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Halo RB-10

UV / Visible Ratio Beam Spectrophotometer



Dynamica

The Halo RB-10 is a ratio beam spectrophotometer with an extensive array of built-in functions for versatility and suitability to many analytical and biological applications. The ratio beam optics impart greater accuracy and reproducibility than the conventional, single beam optics.

Ratio Beam Optics

The absorbance signal in conventional single beam instruments can destabilize and result in data inaccuracy. By contrast, ratio beam optics compensate and stabilize signal fluctuations to increase accuracy and reliability even over prolonged usage such as in time course and kinetic measurements. The ratio beam principle involves splitting the beam generated by the light source by a half mirror. One of the split beams passes through the sample and is quantified by a detector whereas the other split beam, which is representative of the absorbance signal, is measured by an independent detector to obtain a signal reference. The ratio of the values from both detectors is then calculated to detect and compensate for any aberration in the energy of the light source or a temporal change of the optical elements and produce highly stable photometric values.

Spectral Features

Boasting a 2 nm spectral bandpass the Halo RB-10 offers superior spectra and peak resolution.

Other specifications include an impressive wavelength accuracy of $\pm 0.5\text{nm}$, noise level 0.0005Abs (500nm) and stray light $\leq 0.05\%$ (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 multiple 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 Detectable software.

Dual Lamp Advantage

By virtue of the halogen tungsten and deuterium lamps typically found in higher end analytical spectrophotometers the Halo RB-10 wavelength range is an impressive 190nm – 1,100nm. Furthermore a dual lamp system results in higher accuracy than corresponding xenon lamps. Lamp switching is automatic (by default at 340nm) and both lamps are long life.

User Friendly Operation and Information Rich LCD Display

The 94mm x 70mm, backlit LCD screen with adjustable brightness control is sufficiently large to display a large array of data even in a graphical format. Furthermore, single wavelength absorbance or transmittance data can be enhanced and enlarged using the unique zoom function. 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

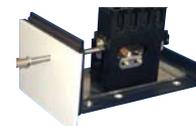
To ensure optimum instrument performance, a self-diagnostic function incorporating a number of parameters is executed each time the Halo RB-10 is switched on. Furthermore, the Halo RB-10 is equipped with a GLP/GMP feature for analyses requiring validation and auditing. Parameters such as wavelength accuracy, 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 RB-10 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 analyses and reporting, the simple slide of a switch places the Halo RB-10 under the direct control of the optional UV Detectable software installed on a computer with Windows® XP or Windows® 7 operating system.

4-Sample Cuvette Holder

A cuvette holder / changer with a 4-cuvette capacity is supplied as standard. Therefore measurement can be expedited by inserting the 4 cuvettes in tandem and manually sliding the holder / changer forwards or backwards to select the appropriate cuvette for measurement. The cuvette holder / changer is easily removed for cleaning purposes.



Halo RB-10 Accessories

Rectangular Long-Path Cuvette Holder

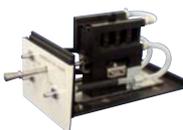
Designed for low concentration or low absorbance samples



- > Accommodates 4 x long-path cuvettes
- > Accepts cuvettes with 6 optical path lengths of: 10, 20, 30, 40, 50 & 100 mm

Thermostatic Cuvette Holder

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



- > Water circulation maintains temperature stability
- > Operating temperature range: Room Temperature to +40°C
- > Temperature stability: $\pm 0.3^{\circ}\text{C}$
- > Complete with tubing for quick connection to water source (such as circulating water bath)

Test Tube Holder

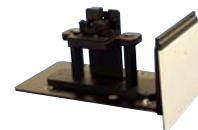
Designed for the direct measurement of samples in a test tube with no need to transfer to a cuvette



- > Spring mechanism automatically adjusts and accepts test tubes with diameters from 12 - 18 mm
- > High ceiling cover accommodates even the tallest test tubes

Micro-cuvette Holder

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



- > Wavelength range: 220 to 950nm
- > Noise level: $\pm 0.004\text{Abs}$ (with 50 μl volumes)

Micro-cuvettes

Suitable for use in the micro-cuvette holder

- > Made from quartz
- > Available size: 50 μl



Sample Sipper

Designed for the rapid measurement of multiple samples. 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.



- > Minimum sample volume: 0.6ml
- > Carryover: $\leq 1\%$
- > Sipper cuvette capacity: $\sim 50\mu\text{l}$
- > Optical path length: 10mm

HALO RB-10 SPECIFICATIONS	
Optics	Concave diffraction grating / Ratio beam principle
Wavelength Range	190nm -1,100 nm
Spectral Bandwidth	2nm
Stray Light	≤0.05% (220nm NaI, 340nm NaNO ₂)
Wavelength Accuracy	±0.5nm
Photometric Range	Absorbance: -3 to +3 %T: 0% to 300% Concentration: 0,000 to 9,999
Photometry Accuracy (measured with NIST 930D)	±0.002Abs (0~0.5Abs) ±0.004Abs (0.5~1.0Abs) ±0.008Abs (1.0~2.0Abs) ±0.3%T
Photometry Repeatability (measured with NIST 930D)	±0.001Abs (0~0.5Abs) ±0.002Abs (0.5~1.0Abs) ±0.004Abs (1.0~2.0Abs) ±0.15%T
Wavelength Scan Speed	10, 100, 200, 400, 800, 1,200, 2,400, 3,600 nm/minute
Baseline Stability	0.001 Abs/hr (500nm, after 2 hours)
Noise Level	0.0005 Abs (500nm)
Light Source	Tungsten-Halogen and Deuterium Lamps
Light Source Switching	Automatic switching at 340nm
Detector	Silicon Photodiode
Display	Back-lit LCD 94(W) x 70(H) mm
Dimensions	370(W) x 550(D) x 265(H) mm
Net Weight	20Kg
Gross Weight	25Kg
Power Requirements	110 - 220 V selectable, 50/60Hz

Halo RB-10 Ordering Information

PRODUCT	CATALOG NUMBER#
Halo RB-10 UV-Visible Ratio Beam Spectrophotometer 110 - 220 V selectable, 50/60Hz	RB-10-220
Thermostatic Cuvette Holder with Tubing	RB-10-TCH
Test Tube Holder (includes High Ceiling Cover)	RB-10-TTH
Micro-cuvette Holder	RB-10-MCH
Micro-cuvettes - quartz 50µl / 10mm Optical Pathlength	RB-10-MC-50
Sample Sipper	RB-10-SS
UV Detective Software	UVDS-08-01