VWR INTERNATIONAL

ALL YOU NEED

FOR SPECTROPHOTOMETRY

Life science applications

Applications in the environmental and food industries

Universal photometers

Single beam devices

Double beam devices

Fluorometers

Turbidimeters for turbidity measures

Cuvettes, accessories and software

Quality assurance

MAKING SPECTROPHOTOMETRY EASY!

Introduction

Dear Customer,

The following questions and answers are designed to help you decide which colorimeter, filter or spectrophotometer is best suited to your requirements. Please remember that a matrix like this cannot always replace the experience and competence that an advisor can offer. You can therefore contact our field specialists if you have any further questions.

Photometry is an important part of modern instrumental analysis. It is now an established measurement and testing method in pharmaceutical quality control, in water and environmental laboratories and in quality assurance in the food industry. Photometers have as many individual features as they do areas of application. We offer an extensive range of devices so we can meet all your requirements in educational institutions, industry and in public and private research laboratories.

Our portfolio starts with simple colorimeters and goes right through to spectrophotometers and the related complete test kits for rapid and precise analysis. A summary table gives you a rapid overview of our product range. We have compiled a list of questions to guide your decision so you can choose the most appropriate instrument for your specific application. Our range is completed by standard solutions and test systems for your quality management, tips for accessories and consumables, which allows us to help you ensure high quality standards. Our field product specialists will also be happy to demonstrate the instruments on site for you.

What field of application do you operate in?	**BioTech/life science:** GENESYS™ 10S BIO, Biophotometer plus, Novaspec series, Ultrospec series, GeneQuant
	Water/wastewater analysis: Spectroquant® NOVA, Pharo, Picco and Multy are suitable for Spectroquant® test kits from Merck, whilst the AquaMate™ plus is suitable as an independent device
	Pharmaceutical (regulated): Model 6715, U-2900/2910, U-3900/3900H, Ultrospec 5300/6300
	General material research (colour measurement): U-3900/3900H
Do you only want to take measurements in the visual range (325 - 1100 nm) or in the UV range (190 - 325 nm) as well?	**Visual measuring range:** VWR V-1200, GENESYS™ 20, GENESYS™ 10S VIS, AquaMate™ plus VIS, Model 6700, Models 7300/7305, UviLine 9100 VIS
	UV and visual measuring range: All other UV/VIS spectrophotometers
Which sample volumes do you have available?	**Macro/micro (>300 µl filling volumes):** All devices are suitable
	Ultra-micro (20 - 200 µl filling volumes): Special plastic single use cuvettes with approx. 50 µl filling volume must be handled separately - the cuvette must be securely located in the cell holder, a pin hole is used ideally to deliver reproducible results; do not use an automated cell changer as the reproducibility of the measuring point is not given
Do you want to save more than one method or measurement data set in the device or on an external medium (not a PC)?	**USB memory sticks:** UviLine 9100, 9400, U-2900, AquaMate™ plus, all GENESYS™ 10S models, Models 7310/7315
	SD card: Models 6700/6705/6715
Do you want to print the data/results?	**Internal printer:** GENESYS™ 20/10S, 10S BIO, 6700/6705/6715, 7300/7305/7310/7315, GeneQuant 100/1300, NanoVue can be ordered with an integrated thermal transfer printer
	External printer port: All devices taking varying printer specifications into consideration
Do you want to measure the sample directly from/in a sample vessel (and not transfer the samples to a cuvette)?	**Sipper** (a pump is used to suck the sample into a pre-installed flow through cell)**:** A range of manual or automatic sipper systems are available for many of the units, please check the accessory tables
	Glass fibre measuring head connection (the measuring sensor is immersed directly into the sample solution outside the photometer)**:** GENESYS™ 10S/10S BIO
Do you want to measure more than one sample at the same time (possibly with zero compensation)?	**Automatic multi-cell changer:** VWR UV-1600PC, UV-3100PC, Models 67 and 73 series, UviLine 9100/9400, GENESYS™ 10S/10S BIO, AquaMate™ plus, U-5100
	Automatic multi-cell changer with Peltier cooling: U-2900/2910, U-3900
	Autosampler: AquaMate™ plus, U-2900/2910, U-3900
Do you want to work with standards (create a calibration curve)?	**All devices**
Are your samples highly diluted?	**All devices:** Special cell holder 20 - 50/100 mm cuvettes
Do you want to constantly measure against a reference sample?	**Double beam devices:** U-2900/2910, U-3900
Would you like to operate a stand-alone instrument by a PC?	VWR UV-1600PC, UV-3100PC, GENESYS™ 20/10S/10S BIO, AquaMate™ plus, U-5100, U-2900, 73 series
Do you want to carry out fluorescence measurements?	Fluorescence spectrophotometers F-2700, F-7000

Photometers for life science applications

Description	Light source (lamps)	Optical system	Wavelength range (nm) (2)	Spectral bandwidth (nm)	Photometric range (A)
GeneQuant 1300/100	Xenon	Single beam with internal reference	190 - 1100	5	-0,3 to +2,5
Ultrospec 10	LED	Single beam	600	40	-0,3 to 1,99
Ultrospec 2100 pro, Ultrospec 3100 pro	Xenon	Single beam with internal reference	190 - 1100	<3	-3,0 to +3,0
Novaspec plus, Novaspec III	Tungsten	Single beam	330 - 800	7	-0,3 to +2,5
Ultrospec 5300 pro, Ultrospec 6300 pro	Tungsten, deuterium	Single beam with internal reference	190 - 1100	1	-3,0 to +3,0
GENESYS™ 10S UV, GENESYS™ 10S BIO	Xenon	Split beam with internal reference	190 - 1100	1,8	-0,1 to +3,0
BioPhotometrer plus	Xenon	Single beam with internal reference	230, 260, 280, 340, 405, 490, 550, 595, 650	5 - 7	0 to 3
NanoVue™ Plus	Xenon	Single beam with internal reference	190 - 1100	5	N/A
Multiskan® FC	Tungsten	Single beam	340, 405, 414, 492, 540, 620	3 - 9 (½ bandwidth)	0 to 4
Multiskan® GO	Xenon	Single beam	200 - 1000	<2,5	0 to 2,5

Photometers for applications in the environmental and food industries

Description	Light source (lamps)	Optical system	Wavelength range (nm) (2)	Spectral bandwidth (nm)	Photometric range (A)
Spectroquant® Picco Cl_2 / O_3 / ClO_2 / CyA / pH	LED	-	(1)	Single parameter devices for the COD, fluoride, ammonium, pH,	
Colorimeter Spectroquant® Multy	6x LED	Single beam with internal reference	430, 530, 560, 580, 610, 660		
Spectroquant® NOVA 30A	Tungsten	Single beam with internal reference	340, 445, 525, 550, 605, 690		-0,3 to +3,2
Spectroquant® NOVA 60A	Tungsten	Single beam with internal reference	340, 410, 445, 500, 525 ,550, 565, 605, 620, 665, 690, 820		-0,3 to +3,2
Spectroquant® Pharo 100	Tungsten	Single beam, stabilised	320 - 1100	4	±3,3
Spectroquant® Pharo 300	Xenon	Single beam, stabilised	190 - 1100	4	±3,3
AquaMate™ plus VIS	Tungsten	Single beam	315 - 1100	2	-0,3 to +3,0
AquaMate™ plus UV/VIS	Tungsten, deuterium	Single beam	190 - 1100	2	-0,3 to +3,0

(*) PC required (no stand-alone functionality)

(1) Details for wavelengths and product codes see product page

(2) If single values mentioned main units are filter photometers

	Interfaces	Memory internal/external	Specialities	Cat. No.
	USB	Yes/-	Predefined life science methods nucleic acid, protein assay, cell culture Cy™ Dye (only Genequant 1300)	28-9182-04, 28-9182-13
	N/A	Yes/-	OD600 measurements (cell density)	80-2116-30
	RS232, parallel	-/-	Predefined life science methods, cDNA (only Ultrospec-3100 pro)	80-2112-21, 80-2112-31
	RS232	-/-	Novaspec III basic unit for education, Novaspec plus basic unit for enzyme methods	80-2117-50, 80-2118-00
	RS232, centronics (Ultrospec 6300 only)	-/-	FDA compliant software SWIFT II available (optional)	80-2117-70, 80-2117-60
	USB		Comprehenisve software package, integral printer (optional), predefined life science methods (G10S BIO only)	634-0595, 634-0596, 634-0591, 634-0592
	RS-232C	100 results, 32 methods	32 methods, 9 freely programmable, very small footprint	634-4033, EU plug 634-0590, UK plug
	Bluetooth®, SD card (optional)	81 methods, SD card	Micro volume sample (min. 0,5 µl at 0,2 mm path length)	28-9569-65
	USB	99 protocols, results/USB stick	Ease of use, stand-alone mode	736-0355, 736-0356
	USB	Yes/USB stick	Stand-alone mode, very fast, cuvette measurements	736-0559, 736-0560

	Interfaces	Memory internal/external	Specialities	Cat. No.
determination of chlorine, ozone, chlorine dioxide, cyanuric acid, pH – nitrate, nitrogen, o-phosphate/total phosphorous - see product page				(1)
	RS232 for printer or PC	1000 data sets	Multi-parameter device for 120 Spectroquant® cell tests	1.73630.0001
	RS232C serial	500 measured values/PC	Barcode reader for Spectroquant® cell tests	1.09748.0001
	RS232C serial	1000 measured values/PC	Barcode reader for Spectroquant® cell tests, 50 free programmable methods, spectral data and kinetics; NOVA 60A includes rechargeable batteries	1.09751.0001, 1.09752.0001
	RS232, USB-A, USB-B	1000 results/USB stick, PC	Barcode reader for Spectroquant® cell tests, freely programmable methods, spectral data and kinetics	1.00706.001
	RS232, USB-A, USB-B	1000 results/USB stick, PC	Barcode reader for Spectroquant® cell tests, freely programmable methods, spectral data and kinetics	1.00707.0001
	RS232C, USB	Yes/USB stick	Comprehensive software package (optional) Uvcalc™ for flexible calculations	705-0951
	RS232C, USB	Yes/USB stick	Comprehensive software package (optional) Uvcalc™ for flexible calculations	705-0950

All units with PC remote control software can save methods and results on PC within remote software.

Universal photometers - single beam devices

Description	Light source (lamps)	Optical system	Wavelength range (nm) (2)	Spectral bandwidth (nm)	Photometric range (A)
VWR V-1200	Tungsten	Single beam	325 - 1000	4	-0,3 to + 3,0
GENESYS™ 20	Tungsten	Single beam	325 - 1100	8	-0,1 to +2,5
VWR UV-1600PC	Tungsten, deuterium	Single beam	190 - 1100	4	-0,3 to + 3,0
VWR UV-3100PC	Tungsten, deuterium	Single beam	190 - 1100	2	-0,3 to + 3,0
GENESYS™ 10S VIS	Tungsten	Single beam	325 - 1100	5	-0,1 to +3,0
U-5100	Tungsten, deuterium	Ratio beam with internal reference	190 - 1100	5	-0,3 to +3,0
UviLine 9100	Tungsten	Single beam	320 - 1000	4	-3,3 to +3,3
UviLine 9400	Xenon	Single beam	198 - 1000	4	-3,3 to +3,3
Model 7300	Tungsten	Single beam	320 - 1000	5	-0,3 to +2,5
Model 7305	Xenon	Single beam	198 - 1000	5	-0,3 to +2,5
Model 7310	Tungsten	Single beam	320 - 1000	5	-0,3 to +2,5
Model 7315	Xenon	Single beam	1908- 1000	5	-0,3 to +2,5
Model 6700	Tungsten	Single split beam with internal reference	320 - 1100	4	-0,3 to +3,0
Model 6705	Xenon	Single split beam with internal reference	190 - 1100	4	-0,3 to +3,0
Model 6715	Xenon	Single split beam with internal reference	190 - 1100	1,5	-0,3 to +3,0

Universal photometers - double beam devices

Description	Light source (lamps)	Optical system	Wavelength range (nm) (2)	Spectral bandwidth (nm)	Photometric range (A)
U-2900, U-2910 (*)	Tungsten, deuterium	Double beam	190 - 1100	1,5	-0,3 to +3,0
U-3900 (*)	Tungsten, deuterium	Double beam	190 - 900	0,1 - 5	-5,5 to +5,5
U-3900H (*)	Tungsten, deuterium	Double beam	190 - 900	0,1 - 5	-3,8 to +3,8

Fluorometers

Description	Light source (lamps)	Optical system	Wavelength range (nm) (2)	Spectral bandwidth (nm)	Photometric range (A)
F-2700	Xenon				
F-7000	Xenon				

(*) PC required (no stand-alone functionality)

(1) Details for wavelengths and product codes see product page

(2) If single values mentioned main units are filter photometers

	Interfaces	Memory internal/external	Specialities	Cat. No.
	RS232, USB	200 results, 200 curves		634-6000
	RS232. parallel		Integral printer (optional)	634-1021, 634-1022
	RS232, USB	200 results, 200 curves	Software for PC control included	634-6001
	RS232, USB	200 results, 200 curves	Full scan capabilities; software for PC control included	634-6002
	USB		Comprehensive software package, integral printer (optional)	634-0593, 634-0594
	USB, parallel	20 methods, 50 results	Comprehensive software package (optional)	634-0757
	RS232, USB	100 methods, 1000 results/USB stick	Optional extra keyboard, functional keys, admin./user system	634-5000
	RS232, USB	100 methods, 1000 results/USB stick	Optional extra keyboard, functional keys, admin./user system	634-5001
	Analogue, RS232		Integral printer (optional), admin./user system	664-0067
	USB, RS232, analogue	USB stick	Integral printer (optional), admin./user system	664-0066
	Analogue, RS232		Integral printer (optional), admin./user system	664-0065
	USB, RS232, analogue	USB stick	Integral printer (optional), admin./user system	664-0064
	USB, parallel, analogue USB, USB	>1000 methods and results/ SD card	Colour touch screen, Qwheel™, admin./user system	634-0583
	USB, parallel, analogue USB, USB	>1000 methods and results/ SD card	Colour touch screen, Qwheel™, admin./user system	634-0584
	USB, parallel, analogue USB, USB	>1000 methods and results/ SD card	Colour touch screen, Qwheel™, admin./user system	634-0585

	Interfaces	Memory internal/external	Specialities	Cat. No.
	RS232 to PC (U-2900/U-2910) parallel, USB (U-2900)	Yes/USB memory stick (U-2900 only)	Comprehensive software package in line with Ph. Eur. (optional)	634-0718, 634-0719
	USB		Comprehensive software package in line with Ph. Eur. (optional)	634-0756
	USB		Comprehensive software package in line with Ph. Eur. (optional), U-3900H: Double monochromator	634-0754

	Interfaces	Memory internal/external	Specialities	Cat. No.
				634-0067
				634-0743

All units with PC remote control software can save methods and results on PC within remote software.

Photometers for life science applications

Spectrophotometer GeneQuant 1300 / 100

Compact, convenient and flexible.

The GeneQuant 1300 spectrophotometer is a compact, convenient and flexible instrument pre-programmed with a range of methods for the quantitation of proteins, nucleic acids, and bacterial cell cultures.

Absorbance and concentration measurements can be made at any wavelength, providing flexibility for future applications.

GeneQuant 100 is also available, with built-in applications for nucleic acids, proteins and cell density measurements.

- Built-in applications for cell density, nucleic acids, proteins, and enzyme kinetics
- cDNA application software for measuring incorporation of Cy™ 3 and Cy™ 5, or other dyes into purified microarray hybridisation probes and PCR products
- Wavelength range of 190 to 1100 nm, with wavelength scan from 200 to 900 nm performed in less than 5 s with zoom facility, peak identification, and on peak confirmation
- Visual inspection of a nucleic acid scan can identify the presence of impurities, especially useful with RNA samples
- Optional integrated printer
- USB cable and print via computer software supplied as standard - wireless Bluetooth® accessory (optional)
- Can be used with a wide variety of cuvettes or capillaries for sample volumes from 3 µl to 2 ml
- Three year lamp warranty

Ordering information

Description	Cat. No.
GeneQuant 1300 Classic	28-9182-13
GeneQuant 1300 with printer	28-9182-14
GeneQuant 1300 with Bluetooth®	28-9182-15
GeneQuant 100 Classic	28-9182-04
GeneQuant 100 Classic with printer	28-9182-05

Cell density meter Ultrospec 10

A small, portable and dedicated cell density OD600 measurement instrument.

The Ultrospec 10 measures the density of cells (*E. coli*, other bacteria, and yeast*) in suspension at 600 nm. This battery powered, hand held device can be easily used in incubation cabinets, under anaerobic conditions and in other areas of the laboratory where cells are cultured. Rechargeable batteries provide nearly one month of cord-free use.

* not recommended for use with mammalian cell lines

- Battery operated for use in cell culture facilities
- Easy-to-use, clean and sterilise
- Download results to a PC or printer for convenient data storage and retrieval
- Available in four colours

Ordering information

Description	Cat. No.
Ultrospec 10 cell density meter, Classic	80-2116-30
Yellow	80-2116-31
Plum	80-2116-32
Apple	80-2116-33

Photometers for life science applications

Photometer Ultrospec 2100 / 3100 pro

The Ultrospec 2100 pro is a simple to use instrument for nucleic acid measurements and enzyme kinetics.

It provides stored routines for nucleic acid quantitation and a standard curve routine for protein determination, in addition to measuring absorbance and concentration.

An 8 position sample changer is supplied as standard.

Accessories such as a temperature control unit option are also available.

The instrument can be upgraded for more sophisticated applications, as well as data storage, with SWIFT II software and a PC.

- Pre-set routines for DNA, RNA, oligonucleotide quantitation, and purity checks
- Combines basic measurement with graphic modes: Wavelength scans, absorbance changes with time, reaction rate determinations, and standard curves can be displayed and printed
- Stores up to 18 user-defined methods
- Includes serial and parallel outputs as standard (outputs to a range of printers)
- GLP self-test diagnostics
- IQ/OQ certification test plans
- Available in a choice of colours
- The Ultrospec 3100 is also available with all the benefits of the Ultrospec 2100, plus high resolution display, ability to store up to 50 user-defined methods and a cDNA application for measuring Cy™ 3 , Cy™ 5 and fluorescein incorporation into probes and PCR products.

Ordering information

Description	Cat. No.
Ultrospec 2100 pro, Classic	80-2112-21
Yellow	80-2112-22
Plum	80-2112-27
Apple	80-2112-28
Ultrospec 3100 pro, Classic	80-2112-31
Yellow	80-2112-32
Plum	80-2112-33
Apple	80-2112-34

Photometers Novaspec Plus

A good value instrument for general laboratory use.

It includes stored methods for protein quantitation and enzyme kinetics, plus the basic modes of absorbance, transmittance, OD600, and concentration.

- Kinetics for enzyme studies
- Stored protein methods for Bradford, BCA, Biuret, and Lowry
- Bacterial cell culture measurement at OD600
- "Flash Scan" diode array, for rapid wavelength scans
- Graphic display of wavelength scans, kinetic assays (including slope calculation for rate/activity studies) and standard curves
- Option for temperature control (factory fitted)
- Up to 99 stored methods

Ordering information

Description	Cat. No.
Novaspec Plus	80-2117-50
Novaspec Plus with heated cell holder includes: Grafico PC utility software, serial cable and dust cover	80-2117-51

Photometers for life science applications

UV/VIS photometer GENESYS™ 10S BIO

GENESYS™ 10S BIO from Thermo Scientific

These upgraded models are compact, robust, economical, easy-to-use, scanning, split beam UV/VIS instruments with improved performance.

This instrument is versatile and includes intuitive and powerful internal software with pre-configured methods that can be edited and stored to a readily accessible customised assay.

A wide variety of accessories are available for the wide ranging requirements of life science applications (please ask for details).

- USB connectivity
- 1,8 nm bandwidth for improved nucleic acid measurement (ratio and concentration)
- Direct protein measurement at 280 and 205 nm
- Standard measurement of protein concentrations using Coomassie/ Bradford, Lowry, modified Lowry, BCA, Pierce Micro-BCA and 660 Protein assays
- 6 cell changer for automated multi-sample experiments

Delivery information:

Supplied with a 6 position cell changer, single cell holder, spare fuses, USB memory device, USB cable, dust cover and operator manual.

For accessories and software see GENESYS™ 10S VIS UV/VIS on page 24

Technical specifications

Lamp source, lifetime	Xenon flash, 5 years typically
Optical system	Split beam with reference detector
Range (nm)	190 - 1100
Spectral bandwidth (nm)	1,8
Wavelength accuracy (nm)	±1,0
Scan speed (nm/min)	10 - 4200
Photometric range (A)	Up to 3,5 A at 260 nm
Photometric accuracy	±0,005 A at 1,0 A 0,010 A $K_2Cr_2O_7$
Stray light	<0,08% T at 220, 340 nm (NaI, $NaNO_3$) <1,0% 198 nm (KCl)
Display	Graphic 320 x 240 pixel backlit LCD (91 x 71 mm)
Standard cell holder	Integral 6 position cell changer, singe cell holder
Keyboard	Membrane keypad
Printer	Optional, 40 column, internal, graphic
Interfaces	USB type A port for USB memory device (front panel) USB type B port for optional PC (rear panel) USB type A port for external printer (rear panel)
Power (V)	100 - 240, selected automatically
W x D x H (mm)	300 x 400 x 250
Weight (kg)	8,6

Ordering information

Description	Cat. No.
GENESYS™ 10S UV/VIS BIO, power leads with EU and UK plug	634-0591
GENESYS™ 10S UV/VIS BIO with internal printer and power leads with EU and UK plug	634-0592

Photometers for life science applications

BioPhotometer plus

Compact and manageable device from Eppendorf®

This photometer is suitable for the rapid and reliable analysis of nucleic acids, proteins, cell density, dye, assays and general absorption measurements.

- Easy-to-use with a measurement time of approx. 2 seconds
- Small but compact device thanks to the robust metal case
- Choice of background compensation at 320 nm for UV measurements
- Direct calculation of all results taking dilutions into account
- 9 wavelengths for 32 methods, alterable

Ordering information

Description	Cat. No.
BioPhotometer plus, EU plug	634-4033
BioPhotometer plus, UK plug	634-0590

Accessories

Description	Pk	Cat. No.
DPU 414 thermal printer, including power supply and printer cable	1	713-1001
Thermal paper for printer	5	700-5118
Secondary UV/VIS test filter	1	732-6015

Technical specifications

Light source	Xenon flash
Optical system	Single beam optics with reference beam
Wavelength range (nm)	230, 260, 280, 340, 405, 490, 550, 595, 650
Spectral bandwidth	5 nm at 230 - 340 nm, 7 nm at 405 - 650 nm
Wavelength accuracy	±1 nm at 230 - 280 nm, ±2 nm at 550 - 650 nm
Photometric range	0 - 3 A; 0 - 2 A at 340 nm, 0 - 2 A at Dye 550/650 nm
Display	Graphic LCD, illuminated (33x60 mm)
Keyboard	19 membrane keys
Test storage	32 pre-programmed (alterable)
Measurement methods	DNA, RNA, Protein, OD600, Dye, Assay, Absorption
Interfaces	RS232C serial for PC and printer
Power (V)	100 - 240
W x D x H (mm)	200 x 320 x 100
Weight (kg)	3
Warranty	2 years
Accessories included	Dust cover, user manual, 8 cell UVette

Photometers Novaspec III

A lightweight instrument for measuring absorbance, % transmission, concentration and rate.

It is so easy-to-use. Just select wavelength, set reference and measure sample, making it the instrument of choice for teaching laboratories.

- Large display with easy-to-read characters
- Absorbance, % transmission, concentration, factor and rate
- Ability to measure two wavelengths simultaneously for kinetics assays
- Self-test on start-up
- Analogue output for connection to chart recorder
- 3 student-friendly experiments plus a tutorial on UV/VIS spectrophotometry are included

Ordering information

Description	Cat. No.
Novaspec III	80-2118-00
Test tube adapters (10, 12 & 16 mm)	80-2117-47

Photometers for life science applications

Spectrophotometer NanoVue™ Plus

Measurement of low volumes made easy

The NanoVue™ Plus is an easy-to-use and reliable instrument for the measurement of nucleic acid and protein samples. Samples of 0,5 to 2 µl can be pipetted directly onto a novel gold sample plate for measurement and then simply recovered using a pipette. If sample recovery is not required, the sample plate with hydrophobic coating can be quickly and easily wiped clean.

- Ideally suited to the life scientist where the sample is limited and speed and convenience of analysis is key
- Eliminates the need for cuvettes, capillaries or other sample devices - just drop and read
- Pre-defined methods for nucleic acid quantitation, including concentration, purity and theoretical Tm
- Pre-defined methods for protein quantitation, including direct UV, Bradford, BCA, Biuret and Lowry, with the ability to run up to 27 standards

Ordering information

Description	Cat. No.
NanoVue™ Plus with SD card	28-9569-60
NanoVue™ Plus	28-9569-65
NanoVue™ Plus with printer	28-9569-66
NanoVue™ Plus with Bluetooth®	28-9569-67

Supplied complete with software for Print Via Computer (PVC) and software Cy™ Dye and calibration fluid.

Technical specifications

Lamp source	Long life stabilised Xenon
Detector	Twin CCD array
Range (nm)	200 - 1100 (scanning 200 - 950)
Spectral bandwidth (nm)	5
Wavelength accuracy (nm)	±2
Wavelength repeatability (nm)	±0,5
Photometric range (A)	0 to 125 (10 mm path length equivalence)
Photometric accuracy	Maximum ±1% at 259 nm at 0,7 to 0,8 A using uracil
Method memory	90
Display	Backlit graphic LCD
Interfaces	USB port, optional Bluetooth®
Power	100 to 240 VAC ±10%, 50/60 Hz, 50 VA
W x D x H (mm)	260 x 390 x 100
Weight (kg)	<4,5

Microplate reader Multiskan® FC Thermo Scientific

The Multiskan® FC, based on 30 years experience in the area of microplate measurement.

It is a compact, reliable and robust instrument capable of reading 96 and 384 well plates for a wide variety of applications.

It provides fast and accurate measurement with excellent linearity. One model in the range is fitted with an incubator providing temperature control up to 50 °C and the capacity to read 384 well plates. It takes only 6 seconds to measure a 96 well plate and 12 seconds to measure a 384 well plate. The spectral range of 340 to 850 nm makes the Multiskan® FC suited to applications from enzyme kinetics to Lowry assays.

- USB stick transfer of stored data with up to 100 assays in internal memory
- Use either as a stand-alone instrument using internal software or under PC control with SkanIt® software
- Small footprint saves laboratory space and facilitates automated procedures
- Reliable day-to-day and year-on-year performance
- Robotic compatibility for high throughput environments

Ordering information

Description	Cat. No.
Multiskan® FC with integral shaker	736-0355
Multiskan® FC with integral shaker and incubator	736-0356

Supplied complete with 3 standard filters - (405, 450, 620 nm) and SkanIt® software

Technical specifications

Model	Multiskan® FC	Multiskan® FC with incubator
Wavelength range (nm)	340 - 850	
Light source	Quartz halogen lamp 6 V/10 W	
Filter type	8 position filter wheel	
Filters	340 nm, 405* nm, 414 nm, 450* nm, 492 nm, 540 nm 620* nm, 690 nm filters (*standard filters)	
Half bandwidth of filters (nm)	3 - 9	
Linearity (96 well plate) with fast mode	0 - 3 Abs, ±2%	
Linearity (96 well plate) with normal mode	0 - 4 Abs, ±2%	
Read-out range (Abs)	0 - 6	
Resolution (Abs)	0,001	
Accuracy (405 nm)	±1% (0,3 - 3 Abs) ±2% (3 - 4 Abs)	
Precision (405 nm)	CV = 0,2% (0,3 - 3 Abs); CV = 1,0% (3 - 4 Abs) normal mode	
Shaking	Linear shaking, 3 speeds	
Measurement time (96 well plate)	<6 s	
Measurement time (384 well plate)	-	<12 s
Display	High contrast colour display (480 x 272 dots)	
Software	Internal software or PC control with SkanIt® software	
Interfaces	USB for computer connection, USB memory stick for data export, USB for external printer (HP PCL5 type)	
Optional incubator	-	Included
Temperature range (°C)	-	Ambient +4 to 50
W x D x H (mm)	290 x 400 x 210	

Photometers for life science applications

Microplate reader Multiskan® GO

The Multiskan® GO is a compact, reliable microplate reader with an option available for an additional cuvette port.

The instrument can be operated as a stand-alone unit using straightforward internal software or for more demanding applications controlled by a remote PC using the SkanIt® software.

The design including a UV to visible wavelength range makes the microplate reader ideal for a wide range of photometric applications, such as nucleic acid and protein analysis, enzyme assays, cytotoxicity and cell proliferation assays as well as apoptosis assays. The option of cuvette reading port allows for optimisation of enzyme kinetics in a standard cell or TrayCell prior to transferring the kinetic protocols to the microplate format - all in the same instrument.

The SkanIt® software package supplied with the instruments provides easy assay optimisation, flexible data handling and convenient report formatting. The software also has a special remote control interface which enables easy integration with robotics and HIS/LIMS systems.

- Freely selectable wavelength selection by monochromator for the demands of various assays
- Fast plate measurement and a full spectrum scan in less than 10 seconds
- Both microplate and standard 10 x10 mm cuvettes reading capability available
- Shaking and incubation up to 45 °C for temperature critical applications
- Robotic compatibility for high throughput environments

Ordering information

Description	Cat. No.
Multiskan GO without cuvette	736-0559
Multiskan GO with cuvette	736-0560

Supplied with SkanIt® software.

Technical specifications

Model	Multiskan® FC	Multiskan® FC with incubator
Wavelength selection	Monochromator	
Light source	Xenon flash lamp	
Wavelength range (nm)	200 -1000 with 1 nm steps	
Read-out range (Abs)	Up to 4	
Bandwidth (nm)	2	
	Plate	**Cuvette**
Linearity (450 nm)	0 - 2,5 Abs, ±2% (96 well plate)	0 - 2,5 Abs, ±2%
Accuracy (450 nm)	1,0% + 0,003 Abs (0 - 2,0 Abs) 2,0% (2,0 - 2,5 Abs)	1,0% + 0,003 Abs (0 - 2,0 Abs) 2,0% (2,0 - 2,5 Abs)
Precision (450 nm)	CV <1,0%	CV <1,0%
Plate/Cuvette types	96 and 384 well plates	Standard, micro and ultra-micro cuvettes, TrayCell
Measurement speed (from A1 back to A1)	6 s with 96 well plate 10 s with 384 well plate	-
Shaking	Linear	-
Spectral scanning speed	10 s from 200 to 1000 nm with 1 nm steps	
Incubation (° C)	+4 to +45	
Internal user interface	4,5´´ colour display USB memory stick position for data export USB port for external printer (HP PCL5 compatible)	
PC control	SkanIt® software using USB connection	
W x D x H (mm)	285 x 430 x 260	
Weight (kg)	10,8	

The Spectroquant® Picco from Merck is a pocket colorimeter for water analysis.

The range covers single and multi-parameter devices that are suitable for drinking water, wastewater and swimming pool analysis.

Spectroquant® Picco colorimeters are easy to handle and are already pre-programmed for use with specific Spectroquant® test kits.

Users can choose from a series of convenient, pre-packaged cell tests and inexpensive reagent tests. Each work step is described clearly and can also be used easily by inexperienced staff.

- Simple handling
- Compact, handy and portable
- Pre-programmed methods
- Uses Spectroquant® test kits,

Items supplied:

Picco colorimeter, case, adapter for cell test kits (16 mm), 3 empty cuvettes for reagent test kits (24 mm) (not with Picco COD), 9 V battery and user manual

See the FEA catalogue W285102

Technical specifications for all Spectroquant® Picco colorimeters

Housing	ABS
Keyboard	3 keys, polycarbonate membrane, acid and solvent-resistant, splash-proof
Sample chamber	Waterproof, optics temperature compensated LED
Power requirements	9 V battery for approx. 40 h of use (corresponds to approx. 600 measurement series of around 4 min each)
Auto OFF	Automatic shut-off
Ambient temperature (°C)	0 to +40
Permitted rH	30 - 90%, not condensed
LxWxH (mm)	190 x 110 x 55 (without adapter), 270 x 225 x 80 (in case)
Weight (kg)	Device 0,4
CE compliance	DIN EN 50 081-1, VDE 0839 Part 81-1 1993-03 DIN EN 50 082-2, VDE 0839 Part 82-2 1996-02
Warranty	2 years

Ordering information

Description	To determine	Measurement wavelength (nm)	Cat. No.
Spectroquant® Picco $Cl_2/O_3/ClO_2$/CyA/pH	Free and total chlorine, ozone, chlorine dioxide, cyanuric acid and pH	528 (LED plus filter)	1.73607.0001
Spectroquant® Picco COD	COD	605 (LED) and 430 (LED plus filter)	1.73608.0001
Spectroquant® Picco F	Fluoride	620 (LED)	1.73606.0001
Spectroquant® Picco NH_4-N	Ammonium	660 (LED plus filter)	1.73602.0001
Spectroquant® Picco NO_3-N	Nitrate	370 (LED plus filter)	1.73603.0001
Spectroquant® Picco N (total)	Nitrogen	370 (LED plus filter)	1.73604.0001
Spectroquant® Picco PO - P (o-phosphate and P-total)	o-Phosphate and phosphorous (total)	660 (LED plus filter)	1.73605.0001

Accessories for Spectroquant® Picco and Multy colorimeters

Description	Pk	Cat. No.
Empty 24 mm cuvettes, round, with screw caps	12	1.73650.0001
Empty 16 mm cuvettes, round, with screw caps	25	1.14724.0001

Photometers for environmental and food industry applications

Colorimeter Spectroquant® Multy

The new Spectroquant® Multy colorimeter from Merck makes it easy to undertake photometric water analysis.

This device is pre-programmed to handle over 120 Spectroquant® reagent and cell tests and covers all major parameters of sewage water and drinking water analysis, such as COD, total nitrogen, total phosphorus and many more. You can also programme your own methods.

Even trace quantities of cyanide, arsenic, cadmium and other substances can be determined very accurately. The wide range of easily manageable Spectroquant® test kits offer an optimal solution for all users.

The device can be used with battery or mains power, so the colorimeter can be used in the field as well as in the laboratory. Method updates can be downloaded free of charge from the Internet.

- Simple to operate
- All important water, wastewater and drinking water parameters can be determined
- Portable due to the combined battery and mains connection
- Simple and free of charge updating of methods via the Internet

Items supplied:

Multy colorimeter, case, 7 rechargeable batteries, lithium battery (to ensure data preservation), battery charger, connection cable for PC, adapter and lid for 16 mm cuvettes, 3 x 16 mm round cuvettes, 3 x 24 mm round cuvettes.

Technical specifications

Optics	6 temperature compensated LEDs with interference filters, internal reference channel (dual beam technology), filters (nm) 430, 530, 560, 580, 610, 660
Display	Large format graphic display
Output	RS232 for printer or PC connection
Keyboard	Acid and solvent-resistant tactile membrane keyboard with audible signal
Environmental conditions	Up to max. 90% relative humidity (non condensing), approx. 0 - 50
Self-diagnostic	Auto check
Memory	Approx. 1000 data sets with date, time and registration number
Power	7 NiCd rechargeable batteries (AA/Mignon), can be charged simultaneously in the device during mains operation, with overload protection
W x D x H (mm)	Device 265 x 195 x 70, case 440 x 370 x 140
CE marked	Yes
Warranty	2 years

Ordering information

Description	Pk	Cat. No.
Colorimeter Spectroquant® Multy	1	1.73630.0001
Empty 24 mm cuvettes, round, with screw caps	12	1.73650.0001
Empty 16 mm cuvettes, round, with screw caps	25	1.14724.0001

Photometers for environmental and food industry applications

Photometers Spectroquant® NOVA 30A / NOVA 60 / NOVA 60A

Spectroquant® NOVA 30A

The NOVA 30A basic model from Merck is capable of running all important Spectroquant® cell tests for wastewater analysis.

The compact and mobile device can be operated with a rechargeable battery as well as mains power.

Spectroquant® NOVA 60/60A

Can be used to measure ready-to-use Spectroquant® cell tests as well as simple and affordable reagent tests. The NOVA 60 unit is a routine device with more than 170 pre-programmed test kits for Spectroquant® cell tests and 50 freely programmable methods. The NOVA 60A can also be used as a mobile analysis station. The Multi/ACHAT software makes it easier to transmit results to the PC and to programme your own methods.

- Barcode reading device for all Spectroquant® tests from Merck (automatic selection of method and then presentation of results)
- Integrated quality control - 3 modes; checking the instrument, the method and the sample matrix
- Turbidity correction
- RS232C serial interface
- For some critical tests, measurement of ppb concentration, e.g. cyanide
- Can also be used as a mobile analysis station

Technical specifications

Model	NOVA 30A	NOVA 60A/60
Kits	Most Spectroquant® tests	All Spectroquant® cell and reagent tests
Graphic display	128 x 64 pixels	
Measurement method	6 filters in array with the reference beam	12 filters in array with the reference beam
Wavelength (nm)	340, 445, 525, 550, 605, 690 ±2	340, 410, 445, 500, 525, 550, 565, 605, 620, 665, 690, 820 ±2
Types of determination	Absorbance, concentration, transmission	
Absorbance range (E)	-0,300 to +3,200	
Lamp	Tungsten halogen lamp, pre-set, no warm up time	
Cell compartment	16 mm Ø cells	16 mm Ø cuvettes and 10, 20 and 50 mm cuvettes
Storage capacity	500 measured values	1000 measured values
Special method functions	More than 60 pre-programmed methods	50 freely programmable methods and more than 170 pre-programmed methods
Power	110 - 130 V, 60 Hz/210 - 250 V, 50 Hz	
Weight (kg)	2,8 (including battery)	

Ordering information

Description	Cat. No.
Spectroquant® NOVA 60 photometer	1.09751.0001
Spectroquant® NOVA 60A photometer	1.09752.0001
Spectroquant® NOVA 30A photometer	1.09748.0001
Multi/ACHAT II for Windows (German & English version on CD-ROM) PC software for data transfer from the Spectroquant® NOVA 30, NOVA 60 and NOVA 400 photometers. Additional control option from pH/O_2/conductivity meters from WTW	1.14964.0001
PC cable for Spectroquant® NOVA 30, NOVA 60, NOVA 400 photometers (for serial interface)	1.14667.0001
Halogen lamp for Spectroquant® NOVA 30 and NOVA 60 photometers	1.09749.0001
Printer cable (for serial interface)	1.09759.0001
Transport case for Nova 30 and 60	1.09769.0001

Photometers for environmental and food industry applications

Spectrophotometers Spectroquant® Pharo 100 / Pharo 300

Spectroquant® Pharo - This range of spectrophotometers combines the advantages of a system photometer - e.g. test kits ideally matched to the device - with the advantages of a spectrophotometer.

Whether you want to programme your own methods, record spectral data and kinetics or multi-wavelength measurements - all the options are available here.

These spectrophotometers have a bandwidth of 4 nm and feature excellent precision and reproducibility. Pharo spectrophotometers include barcode recognition for all Spectroquant® test kits and an automatic recognition of round or rectangular cuvettes, with no adapter required.

The large format, display, alphanumeric keyboard and user-friendly menu navigation with methods that can be updated via the Internet and on-site using a PC. This makes this spectrophotometer a versatile and flexible tool in the laboratory.

- Spectroquant® Pharo is compatible with all Spectroquant® test kits with automatic barcode recognition
- User-defined functions include recording spectral data and kinetic profiles, as well as multi-wave measurements
- Comprehensive device supported analytical quality assurance
- USB and RS232 interfaces enable the simple transfer of data to printers, PCs or in wireless mode to a USB stick
- Pharo spectrophotometers support GLP compliant work
- Flexible cell formats: Round and rectangular cuvettes (10 - 50 mm path length)

Ordering information

Description	Cat. No.
Spectrophotometer Spectroquant® Pharo 100	1.00706.0001
Spectrophotometer Spectroquant® Pharo 300	1.00707.0001
Halogen lamp module for Spectroquant® Pharo 100 spectrophotometer	1.00660.0001
Case for Spectroquant® Pharo 100 and Pharo 300 spectrophotometers	1.00670.0001
12 V cable for Spectroquant® Pharo 100 and Pharo 300 spectrophotometers (auto, Power Pack)	1.00786.0001

* We recommend using a Power Pack rechargeable battery with a 12 V outlet for the power supply during mobile use of the Spectroquant® Pharo spectrophotometer.

Technical specifications

Model	Pharo 100	Pharo 300
Light source	Tungsten halogen lamp	Xenon flash
Optical system	Stabilised single beam technology	
Wavelength range (nm)	320 - 1100	190 - 1100
Measuring modes	Concentration, absorption, transmission, multi-wavelengths, scans + kinetics	
Spectral bandwidth (nm)	4	
Wavelength accuracy (nm)	±1	
Absorbance accuracy	0,003 E at <0,600 E 0,5% of the measured value for 0,600 <A >2,000	
Photometric range (E)	±3,3	
Scan	1 nm steps with a selectable wavelength range	
Cuvettes	16 mm round, 10/20/50 mm rectangular with automatic recognition	
Interface	RS232, USB-A, USB-B	
Data storage	1000 individual measured values, 4 MB for scans and kinetics	
Protection class	IP31 and drain in the cell compartment	
Power	100 - 240 V/50 - 60 Hz	
W x D x H (mm)	404 x 314 x 197	
Weight (kg) without power supply	3,7	

Spectrophotometer AquaMate™ plus for water analysis

A powerful single beam spectrophotometer from Thermo Scientific with quartz coated optics for water analysis.

The methods and results are shown on a VGA quality LCD display.

The USB interface allows a wide range of methods and data to be stored. The device has an internal memory that can store the 20 most frequent water analysis methods.

It is also supplied with the calibration data and factors from Merck Spectroquant®, Hach®, CHEMetrics® and Dr. Lange test kits. The Uvcalc™ internal calculation software means data can be evaluated simply and flexibly.

- Methods can be password protected
- Easy loading of standard methods and updating of existing methods
- Sipper systems and numerous other accessories available as options

Ordering information

Description	Cat. No.
Spectrophotometer AquaMate™ plus VIS, 325 - 1100 nm, EU and UK plug	705-0951
Spectrophotometer AquaMate™ plus UV/VIS, 190 - 1100 nm, EU and UK plug	705-0950

Software details available on Page 23

Accessories

Description	Cat. No.
7x cell changer, automatic	635-2165
Test tube/cell holder combination	634-1028
Variable long cell holder for rectangular cuvettes 1 - 50 mm layer thickness	705-0608
Long cell holder for 100 mm rectangular cuvettes	705-0329
Long cell holder for 100 mm cylindrical cuvettes	705-0327
Cell holder for Hach® square 1" cells and AccuVac® ampoules	705-0330
Thermostatable single cell holder, 1 to 50 mm layer thickness	634-1027
Single cell holder, Peltier tempered	634-1030
SuperSipper	634-1029
MiniSipper	635-2163

Technical specifications

Model	AquaMate™ plus VIS	AquaMate™ plus UV/VIS
Light source	Tungsten	Deuterium and tungsten
Detector	Silicon photodiode	
Optical system	Single beam	
Range (nm)	315 - 1100	190 - 1100
Spectral data scan speed (nm/min)	1 - 380	
Scan intervals (nm)	0,2; 0,5; 1,0; 2,0; 4,0; 10,0	
Spectral bandwidth (nm)	2	
Wavelength accuracy (nm)	±1,0	
Absorbance accuracy	0,005 A at 1 A	
Photometric range	-0,1 to +200% T; -0,3 to +3,0 A, 0 - 9999 C	
Display	VGA LCD	
Keyboard	Membrane keypad	
Interfaces	RS232C, USB for printer and data storage	
Memory	Internal: Up to 30 methods and data set calibrations or external: Unlimited methods and data sets via USB on memory stick	
Standard cell holder supplied.	Test tube (max. Ø 18 mm)/rectangular cell holder combination for tubes with max. Ø 18 mm, total length of 125 mm and rectangular cuvettes with 10 mm path length. Variable rectangular cell holder for cuvettes from 1 - 50 mm path length. Cell holder for Hach®, 1" rectangular cuvettes and AccuVac® tubes.	
Software	Wavelength scan with peak search, absorbance, transmission, concentration, kinetic, multi-component analyses, multi-wavelength measurements (up to 20), standard curves (with up to 20 standards), time scan	
Optional software	VISION software e.g. VISION*lite*™, EnzLab, ColorCalc	
Power (V)	100 - 240	
W x D x H (mm)	455 x 395 x 215	
Weight (kg)	10	
Warranty	3 years	

Universal photometers - single beam devices

Spectrophotometers VWR Collection V-1200

The V-1200 spectrophotometer is a basic VIS unit attractively priced with robust housing.

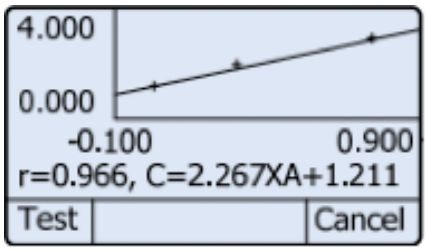
It offers all standard methods including photometry mode (absorption, transmission) and standard curves (with standards or coefficient mode). Using a standard sample solution, you can get a standard curve on the large LCD screen by the locally controlled software, and then print the curve through the parallel port.

The unit is ideal for educational establishments and simple daily quality control.

- Large LCD screen (128 x 64 dots) can display a total of 50 groups of data, 3 groups per screen. It can also display standard curve and the curve equations
- Internal memory can save 200 sets of data and 200 standard curves which is convenient for check and reload
- Pre-aligned design makes it convenient to change lamps
- Large sample compartment which can accommodate 5 - 100 mm path length cuvettes with optional holders
- Variety of optional accessories are available

Technical specifications

Optical system	Single beam
Wavelength range (nm)	325 - 1000
Band width (nm)	4
Stray light	≤0,2%T
Photometric range	0 - 200% T, -0,3 to +3,0 A, 0 – 9999 C
Wavelength accuracy (nm)	±2
Photometric accuracy	≤0,5%T or 0,005 A @ 1 A
Stability	0,002 A/h @ 500 nm
Memory	200 results & 200 standard curves
Languages	EN, FR, DE, SP
Display	128 x 64 dots graphic LC display
Interface	USB, printer port
Methods	Photometry (absorbance, transmittance, concentration by linear function or standard curve-up to 9 standards)
W x D x H (mm)	490 × 360 × 210
Weight (kg)	12
Warranty	2 years



Quantitation
Date& Time: mm-dd-yyyy, hh:mm:ss
Model: V-1200
Serial No.: VECXXXXXXX
Firmware Version: 2.5.0
VWR International bvba
C=1.000*A+1.000
r=1.0000

No.	WL.(nm)	Abs	Conc.
1	500.0	0.120	1.120
2	500.0	0.127	1.127
3	500.0	0.121	1.121

End.

Ordering information

Description	Cat. No.
V-1200 spectrophotometer including 4 glass cells, power cords UK/EU/SW, manual	634-6000

Accessories

Cell holders for	Cat. No.
4 rectangular cells,10 to 50 mm	634-6004
4 rectangular cells,10 to 100 mm	634-6005
Cylindrical cells	634-6006
Micro cells	634-6008
Test tubes	634-6009
Solid samples	634-6011

Spares

Description	Cat. No.
Halogen lamp, 12 V/20 W	634-6037
Thermal printer	634-6039

GENESYS™ 20 from Thermo Scientific

This single beam photometer is ideal for taking routine measurements in teaching laboratories, process control and production. It is reliable, robust, accurate and can also be supplied with an integrated printer.

A wide range of simple cuvette holders, e.g. for COD vials, 50 mm cuvettes, filters and test tubes, are also available for installation in the instrument.

- Splash-proof membrane keyboard for easy cleaning
- Clear 2 line display
- Easy-to-use

Accessories

Description	Cat. No.
Printer paper roll for the internal printer for GENESYS™ 20	634-0502
Standard cell holder for cuvettes with a 10 mm layer thickness	634-0388
Replacement halogen lamp for GENESYS™ 20	634-1000
1 inch round cuvette holder	634-1673
Standard filter set	634-2113
Single cell holder (suitable for a standard platform and 6x changer)	634-1669

Other accessories are available on request.

Technical specifications

Light source	Tungsten lamp
Optical system	Single beam
Measuring range (nm)	325 - 1100
Spectral bandwidth (nm)	8
Accuracy (nm)	±2,0
Photometric range	-0,1 to +2,5 A; 0 - 25% T; 0 - 1999 C, absorption, transmission, concentration, factors
Display	LCD with 2 lines and 20 characters
Standard cell holder	Holder for cuvettes with a 10 mm layer thickness and tubes
Test storage	1 set of parameters in a ROM
Storage capacity	None
Printer, internal (optional)	20 columns
W x D x H (mm)	300 x 330 x 190
Weight (kg)	4,5
Warranty	3 years
Accessories included	Dust cover, user manual, 5 disposable cuvettes

Ordering information

Description	Cat. No.
GENESYS™ 20, EU plug	634-1021
GENESYS™ 20, UK plug	634-0385
GENESYS™ 20 with integrated thermal printer, EU plug	634-1022
GENESYS™ 20 with integrated thermal printer, UK plug	634-0387

See page 25 for details of the software packages

Universal photometers - single beam devices

Spectrophotometers VWR Collection UV-1600 PC

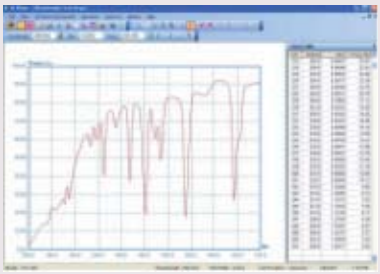
UV-1600PC

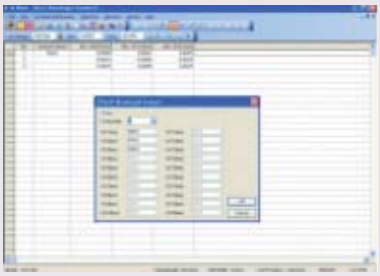
The UV-1600PC is a full range UV/VIS spectrophotometer 190 to 1100 nm. Additional features include kinetics and time scan. Remote control software enables you to run wavelength scans and multi-wavelength measurements.

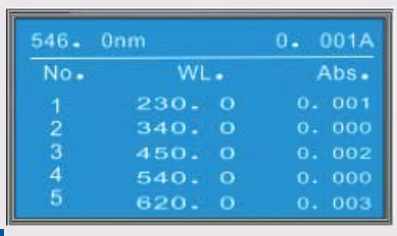
- Full wavelength range from 190 to 1100 nm
- Internal memory can save 200 sets of data and 200 standard curves which is convenient for check and reload
- Pre-aligned design makes it convenient to change lamps
- Large sample compartment, can accommodate 5 - 100 mm path length cuvettes and optional holders up to electronic thermostatted cell holder, sipper and more
- Variety of optional accessories available

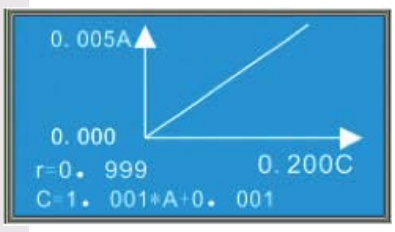
Technical specifications

Optical system	Single beam
Wavelength range (nm)	190 - 1100
Band width (nm)	4
Stray light	≤0,05% T @ 220 nm & 360 nm
Photometric range	0 - 200% T, -0,3 to +3,0 A, 0 – 9999 C
Wavelength accuracy (nm)	±0,5
Photometric accuracy	≤±0,5% T or 0,005 A @ 1 A
Stability	0,002 A/h @ 500 nm
Memory	200 results & 200 standard curves
Languages	EN, FR, DE, SP
Display	128 × 64 dot matrix LCD
Interface	USB, Parallel
Methods	Built-in: Photometry (absorbance, transmittance, concentration by linear function or standard curve-up to 9 standards), kinetics/time scan. Methods by PC remote control: Photometry (absorbance, transmittance, concentration by linear function or standard curve-up to 20 standards, multi-wavelength measurements – up to 20 wavelengths), DNA/protein analysis, kinetics/time scan, wavelength scan.
Power	AC 110/220 V, 50/60 Hz
W x D x H (mm)	490 × 360 × 240
Weight (kg)	14
Warranty	2 years









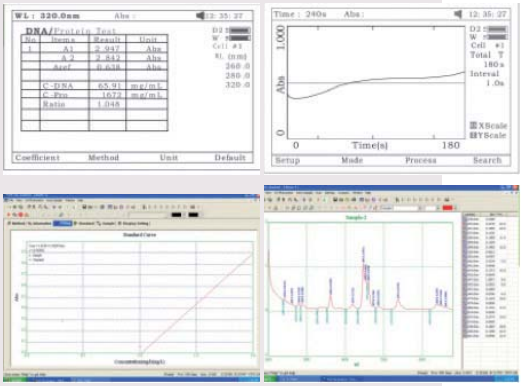
Ordering information

Description	Cat. No.
UV-1600PC spectrophotometer including 4 glass cells, 2 quartz cells, UK, EU, SW, USB cables, remote control software and manual	634-6001

UV-3100PC

The UV-3100 PC represents the top end of our 3 spectrophotometers with a 2 nm spectral bandwidth for a higher resolution and peak sensitivity. A large graphic display helps you to get all results and data including standard curves at a glance.

All methods are available at built-in/stand-alone software and on the remote control software for a flexible use of the instrument.



- Internal memory can save 200 sets of data and 200 standard curves which is convenient for check and reload
- Pre-aligned design makes it convenient to change lamps
- Large sample compartment can accommodate 5 - 100 mm path length cuvettes and optional holders up to electronic thermostatted cell holder, sipper and more
- Variety of optional accessories available
- Large graphic LCD display; 320 x 240 dots

Spares for UV-1600 PC and UV-3100 PC

Description	Cat. No.
Halogen lamp, 12 V/20 W	634-6037
Deuterium lamp	634-6038
Thermal printer	634-6039

Accessories for UV-1600 PC and UV-3100 PC

Description	Cat. No.
Cell holders	
For 4 rectangular cells, 10 to 50 mm	634-6004
For 4 rectangular cells, 10 to 100 mm	634-6005
For cylindrical cells	634-6006
Thermostatable for 1 x 10 mm rectangular cell	634-6007
For micro cells	634-6008
For test tubes	634-6009
Automatic 8 position for 10 mm rectangular cells	634-6010
For solid samples	634-6011
Thermostatable for 4 x 10 mm rectangular cells	634-6012
Peltier thermostated for 1 x 10 mm rectangular cell	634-6034
Sippers	
Sipper unit	634-6035
Sipper unit with temperature control	634-6036

Technical specifications

Optical system	Single beam, grating 1200 lines/mm
Wavelength range (nm)	190 - 1100
Band width (nm)	2
Stray light	≤0,05% T @ 220 nm & 360 nm
Photometric range	0 - 200% T, -0,3 to +3,0 A, 0 – 9999 C
Wavelength accuracy (nm)	±0,5
Photometric accuracy	≤±0,5% T or 0,005 A @ 1 A
Stability	0,002 A/h @ 500 nm
Scan speed (nm/min)	Max. 300
Memory	200 results & 200 standard curves
Languages	EN, FR, DE, SP
Display	320 x 240 graphic LCD
Interface	USB, parallel
Methods	Built-in: Photometry (absorbance, transmittance, concentration by linear function or standard curve-up to 9 standards), multi-wavelength photometry, kinetics/time scan, Methods by PC remote control: Photometry (absorbance, transmittance, concentration by linear function or standard curve-up to 20 standards, multi-wavelength measurements – up to 20 wavelengths), DNA/protein analysis, kinetics/time scan, wavelength scan
Power supply	AC 110/220 V, 50/60 Hz
W x D x H (mm)	490 × 360 × 240
Weight (kg)	14
Warranty	2 years

Ordering information

Description	Cat. No.
UV-3100PC spectrophotometer including 4 glass cells, 2 quartz cells, UK, EU, SW, USB cables, remote control software and manual	634-6002

Universal photometers - single beam devices

Photometer GENESYS™ 10S VIS

GENESYS™ 10S

This series of instruments offer excellent value for money. They also provide robustness with ease-of-use.

The efficient optical configuration delivers high performance with a minimum number of optical surfaces in a true monochromator design. The xenon lamp provides instant UV/VIS measurements and is guaranteed for 3 years of continuous use.

The GENESYS™ 10S VIS uses a tungsten lamp and single detector to support routine measurements in the visible range.

- Spectrum scan function across the complete measuring range from 190 - 1100 nm at 10 - 4200 nm/min scan speed
- USB printer interface for text and graphics in HP PCL format
- Automatic correction of layer thickness tolerances with up to 6 cuvettes
- SmartStart™ software offers a simple selection of standard methods when used for the first time

Ordering information

Description	Cat. No.
GENESYS™ 10S VIS, power leads with EU and UK plug	634-0593
GENESYS™ 10S VIS with internal printer and power leads with EU and UK plug	634-0594
GENESYS™ 10S UV/VIS, power leads with EU and UK plug	634-0595
GENESYS™ 10S UV/VIS with internal printer and power leads with EU and UK plug	634-0596

Supplied with a 6 position cell changer, single cell holder, spare fuses and USB memory device.

Technical specifications

Model	GENESYS™ 10S VIS	GENESYS™ 10S UV/VIS
Lamp source, lifetime	Tungsten halogen (1000 h)	Xenon flash (5 years typically)
Optical system	Single beam	Dual beam internal reference detector
Range (nm)	325 - 1100	190 - 1100
Spectral bandwidth (nm)	5,0	1,8
Wavelength accuracy (nm)	±1,0	
Scan speed (nm/min)	10 - 4200	
Photometric range	Up to 3,0 A at 340 nm	Up to 3,5 A at 260 nm
Photometric accuracy	0,5% or ±0,005 A, whichever is greater up to 2 A	±0,005 A at 1,0 A 0,010 A $K_2Cr_2O_7$
Stray light	<0,1%T at 340, and 400 nm	<0,08% T at 220, 340 nm (NaI, $NaNO_3$) <1,0% 198 nm (KCl)
Display	Graphic 320 x 240 pixel backlit LCD (91 x 71 mm)	
Standard cell holder	Integral 6 position cell changer, singe cell holder	
Keyboard	Membrane keypad	
Printer	Optional, 40 column, internal, graphic	
Interfaces	USB type A port for USB memory device (front panel) USB type B port for optional PC (rear panel) USB type A port for external printer (rear panel)	
Power (V)	100 - 240, selected automatically	
W x D x H (mm)	300 x 400 x 250	
Weight (kg)	8,6	

GENESYS™ 20/10S/10S BIO/Aquamate plus photometers software

Software for GENESYS™ 20/10S/10S BIO/AquaMate™ plus photometers

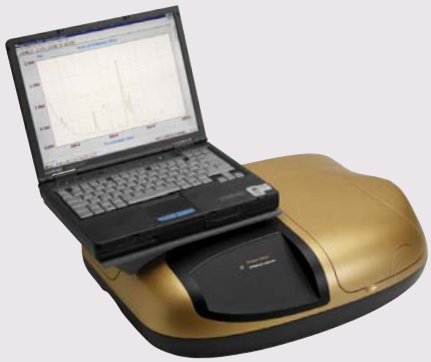
It contains all common measuring modes; standard photometry (Fixed), spectrum scan (Scan), determination of concentration (Quant) and kinetic (Rate).

- Fixed mode carries out single and multi-wavelength measurements (up to 31), for rapid identification/ changing of concentrations
- Scan mode records a partial or full spectrum for your sample
- Rate mode measures your sample at a selected wavelength depending on the time
- Quant mode determines the sample concentration using either a standard curve or a factor
- Other options include measuring up to 100 samples; up to 13 graphics can be overlaid
- Peak identification, reference wavelength, 4 curve models, curve with up to 20 standards, sample data reporting with pre-programmed units, automatic data logging and export

Ordering information

Description	Cat. No.
VISION*lite*™ software, CD-ROM and user manual	634-1017
PC connection cable (DB-9) for GENESYS™ 6/10/20	634-1016

Photometers Ultrospec 5300/6300 pro



High performance instruments featuring 1 nm bandwidth for precision measurements in analytical and research laboratories.

An 8 position sample changer comes as standard. Accessories such as a sipper option are also available.

- Built-in applications for nucleic acid and protein quantitation, cDNA software (measures Cy™ 3, Cy™ 5 and fluorescein) for microarray probes and PCR products; enzyme kinetics, wavelength scanning, substrate quantitation, and standard curves
- Wide wavelength range 190 to 1100 nm in 0,1 nm data steps for flexible application development
- Wavelength accuracy ±0,5 nm
- Absorbance range: -3,000 to +3,000 A, ±0,5% or ±0,003 A (at 546 nm), whichever is greater
- Reference beam compensation
- Rapid scan feature
- GLP self-diagnostics
- IQ/OQ certification test plans
- Compatible with 21 CFR Part 11
- Pharmacopoeia compliant with qualification and performance verification logbook as standard

Ordering information

Description	Colour	Cat. No.
Ultropsec 5300 PC-controlled instrument with SWIFT II software supplied	Gold	80-2117-56
	Classic	80-2117-70
	Yellow	80-2117-71
	Plum	80-2117-72
	Apple	80-2117-73
Ultrospec 6300 stand-alone instrument with built-in methods	Gold	80-2117-55
	Classic	80-2117-60
	Yellow	80-2117-61
	Plum	80-2117-62
	Apple	80-2117-63

Universal photometers - single beam devices

UV/VIS spectrophotometer HITACHI U-5100

HITACHI's U-5100 spectrophotometer has a small footprint and the functionality to accommodate a wide range of applications.

Designed with the environment in mind, the U-5100 has a long life xenon flash lamp which eliminates the need for periodic lamp replacement. The utilisation of a xenon flash lamp also reduces power consumption and noise - once the unit is switched on, sound is minimal during measurements and silent in standby mode.

The user interface has been designed to input and display clear information with a large 6 inch LCD mounted display at an easy-to-read angle above a soft keypad. The keys used for character input, necessary for assigning a file name, are designed to be as easy-to-use as texting using a mobile phone.

The standard automatic 6 cell changer makes daily work more efficient. Standard photometry, time scan, wavelength scan, kinetics and performance validation functionality are all included as standard in the menu driven internal software.

- Low noise xenon flash lamp uses less power
- Soft keypad
- Large 15 cm display for easy reading and programming
- PC control with UV Solutions® software (optional)
- Automatic 6 position cell changer as standard

Ordering information

Description	Cat. No.
U-5100 UV/VIS spectrophotometer	634-0757
Autosipper	634-0758
Single cell holder for 10 mm recangular cells	634-0759
Cell holder for rectangular cells, 10 to 100 mm	634-0760

Technical specifications

Optics	Seya-Namioka mount monochromator, ratio beam
Detector	Silicon photodiode
Light source	Silicon flash lamp
Spectral band pass (nm)	5
Wavelength range (nm)	190 – 1100
Wavelength accuracy (nm)	±1
Photometric range	–3,000 to +3,000 A/0 – 300%T/0,000 – 9999 conc.
Photometric accuracy	±0,003 A (0 to 0,5 A)/±0,005 A (0 to 1,0 A)
Photometric repeatability (Abs)	±0,002 A (0 to 1,0 A)
Stray light	≤0,07% at 220 and 340 nm
Baseline stability	0,0007 A/h (260 nm)
Noise level	0,0002 A or less (RMS (260 nm), 0 A)
Baseline flatness	±0,010 A (200 – 950 nm)
Wavelength scan speed (nm/min)	40, 100, 200, 400, 800, 1200, 2400
Display	15 cm LCD with backlight
Languages	EN, DE, SP
Performance test	Validation function
Standard cell holder	Automatic 6 cell turret (cuvettes not supplied)
Interfaces	Centronics interface (parallel port connection); USB for PC control
Internal memory	50 methods, 30 sets of data
Power	100 – 240 V; 50/60 Hz; 60 W
W x D x H (mm)	355 x 425 x 235
Weight (kg)	13

UviLine 9100/9400 from SI Analytics
A high performance, single beam spectrophotometer, with choice of VIS (9100) or UV/VIS (9400) wavelength ranges.

In addition to the standard spectrometer functions of absorbance and transmission, the instrument has a wide range of menu driven evaluations and therefore has applications across many disciplines. Furthermore the user can easily programme and store more than 100 of their own methods. A large graphic display provides online spectra and together with the simple to use keyboard guides the user with menu navigation.

- Complete functionality for scanning with online graphics, kinetics and multi-wavelength analytics
- USB Master interface (USB-A) enables connection with USB memory sticks, printers with USB interface and external PC keyboards
- Automatic wavelength calibration and compensation of ambient light
- Extensive range of evaluation functions such as min./max. recognition, add and subtract spectrum etc.
- GLP compliant with user login and 3 levels of operation

Ordering information

Description	Cat. No.
UviLine 9100	634-5000
UviLine 9400	634-5001

Accessories

Description	Cat. No.
Replacement halogen lamp for UviLine 9100	634-0597
5+1 automated cell changer	634-5002
Cell holder, single, 10 mm	634-0598
Cell holder, single, thermostatable, 10 mm	634-5004
Sipper SZ2150	634-5005
Cell holder, single, thermostatable (Peltier), 10 mm	634-5006

Technical specifications

Model	UviLine 9100	UviLine 9400
Accuracy (nm)	±1	
Display	Graphic backlit display, 320 x 240 pixels	
Interfaces	1 x USB-A; 1 x USB-B; 1 x RS232C	
Keypad	Alphanumeric, function and cursor direction soft keys	
Light source	Tungsten-Halogen	Xenon
Method storage	>100 (extendable via USB)	
Optical system	Single beam	
Photometric accuracy	0,3% or ±0,003 A (from 0 - 0,6 A)	
Photometric range	-3,3 to +3,3 A	
Photometric stability	<1% at 2 A between 340 - 900 nm	
Power	110 - 220 V, 50/60 Hz	
Range (nm)	320 - 1100	190 - 1100
Spectral bandwidth (nm)	4	
Stray light	<0,1% at 220, 340 and 400 nm	
Weight (kg)	4	
W x D x H (mm)	404 x 314 x 197	

Supplied with a thermostatable single cell holder (10 mm path length).

Universal photometers - single beam devices

Universal photometers - single beam devices Jenway 7300 series

The 73 series spectrophotometers are designed to provide the user with a compact, easy to operate instrument for use in education and general QC laboratories.

- Icon driven software for easy and intuitive navigation
- Small footprint with graphic display in the compartment lid
- Autologging capabilities and optional internal printer
- Press-to-read xenon lamp (7305 and 7315) to extend xenon lamp life
- Extensive range of accessories available

Models 7310 and 7315

These models have more advanced features including:

- Scanning capability
- Kinetic measurements with real-time graphic display
- Supervisor security functions to protect methods/options and operator ID
- Quantitation, using up to 6 standards with curve fit
- Results and method saving to USB memory stick

Ordering information

Description	Cat. No.
7300 spectrophotometer, VIS range	664-0067
7305 Spectrophotometer, UV/VIS range	664-0066
7310 spectrophotometer, VIS range	664-0065
7315 Spectrophotometer, UV/VIS range	664-0064

Accessories

Description	Cat. No.
Sipper pump	664-0063
Peltier pump	664-0062
Sipper/Peltier pump	664-0060
8 cell automatic turret	664-0061
10 x 10 mm path length cell holder	664-0068
16/24 mm test tube holder	664-0059
10 to 100 mm path length cell holder	664-0058
Micro cell holder with reduced aperture	664-0057
Single cell holder, water heated	664-0056
Lamp, tungsten halogen for 6300/7300	634-0083
Internal printer for 7300 series	634-3009

Technical specifications

Model	7300	7305	7310	7315
Light source	Tungsten halogen	Xenon	Tungsten halogen	Xenon
Optical system	Single beam with silicon photodiode			
Wavelength range (nm)	320 - 1000	198 - 1000	320 - 1000	198 - 1000
Spectral bandwidth (nm)	5			
Wavelength accuracy (nm)	±2,0 nm			
Wavelength resolution (nm)	1			
Wavelength repeatability (nm)	±0,5 nm			
Photometric range	0 - 199,9% T; -0,300 to +2,500 A			
Photometric accuracy	±1,0% T; ±0,01 A at 1,000 A			
Photometric resolution	0,1% T: 0,001 A			
Measuring modes	Absorbance, % transmittance and concentration		Absorbance, % transmittance, concentration; scanning, kinetics and quantitation	
Calibration	Blank with a single standard or factor			
Display	Graphic LCD			
Interfaces	RS232		RS232 + USB port	
W x D x H (mm)	275 x 400 x 220			
Weight (kg)	6			

Delivery information

Spectrophotometers fitted with 10 x10 mm cuvette holder, supplied with a pack of 100 disposable cuvettes, instruction manual, universal power supply, PC software on CD ROM and interface cable. Models 7310 and 7315 are supplied with USB memory stick.

Split beam spectrophotometer 6700 series

A range of scanning spectrophotometers with a wide range of applications that have been designed for environments where speed, sample flexibility and regulatory conformance are required.

Scanning at an impressive 1500 nm/min even with data collection at 0,1 nm intervals. This enables zooming to higher resolutions without the need to re-scan. The large colour touch screen display offers simple, intuitive operation and clear representation of results. The sealed QWheel™ allows for fine cursor control or scrolling. The range features significant data storage capability with the option of a removable SD and SD/USB memory cards to transfer data to another instrument or a PC. Transfer of data is also possible via the included software.

- Colour LCD with touch screen interface
- Individual operator passwords and different levels of access provide secure multi-user operation
- Kinetics for timed measurement and enzyme reaction monitoring
- Plug-in accessory modules for a range of sample options
- Software supports compliance with CFR21 Part 11

Ordering information

Description	Cat. No.
6700 VIS with automatic 8 cell changer 634-3001	634-3001
6700 VIS with automatic 8 cell changer and internal printer	634-0583
6700 VIS with single cell holder 634-0583	634-0533
6700 VIS with single cell holder and internal printer	634-3003
6705 VIS with automatic 8 cell changer 634-3003	634-0584
6705 VIS with automatic 8 cell changer and internal printer	634-0534
6705 VIS with single cell holder 634-0584	635-3005
6705 VIS with single cell holder and internal printer	634-0585
6715 VIS with automatic 8 cell changer 634-3005	634-0535
6715 VIS with automatic 8 cell changer and internal printer	634-3001
6715 VIS with single cell holder 634-0585	634-0583
6715 VIS with single cell holder and internal printer	634-3003

Accessories

Description	Cat. No.
Sipper system for 6700 series	634-3006
Peltier for 6700 series	634-3007
Water jacketed cell holder	634-3008
Internal printer for 6700 series	634-3009
Sipper/Peltier system for 6700 series	634-3010

Technical specifications

Model	6700	6705	6715
Light source	Tungsten	Halogen	Xenon
Optical system	Sealed, MgF coated, split beam		
Spectral bandwidth (nm)	4		1,5
Stray light (nm)	<0,1% at 340	<0,05% at 220	
Wavelength range (nm)	320 to 1100	190 to 1100	
Wavelength resolution/accuracy (nm)	0,1/±1,0		
Wavelength repeatability (nm)	±0,2		
Photometric range	-0,300 to +3,000 A & 0 to 199,9% T		
Photometric resolution	0,001 A & 0,1% T		
Photometric accuracy (A)	±0,005 at 1		
Photometric stability	<0,001 A per h		
Quantitation range	-99 999 to +99 999		
No. of standards	20 with up to 5 replicates of each		
Curve fit algorithms	Linear, quadratic and cubic functions		
Multi-wavelength data points	Up to 4 wavelengths		
Calculations	Difference and ratio		
Kinetics time limits (s)	0 to 9999		
Kinetics calibration	Standard or factor		
Scan speed	1500 nm/min at 0,1 nm data steps		
Post scan analysis	Peak/valley pick, peak ratios, area, zoom, wavelength table, derivatives, smoothing, overlay		
Configuration	Secure multi-user or free access for up to 10 users		
No. of methods	>1000 on internal flash memory or removable media		
Results storage	>1000 on internal flash memory or removable media		
Removable media	MM/SD memory card or SD/USB memory card		
Interfaces	USB, Centronics, analogue		
PC software	Supplied on CD ROM with USB interface cable		
Power	100 to 230 V, AC 50/60 Hz (UK, Euro or US power leads supplied)		
WxHxD (mm)	490 x 390 x 220		
Weight (kg)	7,5		

Universal photometers - double beam devices

UV/VIS spectrophotometer U-2900 / U-2910

Reliable and accurate spectrophotometers from HITACHI with dual beam technology, for use in quality control and research for many different applications including life science and development of new materials.

The U-2900 has been designed for direct use without a PC as a stand-alone device. The keyboard and the extraordinary large graphic display make it easy to enter method data and convenient to display results. Methods and results can also be saved on a USB memory stick in the device format or as a text/table file. The device also has the option of being controlled externally via a PC using UV Solutions® software. The U-2910 was developed exclusively for connection to a PC and has therefore dispensed with the keyboard and display, although it has the same equipment otherwise.

- Complies with the specifications of the European Pharmacopoeia Ph. Eur.
- Large, adjustable LCD display (10,4") and user-friendly keyboard (U-2900)
- Full scans across the complete wavelength range of 190 to 1100 nm with a selectable scan speed of 10 to 3600 nm/min
- Validation and self-test functions
- USB interface for storing methods and data (on a memory stick)

Software

Description	Cat. No.
UV Solutions® software	634-0724
Optional package for colour measurements	634-0725
Report generator	634-0726
Nucleic acid measurement	634-0728
GLP/GMP programme	634-0729

Accessories

Description	Cat. No.
Autosipper	634-0720
Autosipper with Peltier temperature control from 20 to 40 °C, for 10 mm cells	634-0721
AS-1010 autosampler (autosipper required)	634-0723
Automatic 6 cell holder with Peltier temperature control, 20 to 40 °C	634-0722
Single cell holder with Peltier temperature control, 10 to 60 °C and magnetic stirrer for 10 mm cells	634-0050
Thermostatable single cell holder, thermostat required	634-0059
Tandem cell holder for max. 3 cells on sample and reference position	634-0062
Single rectangular long cell holder for 10, 20, 30, 40, 50, 100 mm	634-0055
5 cell changer, manual	634-0058
4 position rectangular long path cell holder for 10, 20, 30, 40, 50, 100 mm	634-0054
Glass filter holder	634-0057
Single long cell holder for cylindrical cells	634-0056
Film holder	634-0060

Technical specifications

Model	U-2900	U-2910
Light source	Tungsten, deuterium lamp	
Optical system	Dual beam	
Measuring range (nm)	190 - 1100	
Scan speed (nm/min)	10, 100, 200, 400, 800, 1200, 2400, 3600	
Spectral bandwidth (nm)	1,5	
Wavelength accuracy (nm)	±0,3 (at 656,1; 486,0)	
Photometric range	0 - 300% T; -3 to +340 A	
Display	Colour LCD, backlit	-
Keyboard	Robust laboratory keyboard	-
Test storage	Internal memory or USB memory stick	-
Measurement methods	Absorption, transmission, ratio, concentration, wavelength scan, time scan, multi-wavelength measurement ratio calculations from A260/A280, validation functions and automatic calibration and self-test functions	
Interfaces	RS232C for PC, Centronics for printer, USB port for memory stick	
Power (V)	100 - 240	
W x D x H (mm)	500 x 605 x 283 (folded down LCD)	500 x 605 x 241
Weight (kg)	31	29

Ordering information

Description	Cat. No.
U-2900 spectrophotometer	634-0718
U-2910 spectrophotometer including UV Solutions® software (PC required) only EU plug available	634-0719

Double beam UV/VIS spectrophotometers U-3900 / U-3900H

The U-3900 series are true dual beam spectrophotometers that have been specially developed for research and development.

These devices are highly sensitive, and have selectable bandwidth and a high level of performance. The U-3900H is particularly suited for measuring samples with high absorption, as the very low scattered light of the pre-monochromator ensures a high linearity across a broad absorption range. The sensitivity of the UV range can be increased by setting the scan rate in the UV range separately.

- Stable baseline in the wavelength range of 190 - 850 nm
- High accuracy and reproducibility thanks to the chopped true dual beam optics and photomultiplier detector
- UV Solutions® for U-3900 software provides flexibility for applications and reports
- Scan speed for the UV range can be set individually for increased sensitivity
- The USB interface for PC connection also allows modern laptops or notebooks to be used (that no longer have a RS232 interface)
- A notebook PC can be placed on the photometer to save space

Accessories

Description	Cat. No.
Autosipper	634-0577
Autosipper with Peltier temperature control	634-0578
AS-1010 autosampler, autosipper required	634-0723
Single cell holder with Peltier temperature control, 10 to 60 °C, for 10 mm cells	634-0050
Single cell holder with Peltier temperature control, 10 to 100 °C, for 10 mm cells	634-0576
Thermostatable single cell holder, thermostat required	634-0059
Micro cell holder for HITACHI micro cells	634-0701
Tandem cell holder for max. 3 cells on sample and reference position	634-0062
5 cell changer, manual	634-0058
4 position rectangular long path cell holder for 10, 20, 30, 40, 50, 100 mm	634-0054
Single rectangular long cell holder for 10, 20, 30, 40, 50, 100 mm	634-0055
Single long cell holder for cylindrical cells	634-0056
Glass filter holder	634-0057
Film holder	634-0060
Polarisation filter holder including polarisation filter	634-0063
Automatic 6 cell holder with Peltier temperature control	634-0722
Specular reflectance sample holder, 5°, relative	634-0575
Integrating sphere, 60 mm internal diameter	634-0574
Integrating sphere, 150 mm internal diameter	634-0573

Technical specifications

Model	U-3900	U-3900 H
Light source	Tungsten and deuterium lamps	
Optical system	True dual beam with chopper and photomultiplier	
Monochromator	Single	Double
Sample space dimensions	Layer thickness: 100 mm W x D x H: 120 x 300 x 140 mm	
Wavelength range (nm)	190 - 900	
Scan speed (nm/min)	1,5; 3; 15; 30; 60; 120; 300; 600; 1200; 1800; 2400	
Spectral bandwidth (nm)	0,1; 0,5; 1; 2; 4,5	
Wavelength accuracy (nm)	±0,1 (at 656,1 after wavelength calibration)	
Photometric measuring range	-3,8 to +3,8 A; 0 - 300% T	-5,5 to +5,5 A; 0 - 300% T
Photometric accuracy	±0,002 A (0 - 0,5 A) ±0,003 A (0,5 - 1,0 A) ±0,006 A (1,0 - 2,0 A) ±0,3% T	
Stray light	0,015%	0,00025%
Interfaces	USB	
Power (V)	100 - 240	
W x D x H (mm)	680 x 692 x 257	
Weight (kg)	45 (without PC)	

Ordering information

Description	Cat. No.
U-3900 spectrophotometer, only EU plug version available	634-0756
U-3900H spectrophotometer, only EU plug version available	634-0754

Fluorometers

Fluorescence spectrophotometer F-2700

F-2700 from HITACHI

Unique stand-alone scanning fluorometer offering quantum yield measurement options

The F-2700 fluorescence spectrophotometer surpasses the competition with its superior performance, functionality and flexibility. Within one instrument you can choose between stand-alone or PC-controlled function (together with optional software). Variable slit width and a wide dynamic range offers exceptional performance. Its ultra-high sensitivity (S/N: 800 RMS) combined with the scan speed of 3000 nm/min (stand-alone or 12 000 nm/min PC controlled) is unique in this class of instrument.

Above all those options the instrument offers a huge number of accessories including the option to measure the quantum yield of substances.

All this together in a very compact and space-saving unit.

- Excellent sensitivity (signal/noise ratio: 800 or better)
- Spectral bandwidth selectable from 2,5 to 20 nm
- Large dynamic linear measuring range
- Spectral correction (option under PC control) for comparable and true spectra
- Quantum yield accessory (option under PC control)
- Easy-to-use keypad
- A horizontal beam path allows small sample volumes (approx. 0,6 ml in standard cells) to be measured

Ordering information

Description	Cat. No.
Fluorescence spectrophotometer F-2700 with EU plug	634-0067

Delivery information

Supplied with a xenon lamp, fluorescence cuvette, tool kit and user manual

Accessories

Description	Cat. No.
Thermostatable single cell holder	634-0713
Solid sample cell holder	634-0075
Polarisation filter accessories for the UV/VIS range from 260 to 700 nm	634-0746
Polarisation filter accessories for the VIS range from 380 to 800 nm	634-0073
Cut-off filter set	634-0747

More accessories available on request.

Technical specifications

Light source	150 W xenon lamp
Sensitivity	Signal/noise ratio 800 or better (Raman of water: EX 350 nm, slit: 5 nm)
Display range	0,000 - 9999
Wavelength range (nm)	220 - 730 (optional R928F 220 to 800)
Wavelength resolution (nm)	2,5
Spectral bandwidth (nm)(excitation and emission)	2,5; 5; 10; 20
Scan speed (nm/min)	60, 300, 1500, 3000 (stand-alone) 60, 300, 1500, 3000, 12 000 (PC)
Interface	USB to PC
Display	Monochromatic 5,7" LCD
Sample holder	10 mm rectangular cell holder
Power	100 - 240 V AC; 50/60 Hz
W x D x H (mm)	503 x 600 x 343
Weight (kg)	41

F-7000 from HITACHI

A superior device bearing the HITACHI name with excellent performance.

This fluorescence photometer offers comprehensive possibilities with outstanding scan speeds of 60 000 nm/min. It is especially suitable for 3-D measurements. The horizontal measuring beam also allows measurements to be taken for small volumes (from 0,6 ml in macro cuvettes).

The user-friendly FL Solutions® software is a powerful tool for analyses and provides a wide range of functions, including 3-D measurements and control of the optional associated microplate holder. Other additional applications are phosphorescence measurements, FRET, BRET and Ca^{2}+ identification in cells.

- High sensitivity optical system for precise measurements of low sample volumes: Signal/noise 800 (RMS), 250 (peak to peak)
- Large range of applications in the fields of material industry, pharmaceuticals and life science research
- Extremely rapid scan speed of 60 000 nm/min allows fast reactions to be recorded with 3-D measurements
- Linear signal over up to 6 dimensions of the concentration

Technical specifications

Light source	150 W xenon lamp
Sensitivity	Signal/noise ratio 800 or better (RMS), signal/noise ratio 250 or better (peak to peak)
Monochromator	Stigmatic concave grating: 900 lines/mm
Detector	Photomultiplier
Display range of the display	-9,999 to +9,999
Wavelength range (nm)(stimulation and emission)	220 - 750
Wavelength resolution (nm)	1,0 (at 546,1)
Wavelength accuracy (nm)	±1,0
Spectral bandwidth (stimulation and emission)	1; 2,5; 5; 10; 20
Scan speed (nm/min)	30, 60, 240, 1200, 2400, 12 000, 30 000, 60 000
Interface	USB
PC software	FL Solutions® for F-7000
Sample holder	10 mm rectangular cell holder
Power (V)	100 - 240
W x D x H (mm)	620 x 520 x 300
Weight (kg)	41

Ordering information

Description	Cat. No.
Fluorescence spectrophotometer, F-7000 including UV FL Solutions® software	634-0743

Delivery information

(PC not supplied). System specifications are available on request.

Accessories

Description	Cat. No.
Sipper	634-0736
Single cell holder for sensitive measurements	634-0737
Thermostatable single cell holder	634-0713
Thermostatable single cell holder with stirring function	634-0714
4x changer, manual	634-0753
8x changer, manual	634-0752
Accessories for low cryogenic temperature measurements	634-0735
Sample holder for solids	634-0075
Cell holder for absorption measurements	634-0748
Accessories for measurements with micro volumes	634-0734
Polarisation filter accessories for the UV/VIS range from 260 to 700 nm	634-0746
Polarisation filter accessories for the VIS range from 380 to 800 nm	634-0073
Accessories for polarisation measurements UV/VIS, automatic	634-0738
Accessories for polarisation measurements VIS, automatic	634-0739
Cut-off filter set	634-0747
Microplate holder	634-0740
Intracellular cation measuring programme	634-0742
Report generator for FL Solutions® software	634-0741

Turbidimeter equipment for measuring turbidity

Turbidimeter Turbiquant® 1100 IR/T - 1500 IR/T - 300 IR/T

The degree of turbidity is used as a measurement of water quality.

Cloudy liquid contains undissolved suspended matter (particles, bacteria etc.). These particles scatter incident light in many directions. The light scattered at a 90 degree angle is measured (nephelometry). The clearer the liquid, the lower the turbidity. The units of turbidity are measured as NTU = Nephelometric Turbidity Units. Drinking water has a maximum of 5 NTU, sewage more than 2000. The Turbiquant® devices perform every kind of turbidity measurement convincingly and deliver the results quickly, simply and accurately.

Technical specifications

Model	Turbiquant® 1100 IR/1100 T	Turbiquant® 1500 IR/1500 T	Turbiquant® 3000 IR/3000 T
Measurement units	NTU, FNU	NTU	NTU, FNU, FAU, EBC
Range	0,01 - 1100 NTU	0 - 1000 NTU	0 - 10 000 NTU/0 - 10 000 FNU/0 - 10 000 FAU; 0 - 2450 EBC
Resolution	0,01/0,1/1 depending on measurement range		Selectable 0,1 - 0,0001 NTU 0,0001/0,001/0,01/0,1 depending on the measuring range
Accuracy	±2% of measured value or ±0,1 NTU in the range 0 - 500 NTU ±3% of the measured value in the range 500 - 1100 NTU	±2% of the measured value or ±0,1 NTU in the range 0,00-1000 NTU	±2% of the measured value or ±0,1 NTU, the larger value of the two in the range 0,001000 NTU ±5% of the measured value in the range, 1000 - 4000 NTU ±10% of the measured value in the range 4000 - 10 000 NTU
Repeatability	-	<±1% of measured value or ±0,01 NTU, whichever is the larger	
Calibration	Automatic 1 - 3 point		Automatic 1 - 4 point (to 1750 NTU) 1750 - 10 000 NTU selectable
Cuvettes	25 x 45 mm	28 x 70 mm or optional flow through cell	28 x 70 mm or optional flow through or low pressure flow through cells
Volume (ml)	15	25	25
Interface	-	RS232 bi-directional	
Time/calendar	-	Integrated	
GLP functions	-	Control of calibration intervals, self-test	Control of calibration intervals, self-test, calibration and instrument configuration are access code protected
Power	4x alkali manganese batteries (AAA)	Universal charger/plug	
Certification	CE	CE, UL, TÜV/GS	
Light source	For a model T tungsten halogen lamp as per USEPA method, for a model IR with infrared light source as per EN ISO 7027		

Turbidimeter equipment for measuring turbidity

Turbidimeter Turbiquant® 1100 IR/T - 1500 IR/T - 300 IR/T

Turbiquant® 1100 IR/1100 T

- A portable, battery operated turbidity meter for on-site analysis
- Battery power for more than 5000 measurements
- Waterproof housing (IP67 compliance) with easy-to-use 5 button operation
- Rugged carrying case

Items supplied: Turbidimeter, 2 empty cells, quick guide, user manual, carrying case and 4 batteries.

Turbiquant® 1500 IR/1500 T

Ideal for routine analytical requirements in the laboratory

- Simple handling
- Automatically selects relevant resolution
- Optional pour through assembly for high sample throughput

Items supplied:

Turbidimeter, universal charger/plug, 3 empty cells, quick guide and user manual.

Turbiquant® 3000 IR and 3000 T for optimum flexibility

Same as the 1500 models plus the following features:

- Wider measuring range - up to 10 000 NTU
- 4 detectors give nephelometric and ratio measurements
- Transmission measurements over 40 FNU in line with EN ISO 7027
- Optional flow through assembly

Items supplied:

Turbidimeter, universal charger/plug, 3 empty cells, quick guide and user manual.

Ordering information

Description	Cat. No.
Turbiquant® 1100 IR turbidimeter, portable plug type	1.18324.0001
Turbiquant® 1100 T turbidimeter, portable	1.18325.0001
Turbiquant® 1500 IR turbidimeter	1.18330.0001
Turbiquant® 1500 T turbidimeter	1.18331.0001
Turbiquant® 3000 IR turbidimeter	1.18332.0001
Turbiquant® 3000 T turbidimeter	1.18333.0001

Accessories

Description	Pk	Cat. No.
Turbiquant® 1100 IR empty cuvettes	3	1.18320.0001
Turbiquant® 1500/3000 cuvettes	3	1.18336.0001
Lamp, LED for Turbiquant® 1500 IR	1	1.18344.0001
Turbiquant® 1500/3000 flow through cells	1	1.18340.0001
Turbiquant® 1500/3000 tungsten lamp	1	1.18338.0001
Lamp, LED for Turbiquant® 3000 IR	1	1.18382.0001
Turbiquant® 1500/3000 cuvette stands	1	1.18339.0001
Turbiquant® 3000 flow through cells (low pressure)	1	1.18341.0001
Printer cable for Turbiquant® 1500/3000 (serial)	1	1.09759.0001
PC cable for Turbiquant® 1500/3000 (for serial interface)	1 kit	1.14667.0001

Calibration standards

Description	Pk	Cat. No.
Turbiquant® 1000 IR calibration standard set (0,02 - 10,0 - 100 - 1000 NTU)	1	1.18327.0001
Turbiquant® 1500 IR/1500 T calibration standard set (0,02 - 10,0 - 1000 NTU)	1	1.18328.0001
Turbiquant® 3000 IR calibration standard set (0,02 - 10,00 - 100,0 - 1750 NTU)	1	1.18329.0001
Turbiquant® 1100 IR/1100 T (0,02 - 10,0 - 1000 NTU) standard set	3	1.18335.0001
Turbiquant® 3000 IR calibration standard (10 000 NTU)	1	1.18342.0001
Turbiquant® 3000 T calibration standard (10 000 NTU)	1	1.18343.0001
Turbiquant® 1500 IR/1500 T calibration standard set (0,02 - 10,0 - 100,0 - 1750 NTU)	1	1.18349.0001

Cuvettes

Absorption measurement macro standard cuvettes

Glass and quartz cuvettes from Hellma® for spectrophotometers

These cuvettes are manufactured from various types of glass. The most important criteria for the choice of the type of glass is the spectral range for which the cell is intended. Each cuvette is identified by an etched on colour symbol that indicates the spectral range.

The layer thickness plays a particularly important part in some photometric applications.

Material	Layer thickness (mm)	Tolerance (± mm)
Quartz glass	0,01 to 0,05	0,003
	0,1 to 0,2	0,005
	0,5 to 20	0,01
	40 to 100	0,02
Special optical glass	0,1 to 20	0,01
	40 to 100	0,02
Optical glass	10 to 30	0,1
	40 to 100	0,2

Macro cuvette

Technical specifications

Logo	Glassware type	Spectral range (nm)	Applications/spectrum
QS	High quality SUPRASIL® quartz glass	200 to 2500	UV
QH or UV	Natural crystalline quartz	230 to 2500	UV
QX	Synthetic quartz glass without OH absorption	200 to 3500	Near IR
OS	Special optical glass	320 to 2500	Visible
OG	Optical glass - not normally used in spectrophotometry	360 to 2500	Visible
BF	Chemical-resistant borosilicate glass	330 to 2500	Visible

Ordering information

Style	Window material	Layer thickness (mm)	Height (mm)	Volume (µl)	Cat. No.
6030-OG	Optical glass	<10	45	3500	634-9001
		20	45	7000	634-9002
		<40	45	14 000	634-9003
		50	45	17 500	634-9004
100-OS	Special optical glass	1	45	350	634-9011
		2	45	700	634-9012
		5	45	1750	634-9013
		10	45	3500	634-9014
		20	45	7000	634-9015
		40	45	14 000	634-9016
		50	45	17 500	634-9017
		100	45	35 000	634-9018
100-QS	SUPRASIL® quartz glass	1	45	350	634-9021
		2	45	700	634-9022
		5	45	1750	634-9023
		10	45	3500	634-9024
		20	45	7000	634-9025
		40	45	14 000	634-9026
		50	45	17 500	634-9027
		100	45	35 000	634-9028
100-QX	SUPRASIL® 300 quartz glass	10	45	3500	634-9034
110-OS	Special optical glass	1	52	350	634-9041
		2	52	700	634-9042
		5	46	1750	634-9043
		10	46	3500	634-9044
		20	46	7000	634-9045
		40	46	14 000	634-9046
		50	46	17 500	634-9047
110-QS	SUPRASIL® quartz glass	1	52	350	634-9051
		2	52	700	634-9052
		5	46	1750	634-9053
		10	46	3500	634-9054
		20	46	7000	634-9055
		40	46	14 000	634-9056
		50	46	17 500	634-9057
		100	46	35 000	634-9058
110-QX	SUPRASIL® 300 quartz glass	10	46	3500	634-9064

semi-micro cuvette

Semi-micro standard cuvettes for absorption measurements

Style	Window material	Layer thickness (mm)	Height (mm)	Volume (µl)	Cat. No.
6040-OG	Optical glass	10	45	1400	634-9101
6040-UV	HERASIL® quartz glass	10	45	1400	634-9223
104-OS	Special optical glass	10	45	1400	634-9112
		50	45	7000	634-9115
104-QS	SUPRASIL® quartz glass	10	45	1400	634-9122
		50	45	7000	634-9125
104B-OS*	Special optical glass	10	45	1400	634-9140
Semi-micro	SUPRASIL® 300 quartz glass	10	45	1400	634-9132
104B-QS*	SUPRASIL® quartz glass	10	45	1400	634-9150
114-OS**	Special optical glass	10	46	1400	634-9148
114-QS**	SUPRASIL® quartz glass	5	46	700	634-9156
		10	46	1400	634-9158

* Black side walls and base
** Round PTFE stoppers

Micro cuvette

Micro cuvettes for absorption measurements

Micro cuvettes with PTFE lid, internal dimensions: width 2 mm from Hellma®

Style	Window material	Layer thickness (mm)	Height (mm)	Volume (µl)	Cat. No.
104.002-OS	Special optical glass	10	45	700	634-9079
104.002B-OS*		10	45	700	634-9214
104.002-QS	SUPRASIL® quartz glass	10	45	700	634-9080
104.002B-QS*		10	45	700	634-9081

Ultra-micro cuvette

Ultra-micro cuvettes for absorption measurements

With PE stoppers.

Style	Window material	Layer thickness (mm)	Height (mm)	Volume (µl)	Cat. No.
105.200-QS	SUPRASIL® quartz glass	10	45/15*	180	634-9087
		10	45/8,5**	180	634-9088
105.201-QS		10	45/15*	120	634-9089
		10	45/8,5**	100	634-9090
105.202-QS		10	45/15*	70	634-9091
		10	45/8,5**	70	634-9092
105.203-QS		10	45/15*	70	634-9328
		10	45/8,5**	70	634-9093

* Black side walls and base
** Round PTFE stoppers

Cuvettes

Disposable cuvettes VWR Collection

Disposable cuvettes for spectrophotometers

Disposable cuvettes made from optical PS with optimal transmittance from 340 to 900 nm or made from PMMA with an application range of 300 to 900 nm.

- Very low variation of absorbance values
- Layer thickness 10 mm, with 2 windows
- Packed in Styrofoam racks and wrapped in plastic film

Ordering information

Style	Materials	Volume (ml)	Pk	Cat. No.
Macro	PS	4	100	634-2500
Semi-micro, VWR Collection	PS	1,6	100	634-2501
	PMMA	4	100	634-2502
Macro	PMMA	1,6	100	634-2503

Disposable UV cuvettes Brand

Disposable UV cuvettes

These disposable plastic UV cuvettes from BRAND can be used in many fields of application instead of expensive and sensitive cuvettes made from glass or quartz glass. Their high chemical resistance means they can be used with most polar solvents as well as with acids and alkalis. The UV micro cuvettes can be used for measurements from 220 nm and with small sample quantities (70 µl are enough for measurement). The cuvette layer thickness is 10 mm. Two different centre heights ensure they can be used in most commercially available photometers

- Specially developed for the photometric measuring of proteins, DNA and RNA in the UV range
- Ideally suited for measurements at 260 nm, 280 nm and in the visible wavelength range
- Colour circular closures for the micro cuvettes ensure that samples can be easily recognised and the cuvettes are reliably leak-proof at up to -20 °C

Ordering information

Style	Volume	Pk	Cat. No.
UV cuvettes, semi-micro, 4,5 x 23 mm aperture	1,5 - 3,0 ml	100	612-5684
UV cuvettes, macro, 10 x 35 mm aperture	2,5 - 4,5 ml	100	612-5685
UV cuvettes, micro, z=8,5 mm, 2 x 3,5 mm aperture	70 - 850 µl	100	612-5686
	70 - 850 µl	500	612-5687
UV cuvettes, micro, z=8,5 mm, 2 x 3,5 mm aperture, individually packed	70 - 850 µl	100	612-2505
UV cuvettes, micro, z=15 mm, 2 x 3,5 mm aperture	70 - 550 µl	100	612-5688
	70 - 550 µl	500	612-5689
UV cuvettes, micro, z=15 mm, 2 x 3,5 mm aperture, individually packed	70 - 550 µl	100	612-2506

Lids for UV micro cuvettes, PE

Ordering information

Colour	Pk	Cat. No.
Blue	100	612-5690
Yellow	100	612-5691
Green	100	612-5692
Orange	100	612-5693

UVette® 80

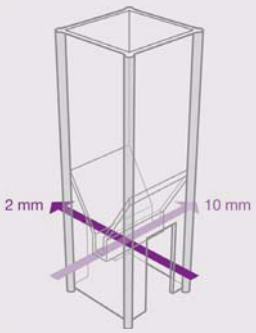
- Individually blister packed for contamination-free work
- DNA, RNAase and protein-free

UVette® Starter set

- 80 individually packed UVettes® and a universal adapter for 15 mm light beam height (including GeneQuant); can be converted to 8,5 mm

UVette® Routine pack

- 200 UVettes® bulk packed in a resealable box (as an economical solution)



UVette® disposable cuvettes for spectrophotometers

The plastic material of the disposable UVette® provides a transparency spectrum of 220 to 1600 nm. The cuvette has a funnel shaped tube bottom that prevents capillary effects and ensures that the liquid always remains in the centre of the measuring range; this is particularly important for micro volumes such as 50 µl. The design provides a 2 or 10 mm optical path length by simply rotating the UVette® by 90 degrees. The 2 mm layer thickness means that no dilution of highly concentrated samples is required in most cases.

- Compatible with most spectrophotometer models (with appropriate adapter)
- 4 optical windows and volume markings for 500 and 1000 µl
- No adapter required when used with the Eppendorf® BioPhotometer

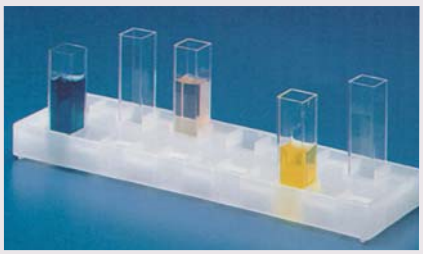
Ordering information

Description	Pk	Cat. No.
UVette® 80	80	634-1921
UVette® Starter set	1 kit	634-1922
UVette® Routine pack	200	634-1923
UVette® adapter for 8,5 mm light beam height (centre height)	1	634-0022
UVette® adapter for 10 mm light beam height (centre height)	1	634-0023
UVette® adapter for 15 mm light beam height (centre height)	1	634-0024
UVette® adapter for GeneQuant	1	634-0025

Cell stands

PE, for 12 cuvettes with 10 mm layer thickness - Kartell

Description	Cat. No.
Cell stand	634-8580



Cuvette cleaning agents

An alkaline liquid concentrate from Hellma®, which is typically diluted to 2% with water for cleaning quartz glass and glass cuvettes. It can also be used to clean other sensitive optical components made of glass, quartz, sapphire and porcelain. It is a complete replacement for chromo sulphuric acid. It removes even the most stubborn contaminants such as fats, waxes, and proteins whilst being considerably less hazardous and corrosive than many of the traditional alternatives.

Description	Pk	Cat. No.
Hellmanex® III	1 l	634-0666

Secondary standards for calibrating spectrophotometers

UV/ VIS spectrophotometry is one of the most frequently applied methods in chemical analysis. It is used in clinical chemistry, the pharmaceutical industry, scientific research and very often in quality assurance.

In recent years quality requirements, outlined by EN ISO 9000, Good Laboratory Practice (GLP), Good Manufacturing Practise (GMP) or the recommendations of pharmacopeias (EP, DAB, USP) have become more influential. Formal performance verification of UV/VIS spectrophotometers is now essential. The performance verification tests required by major Pharmacopeias for UV/VIS spectrophotometers check the spectral resolution, the wavelength accuracy, the photometric accuracy and for stray light.

A set of liquid Hellma® calibration standards enables you to check spectrophotometers with respect to wavelength and photometric accuracy, stray light and spectral resolution at wavelengths from 198 to 650 nm.

They also enable the checking of photometric accuracy in the visible range of the spectrum and the wavlength accuracy in the ultraviolet and visible range.

Solid filter set

The calibration set consists of three neutral density glass filters for checking absorbance accuracy, and a holmium oxide glass filter for checking wavelength accuracy.

The glass filters are mounted in precision aluminium frames and are designed for use with the standard 10 mm cell holder provided with spectrophotometers. The set, along with an empty mount, is supplied in a sturdy wooden case.

For identification purposes the set number is engraved on each filter mount. The absorbance values and/or peak position wavelength of every filter is quoted in the accompanying calibration certificate. A copy of the values, for laboratory use, can be found on the inside of the case lid.

Ordering information

Description	Cat. No.
Complete set for testing photometric and wavelength accuracy	634-9691
Holmium oxide glass filter to test wavelength accuracy	634-9693
Glass filter for testing photometric accuracy (nominal value of the absorption 0,25 A)	634-9694
Glass filter for testing photometric accuracy (nominal value of the absorption 0,5 A)	634-9695
Glass filter for testing photometric accuracy (nominal value of the absorption 1 A)	634-9696
Didymium glass filter for testing photometric accuracy and wavelength accuracy	HELL666-000F7-323

Liquid filter set

Consisiting of eight liquid filters which enable the complete checking of the spectrophotometer according to European Pharmacopeia. They are designed for use with a standard 10 mm cell holder provided with spectrophotometers. The set is supplied in a sturdy wooden case. For identification purposes an ID number engraved on each filter. The absorbance values and/or peak position wavelengths of every filter are quoted in the accompanying calibration certificate.

Ordering information

Description	Pk	Cat. No.
Set for checking spectrophotometer according to Ph. Eur.	1 kit	HELL667-003-UV-40
Set for testing stray light according to Ph. Eur.	1	HELL667-100-UV-40
Set for testing the resolution according to Ph. Eur.	1	HELL667-200-UV-40
Set for testing the photometric accuracy according to Ph. Eur.	1	HELL667-305-UV-40

Absolutely seamless

Consistent quality assurances convert your measurements into safe and verifiable analysis results. The Spectroquant® NOVA and Pharo photometers ensure your work is GLP compliant. The building blocks of the AQS concept are tried and tested media for your Internal Quality Control (IQC), as recommended in the data sheet ATV-DWVK A 704 of the German Association for Water, Wastewater and Waste (ATV-DVWK).

The choice is yours:

AQS-1 mode for monitoring the photometer

The photometer is monitored in AQS-1 mode using certified colour standards (Spectroquant® PhotoCheck) and also for the Spectroquant® Pharo spectrophotometers using CertiPUR® UV/VIS standards and Spectroquant® Photocheck.

Spectroquant® PhotoCheck is a complete set of long-term stable dye solutions. The traceability of this test equipment on international standards is guaranteed by testing in a reference spectrophotometer. This is monitored using primary standards (NIST Standards). This means that Spectroquant® PhotoCheck is traceable and therefore suitable for monitoring test equipment in accordance with DIN ISO 9001 or 14001. All results can ultimately be transferred to a printer or PC for documentation purposes.

Ordering information

Description	Pk	Cat. No.
Spectroquant® PhotoCheck	1 kit	1.14693.0001

CertiPUR® UV/VIS standards

CertiPUR® standards can be used to check your spectrophotometer is functioning uniformly and correctly. The following parameters can be tested with the CertiPUR® solutions in accordance with Ph. Eur.:

- Absorbancy
- Scattered light behaviour
- Wavelength accuracy

These regular checks are required in accordance with GLP, GMP, USP and DIN 9001 or EN 45001.

Ordering information

Description	Volume	Cat. No.
UV/VIS Standard 1	Potassium dichromate solution for the absorption as per DAB and Ph. Eur. 2 x 10 ml $K_2Cr_2O_7$ 60,06 mg/l in H_2SO_4 0,01 N and 6 x 10 ml H_2SO_4 0,01 N	1.08160.0001
UV/VIS Standard 1A	Potassium dichromate solution for the absorption at 430 nm as per DAB and Ph. Eur. 2 x 10 ml $K_2Cr_2O_7$ 600,06 mg/l in H_2SO_4 0,01 N and 6 x 10 ml H_2SO_4 0,01 N	1.04660.0001
UV/VIS Standard 2	Sodium nitrite solution for scattered light testing as per DAB and Ph. Eur. 3 x 10 ml $NaNO_2$ 50 g/l in H_2O	1.08161.0001
UV/VIS Standard 3	Sodium iodide solution for scattered light testing as per DAB and Ph. Eur. 3 x 10 ml NaI 10 g/l in H_2O	1.08163.0001
UV/VIS Standard 6	Holmium oxide solution reference material for the wavelength as per DAB and Ph. Eur. 3 x 10 ml HO_2O_3 40 g/l in $HClO_4$ (10% v/v)	1.08166.0001

AQS-2 mode for monitoring the complete system

AQS mode monitors the complete system comprehensively using certified multi-parameter standards.

Spectroquant® CombiCheck

Spectroquant® CombiCheck solutions are ready-to-use multi-parameter standards for use with Spectroquant® test kits. Each pack contains a standard solution and an additional solution. Both solutions can be used immediately for quality assurance without requiring dilution.

The standard solution is used to prove the correctness of the results of the complete Spectroquant® system (photometer, reagents, analytical procedure and operation).

The additional solution is used to test sample-related influences by measuring the recovery rate and identifies the sample-related preparation.

The maximum number of identifications depend on the test kit used when applying the standard solution.

This function has additional device driven support for the Spectroquant® Pharo spectrophotometers.

Technical specifications

Spectroquant® CombiCheck 10	
Ammonium	4,00 ±0,30 mg/l NH_4^+
Chloride	25 ±6 mg/l Cl^-
COD	80 ±12 mg/l COD
Nitrate	2,5 ±0,25 mg/l NO_3^-
Phosphate	0,80 ±0,08 mg/l PO_4^-
Sulphate	100 ±15 mg/l SO_4^{2-}

Spectroquant® CombiCheck 20	
Ammonium	12,0 ±1,0 mg/l NH_4^+
Chloride	60 ±10 mg/l Cl^-
COD	750 ±75 mg/l COD
Nitrate	9,0 ±0,9 mg/l NO_3^-
Phosphate	8,0 ±0,7 mg/l PO_4^-
Sulphate	500 ±75 mg/l SO_4^{2-}

Spectroquant® CombiCheck 30	
Cadmium	0,500 ±0,060 mg/l Cd
Iron	1,00 ±0,15 mg/l Fe
Copper	2,00 ±0,20 mg/l Cu
Manganese	1,00 ±0,15 mg/l Mn

Spectroquant® CombiCheck 40	
Aluminium	0,75 ±0,08 mg/l Al
Lead	2,00 ±0,20 mg/l Pb
Nickel	2,00 ±0,20 mg/l Ni
Zinc	2,00 ±0,40 mg/l Zn

Spectroquant® CombiCheck 50	
Ammonium	1,00 ±0,10 mg/l NH_4^+
COD	20,0 ±4,0 mg/l COD
Nitrogen	5,0 ±0,70 mg/l N

Spectroquant® CombiCheck 60	
Chloride	125 ±13 mg/l Cl^-
COD	250 ±25 mg/l COD

Spectroquant® CombiCheck 70	
Ammonium	50 ±5 mg/l NH_4^+
COD	5000 ±400 mg/l COD
Nitrogen	50 ±7mg/l N

Spectroquant® CombiCheck 80	
COD	1500 ±150 mg/l CSB
Nitrate	25,0 ±2,5 mg/l NO_3^-
Phosphate	15,0 ±1,0 mg/l PO_4^-

Ordering information

Description	Cat. No.
Spectroquant® CombiCheck 10	1.14676.0001
Spectroquant® CombiCheck 20	1.14675.0001
Spectroquant® CombiCheck 30	1.14677.0001
Spectroquant® CombiCheck 40	1.14692.0001
Spectroquant® CombiCheck 50	1.14695.0001
Spectroquant® CombiCheck 60	1.14696.0001
Spectroquant® CombiCheck 70	1.14689.0001
Spectroquant® CombiCheck 80	1.14738.0001

(AQS-3 marking)

AQS-1 + AQS-2:

The photometer indicates when the next AQS check is due. The intervals can be freely selected depending on time and also, for AQS-2, depending on the number of measurements.

AQS-3 matrix check

In addition to testing the complete system, measurement errors that can be caused by possible interferences in the sample also have to be identified.

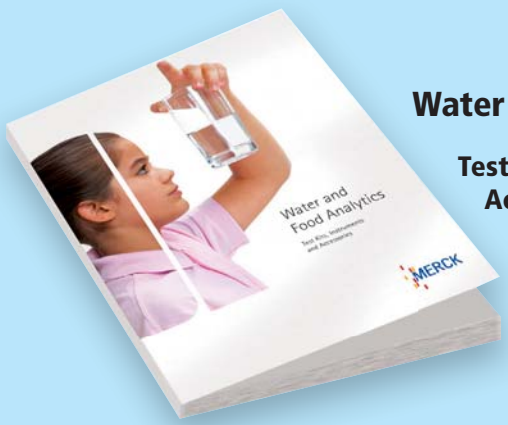
Standard addition (see also Spectroquant® CombiCheck R-2 additional solutions) or dilution can be used to identify measurement errors that are caused by matrix influences. Recovery can be used to analyse these interferences and they can be removed using suitable measures e.g. a sample preparation.

Standard solutions

You can, of course, make use of our comprehensive range of ready-to-use standard solutions. Standards can be produced in the required concentration for almost every parameter using simple dilution.

Ordering information for standard solution (*traceable on NIST) 1000 mg/l

Description	Cat. No.
Ammonium	1.19812.0500
Chloride	1.19897.0500
COD	1.11769.0100
Nitrate	1.19811.0500
Phosphate	1.19898.0500
Sulphate	1.19813.0500



Water and Food Analytics

Test Kits, Instruments and Accessories

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