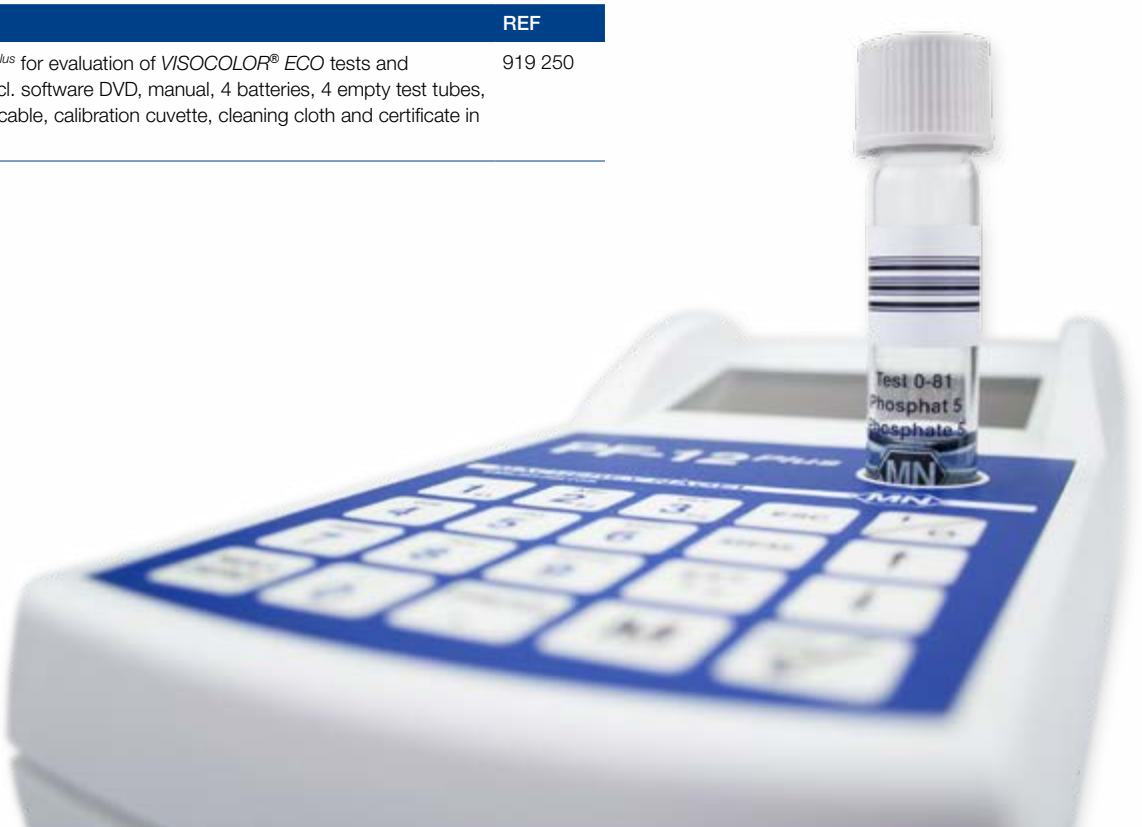
An overview of the *VISOCOLOR® ECO* and *NANOCOLOR®* tubes compatible with the PF-12^{Plus} is given on page 76 and page 88.

Good to know

Turbidity – a source of error:
Turbidity is often underestimated since it is not always visually recognizable. During each measurement, the MACHEREY-NAGEL spectrophotometers automatically measure the turbidity and warn the user in case of an interfering turbidity.

Ordering information

Description	REF
Compact photometer PF-12^{Plus} for evaluation of *VISOCOLOR® ECO* tests and *NANOCOLOR®* tube tests, incl. software DVD, manual, 4 batteries, 4 empty test tubes, funnel, beaker, syringe, USB cable, calibration cuvette, cleaning cloth and certificate in rugged case	919 250



Safe

- Easy handling for precise results
- GLP-conform storage of all measurement results
- Comfortable data export and data backup concept

Mobile

- Flexible power supply via batteries or accu-pack
- Backlit graphic display also for critical lighting conditions
- Robust and waterproof according to IP 68

Versatile

- Compatible with *NANOCOLOR*® and *VISOCOLOR*® *ECO* test kits
- Nephelometric turbidity measurement and NTU-check
- Applicable in all fields of water and waste water analysis

Technical data

PF-12Plus	
Type	Filter photometer with microprocessor control, self-test and auto-calibration
Optics	Automatic filter wheel with 7 interference filters Insensitive to external light for fast measurements without cuvette slot cover
Wavelengths	345 nm / 436 nm / 470 nm / 540 nm / 585 nm / 620 nm / 690 nm plus 1 compartment for an additional filter; 860 nm LED for NTU measurement
Wavelength accuracy	± 2 nm, bandwidth at half transmission 10 nm–12 nm
Light source	Xenon high pressure lamp
Detector	Silicon-photodiode
Blank value	Automatic
Measuring modes	Over 100 preprogrammed tests and special methods, absorbance, transmission, factor, standard, nephelometric turbidity measurement; 50 freely programmable methods
Compatible test kits	*NANOCOLOR*® tube tests (see page 88) *VISOCOLOR*® *ECO* tests (see page 76)
Photometric range	± 3 A
Photometric accuracy	± 1 %
Stability	< 0.002 A/h
Cuvette slot	Tubes 16 mm OD
Data memory	1000 results, GLP conform
Display	Backlit graphic display, 128 x 64 pixels. All important data at a glance: Result with unit, date, time, sample number, sample location, dilution, measuring range control bar
Auto-off function	Inactive or automatic shutdown after 5 min, 10 min, 15 min, 20 min, 60 min
Quality control	With *NANOCONTROL* NANOCHECK
Operation	Self-explanatory menu guidance, foil keypad, test selection via parameter lists
Interface	USB 2.0
Languages	DE / EN / FR / ES / IT / NL / HU / PL / PT / CZ / ID / SL / TR / MY
Update	Free of charge via Internet / PC
Operating range	10 °C–40 °C, up to 80 % relative humidity (non-condensing)
Power supply	4 AA batteries, rechargeable batteries, USB interface; optional internal accu-pack
Housing	Shock-resistant; waterproof and dustproof, according to IP 68
Dimensions	215 mm x 100 mm x 65 mm
Weight	0.7 kg
Warranty	2 years
CE	CE certified

NANOCOLOR® 500 D

Universal photometer for the lab and on the road

The photometer *NANOCOLOR*® 500 D is the link between our spectrophotometers and our handy compact photometers. The device contains all measurement options important in the laboratory and is therefore versatile. The combination of extremely short measurement times and accurate results render this photometer the ideal instrument for the universal use in water and wastewater analysis. It combines established and reliable technology with a robust design. The *NANOCOLOR*® 500 D comes in a rugged case, which provides space for the complete scope of delivery. Together with the inbuilt rechargeable battery, the *NANOCOLOR*® 500 D is perfectly suited for the analysis in the laboratory or on the road.

All at a glance

Its simple operation enables measurement results within seconds. The *NANOCOLOR*® 500 D is delivered with an extensive manual, for the evaluation of *NANOCOLOR*® tests kits, with easy to understand pictogram instructions, which enable a reliable test performance without a complex guidance. The backlit graphic display presents all important data at a glance. Out-of-limit results are clearly indicated.

Basic functions and programming

In addition to the pre-programmed methods, the *NANOCOLOR*® 500 D offers comprehensive basic functions such as absorbance, transmittance or kinetic measurements. Up to 100 methods can be individually programmed for customized applications. The calibration data required for these methods can be obtained by creating the respective calibration curves using the PC software.

Data management and documentation

The alphanumeric keypad allows entering of additional sample information for each measurement result and therefore a clean assignment of the samples. It can store up to 500 GLP-compliant results, which can be exported via the RS232 or USB interface. The measurement results of the *NANOCOLOR*® 500 D can be easily accessed in combination with the free of charge *NANOCOLOR*® data export software.

Good to know

The *NANOCOLOR*® 500 D has successfully passed the shock test according to Military Standard 810C. It therefore meets the strict requirements of the German military forces, which confirms its robustness and suitability for the mobile analysis.

Good to know

For an overview of *NANOCOLOR*® tube tests and rectangular test kits compatible with the *NANOCOLOR*® 500 D see page 88 and 94.

Ordering information

Description	REF
Universal photometer *NANOCOLOR*® 500 D incl. software DVD, manual, protective covering, mains adapter, data cable, USB cable, calibration cuvette, cleaning cloth and certificate in rugged case	919 500

Approved

- Simplest operation without the need for extensive trainings
- Turn on – Measure – Read in less than 10 seconds
- Robust technique for high resistance

Versatile

- Flexible use in lab and on the road
- Universal cuvette slot
- Applicable in all fields of water and waste water analysis

Safe

- Barcode recognition for automatic method selection
- Automatic functional testing and auto-calibration
- GLP-conform data storage via PC-software

Technical data

NANOCOLOR® 500 D	
Type	Filter photometer with microprocessor control, self-test and auto-calibration
Optics	Automatic filter wheel with 10 interference filters Insensitive to external light for fast measurements without cuvette slot cover
Wavelengths	345 nm / 365 nm / 436 nm / 470 nm / 520 nm / 540 nm / 585 nm / 620 nm / 690 nm / 800 nm plus 2 compartments for additional filters
Wavelength accuracy	± 2 nm, bandwidth at half transmission 10 nm–12 nm
Light source	Tungsten lamp
Detector	Silicon photodiode
Blank value	Automatic
Measuring modes	Over 100 preprogrammed methods, 100 freely programmable methods, absorbance, transmittance, factor, kinetics, 2-point-calibration
Compatible test kits	*NANOCOLOR*® tube tests (see page 88) *NANOCOLOR*® standard tests (see page 94)
Photometric range	± 3 A
Photometric accuracy	± 1 %
Stability	< 0.002 A/h
Cuvette slot	Tubes 16 mm OD Rectangular cuvettes 10 mm, 20 mm, 50 mm
Data memory	500 results, GLP-compliant
Display	Backlit graphic display, 128 x 64 pixel, all important data at a glance: Result with unit, date, time, sample number, sample location, dilution
Auto-off function	Inactive or automatic shutdown after 10 min–120 min (10 min increments)
Quality control	With *NANOCONTROL* NANOCHECK
Operation	Test selection via barcode technology, self-explanatory menu guidance, foil keypad
Languages	DE / EN / FR / IT / NL / ES / HU / PL / PT / CZ / SL / TR / ID / DK
Interface	USB, RS232
Update	Free of charge via Internet / PC
Operating range	10 °C–40 °C, up to 80 % relative humidity (non-condensing)
Power supply	100 V–240 V~, 50 / 60 Hz / 6 V, 3.2 Ah via built-in battery with charge regulator and mains power supply
Dimensions	227 mm x 282 mm x 105 mm
Weight	2.4 kg
Warranty	2 years
CE	CE certified

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

Spectrophotometers for high-precision analysis

The *NANOCOLOR*® *VIS* II and *NANOCOLOR*® $^{UV}/_{VIS}$ II are high-precision measurement instruments applicable in all areas of water and wastewater analysis. MACHEREY-NAGEL revolutionizes the daily laboratory work with these two new spectrophotometers, combining premium high-tech instruments with outstanding usability. With their intuitive, icon-based menu guidance, these innovative photometers can be used like a smartphone or tablet. The clearly arranged, high-resolution touch screen display makes your daily measurement routine a real pleasure.

Powerful technology

The new *NANOCOLOR*® spectrophotometers impress with high-class technology and optics. The spectral bandwidth of the *NANOCOLOR*® $^{UV}/_{VIS}$ II of < 2 nm allows high-precision measurements. The optical set-up and the clever technique of both devices enable measurements without protective cover; a big advantage for smooth lab processes. With a 2D barcode scanner and cuvette recognition, all steps from measuring over displaying to storing of the result are part of a fully automated sequence.

The allrounders for all requirements

As comprehensive spectrophotometers, the *NANOCOLOR*® *VIS* II and $^{UV}/_{VIS}$ II, meet all requirements of your daily laboratory work. They come with well-known barcode technology for a rapid measurement of *NANOCOLOR*® tube tests. In addition, they offer extensive color measurement possibilities and real-time scan recording. Next the nephelometric turbidity measurement and the turbidity measurement in transmitted light, the preprogrammed MEBAK methods allow a comprehensive brewery analysis. The simple menu navigation and the icon-based pictogram instructions for the performance of cuvette tests, reduce the complexity of the daily laboratory work. The clear result screen enables an easy assignment of additional sample information and measurement results. The systematic menu guidance for the calibration of special methods allows even inexperienced users to program methods for user specific applications.

Good to know

Turbidity – a source of error:
Turbidity is often underestimated since it is not always visually recognizable. During each measurement, the MACHEREY-NAGEL spectrophotometers automatically measure the turbidity and warn the user in case of an interfering turbidity.

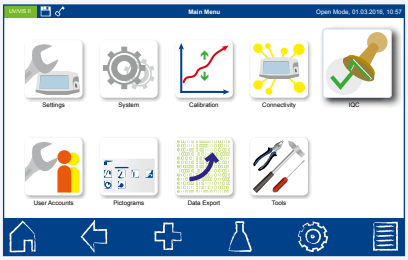
Good to know

An overview of all *NANOCOLOR*® test kits available on the *NANOCOLOR*® $^{UV}/_{VIS}$ II and *VIS* II is given on page 88 and page 94.

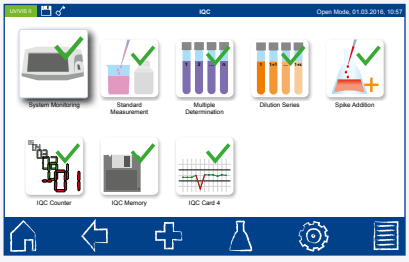
How it's done

In four steps to inspection equipment monitoring

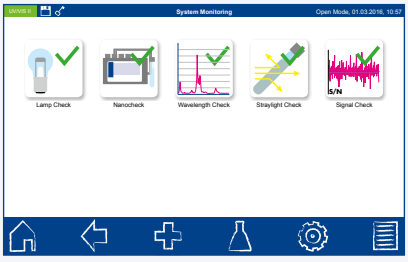
1. Call up main menu



2. Choose IQC-menu



3. Call up inspection equipment monitoring



4. Choose respective test

Good to know

The test equipment offers the monitoring of the entire analysis system also extensive options for verifying the device functionality. The user can perform the test himself and save costs, an external device test is no longer needed.

Smart

- Outstanding usability due to touch screen
- 10.1″ HD display for a clear overview
- Unique user experience due to icon based menu guidance

Precise

- High quality optics with reference detector technology
- Safe results due to automatic turbidity control function (NTU-check)
- Safeguarding of results via integrated IQC menu

Impressively versatile

- Future-proof interfaces
- Color measurements, turbidity measurements and scans
- Applicable in all fields of water and waste water analysis

Smart photometry

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

The next audit will be a breeze

Quality is of high importance for MACHEREY-NAGEL. Therefore, our new spectrophotometers are equipped with extensive quality control features. Besides the integrated, f.o.c. inspection equipment monitoring tools, the devices offer a variety of quality control functions for e.g. standard measurements, multiple determinations and dilution series. IQC cards are generated directly in the device and can be printed or exported for documentation purposes. Therefore, *NANOCOLOR*® *VIS* II and $^{UV}/_{VIS}$ II offer easy to use control options, allowing an efficient and accurate internal quality control perfectly integrated in your daily work.

Striking interface options for smart connectivity

The connection of measuring devices to laboratory information systems (LIMS) plays a more and more important role in many industries. Therefore, the *NANOCOLOR*® *VIS* II and *NANOCOLOR*® $^{UV}/_{VIS}$ II are equipped with all important interfaces (LAN, RS232, USB) for the connection to laboratory information systems. In addition, the integrated LIMS configurator allows a customized adaptation for many kinds of data for transfer. An easily accessible USB port increases the comfort of data exchange with mass storage media or the usage of a barcode reader, scanner or printer.

Ordering information

Description	REF
Spectrophotometer *NANOCOLOR*® *VIS* II incl. manual (quick start guide), touch pen, protective covering, power cable with country adapters, USB cable, USB stick, calibration cuvette, cleaning cloth and certificate	919 650
Spectrophotometer *NANOCOLOR*® *UV/VIS* II incl. manual (quick start guide), touch pen, protective covering, power cable, USB cable, USB stick, calibration cuvette, cleaning cloth and certificate	919 600

Technical data

	NANOCOLOR® *VIS* II	*NANOCOLOR*® *UV/VIS* II
Type	Spectrophotometer with reference detector technology (RDT)	
Light source	Halogen lamp	Halogen lamp (visible range) Deuterium lamp (UV range)
Optics	Monochromator Insensitive to external light for fast measurements without cuvette slot cover; Cuvette slot must be covered for color measurements and measurements in the UV-range	
Wavelength range	320 nm–1100 nm	190 nm–1100 nm
Wavelength accuracy	± 1 nm	
Wavelength resolution	0.1 nm	
Wavelength reproducability	< 0.5 nm	
Wavelength calibration	Automatic	
Wavelength selection	Automatic, barcode, manual	
Scan speed	1 complete scan in less than 1 min	
Spectral bandwidth	< 4 nm	< 2 nm
Photometric range	± 3.0 A in wavelength range 340 nm–900 nm	± 3.0 A in wavelength range 200 nm–900 nm
Photometric accuracy	0.005 A at 0.0 A–0.5 A; 1 % at 0.5 A–2.0 A	
Photometric linearity	< 0.5 % at ≤ 2 A; ≤ 1 % at > 2 A	
Stray light	< 0.1 %	< 0.05 %
Measuring modes	More than 200 preprogrammed tests and special methods, 100 optionally programmable methods, absorbance, transmittance, factor, kinetics, 2-point calibration, scan, nephelometric turbidity measurement	
Compatible test kits	*NANOCOLOR*® tube tests (see page 88) *NANOCOLOR*® standard tests (see page 94)	
Turbidity measurement	Nephelometric turbidity measurement at 860 nm, 0.1 NTU–1000 NTU	
Cuvette slot	Test tubes 16 mm OD Rectangular cuvettes 2 mm, 10 mm, 20 mm, 40 mm, 50 mm	
Data memory	16 GB Micro SDHC card, 5000 measured data sets, 100 scans or color measurements, GLP-conform	
Display	10.1″ LED backlit HD display, anti-reflective cover glass with projected capacitive touch screen (PCAP)	
Operation	Test selection via barcode technology, icon-based menu guidance, touch screen	
Languages	DE / EN / FR / ES / PT / PL / HU / NL / CZ / RO / IT	
Interfaces	LAN, 2 x USB (Host), 1 x USB (Function) and RS232	
Update	Free of charge via USB stick	
Operating range	10 °C–40 °C, up to 80 % relative humidity (non-condensing)	
Power supply	Input: 110 V–240 V, Output: 12 V 3A	110 V–240 V, ~50 / 60 Hz
Dimensions	360 mm x 400 mm x 110 mm	400 mm x 440 mm x 170 mm
Weight	4.0 kg	6.5 kg
Warranty	2 years	
CE	CE certified	

NANOCONTROL

Analytical quality control for the entire analysis system

The *NANOCONTROL* equipment for quality control of the photometers is designed to support our IQC concept. It always allows the user to check the correct functionality of the devices and therefore represents a cornerstone for ensuring correct measurement results.

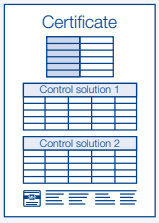
Checking the photometric accuracy

NANOCONTROL NANOCHECK is used as a secondary standard for inspection equipment monitoring in accordance with ISO 9001 and ISO 14001. The test solutions are controlled and documented using a reference photometer, which is monitored with primary standards (NIST standards). With only two stable color solutions, the photometers can be checked for accuracy of the absorbance reading and linearity.

Checking the turbidity calibration

NANOCONTROL NANOTURB is a turbidity standard for nephelometric turbidity measurements for our photometers. The solutions are used as a primary standard for calibrating and checking the nephelometric turbidity unit in accordance with ISO 7027. The test solutions are ready for immediate use and must only be placed into the photometer. Dilution steps or contact with chemicals are avoided effectively.

Good to know



With the *NANOCONTROL* NANOCHECK evaluation sheet the requirements for quality assurance can be fulfilled and it serves as validation against authorities and supervisors.

Ordering information

Description	REF	Shelf life	GHS
NANOCONTROL NANOCHECK test solutions for the determination of photometric accuracy for *NANOCOLOR*® photometers, secondary standard for inspection equipment monitoring in accordance with ISO 9001	925 701	2 years	■
NANOCONTROL NANOTURB turbidity standard with 4 tubes (1, 4, 100, 400 NTU) for the nephelometric turbidity calibration for *NANOCOLOR*® spectrophotometers and PF-12^{Plus}, secondary standard for inspection equipment monitoring in accordance with ISO 9001	925 702	8 months	

GHS: Globally harmonized system: This product contains harmful substances, which must be labeled as hazardous. For detailed information, please see the SDS.

The complete analytics from a single source

MACHEREY-NAGEL photometers fulfill all requirements for daily laboratory analysis. In addition, many accessories are available to be equipped optimally for special applications. The sipper pump *NANOCOLOR*® FP-100 for instance allows time savings and increased accuracy for standard tests with high sample throughput. The user receives all accessories from a single source. Compatibility with the different photometers is therefore ensured at all times.

Ordering information

Description	REF	Content
Transport cases for photometers		
Transport case for spectrophotometer *NANOCOLOR*® UV/VIS II	919 624	1 piece
Transport case for spectrophotometer *NANOCOLOR*® *VIS* II	919 652	1 piece
Special filters for photometers *NANOCOLOR*® 500 D / 400 D / 350 D / PF-12*Plus* / PF-12		
Interference filter 412 ± 2 nm (incl. installation) for tube test *NANOCOLOR*® Formaldehyde 10	919 841.2	1 piece
Special filter incl. ex-factory installation (wavelengths on request)	919 850.2	1 piece
Handheld scanner		
Handheld scanner for *NANOCOLOR*® spectrophotometers	919 134	1 piece
Sipper		
Sipper pump *NANOCOLOR*® FP-100 for *NANOCOLOR*® spectrophotometers incl. power supply, support stand, tube, intake needle and RS232-cable	919 140	1 piece
RS232-cable for the connection of *NANOCOLOR*® FP-100 with the *NANOCOLOR*® spectrophotometers	919 775	1 piece
Intake needle for *NANOCOLOR*® FP-100	919 142	1 piece
Support stand for *NANOCOLOR*® FP-100	919 143	1 piece
Pedal for *NANOCOLOR*® FP-100	919 144	1 piece
Manuals		
Manual (quick start guide) for *NANOCOLOR*® *VIS* II and UV/VIS II	919 601	1 piece
Manual for *NANOCOLOR*® 500 D	919 501	1 piece
Manual for photometer PF-12*Plus*	919 252	1 piece
Manual for photometer PF-3	919 392	1 piece
VISOCOLOR® *ECO* test instructions for photometer PF-3	934 001	1 piece
VISOCOLOR® *ECO* test instructions for photometer PF-12*Plus*	931 503	1 piece
Lamps		
Halogen lamp for *NANOCOLOR*® *VIS* II and UV/VIS II	919 604	1 piece
Deuterium lamp for *NANOCOLOR*® UV/VIS II	919 603	1 piece
Tungsten lamp for *NANOCOLOR*® 500 D / 400 D / 350 D / 300 D / 250 D / PT-3	919 787	1 piece
Cuvettes		
Calibration cuvette for *NANOCOLOR*® photometer	916 908	1 piece
Flow cuvette, Quartz glass, 2 mm optical path, for *NANOCOLOR*® UV/VIS and UV/VIS II	919 127	1 piece
Flow cuvette, Quartz glass, 10 mm optical path, for *NANOCOLOR*® UV/VIS II	919 626	1 piece
Flow cuvette, optical glass, 10 mm optical path, for *NANOCOLOR*® *VIS*, *VIS* II and UV/VIS II	919 158	1 piece
Flow cuvette, Quartz glass, 50 mm optical path, for *NANOCOLOR*® *VIS*, *VIS* II and UV/VIS II	919 149	1 piece
Quartz glass cuvette, 2 mm optical path, for *NANOCOLOR*® UV/VIS and UV/VIS II	919 122	1 piece
Quartz glass cuvette, 10 mm optical path, for *NANOCOLOR*® UV/VIS and UV/VIS II	919 120	1 piece
Quartz glass cuvette, 50 mm optical path, for *NANOCOLOR*® UV/VIS and UV/VIS II	919 121	1 piece

[1] Required additionally: Cable set, REF 919 133
[2] Required additionally: Mains adaptor, REF 919 06
[3] Required additionally for PF-3: Mini USB-cable, REF 919 390

Accessories for photometers

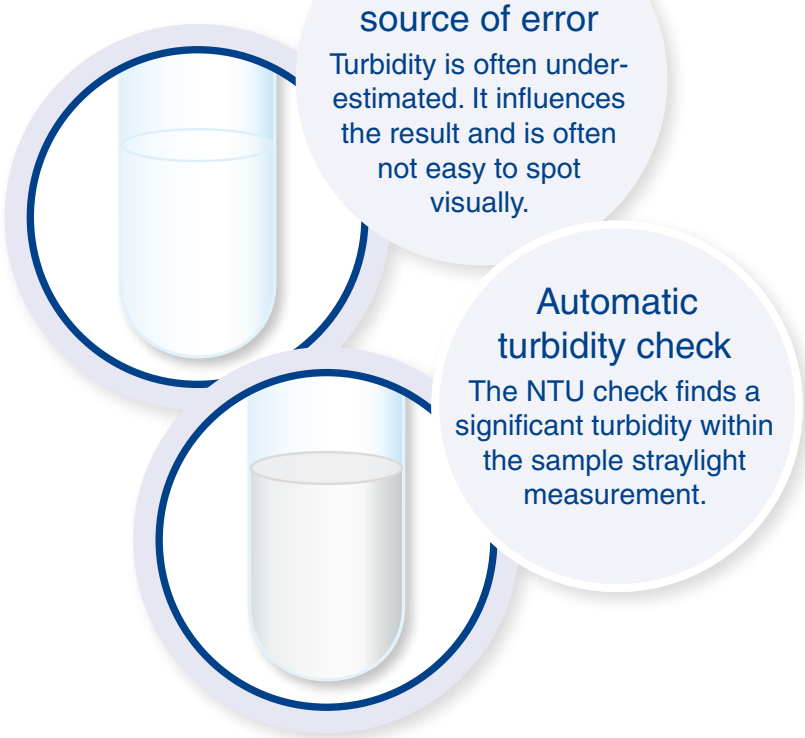
Description	REF	Content
Glass cuvettes, 5 mm optical path	919 32	2 pieces
Glass cuvettes, 10 mm optical path	919 33	2 pieces
Glass cuvettes, 20 mm optical path	919 34	2 pieces
Glass cuvette, 50 mm optical path	919 35	1 piece
Semi-micro cuvette, 50 mm optical path	919 50	1 piece
Lids for glass cuvettes, 10 mm	919 41	2 pieces
Lids for glass cuvettes, 50 mm	919 40	2 pieces
Disposable plastic cuvettes, 10 mm optical path	919 37	100 pieces
Fixing for 10 mm cuvette for *NANOCOLOR® VIS* II, *UV/VIS* and *UV/VIS* II	919 136	1 piece
Test tubes, 16 mm OD	916 80	20 pieces
Cover		
Cover for cuvette slot for *NANOCOLOR® UV/VIS* II	919 606	1 piece
Cover for cuvette slot for *NANOCOLOR® VIS* II	919 654	1 piece
Protective coverings		
Protective covering for *NANOCOLOR® UV/VIS* II	919 605	1 piece
Protective covering for *NANOCOLOR® VIS* II	919 651	1 piece
Protective covering for *NANOCOLOR®* 500 D / 400 D / 350 D	919 18	1 piece
Printer		
NANOCOLOR® thermal printer for photometer *NANOCOLOR® VIS* II and *UV/VIS* II (incl. mains adapter and manual)	919 655	1 piece
NANOCOLOR® thermal printer for *NANOCOLOR® UV/VIS* [1) 2)] / VIS [1) 2)] / 500 D / 400 D / 350 D / 300 D / 250 D and photometer PF-11 [2)] (incl. printer cable, without mains adapter)	919 16	1 piece
Printer paper rolls for *NANOCOLOR®* thermal printer for *NANOCOLOR® VIS* II / *UV/VIS* II, 79 mm width, core 12 mm, OD 80 mm	919 656	3 pieces
Software		
NANOCOLOR® software for Linus / 500 D / 400 D / 350 D / 300 D / 250 D / PF-12*Plus* / PF-12 / BioFix® Lumi-10	919 02	1 piece
Accessories for data transfer		
USB cable AA for *NANOCOLOR®* 500 D	919 686	1 piece
USB cable AB for *NANOCOLOR® VIS* / *VIS* II / *UV/VIS* / *UV/VIS* II / *VARIO 4* / *VARIO C2* and photometers PF-12*Plus* / PF-12	919 687	1 piece
LAN cable (1.5 m) for *NANOCOLOR® VIS* II and *UV/VIS* II	919 682	1 piece
Mini USB cable for photometer PF-3 and *VARIO Mini*	919 390	1 piece
Zero modem cable, serial, 2x9 pin SUB-D socket, for *NANOCOLOR®* 500 D / 400 D / 350 D / 300 D / 250 D / PT-3 / PF-10 / PF-11 and BioFix® Lumi-10	919 773	1 piece
Adaptor, 9 pin SUB-D-plug to 25 pin SUB-D socket	919 681	1 piece
NANOCOLOR® USB stick	919 123	1 piece
Power supply		
Mains adaptor for *NANOCOLOR® VIS*, *VIS* II and *VARIO Mini*	919 156	1 piece
USB mains adaptor for photometer PF-12*Plus* / PF-12 / PF-3 [3)]	919 220	1 piece
Mains adaptor for *NANOCOLOR®* 500 D / 400 D / 350 D / 300 D / 250 D / PT-3 / PF-11 / FP-100; prim. 100 V–240 V ~; sec. 9 V⎓ / 1500 mA	919 06	1 piece
Rechargeable battery for *NANOCOLOR®* 500 D / 400 D / 350 D	919 914	1 piece
Rechargeable battery pack for photometer PF-12*Plus* / PF-12	919 201	1 piece
Rechargeable battery pack for photometer PF-3	919 391	1 piece
Battery charger for photometer PF-3 / PF-12*Plus* / PF-12 / PF-11 / PF-10, incl. 4 rechargeable batteries	919 221	1 piece

[1)] Required additionally: Cable set, REF 919 133
[2)] Required additionally: Mains adaptor, REF 919 06
[3)] Required additionally for PF-3: Mini USB-cable, REF 919 390

NTU-check
Automatic turbidity check for tube tests

Maximum measurement safety

- Innovative and unique solution for turbidity problems
- Automatic turbidity check for tube tests
- Turbidity displayed directly in NTU according to EN ISO 7027
- Warns in case of potential interferences



NANOCOLOR® *VARIO 4*, *VARIO C2* and *VARIO C2 M*

Heating blocks for reliable digestions

The *NANOCOLOR*® heating blocks enable a fast and safe performance of all kinds of sample digestions required in water and waste water analysis. Standard parameters for routine digestions such as COD, TOC, total nitrogen, total phosphorus and metals are pre-programmed in the heating blocks and help the user to avoid mistakes.

The small one and the big one

The heating block *NANOCOLOR*® *VARIO C2* enables the simultaneous digestion of up to 12 samples. For a higher sample throughput the *NANOCOLOR*® *VARIO 4* is perfectly suited, as it allows up to 24 simultaneous digestions in two separately controllable heating units. Therefore, MACHEREY-NAGEL offers the appropriate heating block to each user for routine analysis in the laboratory. The *NANOCOLOR*® heating blocks are equipped with lockable protective lids and a touch protection for increased work safety. The *NANOCOLOR*® *VARIO C2 M* heating block with two 22 mm and eight 16 mm holes is available for the digestion of large sample volumes as part of metal analysis.

Extremely versatile and maximally secure

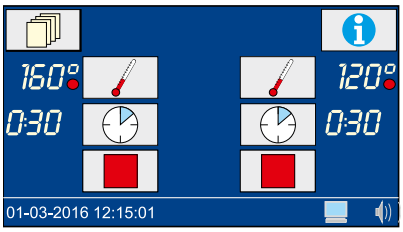
In addition to the preprogrammed temperatures and heating times, a large number of user-specific digestion methods can be stored. The USB and RS232 interfaces allow an easy connection to a PC and enable the convenient linkage to the *NANOCONTROL* inspection equipment monitoring tools. The graphical representation of the heating curves enhances transparency about the temperature stability. The electronic overtemperature sensor protects the heating block from overheating.

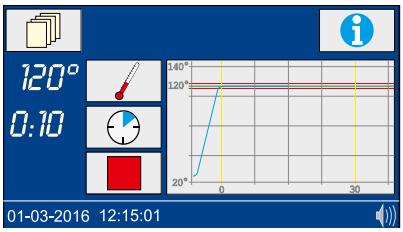
Temperature testing and calibration

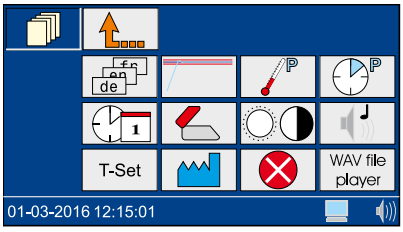
A temperature test can be performed using the *NANOCOLOR*® T-Sets to safeguard results against authorities and supervisors. The free PC software of the heating blocks facilitates checking of temperatures and the creation of the respective reports. After measurement data transfer via the interfaces using the PC software, the testing certificate is created directly, which ensures a GLP-compliant documentation of all equipment testing.

Good to know

The *NANOCOLOR*® T-Set is a simple and unique tool for inspection equipment monitoring of MACHEREY-NAGEL heating blocks by the user himself. For further information about the *NANOCOLOR*® T-Set see page 140.







Suitable for all *NANOCOLOR*® digestion methods

Application	Temperature	Time
COD according to DIN ISO 15705	148 °C	120 min
High-speed COD	160 °C	30 min
TOC	120 °C	120 min
Total nitrogen	120 °C	30 min
Total phosphorus	120 °C	30 min
Organic acids	100 °C	10 min
Total metals	120 °C	30 min
AOX	120 °C	30 min
Hydrocarbons	148 °C	120 min
Programmable, user-defined programs	40 °C–160 °C	0 h:01 min–9 h:59 min

NANOCOLOR® VARIO 4, *VARIO C2* and *VARIO C2 M*

Easy

- User-friendly touch screen
- Intuitive usage via icons
- Operation without the need for intensive training

Fast

- All important parameters within 30 minutes
- Extremely short heating-up times
- Call up of heating programs in a matter of seconds

Secure

- High temperature stability
- Graphically visualized heating curves
- Internal quality control via *NANOCOLOR®* T-Set

Ordering information

Description	REF
Heating block *NANOCOLOR® VARIO 4* with two blocks with separate control, 2 x 12 bores for test tubes of 16 mm OD, incl. power cable, two separate protective coverings, manual, data cable, software DVD and certificate	919 300
Heating block *NANOCOLOR® VARIO C2* 12 bores for test tubes of 16 mm OD, incl. power cable, protective covering, manual, data cable, software DVD and certificate	919 350
Heating block *NANOCOLOR® VARIO C2 M* – version for metal analysis, with large bores – 8 bores for test tubes of 16 mm OD, 2 bores for reaction vessels of 22 mm OD, incl. power cable, protective covering, manual, data cable, software DVD and certificate	919 350.1

NANOCOLOR® *VARIO 4*, *VARIO C2* and *VARIO C2 M*

Technical data

NANOCOLOR*® *VARIO 4*, *VARIO C2* and *VARIO C2 M	
Type	Heating blocks for chemical-analytical digestions
Number of bores	2 x 12 of 16 mm OD (*VARIO 4*) 12 of 16 mm OD (*VARIO C2*) 8 of 16 mm OD + 2 of 22 mm OD (*VARIO C2 M*)
Display	Colored, backlit LCD touch screen
Operation	Icon-based menu guidance via touch screen
Temperatures	6 preprogrammed temperatures 70 °C / 100 °C / 120 °C / 148 °C / 150 °C / 160 °C 6 free memory locations for individual temperature settings
Temperature range	40 °C–160 °C (1 °C increments)
Temperature stability	± 1 °C (according to DIN, EN, ISO and EPA methods)
Warm-up time	From 20 °C to 160 °C within 10 minutes
Heating times	5 preprogrammed heating times 10 min / 30 min / 60 min / 120 min / cont. 7 free memory locations for individual heating times
Time range	0 h:01 min–9 h:59 min (1 °C increments)
Safety	Replaceable safety covers as contact protection Lockable protective lids Overheating protection
Interfaces	Bidirectional serial RS232, USB A (function) and USB B (Host)
Internal quality control (IQC)	With *NANOCOLOR*® T-Set (REF 919 917) and *NANOCOLOR*® USB T-Set (REF 919 921) Optional fully automatic calibration and generation of a test certificate for instrument control and monitoring
Languages	DE / EN / FR / ES / HU / PL / CZ / TR / DK
Update	Free via Internet / PC and USB stick
Operating range	10 °C–40 °C; max. 80 % relative humidity (non-condensing)
Power supply	110 V–230 V~, 50 / 60 Hz
Power consumption	300 / 550 W (*VARIO 4*) 150 / 300 W (*VARIO C2* and *VARIO C2 M*)
Dimensions	290 mm x 287 mm x 146 mm (*VARIO 4*) 169 mm x 282 mm x 146 mm (*VARIO C2* and *VARIO C2 M*)
Weight	approx. 3.2 kg (*VARIO 4*) approx. 2.0 kg (*VARIO C2* and *VARIO C2 M*)
Warranty	2 years
CE	CE certified

Compact heating block for mobile analysis

Sample digestion is an essential step in the determination of a couple of important parameters in photometric water analysis, but is usually only carried out in a laboratory. The new *NANOCOLOR® VARIO Mini* now gives the ability to perform sample digestions on-site or on the road. This guarantees a mobile and safe performance of all sample digestions required in the water and waste water analysis. The compact size and the flexible power supply, e.g. through the power port of a car, ease the use and offer a maximum flexibility for the everyday analysis.

Simply clever

The *NANOCOLOR® VARIO Mini* has six positions for test tubes with an outer diameter of 16 mm and therefore offers the opportunity to examine small numbers of samples directly on the spot. Furthermore, the device impresses with a temperature stability of ± 1 °C. All digestions of the MACHEREY-NAGEL test kits can easily be conducted using the pre-programmed temperatures and heating times. MACHEREY-NAGEL offers the new *NANOCOLOR®* USB T-Set as a reliable inspection equipment monitoring tool to ensure the temperature stability and the accuracy of the temperature calibration of the *NANOCOLOR® VARIO Mini*. It allows the easy temperature checking and calibration of the heating block and thereby results in an always accurate and reliable digestion of the sample.

Good to know

No power supply available?
The *NANOCOLOR® VARIO Mini* can be operated with an external battery as the only heating block device of its class. For the comfortable transport MACHEREY-NAGEL provides compact and complete mini laboratories as case solutions for direct analysis at the place of sampling.

Ordering information

Description	REF
Heating block *NANOCOLOR® VARIO Mini*, 6 bores for test tubes of 16 mm OD, incl. power cable, protective covering, manual and certificate	919 380

Technical data

NANOCOLOR® VARIO Mini	
Type	Heating block for chemical and analytical digestion
Number of bores	6 of 16 mm OD
Display	Graphic display 128 x 64 pixel
Operation	Icon-based menu guidance with four buttons
Temperatures	70 °C, 100 °C, 120 °C, 148 °C, 150 °C, 160 °C
Temperature stability	± 1 °C (according DIN, EN, ISO and EPA methods)
Warm-up time	From 20 °C to 160 °C within 25 minutes (at 20 °C ambient temperature)
Heating times	30 min, 60 min, 120 min
Safety	Safety cover with lockable protective lid and overheating protection
Interfaces	Mini-USB-OTG (On-The-Go)
Internal quality control (IQC)	With *NANOCOLOR®* USB T-Set (REF 919 921) Optional fully automatic calibration and test certificate generation
Update	Free via Internet / PC and USB stick
Operating range	10 °C–40 °C; max. 80 % relative humidity (non-condensing)
Power supply	12 V, 5 A
Power consumption	60 W
Dimensions	105 mm x 125 mm x 170 mm
Weight	670 g
Warranty	2 years
CE	CE certified

NANOCOLOR® VARIO HC

Heating block for fast digestions

The factor time plays a crucial role in many laboratories when conducting sample digestions. The *NANOCOLOR® VARIO HC* enables the user to digest all important parameters in just 30 minutes. The usually very slow cooling down of the cuvettes after digestion is greatly accelerated in the *NANOCOLOR® VARIO HC* by the active cooling unit. Hereby the test tubes are ready for the measurement or further analysis steps shortly after the digestion has ended.

Simply fast

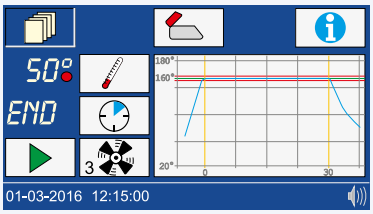
Thanks to the intelligent linkage of heating-up, digestion and cooling-down the *NANOCOLOR® VARIO HC* allows the performance of a COD test in less than 45 minutes. The readily prepared cuvettes are directly inserted into the cold heating block, which means an additional time saving for the user as the waiting of the heating process is omitted.

Approved and versatile

In addition to the cooling function, the *NANOCOLOR® VARIO HC* comes with all features provided by our proven heating blocks *NANOCOLOR® VARIO 4* and *VARIO C2*. Naturally, this includes the possibility of checking and calibrating the temperature with the *NANOCOLOR®* T-Sets, thus fulfilling the requirements of analytical quality control. The safety of the user is as important as accurate results. The protection lid of the *NANOCOLOR® VARIO HC* locks electronically during digestion. The operation of the heating block and the input of digestion programs are carried out via a user-friendly touch screen.

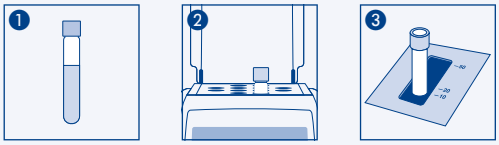
Good to know

Both, the temperature of the cooling process as well as the ventilation speed can be individually adjusted by the user.



How it's done

Heating and cooling



1 Prepare sample

2 Digestions and cooling in *VARIO HC*

3 Direct measurement after withdrawel

Ordering information

Description	REF
Heating block *NANOCOLOR® VARIO HC* – with cooling function – 12 bores for test tubes of 16 mm OD and fan, incl. power cable, protective covering, manual, data cable, software DVD and certificate	919 330

Technical data

NANOCOLOR® VARIO HC	
Type	Heating block for chemical-analytical digestion
Number of bores	12 of 16 mm OD
Display	Colored, backlit LCD touch screen
Operation	Icon-based menu guidance via touch screen
Temperatures	6 preprogrammed temperatures 70 °C / 100 °C / 120 °C / 148 °C / 150 °C / 160 °C 6 free memory locations for individual temperature settings
Temperature range	40 °C–160 °C (1 °C increments)
Temperature stability	± 1 °C (according to DIN-, EN-, ISO- and EPA-methods)
Warm-up time	from 20 °C to 160 °C within 10 minutes
Heating times	5 preprogrammed heating times 10 min / 30 min / 60 min / 120 min / cont. 7 free memory locations for individual heating times
Time range	0 h:01 min–9 h:59 min (increments 0 h:01 min)
Safety	Replaceable safety covers for contact protection Lockable protective lids Overheating protection
Interfaces	Bidirectional serial RS232, USB A (function) and USB B (Host)
Internal quality control (IQC)	With *NANOCOLOR®* T-Set (REF 919 917) and *NANOCOLOR®* USB T-Set (REF 919 921) Optional fully automatic calibration and test certificate generation
Languages	DE / EN / FR / ES / HU / PL / CZ / TR / DK
Update	Free via Internet and USB-stick
Operating range	10 °C–40 °C; max. 80 % relative humidity (non-condensing)
Power supply	110 V–230 V~, 50 / 60 Hz
Power consumption	150 / 550 W
Dimension	290 mm x 287 mm x 146 mm
Weight	approx. 3.2 kg
Warranty	2 years
CE	CE certified

NANOCOLOR® T-Set and USB T-Set

Analytical quality control for the entire analysis system

The unique inspection equipment *NANOCOLOR*® T-Set is an electronic temperature sensor, which is suitable for the temperature control and automatic calibration of all *NANOCOLOR*® heating blocks. The user can check the heating blocks independently with the *NANOCOLOR*® T-Set for internal quality control purposes. For this reason the *NANOCOLOR*® T-Set is an important building block for a comprehensive analytical quality assurance.

Independent self-control

By a target-actual comparison, the temperatures in the heating blocks can be tested quickly and easily. All programmed temperatures are measured, registered and stored in the heating block by the *NANOCOLOR*® T-Set. This tool also enables an automatic calibration of the heating blocks. Our customers appreciate the *NANOCOLOR*® T-Set, as it allows a cost-effective and independent monitoring of their own heating block.

Data transfer and documentation

After completion of the temperature control or calibration, the collected data can be transferred to a computer easily via the RS232 or USB port. The free of charge *NANOCOLOR*® T-Set PC software enables a GLP-compliant documentation and the creation of direct test certificates.

Now with temperature display

The new *NANOCOLOR*® USB T-Set is a advancement of the established *NANOCOLOR*® T-Set, extended by a LED display to control the measured temperature. Therefore, temperature measurements can now be carried out independent of the heating block.

Good to know

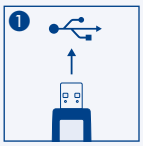
The *NANOCOLOR*® T-Sets can be used also for external temperature measurements, e.g. for the determination of the sample temperature.

Good to know

The temperature display of the *NANOCOLOR*® USB T-Set can be flipped by tapping on the edge of the device. Therefore, an optimal reading is always guaranteed.

How it's done

Automatic temperature control and calibration with the *NANOCOLOR*® USB T-Set



Connect T-Set

Choose and start program

Create test protocol

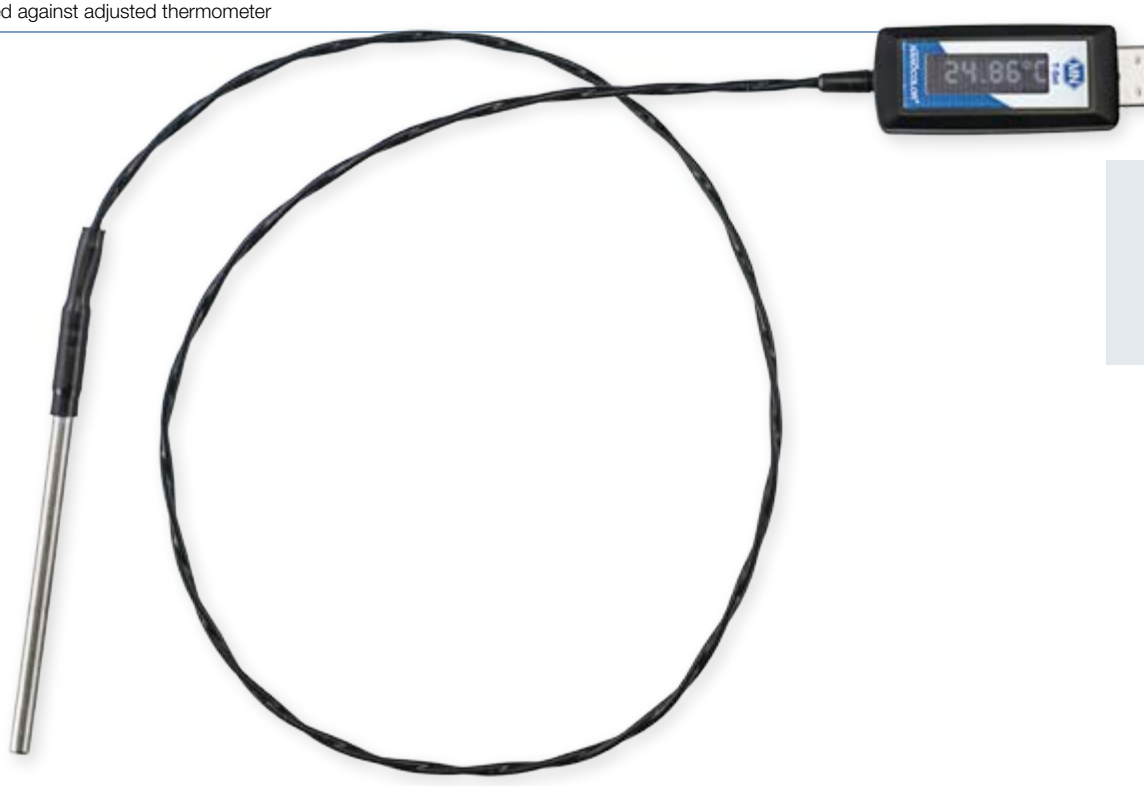
Ordering information

Description	REF
NANOCOLOR® T-Set for electronic temperature control and calibration of the heating blocks *NANOCOLOR*® *VARIO 4* / *VARIO C2* / *VARIO C2 M* / *VARIO HC* / *VARIO 3* / *VARIO compact*	919 917
NANOCOLOR® USB T-Set for electronic temperature control and calibration of the heating blocks *NANOCOLOR*® *VARIO 4* / *VARIO C2* / *VARIO C2 M* / *VARIO HC* / *VARIO Mini* [1)]	919 921

[1)] Additional adapter for USB-T-Set (REF 919 937) is required.

Technical data

	T-Set	USB T-Set
Type	Electronic thermal sensor for temperature control, calibration and generation of a test certificate for inspection equipment monitoring	
Detector	PT 1000 (95 mm length x 4 mm Ø)	
Display	–	LED display
Operation	Via touch screen of the heating blocks and the T-Set software	
Temperature range	0 °C–200 °C	
Precision	± 1 °C	
Accuracy	± 0.2 °C	
Long term stability	± 0.1 °C	
Interface	RS232	USB A
Operating range	10 °C–40 °C max. 80 % relative humidity (non-condensing)	
Power supply	Via RS232	Via USB A
Power consumption	Max. 20 mW	
Dimensions	75 cm (length)	73 cm (length)
Weight	Approx. 60 g	
Warranty	2 years	
CE	CE certified	
Certificate	Calibrated against adjusted thermometer	



Accessories for heating blocks

The complete analytics from a single source

MACHEREY-NAGEL heating blocks represent an important corner stone of the *NANOCOLOR*® analytical system. By the perfect combination of test kits, heating blocks and photometers, the user is well equipped for daily laboratory analysis. In addition to the digestion for the classical parameters such as COD and phosphate, some customers require special solutions, e.g. for the digestion of metals using *NanOx* Metal. The accessories required for this purpose are available as a complete package from MACHEREY-NAGEL. For an overview of available digestion reagents see page 104. All this ensures the compatibility of the equipment and a reliable analysis.

Good to know

The *NANOCOLOR*® *VARIO Mini* can be operated independent of the grid with a car adapter cable (REF 919 938) from our heating block accessories.

Accessories

Description	REF	Content
Acessories for temperature control of heating blocks		
T-Set adaptor 16 mm	919 924	1 piece
T-Set adaptor 13 mm	919 925	1 piece
USB-serial-Adaptor for heating blocks *NANOCOLOR*® *VARIO 4* / *VARIO C2* / *VARIO C2 M* / *VARIO HC* / *VARIO 3* / *VARIO compact* and *NANOCOLOR*® T-Set	919 926	1 piece
USB-T-Set adaptor for *NANOCOLOR*® *VARIO Mini*	919 937	1 piece
Accessories for digestions in heating blocks		
Protective covering for *NANOCOLOR*® *VARIO 4* / *VARIO C2* / / *VARIO C2 M* / *VARIO HC*, transparent	919 310	1 piece
Protective covering with bores for TOC-tests for *NANOCOLOR*® *VARIO 4* / *VARIO C2* / *VARIO C2 M* / *VARIO HC*, transparent	919 309	1 piece
Protective covering for *NANOCOLOR*® *VARIO Mini*, transparent	919 381	1 piece
Safety cover for *NANOCOLOR*® *VARIO 4* / *VARIO C2* / *VARIO HC* / *VARIO 3* / *VARIO compact*	916 598	1 piece
Reducing adaptors 16 → 13 mm for *NANOCOLOR*® heating blocks	916 910	8 pieces
Reducing adaptors 22 → 16 mm for *NANOCOLOR*® heating blocks	919 916	2 pieces
Decomposition apparatus including tube for sample decomposition, reducing adaptor and absorption attachment	916 29	1 piece
Tubes for sample decomposition 22 mm OD, NS 19/26 with glass stopper	916 66	2 pieces
Condenser 200 mm, type KS with 3 m PE tubing, NS 19/26 bottom, NS 29/32 top	916 67	1 piece
Absorption attachment for condenser NS 29/32	916 68	1 piece
Reaction tubes 16 mm OD	916 80	20 pieces
Reaction tubes 22 mm OD	916 22	2 pieces
Power supply [1)]		
Car adapter cable for *NANOCOLOR*® *VARIO Mini*	919 938	1 piece
Mains adaptor for *NANOCOLOR*® *VIS*, *NANOCOLOR*® *VIS* II and *VARIO Mini*	919 156	1 piece
Accessories for data transfer		
USB cable AB for *NANOCOLOR*® *UV/VIS* / *UV/VIS* II / VIS / *VIS* II / *VARIO 4* / *VARIO C2* / *VARIO C2 M* and PF-12 / PF-12*Plus*	919 687	1 piece
Mini USB cable for compact photometer PF-3 and *NANOCOLOR*® *VARIO Mini*	919 390	1 piece

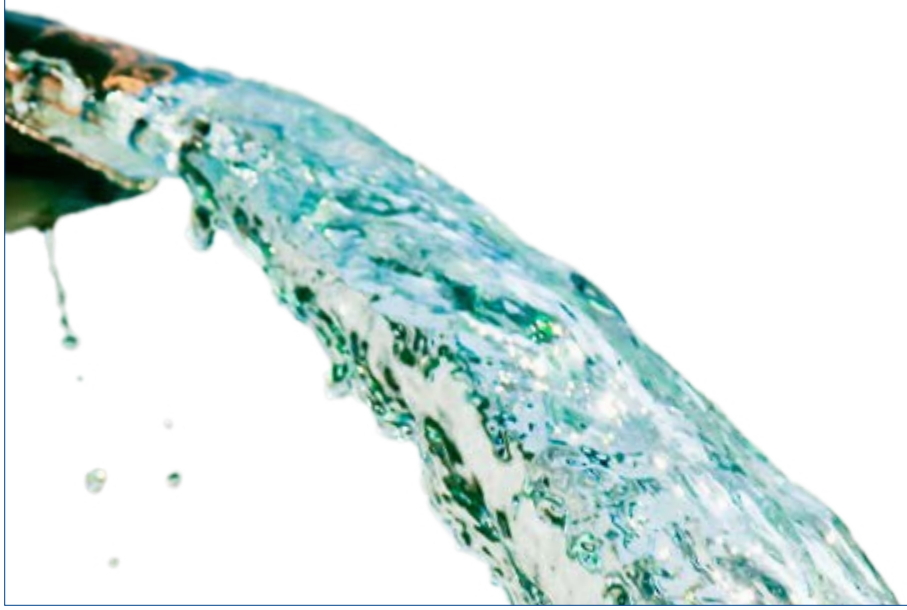
[1)] For information about an external battery for *NANOCOLOR*® *VARIO Mini*, please contact MACHEREY-NAGEL.

NANOCOLOR® COD test kits

Safe, safer, the safest

Reliable COD analysis

- No risk of leaking gases
- Minimum quantity of hazardous chemicals
- Hg-free version available
- 12 measurement ranges available for all requirements and demands



MN Since 1911

QUANTOFIX® Relax

Reflectometer for evaluation of test strips

The QUANTOFIX® Relax is the ideal device for the objective evaluation of our QUANTOFIX® test strips. It combines the simplicity of test strips with the safety of instrumental analysis and thus the best out of these two worlds. The QUANTOFIX® Relax does not require any special strips, but evaluates the normal pH-Fix and QUANTOFIX® test strips. Therefore entrance into instrumental analysis is very simple; the same strip can be used for visual and instrumental evaluation.

Excellent usability

All functions of the device can be selected with the touch screen display. Therefore, the operation is simple and intuitive, without the need for extensive training. The auto-start function initiates the measurement as soon as the test strip is placed on the strip holder. Therefore, it is not necessary to touch the device for performing a measurement. Contaminations are reliably avoided. Frequently used parameters can be stored as favorites. Simple tapping can quickly access these favorites during operation.

Quantitative results

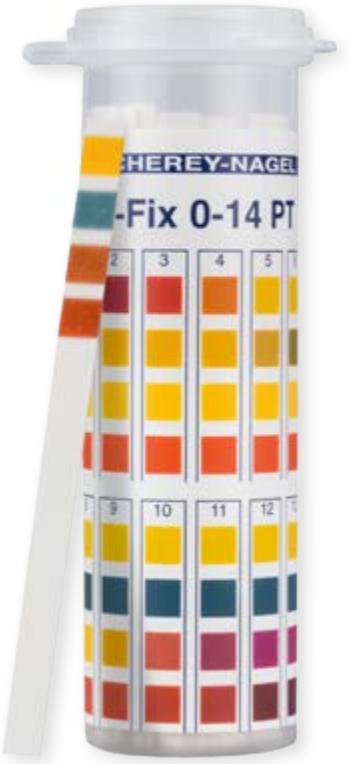
The optics of the QUANTOFIX® Relax has been proven for years in medical technology and supplies secure and standardized values. Thereby an accuracy of ≤ 10 % is achieved for many parameters; a hardly achieved level in the analysis of test strips, yet. The evaluation with the QUANTOFIX® Relax is not interfered by external factors and is therefore absolutely objective and precise. The estimation of measured values between the gradations of the scale is omitted.

Documentation and data transfer

The QUANTOFIX® Relax allows the assured documentation of analytics with test strips. Results are printed immediately after the measurement. The printout can be e.g. appended to a production protocol or kept for later quality controls. The transmission to an information system can be realized easily. In addition, the data are stored in the device and can be simply read out or printed again later on.

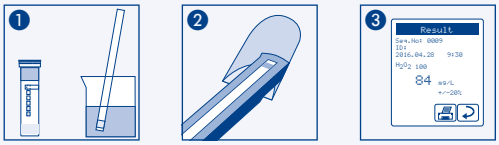
Good to know

For an overview of all the parameters and pH-Fix test strips available on the QUANTOFIX® Relax, please refer to page 52 and 60.



How it's done

Objective evaluation with the QUANTOFIX® Relax



Dip | Place immediately | Read off result

Ordering information

Description	REF
Reflectometer QUANTOFIX® Relax for evaluation of QUANTOFIX® test strips incl. power supply, adapter, manual, 1 roll of printer paper and certificate	913 46

Accessories

Description	REF	Content
Transport case for reflectometer QUANTOFIX® Relax for individual combination with 1 QUANTOFIX® Relax, 3 rolls of printer paper, 6 QUANTOFIX® tubes, 6 batteries, power supply, manual and accessories	930 889	1 piece
Printer paper for QUANTOFIX® Relax	930 65	5 pieces
Barcode scanner for QUANTOFIX® Relax	930 74	1 piece
Power supply for QUANTOFIX® Relax	930 995	1 piece

Objective

- High-quality optics
- Independent from external light and subjective color perception
- Standardized reaction times

Easy

- Intuitive use via touch screen
- Contactless measurement due to auto-start function
- Favorites list for the most important parameters

Safe

- Reproducible results independent of the user
- Printout of results for optimized documentation
- Accuracy for many parameters ≤ 10 %

Technical data

QUANTOFIX® Relax	
Type	Reflectometer with microprocessor control, self-test and auto-calibration
Calibration	Automatic, self calibrating
Capacity	50 strips per hour
Data storage	200 results
Display	LCD display with touch screen
Operation	alphanumeric input via touch screen
Interface	RS232, USB B (Host), PS/2 for connection of a keyboard or barcode scanner
Languages	DE / EN / FR / ES / IT / PT / PL / TR / HU
Update	Free via Internet / PC
Operating range	10 °C–40 °C, max. 80 % relative humidity (non-condensing)
Power supply	100 V–240 V~, optional with 6 AA batteries
Dimensions	200 mm x 160 mm x 75 mm
Weight	710 g (without batteries and power supply)
Warranty	2 years
CE	CE certified

BioFix® Lumi-10

Compact luminometer for mobile use

The BioFix® Lumi-10 is a compact luminometer for the measurement of bio and chemical luminescence reactions with constant light emission. Due to its size it is ideally suited for the use in the laboratory or on the road and can be operated with a power supply as well as rechargeable batteries.

Incredibly versatile

Thanks to its highly sensitive detector (Ultra-Fast Single Photon Counter) the BioFix® Lumi-10 can be used for a variety of applications. This includes amongst others bio toxicity tests, ATP- and biomass determinations, reporter-gene assays, luminescence immunoassays as well as NAD(P)H measurements.

Individually programmable

The BioFix® Lumi-10 has six individually adjustable measurement protocols and a data memory for up to 2000 results. It provides the opportunity for single, multiple and extensive screening measurements. The results are optionally displayed in % inhibition, % stimulation or RLU (relative light units). The user can set the particular measurement parameters such as incubation time or measurement time individually. By a previous definition of detection limits, the results can be automatically classified by the device. There are already pre-programmed test methods available for the determination of luminescent bacteria toxicity tests and ATP tests.

Good to know

Thanks to six individually adjustable measurement protocols, the BioFix® Lumi-10 is extremely versatile and suitable for many applications.

Ordering information

Description	REF
BioFix® Lumi-10 incl. manual, rack, cuvettes and spare adaptor	940 008

Accessories

Description	REF	Content
Absorbance color correction cuvettes with 100 aspirators	940 006	4 pieces
Glass cuvettes 12 mm OD	916 912	690 pieces
Rack for glass cuvettes 12 mm OD, 5 x 10 positions	945 013	1 piece
Manual BioFix® Lumi-10, German	940 014	1 piece
Manual BioFix® Lumi-10, English	940 014.en	1 piece
Mains adaptor	940 009	1 piece

Technical data

BioFix® Lumi-10	
Type	Luminometer
Optics	Ultra-Fast Single Photon Counter
Wavelengths range	380 nm–630 nm
Software	Microprocessor software
Measuring modes	3 preprogrammed tests, 6 free programmable methods, % inhibition, % stimulation, RLU
Cuvette holder	Cuvettes 12 mm OD
Data storage	2000 results
Display	Backlit graphic display (128 x 64 pixel)
Operation	Foil covered push buttons
Languages	DE, EN
Interface	RS232 interface for data transfer to the PC or printer
Operating range	15 °C–30 °C
Power supply	Mains adaptor: 230 V / 50 Hz, 115 V / 60 Hz, batteries
Rechargeable batteries	3 Rechargeable batteries: NiCd R14 / C / Baby / UM2 batteries; 1600 mAh
Dimensions	170 mm x 150 mm x 280 mm
Weight	2 kg (incl. batteries)
Warranty	2 years
CE	CE certified