

ScanDrop®

Nano-volume spectrophotometer

- Combination of two generations of spectrophotometer
- Measurement of microliter volumes down to 0.3 µl
- Automatic measurements of up to 16 samples either in single or repeat determination at path lengths of 0.1 and 1.0 mm, respectively



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New generations of spectrophotometer

The ScanDrop® combines easy measurement of microliter volumes down to 0.3 µl with a standard measuring position for 10 mm cuvettes. This feature results in an exceptionally versatile instrument for routine work. The modular system is available as a single instrument for small sample volumes, as a standard 10 mm position instrument or as a combination of both. Unlike other systems, no warm up time is necessary. The instrument is ready to use almost as soon as it is switched on thanks to a long-life xenon flash lamp. The lifetime of the lamp with 10⁹ flashes (approx. 100,000 h) outperforms conventional light sources easily. Furthermore the Split-Beam-Technology provides high stable and reproducible measurement results. One additional highlight is the new portable HID-Pro 320 user interface with a 5.7" color touchscreen, which turns the ScanDrop® into a fully functional and space-saving standalone system.

Reliable, versatile and robust

The ScanDrop® uses next to cuvettes in 10 mm standard format a unique patented CHIPCUVETTE®, which allows the user to easily measure sample volumes even as small as an impressive 0.3 µl. The CHIPCUVETTE® provides consistent measuring conditions, such as path lengths, which leads to enhanced reproducibility compared to other available "open drop" or "microliter" systems. It also provides optimum user and sample protection, utterly eliminating sample evaporation and the risk of cross-contamination or carryover effects. This new chip technology makes it easy to recover or simply store the sample after measurement.

The CHIPCUVETTE® provides 16 separate micro channels and is suitable for multichannel pipettes. Its technology ensures precise UV VIS absorption measurements between 190 nm and 720 nm.



▲ Measurement position for CHIPCUVETTE®

Features

- Combination of two generations of spectrophotometer
- Measurement of microliter volumes down to 0.3 µl
- 16 channels per CHIPCUVETTE® with fully automated measuring of up to 32 positions at path lengths of 0.1 or 1.0 mm
- Automated sample positioning (CHIPCUVETTE®)
- Measuring position for 10 mm standard cuvettes
- Usage of TrayCell: single measurements of small samples at path length of 0.2 mm or 1.0 mm
- Maintains best user and sample protection
- No evaporation
- No cross-contamination
- No carryover effects
- Easiest sample recovery
- Sample storable in the CHIPCUVETTE®
- Suitable for multi-channel pipettes
- Powered by SPECORD® technology
- High-precision optics with aberration-corrected grating

Fully automated measurement

The CHIPCUVETTE® is convenient and easy to use thanks to fully automatic movement and measurement of predefined measuring positions. Up to 32 measurements can be performed during one run at which a double determination of one sample at two different pathlength can be performed. This feature offers a matchless advantage especially if sample concentrations are unknown, because any dilution becomes unnecessary.

High-precision optics – powered by SPECORD® technology

The polychromator system, designed to work without any movable components, is the heart of ScanDrop®. Its high-precision optics consist of an aberration-corrected grating, a mechanical slit and a diode array detector. Encased in a rugged titan-based spectrometer body, it is permanently adjusted, fixed and insensitive to external influences.

The formula module

Mathematical functions such as:

- Addition
- Subtraction
- Multiplication
- Division
- Factor
- Square
- Square root
- Sine
- Cosine
- Logarithm ln
- Binomial theorems

Biomethod module – wide selection

The following preprogrammed methods are available:

- Absorbance 260 nm
- DNA purity (A260 nm/A280 nm)
- ssDNA concentration (A260 nm × factor 33)
- RNA concentration (A260 nm × factor 40)
- DNA concentration (A260 nm × factor 50)
- Absorbance 280 nm
- Absorbance 280 nm, factor 1.38
- Kalb and Bernlohr
- Warburg-Christian formula for DNA
- Warburg-Christian formula for proteins
- Whitaker and Granum
- Kalckar and Shaffran
- and more...

PC controlled or stand alone

The ScanDrop® is controlled either by PC or by a new portable user interface with a touchscreen, and includes the corresponding measurement and analysis software. This software provides several modules meeting the needs of every user. The method module allows users to select any preprogrammed nucleic acid and protein analysis method. The formula module allows users to compile, store and reuse customized computation formulas; the quantification module automatically calculates unknown concentrations by creating a calibration curve containing standard samples. A number of typical methods are preprogrammed. The formula module mathematically combines up to six fixed wavelengths and the quantification module chooses between different calibration curves.

External user-interface HID-Pro 320

The new portable HID-Pro 320 user interface eliminates the need for a PC and makes the system exceptionally easy to operate. Its extra large 5.7" color touchscreen eliminates the need for a keyboard or mouse. The software, which is based on Windows CE, offers typical Windows functions and operating environment, as well as an intuitive menu bar.



▶ Portable and versatile user interface HID-Pro 320 with a 5.7" touchscreen, USB and LAN port

The HID-Pro 320 consists of a LAN and USB port for optimum connectivity and is also compatible with other instruments from Analytik Jena | Life Science, such as the SpeedCycler² thermal cycler or InnuPure[®] C16 extraction automate.

ScanDrop® software

Methods can be stored individually and organized in user-defined directories. Users may also select a quick-start menu for frequently used methods. An USB and LAN port allows users to exchange methods to other systems and export analysis data. The operating language can be easily changed at the touch of a button.

If there is PC already available in the laboratory, ScanDrop® can be used as well by novel software FlashSoftPro. FlashSoftPro convinces by a comparable flexibility of the functional range and allows an intuitive handling as well as the automated analysis of the measuring results.



Validation CHIPCUVETTE®

The Validation CHIPCUVETTE® is used for revising the following device parameters, particularly those affecting to the CHIPCUVETTE® measuring position:

- Zero transmission
- Baseline variation
- Baseline noise (RMS)
- Long-term stability
- VIS photometry
- Baseline accuracy

The validation of VIS photometry is done with the aid of the neutral glass filters NG1, NG4, NG3 and NG9. A holmium oxide glass filter is also used for checking wavelength accuracy. WG280 glass is necessary as reference filter.



▶ Validation CHIPCUVETTE® external certified by Hellma

Technical data

System parameters	
Optical principle	Powerful diode array spectrophotometer for the UV VIS range
Optical system	Polychromator system
Light source	Xenon flash lamp
Wavelength range	190–720 nm (in steps of 0.5 nm)
Measuring time	Minimal 1 sec
Longterm stability	0.003 A/h
Sample temperature control	Approximately 4–90°C optional
Control	HID-Pro 320 or PC
Software	ASpect Nano or FlashSoftPro

Application parameters	
Scan application	Simultaneous, Split-Beam-Technology
Mode	Energy, absorbance, transmittance

Cuvettes	Standard cuvette	CHIPCUVETTE®			TrayCell®	
Pathlength	Up to 10 mm	0.1 mm	1.0 mm	Both	0.2 mm	1.0 mm
Sample volume	2 ml (min. 1.7 ml)	Min. 0.3 µl	Min. 2.0 µl	Min. 4.0 µl	0.7 - 4.0 µl	3.0 - 5.0 µl

Other technical data	
Dimensions (W×H×D)	240×170×200 mm
Weight	Approx. 5 kg
Electrical requirements	110–220 V ± 10%, 50–60 Hz
Instrument operation	+ 15 °C to 35 °C, rel. humidity max. 90% at 30 °C
PC interface	USB
Warranty	2 years