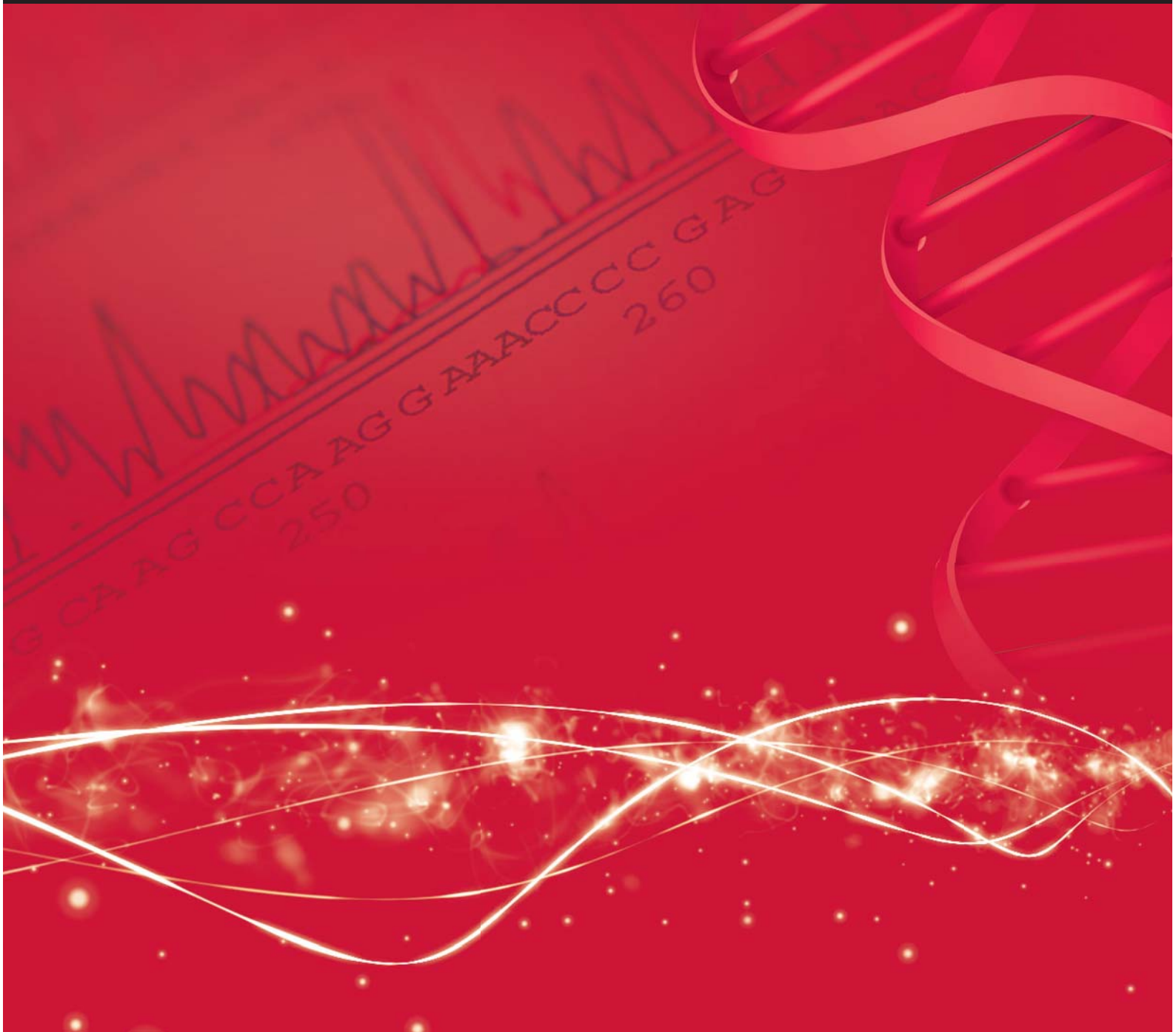


# Dynamica

## Science Equipment



Spectrophotometer • Thermal Cycler • Microplate Reader • Centrifuge • Gas Chromatograph • pH meter

**CONTROLTECNICA**





## Introduction

Dynamica is an international company which specializes in the development, production and provision of tools and services for use in life science research, analytical and academic purposes. We market a broad range of products include centrifuges, spectrophotometers, microplate readers, DNA analysers and other laboratory instruments. Based in UK, we have regional offices and manufacturing facilities in Europe, Australia and Asia. Together with our distribution partners in many parts of the world, our professional teams support thousands of customers working in healthcare, pharmaceutical, chemical, industrial, quality assurance, academic and government organizations.

We aim to create technological and business advantages for our customers to enable advancement in human health, environmental and resource management, and production efficiency. From product design and research through development to production and distribution, at Dynamica we always strive to deliver practical and innovative solutions with dependable services to each and every customer.

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## The Halo Range - UV-Visible and Visible Spectrophotometers

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# The Halo Range

UV-Visible and Visible Spectrophotometers

# Halo XB-10 / VIS-20

## UV / Visible and Visible Touch Screen Spectrophotometer



The Halo XB-10 and VIS-20 are based on the remarkable DNAMaster design and also offer the same high quality, touch screen operation in a compact measurement systems for daily analysis in education, quality control and basic research.

### Compact Optics with Full Range Scanning

The single beam optics are compact resulting in significant bench space saving. The long life Xenon lamp optics system in Halo XB-10 ensures quick and reliable performance. The Halo VIS-20 is equipped with a Tungsten Halogen lamp also providing stable measurement.

### Color Touch Screen Operation

The intuitive color touch screen provides simple access to an extensive range of function. The touch screen is sensitive to stylus or fingers (with and without gloves). Icon driven on board software improves accessibility and the graphical display allows spectrum or standard curve show on screen. The forward and backward quick action keys are another convenience feature. An enlarged data display for photometry measurement enhances the legibility of numerical and graphical data.

### Various Measurement Modes

Operation modes include photometric, multiple wavelength analysis, spectrum scanning, time scan, kinetics and direct concentration results.

### Optional Accessories

A various selection of accessories include: test tube holder, flow cell with sipper, temperature control holder, long pathlength cuvette holder, and an automatic multiple cell holder is available to enhance different application needs.

### Storage and Data Output

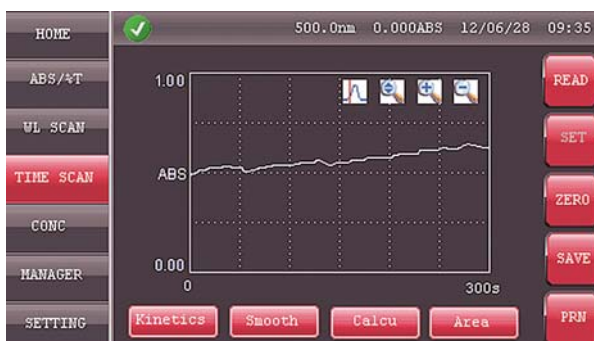
External storage with SD card allows data export to PC compatible text or spreadsheet format. Master Report software is available to convert the raw data to an organized data table.

Method and result storage is almost unlimited by exchanging the SD card when needed. A printer option is available for direct printing of data and / or graphics. Advanced control, analyses

and reporting can be performed with the optional UV Detective software installed on a computer.

### Validation Function

To ensure optimum instrument performance, self diagnosis functions are executed with the GLP/GMP wizard for performance validation and auditing.





HALO XB-10 / VIS-20 SPECIFICATIONS	XB-10	VIS-20
Wavelength Range	190 to 1000nm	330 to 1100nm
Resolution	1nm	
Spectral Bandwidth	5nm	8nm
Transmittance Accuracy	±1% T	
Transmittance Repeatability	0.50%	
Noise	0.004A at 0A at 250nm	
Stray Light	<0.5% at 220nm, 340nm, 360nm	
Wavelength Accuracy	±2nm	
Wavelength Repeatability	1nm	
Absorbance	-0.3 to 1.999	
Transmittance	0 to 199.9%	
Spectrum Scanning	Yes	
Concentration	-300 to 1999	
Selectable Resolution	1, 0.1, 0.01 or 0.001	
Memory	SD card storage	
Quantitation	-300 to 1999	
Time Scan Display	Graphical and calculated concentration value	
Wavelength Scan Analysis	Absorbance and wavelength of peaks and valleys	
GLP	Clock and calendar Self diagnosis	

## Halo XB-10 / VIS-20 Ordering Information

PRODUCT	CATALOG NUMBER#
Halo XB-10 UV-Visible Single Beam Spectrophotometer 100-230V, 50/60Hz	XB-10
Halo VIS-20 Visible Single Beam Spectrophotometer 100-230V, 50/60Hz	VIS-20
Test Tube Holder (Tube Diameter : 9-22mm; Height 70-150mm)	XB-10-TTH
Microcell Holder	XB-10-MCH
Sample Sipper (with 150µl flow cell)	XB-10-SS
Temperature Control Holder (20- 40°C)	XB-10-TCH
Rectangular Long Pathlength Cell Holder (for 10, 20,30, 40, 50, 100mm)	XB-10-RLPH
Automatic 5 Cell Changer	XB-10-A5C
Flow Cell Holder (with 150µl flow cell)	XB-10-FCH
UV Detective for XB-10 / VIS-20	UVDS-08-05
Compact Thermal Printer	XB-10-PRINT



Long Pathlength Cell Holder



Temperature Controlled Holder



Microcell Holder



Sample Sipper



Auto 5 Cell Changer



Flow Cell Holder



Test Tube Holder



Compact Thermal Printer

# Halo RB-10

## UV / Visible Ratio Beam Spectrophotometer



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  $\text{NaNO}_2$ ).

### 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

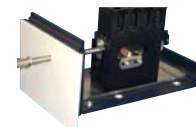
To ensure optimum instrument performance, a self-diagnostic function incorporating a number of parameters is executed each time the Halo RB-10 is switched on. Furthermore, the Halo RB-10 is equipped with a GLP/GMP feature for analyses requiring validation and auditing. Parameters such as wavelength accuracy, 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

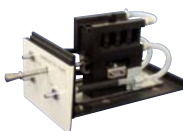
Designed for low concentration or low absorbance samples



- > 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

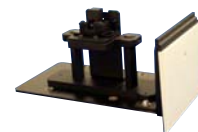
Designed for the direct measurement of samples in a test tube with no need to transfer to a cuvette



- > 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 $\mu\text{l}$  micro-cuvette



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

## Micro-cuvettes

Suitable for use in the micro-cuvette holder

- > Made from quartz
- > Available size: 50 $\mu\text{l}$



## 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: ~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 <sub>2</sub> )
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

# Halo DB-20/DB-20S/DB-20R

## UV / Visible Double Beam Spectrophotometer



The Halo DB-20 is a high performance double beam spectrophotometer suitable for many analytical applications that 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  $\pm 0.3$ nm, noise level 0.0003Abs (500nm) and stray light  $\leq 0.05\%$  (220nm NaI, 340nm NaNO<sub>2</sub>).

### 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 Detectable 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 Detectable 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)

### PC Control Operation DB-20R

The Halo DB-20R shares the same specification of DB-20S with impressive 1nm bandwidth. DB-20R is PC control only, which the display and USB storage port are replaced by the UV Detectable software come as standard.



# Halo DB-20/DB-20S/DB-20R Accessories

## Rectangular Long-Path Cuvette Holder

Designed for low concentration or low absorbance samples

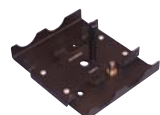
- > Accommodates 2 x long-path cuvettes (sample and reference sides)
- > Accepts cuvettes with 6 optical path lengths of: 10, 20, 30, 40, 50 & 100 mm
- > Outer width: 12.5mm



## 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:  $\pm 0.3^\circ\text{C}$
- > 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 50 $\mu\text{l}$  micro-cuvette

- > Wavelength range: 220 to 950nm
- > Noise level:  $\sim 0.005\text{Abs}$  (with 50 $\mu\text{l}$  volumes)



## Micro-cuvettes

Suitable for use in the micro-cuvette holder

- > Made from quartz
- > Available size: 50 $\mu\text{l}$



## 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:  $\leq 1\%$
- > Sipper cuvette capacity:  $\sim 50\mu\text{l}$
- > 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: 70 $\mu\text{l}$
- > 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 / DB-20R SPECIFICATIONS	DB-20	DB-20S	DB-20R
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 <sub>2</sub> )	≤0.10% (220nm NaI, 340nm NaNO <sub>2</sub> )	
Wavelength Accuracy	±0.3nm		
Photometric Range	Absorbance: -3 to +3 %T: 0% to 300%T Concentration: 0,000 to 9,999		
Photometry Accuracy (Measured with NIST 930D Filter)	±0.002Abs (0~0.5Abs) ±0.004Abs (0.5~1.0Abs) ±0.008Abs (1.0~2.0Abs) ±0.3%T		
Photometry Reproducibility (Measured with NIST 930D Filter)	±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	0.0003 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	N/A	
Dimensions	505(W) x 590(D) x 265(H) mm		
Net Weight	29Kg		
Gross Weight	35Kg		
Power Requirements	110 - 220 V selectable, 50/60Hz		

## Halo DB-20/DB-20S/DB-20R Ordering Information

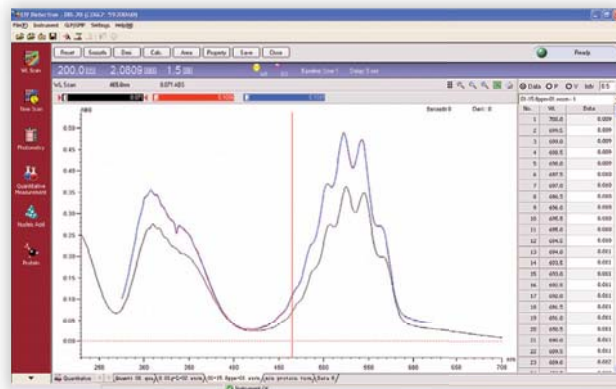
PRODUCT	CATALOG NUMBER#
Halo DB-20 UV-Visible Double Beam Spectrophotometer 110 - 220 V selectable, 50/60Hz	DB-20-220
Halo DB-20S UV-Visible Double Beam Spectrophotometer 110 - 220 V selectable, 50/60Hz	DB-20S-220
Halo DB-20R UV-Visible Double Beam Spectrophotometer 110 - 220 V selectable, 50/60Hz	DB-20R-220
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 Pathlength*	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 & DB-20R



# Halo UV Detective Software

UV Detective is powerful, user friendly software specifically designed for the control (and data processing) of selected Halo spectrophotometers from computers installed with the Windows® XP or Windows® 7 operating system. The versatile UV Detective can control all spectrophotometer operations such as photometry, wavelength scans, time scans and more. Further functions include storage of methods programs, saving of numerical and graphical data, downstream data processing, data transfer to commercial spreadsheets such as Microsoft® Excel and report generation.

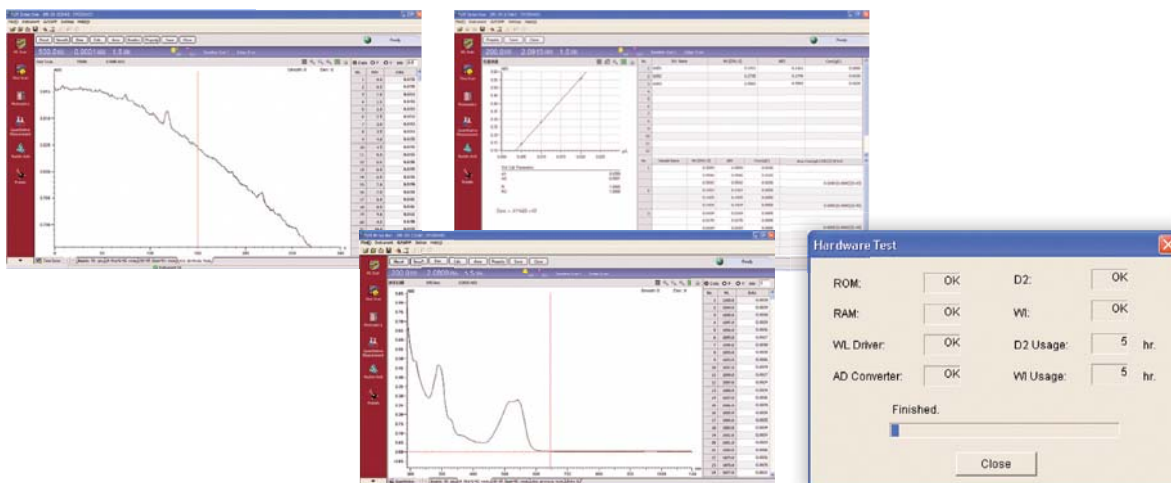


Compatible Spectrophotometers	Halo XB-10, VIS-20, RB-10, DB-20, DB-20S, DNAmaster, BIOmaster (optional) Halo DB-20R, DB-30 (standard)
Control Functions	Wavelength setting, auto-zero, auto calibration, optical path calibration, accessories such as 6-cuvette positioner and sipper
Measurement Conditions	Start-up, setting, output and storage of measurement parameters
Measurement Function	Wavelength scan, time scan, quantitative analysis, multi-spectrum measurement, kinetic analysis, concentration measurement, nucleic acid / protein measurements
Data Output	Display of spectra, data and scans (time and spectrum)
Quantitative Methods	Multi-wavelength, input of constant, standard curve calibration (linear, quadratic, cubic and segment)
Data Processing	Integral, derivative, flatness, calculation (spectrum and constant), kinetic

## Halo UV Detective Software Ordering Information

PRODUCT	CATALOG NUMBER#
UV Detective Software for RB-10 / DB-20 Series / XB-10 / VIS-20 / DNAmaster / BIOmaster	UVDS-08-01

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# Halo LED 96

## Microplate Reader



HALO LED 96 is a computer controlled microplate reader for 96 well plates. Easy and safe operation removes the hassle from your daily microplate reading jobs. It is based on the most modern LED technology, no need to worry about lamp replacements anymore.

### LED Technology

Instead of lamps and filters, HALO LED 96 is supplied with up to 6 intelligent, wavelength specific LED-plugins (patent pending). Each plugin contains its own digital ID, LED-light source, filter and lenses in one easily exchangeable component.

### Low Power Consumption

In times like these, low power consumption must be a key issue with any electrical devices. With a maximum consumption of 12W during reading and a standby consumption of not more than 2W, HALO LED 96 again is setting new standards.

### Unrivalled Optical Performance

Using LED's as light source moves all those known problems with halogen lamps used in other readers to history. Modern LED's are known for their high and extremely stable light energy paired with very low energy consumption and no heat development.

### Intelligent LED Plugins

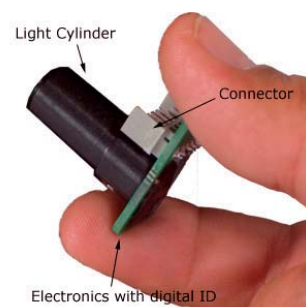
Adding new wavelengths (e.g. 340nm) or exchanging existing ones is as easy and safe as 1-2-3. Auto-recognition of the individual plugins takes away the worry about filter positions in the reader.

### Computer Controlled

HALO LED 96 is fully computer control-led. **Capture 96** (included) allows plate reading and collecting the raw OD data from the reader. With its clipboard function, it allows raw data to be pasted into any spreadsheet program for further calculations.

### MikroWin2010 Compliant

In combination with MikroWin2010 data reduction software (optional), HALO LED 96 adapts itself to any of your requirements for microplate based assays. Depending on your package selection, MikroWin2010 is the best choice for routine applications as well as extended screening, curvefit and kinetic studies.



HALO LED 96 SPECIFICATIONS	
Plate Types	96 well
Optical System	8 channel transmission photometer
Light Source	Digital controlled LED lamps, wavelength specific
Photodetector	8 silicon photodiodes
Wavelength Range	340 - 750nm (special wavelengths up to 900nm)
Resolution	0.1 mOD (0.0001 OD)
Indication Range	0.000 - 4.000 OD (Abs)
Accuracy	better than $\pm 1\%$ and $\pm 0.005$ OD up to 2.5 OD (any wavelength)
Linearity	$\leq \pm 0.5\%$ and $\pm 0.005$ OD from 0.1 to 1.5 OD (any wavelength) $\leq \pm 0.75\%$ from 1.5 to 2.5 OD (400nm – 750nm) $\leq \pm 0.75\%$ and $\pm 0.005$ OD from 0.1 to 2 OD (340 - 400 nm)
Reproducibility	better than $\leq \pm 0.3\%$ at 1OD (any wavelength) better than $\leq \pm 0.5\%$ at 2OD (400-750nm)
Measurement Mode	Single and dual wavelength Linear scan (30 points/well) for agglutination etc.
Reading Speed	5 seconds (kinetic interval, single wavelength) 10 seconds (96 well, dual wavelength)
Wavelengths	4 wavelengths onboard (405, 450, 492, 620nm) up to 6 possible (340 - 750)
Shaking	4 speeds
PC-Interface	USB 2.0 (USB 1.1 compatible)
PC Software	Capture96 included MikroWin2010 demo version included
Dimensions	23cm x 12cm x 36cm (W x H x L)
Weight	6.7 kg net
Housing	Anodized Aluminium
Power Supply	external power adapter 100-240V, 50 or 60 Hz (autosensing), 24VDC, 2.5A (approved to EN 60601-1-2, EN 61000-6-3, EN 61000-6-1, EN 60601-1, EN 60950)
Scope of Supply	Power adapter, USB Cable, 4 Standard Filters, User manual (CD), Capture96 Control Software, MikroWin2010 Connect (demo version)

## Halo LED 96 Ordering Information

PRODUCT	CATALOG NUMBER#
HALO LED 96 Microplate Reader	WR-302-02
LED plugin (xxx = wavelength in nm)	WR-302-xxx
MikroWin2010 Lite	MikroLite
MikroWin2010 Full Version (Screening & Curve Fit & Kinetic)	MikroFullV1

For more information on MikroWin2010 and its features, please visit [www.mikrotek.de](http://www.mikrotek.de)





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