Halo DB-20/DB-20S

UV / Visible Double Beam Spectrophotometer

The Halo DB-20 is a high performance double beam spectrophotometer suitable for many analytical applications where a higher level of accuracy is required.

Genuine Double Beam Optics

True double beam optics ensure concurrent measurement of the sample and reference for improved stability, accuracy and reproducibility. The light beam is split in two using a half mirror so that one beam passes through the sample side whilst the other passes through the reference side. Both beams are then measured on individual detectors. The reference side beam also acts to stabilize photometric values in a similar manner to the ratio beam principle.

Spectral Features

Coma aberration elimination from the concave diffraction grating achieves a high resolution 1.5 nm (DB-20S : 1nm) spectral bandpass and certifies compliance of the Halo DB-20 to the stringent European Pharmacopoeia standards.

Other specifications include an impressive wavelength accuracy of ±0.3nm, noise level 0.0003Abs (500nm) and stray light ≤0.05% (220nm NaI, 340nm $NaNO_2$).

Built-in and Diverse Range of Measurement Modes

Photometry Mode. Perform quantitative analyses in either absorbance or transmittance modes. Select from single wavelength, up to 6 different individual wavelengths, nucleic acid/protein A260/A280 ratios and set up calibration curves with up to 20 standards for concentration measurements.

Time Scan: Perform kinetic measurements for time periods ranging from 1 minute to >27 hours. Measurement intervals are factory preset and automatically selected when the scan time is set.

Wavelength scan: Perform a full spectral scan from 190 to 1,100nm at any of 8 incremental and preset selectable scan speeds starting from a high resolution 10nm/minute up to a swift 3,600nm / minute. Data is displayed as either numerical values or a graphical spectrum. Furthermore perform downstream processing of data, such as peak / valley search or smoothing, directly on board or with the optional Halo UV Detective software.

Dual Lamp Advantage

By virtue of the long life, halogen tungsten and deuterium lamps, the Halo DB-20s wavelength range is an extensive 190nm – 1,100nm. Furthermore, the dual lamp system results in higher accuracy than corresponding xenon lamps. Lamp switching is automatic and selectable from a wavelength range of 325nm to 370nm.

User Friendly Operation and Information Rich LCD Display

The extra large 165mm x 122mm, backlit LCD screen with adjustable brightness control displays a large array of data also in graphical format. The seamless and chemical resistant keypad is designed for easy and quick selection of navigation and function features whilst protecting against any laboratory spills. Other unique features include the 'GO TO WL' short cut key to allow direct input of a new wavelength into an existing measurement.

Validation Functions

To ensure optimum instrument performance, self-diagnosis incorporating a number of parameters and wavelength calibration are automatically initiated upon start-up. Furthermore the Halo DB-20 is equipped with a GLP/GMP feature for analyses requiring validation and auditing. Parameters such as wavelength accuracy, wavelength reproducibility, bandpass, baseline flatness, baseline stability and noise level can be all validated and the audit report printed.

Stand alone or PC Operation

The Halo DB-20 is fully equipped and capable of executing all functions in stand alone mode. Simply connect a standard laser printer for direct printouts of data and graphs. For more advanced control, analyses and reporting, the simple slide of a switch places the Halo DB-20 under the direct control of the optional UV Detective software installed on a computer with Windows® XP or Windows®7 operating system.

On-Board Data Storage

Up to 20 operating programs and up to 10 sets of measurement data can be stored in the flash memory of the Halo DB-20. Programs can easily be recalled, edited and deleted. Furthermore, when in stand alone mode, data (in text format) can be downloaded directly to an external memory stick via the USB port and transferred for further processing to any computer loaded with commercial spreadsheets (such as Microsoft® Excel)

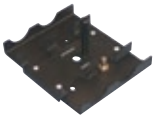
DB-20/DB-20S Accessories

Rectangular Long-Path Cuvette Holder

Designed for low concentration or low absorbance samples

> Accommodates 2 x long–path cuvettes (sample and reference sides)
> Accepts cuvettes with 6 optical path lengths of: 10,20, 30, 40, 50 & 100 mm
> Outer width: 12.5mm

Cylindrical Long-Path Cuvette Holder:



Designed for low concentration or low absorbance samples using a cylindrical cuvette

> Accommodates 2 x long–path cylindrical cuvettes (sample and reference sides)

Thermostatic Cuvette Holder

Designed for applications requiring incubation and/or maintenance of a sample at a constant temperature

> External water circulation maintains temperature stability
> Operating temperature range: Room Temperature to +40°C
> Temperature stability: ±0.3°C
> Complete with tubing for quick connection to water source (such as circulating water bath)

5-Cuvette Holder / Changer

Designed for mounting up to 5 standard 10mm cuvettes on the sample beam side.

> Total capacity: 5 cuvettes on sample beam side + 1 cuvette on reference beam side)
> Turret design cuvette holder for efficient changeover
> Manual change of cuvettes by turning front mounted knob
> No temperature control

6-Cuvette Holder / Changer (with electronic temperature control):

Designed for mounting up to 6 standard 10mm cuvettes with temperature control and stirring

> Total capacity: 6 cuvettes on sample beam side + 1 cuvette on reference side)
> Electronic change over – change cuvettes automatically at defined time intervals
> Electronic thermostat – set temperature between +20°C to +40°C
> Includes magnetic stirrer (and fleas)
> Requires water circulated cooling (tubing included)

Micro-cuvette Holder

Designed for measuring micro-volumes with 50µl micro-cuvette

> Wavelength range: 220 to 950nm
> Noise level: ~0.005Abs (with 50µl volumes)

Micro-cuvettes

Suitable for use in the micro-cuvette holder

> Made from quartz
> Available size: 50µl

Auto Sample Sipper (without temperature control)

Designed for the rapid measurement of multiple or large amounts of sample without the requirement for manual washing or changing of cuvettes. The sample is sipped from an external tube directly into the sipper's integrated cuvette and automatically measured. The sample can also be recovered post-measurement. Two models are available with and without electronic temperature control, the former maintains the flow cuvette section at a constant temperature.

> Minimum sample volume: 0.7ml
> Wavelength range: 190nm – 900nm
> Carryover: ≤1
> Sipper cuvette capacity: ~50µl
> Optical path length: 10mm.

Auto Sample Sipper (with temperature control)

The same features as the Auto sipper with the added convenience of electronic temperature control to maintain the flow cuvette section at a constant temperature.

> Temperature control range: +20°C to +40°C
> Requires water circulated cooling (tubing included)

Micro Flow Cuvette Holder

Designed for the continuous measurement of trace samples. The sample can be injected directly into the flow cuvette with a syringe or other injection device.

> Flow cuvette capacity: 70µl
> Pressure tolerance: Max. 0.1Mpa
> Optical path length: 10mm
> Teflon tubing provided

Glass Sample Holder

Designed for measuring the transmittance /absorbance of glass samples or filters.

> Glass sample thickness: 0.5mm to 5mm
> Glass sample dimensions: Min. 12x25mm to Max. 55x100mm

Film Sample Holder

Designed for measuring the transmittance to absorbance of thin film-like samples.

> Film sample dimensions: 25m (W), 30 to 50mm (H)
> Beam aperture: 10mm(W) x 20mm (H)

HALO DB-20 / DB-20S SPECIFICATIONS	DB-20	DB-20S
Optics	Concave diffraction grating / Double Beam Principle	
Wavelength Range	190nm -1,100 nm	
Spectral Bandwidth	1.5 nm	1.0 nm
Stray Light	≤0.05% (220nm NaI, 340nm $NaNO_2$)	≤0.10% (220nm NaI, 340nm $NaNO_2$)
Wavelength Accuracy	±0.3nm	
Photometric Range	Absorbance: -3 to +3 %T: 0% to 300%T Concentration: 0,000 to 9,999	
Wavelength Scan Speed	10, 100, 200, 400, 800, 1,200, 2,400, 3,600 nm/minute	
Baseline Stability	0.0003 Abs/hr (500nm, after 2 hours)	
Noise Level	0.0003 Abs (500nm)	
Light Source	Tungsten-Halogen and Deuterium Lamps	
Light Source Switching	Automatic switching selectable from 325nm to 370nm	
Detector	Silicon Photodiode	
Display	Back-lit LCD 165(W) x 122(H) mm	
Dimensions	505(W) x 590(D) x 265(H) mm	
Net Weight	29Kg	
Gross Weight	35Kg	
Power Requirements	110 - 220 V selectable, 50/60Hz	

DB-20/DB-20S Ordering Information

PRODUCT	CATALOG NUMBER#
Halo DB-20 UV-Visible Double Beam Spectrophotometer 110 - 220 V selectable, 50/60Hz	DB-20-220
Halo DB-20S UV-Visible Double Beam Spectrophotometer 110 - 220 V selectable, 50/60Hz	DB-20S-220
Rectangular Long-Path Cuvette Holder	DB-20-RLPH
Cylindrical Long-Path Cuvette Holder	DB-20-CLPH
Thermostatic Cuvette Holder (includes tubing)	DB-20-TCH
Manual 5-Cuvette Holder/Changer	DB-20-FCC
Auto 6-Cuvette Holder/Changer with temperature control and stirrer	DB-20-SCCT
Auto 6-Cuvette Holder/Changer without temperature control and stirrer	DB-20-SCC
Micro-cuvette Holder*	DB-20-MCH
Micro-cuvette - quartz: 50µl / 10mm optical path length*	MC-50
Auto Sample Sipper with temperature control*	DB-20-SST
Auto Sample Sipper without temperature control*	DB-20-SS
Micro Flow Cuvette Holder*	DB-20-MFH
Glass Sample Holder	DB-20-GSH
Film Sample Holder	DB-20-FSH
UV Detective Software	UVDS-08-01

Note : * Not Applicable for Halo DB-20S

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