

SPECTROPHOTOMETERS



S-20
S-22



BOECO MODELS S-20 VIS & S-22 UV/VIS

The S-20 and S-22 are high quality, low cost measurement systems for routine analysis in QC applications, education and training.

- ▶ Wavelength ranges:
320 - 1000 nm (S-20)
198 - 1000 nm (S-22)
- ▶ Bandwidths:
8 nm (S-20)
6 nm (S-22) (over UV range)
- ▶ In-built wavelength calibration
- ▶ Automatic 0%T setting during all calibration routines
- ▶ Dual display - wavelength & photometric result
- ▶ Full interfacing capability (bi-directional RS 232 interface)
- ▶ Versatile sampling system
- ▶ Simple operation
- ▶ Ideal for Routine Analysis
- ▶ First quality at affordable prices
- ▶ Manufactured under ISO 9000 norms
- ▶ CE mark for electromagnetic compatibility

The BOECO Model S-22 has a unique xenon lamp which has the advantage of offering a broad spectral source with extended life. This enables the running costs for the S-22 to be minimised over the lifetime of the spectrophotometer, since there are no deuterium and tungsten lamps to replace.

- ▶ Single lamp with guaranteed 3 year life time
- ▶ Self calibrating lamp at 3 wavelengths
- ▶ 10 times more UV light energy
- ▶ Blazed holographic grating

Code	Description
BOE 8630501	Model S-20 Vis Spectrophotometer, 230V, with pack 100 10x10mm plastic cuvettes, mains lead, 10x10 cell holder & manual
BOE 8630531	Model S-20 Vis Spectrophotometer, 110V, with pack 100 10x10mm plastic cuvettes, mains lead, 10x10 cell holder & manual
BOE 8635001	Model S-22 UV/Vis Spectrophotometer, 230V, with pack 100 10x10mm plastic cuvettes, mains lead, 10x10 cell holder & manual
BOE 8635031	Model S-22 UV/Vis Spectrophotometer, 110V, with pack 100 10x10mm plastic cuvettes, mains lead, 10x10 cell holder & manual

Specifications

	S-20 Vis	S-22 UV/Vis
Wavelength:		
Range:	320 - 1000 nm	198 - 1000 nm
Resolution:	1nm	1nm
Accuracy	± 2 nm	± 2 nm
Bandwidth	8 nm	6 nm over UV range
Absorbance:		
Range:	-0.300 to 1.999 A	-0.300 to 1.999A
Resolution	0.1 %	0.1 %
Stray Light	<0,5% @ 340 nm	<0,5% @ 340 nm
Photometric Accuracy	± 1%	± 1%
Concentration:		
Range	-300 to 1999 Concentration	-300 to 1999 Concentration
Resolution	0.1 / 1	0.1 / 1
Units	ppm, mg/l, g/l, M, %, blank	ppm, mg/l, g/l, M, %, blank
Factor	0 to 999.9, 1000 to 9999	0 to 999.9, 1000 to 9999
Photometric Noise Levels	<1%	<1%
Photometric Stability	1%/Hour after warm-up	1%/Hour after warm-up
Readout	Custom Liquid Crystal Display	Custom Liquid Crystal Display
Outputs	Analog (0 to 1999mV) / RS232 serial port	Analog (0 to 1999mV) / RS232 serial port
Light Source	Tungsten Halogen 20W 12V	Xenon Lamp module
Input Voltage	115/230V AC -20% +10%	115/230V AC -20% +10%
Input Power	<50W	<50W
Size:	365(W)x272(D)x166(H) mm	365(W)x272(D)x166(H) mm
Weight:	6 kgs	6 kgs

BOECO S-24 VIS SPECTROPHOTOMETER

- ▶ Concentration and kinetic measurements
- ▶ Spectrum Scanning from 320 to 1000 nm
- ▶ Quantitation using up to 6 standards
- ▶ 200 method memory (50 per mode)

The BOECO S-24 is a advanced measuring system with modes for Photometrics, Concentration, Quantitation, Kintetics and Scanning. The S-24 will meet the demands of a wide range of applications especially those in the clinical, veterinary environmental, general QC and performance testing areas.

With a memory capacity of 50 methods for each mode, the fully open operating system ensures compatibility with reagent kits from most manufacturers, as well as enabling full customisation to the operators's choice of chemistries and operating procedures.

The simple to use but feature rich spectrophotometer can be adapted to meet your current and future requirements through it's novel customisable menus. Activating the Supervisors Security functions, that enable that all the Set-up options to be locked without the entry of a security code number, can further enhance the integrity of your work.

In the Photometrics mode, Absorbance, Transmission and Wavelength are displayed simultaneously on the readout so no changing is required. Simple concentration measurements using a single standard or factor can be made in the Concentration mode. A Quantitation mode allows more complex concentration methods to be programmed, using up to six standards to create a calibration curve. For each curve fit option a linearity correlation co-efficient is calculated.

A real-time graphical display of Kinetic measurements is shown along with the calculated concentration vale and other relevant data.

The Spectrum Scanning mode allows scans to be made across any selected portion of the 320 to 1000 nm range.

The auto-ranging Absorbance axis allows scans to be commenced with no prior knowledge of the peak Absorbance level expected.

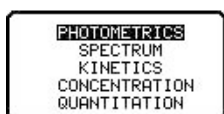
The S-24 has a analogue output that can be used to drive chart recorders and other analogue recording or conversion devices, as well a bi-directional RS 232 serial port for connection to serial printers and computers.

The optional S-24 software allows full emulation of the instrument functions on a PC including the import of results and download of methods.

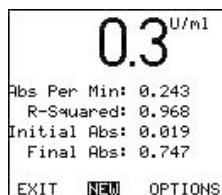
An electrically heated cuvette holder and control unit is available, as well as a water heated cuvette holder and a thermostatically controlled water circulator. The external programmable sipper pump ensures faster and safer sample handling.

The large sample compartment enables a wide range of sampling devices to be fitted. Cuvette holders from 10 mm to 100 mm in path length, a four-position roraty cuvette holder, and test tubes from 12.5 to 25 mm diameter can all be accommodated.

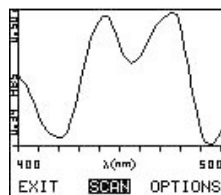
Code	Description
BOE 8631001	Model S-24 Spectrophotometer, supplied with a pack of 100 10 x 10 mm plastic cuvettes, mains lead, 10 x 10 mm cuvette holder and manual, for use on 230 V, 50/60 Hz
BOE 8631031	Model S-24 Spectrophotometer, supplied with a pack of 100 10 x 10 mm plastic cuvettes, mains lead, 10 x 10 mm cuvette holder and manual, for use on 110 V, /60 Hz



MAIN MENU



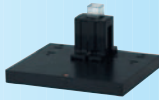
KINETIC RESULTS



WAVELENGTH SCAN



S-24 VIS



10MM CUVETTE HOLDER
(SUPPLIED AS STANDARD WITH PRODUCT)

Instrument Specifications:

Wavelength Range:	320 to 1000nm
Resolution:	1nm
Accuracy:	±2nm
Spectral Bandwidth:	8nm
Absorbance Range:	-0.300 to 1.999A
Transmittance Range:	0 to 199.9%
Concentration Range:	-300 to 1999Conc.
Selectable Resolution:	1, 0.1, 0.01 or 0.001
Calibration:	Blank with a single standard or factor
Memory:	50 methods
Quantitation Range:	-300 to 1999Conc.
Selectable Resolution:	1, 0.1, 0.01 or 0.001
Calibration:	Blank with up to 6 standards
Curve Correction:	Linear regression, interpolati on or linear regression through zero
Memory:	50 methods
Kinetics:	Graphical and calculated concentration value
Selectable Resolution:	1, 0.1, 0.01 or 0.001
Calibration:	Against standard and factor
Correlation Factor:	r squared value displayed with result
Memory:	50 methods and 5 graphed results
Spectrum:	any range between 320 and 1000 nm
Scan Data Internal:	1, 2 or 5 nm selectable
Analysis:	Absorbance and wavelength of peaks and valleys
Memory:	50 methods and 5 scans
GLP:	Real time clock and calender Operator ID Supervisor security (locks all set up parameters) Method display lock
Readout:	Custom LCD Graphics
Outputs:	Analogue (0 to 1.999V d.c.) RS232 serial port
Light source:	Tungesten Halogen lamp
Operating Temperature:	5°C to 40°C
Maximum RH:	80%
Input voltage:	115/230V a.c. -20% +10% 50/60Hz
Input power:	<50W
Size:	365(w)x272(d)x160(h) mm
Weight:	6kg

BOECO S-30 LIFE SCIENCE ANALYSER

- ▶ Pre-programmed for DNA Analysis
- ▶ DNA Purity Scan
- ▶ Established Protein Methods Pre-Loaded
- ▶ Standard UV/vis Spectrophotometer Functions

The BOECO S-30 has been designed specifically for the scientist whose primary interest is the study of DNA and Proteins. Optimised for low volume analysis, the BOECO S-30 is capable of determining DNA levels as low as 70ng with samples as low as 50ul using special cuvettes and the micro-cuvette holder.

All routinely used DNA calculations are pre-programmed into BOECO S-30. It will automatically calculate purity ratios at 260/280nm or 260/230nm both with an optional background correction wavelength (default at 320nm).

Concentrations of ssDNA, dsDNA, RNA and Oligonucleotides are clearly displayed on the large multi-function LCD display. In addition a 100nm purity scan may be run to clearly show the status of any samples.

The on-board software enables all the common protein measurement methodologies to be run directly with the minimum set-up time. Included are the Bradford, Biuret, BCA, Lowry, Bicinchoninic and direct UV methods, standard settings can be used immediately or modified and stored for future use.

Where BOECO S-30 is used in a multi-user or unskilled user environment a Supervisor Security mode can be activated which looks all the set-up options without the entry of a pin code.

As well as these general life science applications BOECO S-30 can also be used as a standard UV/Vis spectrophotometer with Absorbance and Transmission readings being given across the wavelength range from 198 to 1000nm.

Code	Description
BOE 8636001	Model S-30 dedicated Spectrophotometer, for DNA/RNA oligonucleotide and protein analysis, supplied with mains lead, 8 x UV plastic cuvettes, cell holder and instruction manual, for use on 230 V, 50/60 Hz
BOE 8636031	Model S-30 dedicated Spectrophotometer, for DNA/RNA oligonucleotide and protein analysis, supplied with mains lead, 8 x UV plastic cuvettes, cell holder and instruction manual, for use on 110 V / 60 Hz



S-30

Instrument Specifications:

Transmittance	
Range:	0 to 199.9%
Resolution:	0.1%
Stray light	<0.5% @ 340nm and 220nm
Photometric accuracy:	±1%
Absorbance	
Range:	-0.300 to 1.999A
Resolution:	0.001A
Photometric stability:	<0.002A Hr after 30 minute warm up
Photometric noise:	<0.001A @ 0A @ 400nm
Concentration	
Range:	-300 to 9999
Resolution:	1, 0.1, 0.01 or 0.001
Units:	ppm, mg/l, g/l, M, %, µg/l, µg/ml, mg/ml, ng/ml or blank(mode specific)
Wavelength	
Range:	198 to 1000nm
Resolution:	1nm
Accuracy:	±2nm
Repeatability:	±0.5nm
Bandwidth:	5nm typical @ 270nm (8nm over full wavelength range)
Factor:	0 to 199.9, 1000 to 9999
Readout:Custom	LCD Graphics
Outputs:	Analogue (0 to 1.999V d.c.) / RS232 serial port
Light source:	Xenon flash lamp module
Operating Temperature:	5°C to 40°C
Maximum	RH:80%
Input voltage:	115/230V a.c. -20% +10% 50/60Hz
Input power:	<50W
Size:	365(w)x272(d)x160(h) mm
Weight:	6kg

ACCESSORIES SPECTROPHOTOMETER

Code	Description
BOE 635100	S-22 / S-24 PC software on CD ROM (compatible with Windows 98™ and above)
BOE 631001	S-24 PC software on CD ROM (compatible with Windows 98™ and above)
BOE 542009	Interface cable
BOE 633001	Heated cuvette system (cuvette holder and external control unit), supplied with interconnection cables, instruction manual, mains cables for EU, UK and USA. Universal voltage and frequency.
BOE 632001	External sipper pump supplied with inlet and outlet tubing, mains cable and instruction manual 230V/50Hz
BOE 632031	External sipper pump supplied with inlet and outlet tubing, mains cable and instruction manual 110V/60Hz
BOE 630005	Adjustable path length cuvette holder (10 – 100mm)
BOE 630204	10mm cuvette holder (supplied as standard with product)
BOE 630304	Micro-cuvette holder with reduced aperture
BOE 636024	S-30 cuvette holder adapter
BOE 630020	Test tube holder (12.5 – 13.5mm diameter)
BOE 630022	Test tube holder (15.5 – 16.5mm diameter)
BOE 630021	Test tube holder (24 – 25.5mm diameter)
BOE 634001	4 position rotary cuvette holder
BOE 648001	Water heated cuvette holder
BOE 033290	Storage Case
BOE 630028	Dust Cover
BOE 012075	Tungsten halogen lamp (S-20, S-24)
BOE 012094	Xenon Lamp module (S-22, S-30)
BOE 035088	Calibration Set Visible
BOE 035091	Calibration Set UV/Visible

Cuvettes:

HEL 6030-OG/10	Macro Cuvette without lid, Optical glass, 10 mm light path
HEL 6030-UV/10	Macro Cuvette without lid, Quartz glass, 10 mm light path
HEL 100-OS/10	Macro Cuvette with PTFE lid, Optical glass, 10 mm light path
HEL 100-OS/20	idem with 20 mm light path
HEL 100-OS/40	idem with 40 mm light path
HEL 100-OS/50	idem with 50 mm light path
HEL 100-OS/100	idem with 100 mm light path
HEL 6040-OG/10	Semi-Micro Cuvette without lid, Optical glass, 10 mm light path
HEL 6040-UV/10	Semi-Micro Cuvette without lid, Quartz glass, 10 mm light path
HEL 105-202-QS/15	Ultra-Micro Cuvette with PE stopper, Quartz glass, 10 mm light path, Centre height 15 mm Chamber volume 50 µl, Filling volume 70 µl
HEL 174-OS/10	Semi-Micro Flow-Through cuvette, Optical glass with in/outlet tubes, Volume 1500 µl
HEL 178.010-OS/10	Micro Flow-Through cuvette, Optical glass with in/outlet tubes, Volume 80 µl
BOE 2711110	Disposable Macro Cuvettes, PS, 10 mm light path, pack of 100 pcs.
BOE 2712120	Disposable Semi-Micro Cuvettes, PS, 10 mm light path, pack of 100 pcs.
BRA 759150	Disposable UV Semi-Micro Cuvettes, PS, Wavelength as from 22 to 900 nm 10 mm light path, pack of 100 pcs.
BRA 759220	Disposable UV Micro Cuvettes, PS, Center height 15 mm, Vol. 70 µl up to 550 µl Wavelength as from 22 to 900 nm 10 mm light path, pack of 100 pcs.

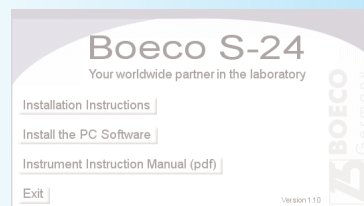
Water test kits for the S-24 are available on request.



TEST TUBE HOLDER



ADJUSTABLE PATH LENGTH CUVETTE HOLDER (10 – 100MM)



HEATED CUVETTE SYSTEM (CUVETTE HOLDER AND EXTERNAL CONTROL UNIT)



EXTERNAL SIPPER PUMP



HEL 100-OS/100



HEL 100-OS/10



HEL 174-OS/10