Water Analysis

NANOCOLOR® UV/VIS

Highly versatile
190 – 1100 nm

NANOCOLOR® UV/VIS

More than a spectrophotometer

- Safe water and waste water analysis
- Internal quality control according to ISO 9001
- Turbidity measurements according to EN ISO 7027
- CIE-compliant colour measurements

Innovative precision

UV/VIS Spectrophotometer with reference detector technology (RDT)

- Powerful UV/VIS spectrophotometer with monochromator (190-1100 nm)
- For universal use in all areas of water and waste water analysis

Highly accurate measurements by high-quality optical components

- Precision optics and reference detector technology (RDT) ensure accurate results
- High resolution scans are recorded and displayed within seconds

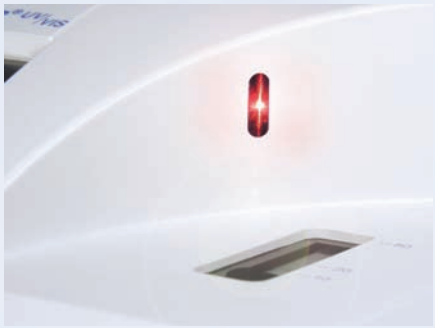
"The NANOCOLOR® UV/VIS is a highly versatile spectrophotometer, which can be employed in a wide variety of settings and impresses with precise and reproducible analytics in any application.

Our laboratory uses the NANOCOLOR® UV/VIS both for routine analysis and for individual applications, such as turbidity and colour comparison measurements."

Oliver Süße-Herrmann,
Laboratory director, CR3-Kaffeeveredelung M. Hermsen GmbH

Save time

Fast measurements – *NANOCOLOR*® barcode technology



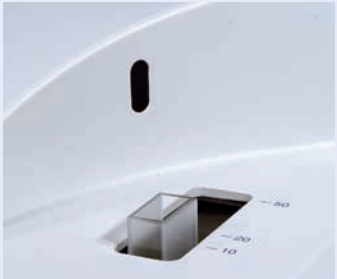
- Fully automatic, instant cuvette detection
- Selection of test method and suitable wavelength, the actual measurement and storage of results are carried out automatically

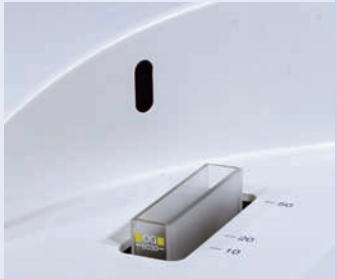
Measurement without cuvette slot cover

- The progressively designed optics is insensitive to external light and makes measuring straightforward

No cuvette adapter required

- Universal cuvette slot for the use of round tubes (16 mm OD) and rectangular cuvettes (2, 10, 20, 50 mm) without any adapter





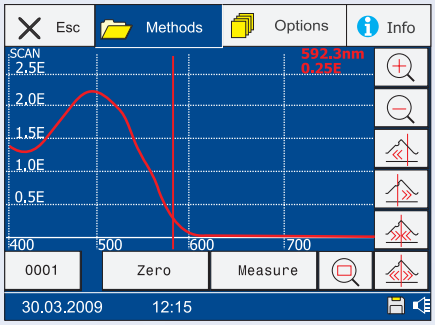
Increase accuracy

Self-explanatory user guidance

- All tests and menu items can be activated fast and easily
- Operation without complex and time-consuming training

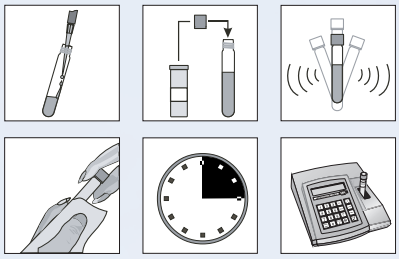
User-friendly, backlit touchscreen

- All significant data and functions are clearly shown on the coloured, backlit touchscreen display



Manual with test instructions, presented as pictograms

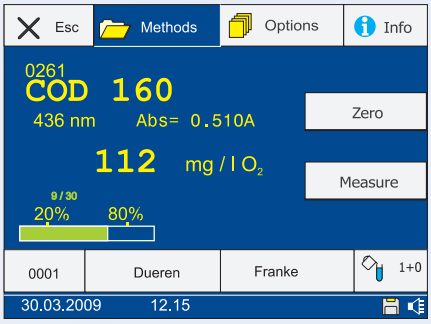
- Safe test procedures
- Clear instructions
- No confusion



Assure results

Documentation of results according to GLP

- Individual entries of sample number, sample location, user and dilution
- Graphic display of results, relating to measurement range and 20-80% range



Clear memory management

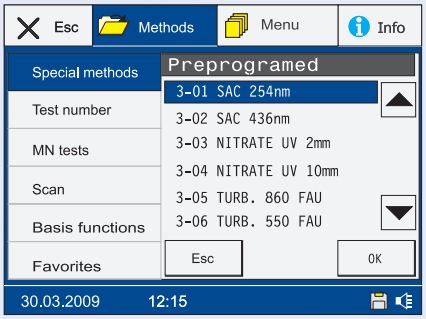
- GLP-conform storage of results with all supplementary information such as date, time, sample number, sample location, user and dilution
- Fast and easy access to stored results and data sets

Time saving sample allocation with the *NANOCOLOR*® USB handheld scanner

- Easy administration of sample locations
- Classification of results within seconds
- Comfortable preparation of sample lists

Experience flexibility

Pre-programmed tests and free programming of user-defined applications



- Easy access to all photometric basic functions, such as absorbance, transmission, factor, standard and multi-wavelength measurements, as well as kinetics and scan
- More than 200 pre-programmed tests and special methods
- Determination of the spectral absorption coefficient (SAC) at 254 and 436 nm
- Environmentally friendly determination of nitrate without chemicals
- Colour determination according to DIN EN ISO 7887 at 3 wavelengths
- Free programming of up to 100 user-defined methods in the wavelength range of 190-1100 nm

Meet specifications

Internal quality control according to ISO 9001

- Conformance to requirements of internal quality control (IQC)
- Protection towards supervisors and authorities
- Complete documentation of standard measurements
- Fast and easy self-monitoring of photometric accuracy with *NANOCONTROL* NANOCHECK (REF 925 701)
- Integrated counter as reminder for determination of standards

"The advisory leaflet DWA-A 704 „Operational Methods for Wastewater Analsis" contains specifications concerning application and quality control of operating methods intended for self-monitoring of wastewater. […]

By means of model cards (IQC-Cards), filled-in examples (for municipal and industrial wastewater systems) and extensive descriptions help is provided which remarkably simplifies the implementation of the requirements listed in DWA-A 704. The, all in all, 11 IQC-Cards are modules which should be adapted to the needs of the respective wastewater system. […] IQC-Card 9: control and maintenance of the equipment; control of photometers […]

The Standard aims at operators and operating personnel at municipal and industrial wastewater treatment plants as well as at those authorities in charge of the execution of the monitoring."

***KA – Abwasser, Abfall 2007** (54) Nr. 5 S. 508*

Be prepared for the future

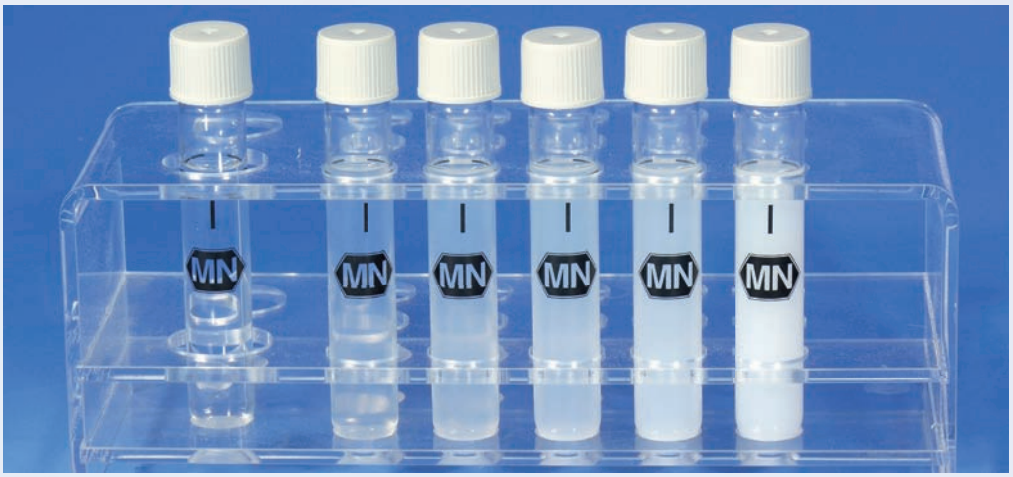
Fast photometer update – free of charge

- At any time, stay up-to-date by easy programme updating via Internet/PC and USB stick
- For the current software update please visit ***www.mn-net.com***

Enjoy versatility

Nephelometric turbidity measurements according to EN ISO 7027

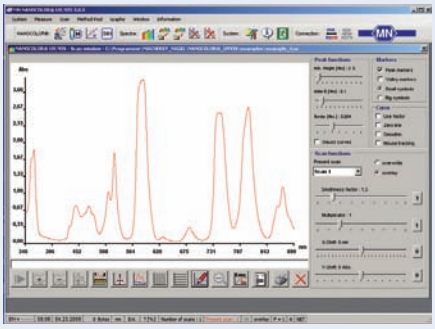
- Determination of scattered light in an angle of 90° (nephelometric) at 860 nm in a range from 1 to 1000 NTU/FNU.
- Absorption measurement in an angle of 180° (turbidimetric) at 550 nm in a range of 1 to 100 FAU and at 860 nm in a range of 1 to 400 FAU
- Turbidity control in COD analysis



NANOCOLOR® UV/VIS PC-Software – more power for your photometer

Convenient data export

- Easy transfer of results and spectra to PC
- Data storage on USB stick (included in delivery)

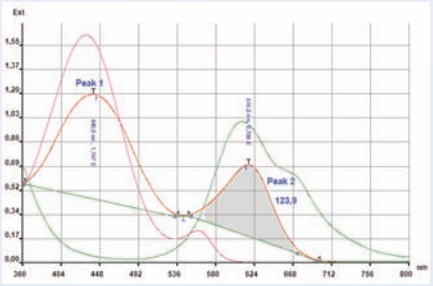


Professional data and spectrum processing

- Easy processing of transferred data either with the *NANOCOLOR® UV/VIS* PC-software or with standard software

Comprehensive spectrum analysis

- Clearly displayed spectra
- Automatic and manual peak analysis

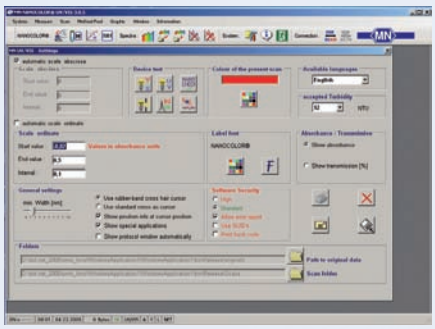


Photometer control via PC

- Convenient development and administration of special methods
- Numerous additional measuring programmes such as scan kinetics, micro-biological functions et cetera

Manipulation-proof storage of data

- Fully automatic creation of original files and data saving with HASH-Code



Internal quality control (IQC)

- Generation of GLP-compliant test protocols
- Integrated testing of wavelength accuracy
- Easy checking of UV and VIS lamps
- Scattered light test according to DAB and PhEur

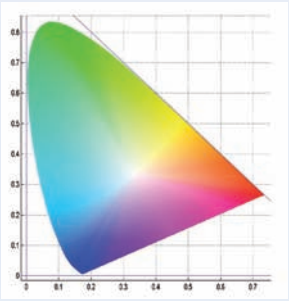
CIE-compliant colour measurements

Determination of colour index and colour spaces

In many industrial settings, the product's colour is an important quality criterion. In order to establish a relationship between human colour perception and physical colour stimulus specification, the International Commission on Illumination (CIE – commission internationale de l'éclairage) has, already in the year 1931, defined the CIE norm-valency system and CIE norm colour system, respectively.

The above mentioned system constitutes the foundation for colour measurements with the *NANOCOLOR® UV/VIS*.

- CIE-L*a*b*, CIE-L*Ch, CIE-L*u*v*, Hunter-Lab, RGB, CMYK, HSB, HSL, YUV, tristimulus values X, Y, Z, et cetera
- Hazen/APHA/PtCo-, Gardner-, Saybolt-, Klett-, Iodine-, Hess-Ives-, ASTM-, Ph. Eur.-, ADMI-colour index et cetera



Easy and fast colour control

- Determination of colour differences against a quality control reference according to classic and modern standards (ΔE CIE 1976, ΔE CIE 1994, ΔE CIE 2000, ΔE CMC (1:1), ΔE CMC (2:1), ΔE DIN 99)
- Easy determination against numerous stored reference values

MEBAK – beer colour, bitterness units, VDK and more

- Reliable determination of all important parameters like beer colour, bitterness units, vicinal diketones, total polyphenoles, anthocyanogenes, Iso - α - acids, photometrical iodine sample et cetera

Colour measurement of mixed drinks and their raw materials – a field report

"By developing the NANOCOLOR® UV/VIS, MACHEREY-NAGEL has successfully faced clients' requirement and thus created a multifunctional measurement device. The NANOCOLOR® UV/VIS covers the whole range of photometric applications from water analysis up to modern quality control.

*The NANOCOLOR® UV/VIS and its software, which comprises all photometric determinations from MEBAK, as well as multiple colour systems (e.g. EBC, CIE-L*a*b*, …), have become an integral part of our laboratory.*

In times of growing brand diversity in breweries, e.g. mixed drinks, the NANOCOLOR® UV/VIS is a versatile device for multi wavelength measurements in a three-dimensional colour spectrum for colour measurements of the respective drinks and their initial ingredients."

Bernd Sieren, *Assistant laboratory director, Bitburger Brauerei*

Food analysis

Enzymatic measurements with the *NANOCOLOR*® UV/VIS PC-Software

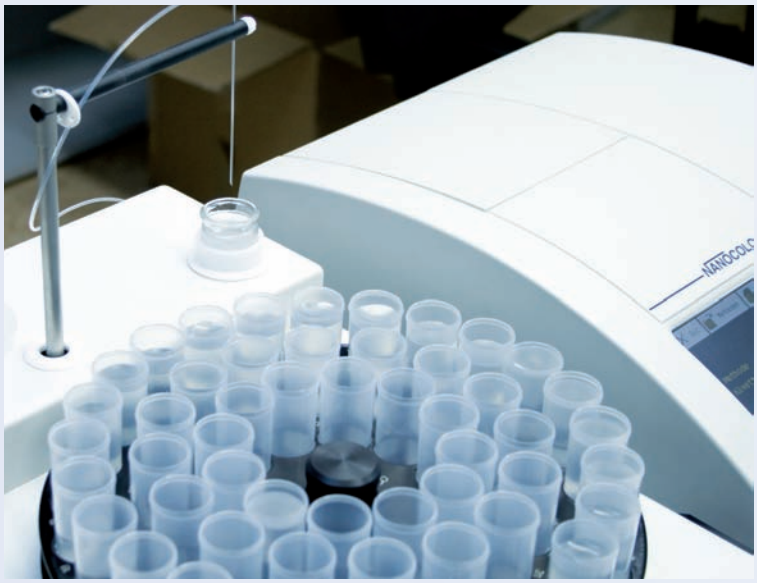
- For quality assurance and raw material control in food analysis
- Analysis of enzymatic tests from r-biopharm AG

Analysable tests

Saccharose/D-Glucose	Saccharose/D-Glucose/D-Fructose	Maltose/Saccharose/D-Glucose
D-Gluconic acid/D-Glucono-δ-lactone	Citric acid	D-Glucose
Urea/Ammonia	D-Glucose/D-Fructose	Cholesterol
Glycerin	Acetaldehyde	Ethanol
L-Lactate	L-Glutamic acid	D-Lactate/L-Lactate
D-Sorbite/Xylitol	Acetate	Raffinose
L-Ascorbic acid	Formate	L-Malate
D-Malate	Nitrate	Succinate
Starch	Sulphite	
fluid Saccharose (*total* Glucose)	fluid D-Fructose	fluid L-Malic acid
fluid D-Glucose	fluid Ethanol	fluid Glucose/Fructose
fluid Glycerin	fluid Urea/Ammonia	fluid Isocitric acid
fluid Ammonia	fluid Lactose/Glucose	fluid D- and L-Lactic acid

Automatic measurement of sample series

Autosampler *NANOCOLOR*® AS 53 with sample disc



Using the autosampler *NANOCOLOR*® AS 53 in combination with a flow cuvette increases measurement accuracy, since the same optical properties are applied for all measurements. All samples which have to be analysed are measured in one single cuvette, thus eliminating optical disparities in different cuvettes.

The autosampler is activated and controlled via a serial interface (RS-232) and the included PC-software.

NANOCOLOR® UV/VIS

Technical data

Type:	UV/VIS Spectrophotometer with reference detector technology (RDT)
Light sources:	Halogen lamp (visible range) and deuterium lamp (UV range)
Optical system:	Monochromator
Wavelength range:	190-1100 nm
Wavelength accuracy:	± 1 nm
Wavelength resolution:	0.3 nm
Wavelength calibration:	Automatic
Wavelength selection:	Automatic, barcode, manual
Scan speed:	900 nm or 1 complete scan in less than 1 min
Spectral bandwidth:	< 4 nm
Photometric range:	± 3.0 E in wavelength range 200-900 nm
Photometric accuracy:	0.005 E at 0.0-0.5 E; 1% at 0.5-2.0 E
Photometric linearity:	< 0.5% at 2 E; ≤ 1% at > 2 E
Stray light:	< 0.05%
Measuring modes:	More than 200 pre-programmed tests, 100 optionally programmable methods, absorbance, transmission, factor, kinetics, 2-point calibration, scan, nephelometric turbidity measurement
Cuvette holder:	Test tubes 16 mm OD, rectangular cuvettes 2, 10, 20, 50 mm
Data memory:	1000 measured data sets, GLP conform
Display:	Coloured, backlit LCD touchscreen
Operation:	Barcode technology, display user guidance, touchscreen
Languages:	de, en, fr, es, nl, it, hu, pl, pt, cz
External light:	Insensitive, open cuvette slot
Interfaces:	USB and bi-directional serial RS 232
Update:	Via Internet / PC and USB stick (included in delivery)
Operating range:	10-40 °C , max. 80% relative humidity (without condensation)
Power supply:	110-240 V~, 50/60 Hz, 60 VA
Dimensions L / W / H:	390 / 285 / 155 mm
Weight:	6.5 kg
Warranty:	2 years

CE This device complies with the following directives:
- 2006/95/EC - Low-Voltage Directive
- 2004/108/EC - EMC Directive

Ordering information:

Spectrophotometer *NANOCOLOR® UV/VIS* incl. software DVD, quick reference guide, manual, dust cover, mains cable, USB cable, USB stick, serial cable, calibration cuvette and certificate	REF 919 100
Accessories and spare lamps:	
Quartz glass cuvette, 2 mm optical path	REF 919 122
Quartz glass cuvette, 10 mm optical path	REF 919 120
Quartz glass cuvette, 50 mm optical path	REF 919 121
Flow cuvette, quartz glass, 10 mm optical path	REF 919 126
Flow cuvette, quartz glass, 2 mm optical path	REF 919 127
Flow cuvette, glass, 10 mm optical path	REF 919 128
USB stick	REF 919 123
Halogen lamp for *NANOCOLOR® UV/VIS*	REF 919 104
Deuterium lamp for *NANOCOLOR® UV/VIS*	REF 919 103
Autosampler AS 53 for *NANOCOLOR®* AS 53	REF 919 125
Handheld scanner for *NANOCOLOR® UV/VIS*	REF 919 134

Your local distributor:

KATEN100072/Flyer NANO UVVIS en3/3/0/5.2009 PD
Printed in Germany

www.mn-net.com

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