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HPLC

Detector Range



www. **GBC** .sci.com
SCIENTIFIC EQUIPMENT

Who is GBC Scientific Equipment?

GBC Scientific Equipment Pty Ltd commenced operations in 1978. GBC designs, manufactures and markets a range of scientific instruments comprising quality analytical Atomic Absorption spectrometers (AAS), UV-Visible



spectrometers (UV-VIS), Inductively Coupled Plasma Optical Emission spectrometers (ICP-OES), Inductively Coupled Plasma orthogonal Time of Flight Mass spectrometers (ICP-oTOFMS), High Performance Liquid Chromatographs (HPLC), Fastest Viscoelastic Biomechanical Rheometry and XRD instruments and upgrades.

GBC's growth has been fuelled by its extensive AA expertise, innovative

thinking and an obsession for quality and reliability. GBC now produces the widest range of AA spectrometers in the world.

Endorsed by the international quality standard, ISO 9001, the company prides itself on developing products to exceed market expectations.

GBC is the proud recipient of many international and export awards for state-of-the-art technology and design throughout the world.

The company is proudly Australian and Head Office is based in Melbourne. The GBC network spans all sectors of the globe. Now more than 25 years after its inception, GBC is renowned as being progressive in the elemental and materials analysis fields.

GBC customers benefit from an efficient and effective global organization. Access to information, applications support and technical service is never more than a phone call or email away.

ISO 9001 QUALITY ACCREDITATION

GBC has always placed a strong emphasis on quality in all aspects of our operation, from design and manufacture to the provision of service and support to our customers, and we are fully committed to continuous evaluation and improvement in all areas.

The GBC Quality Management System has been accredited to the ISO 9001 quality standard by Lloyd's Register Quality Assurance Limited. This certification is your assurance that the procedures and processes used to produce the goods and services which GBC provides comply with the relevant International Standard, and demonstrates our commitment to meeting the needs and the expectations of our customers.



What is the GBC vision?

GBC Scientific Equipment

will

advance people's knowledge

and

their capacity to enhance the quality of life



for all humankind.

GBC's product lines...



AAS



HPLC



ICP-OES



ICP-oTOFMS



Rheometer



UV-Vis



XRD

LC 1200 Variable Wavelength UV-Vis Detector



LC1200 Variable Wavelength UV-Vis Detector

GBC offers a comprehensive range of quality high performance HPLC detectors from turn-key systems to stand alone modules including autosamplers, pumps and detectors. GBC also offers accessories such as columns, fittings and tool kits.

Simplify your choices by selecting one of our customised and complete HPLC Systems or choose from our comprehensive range of pumps, detectors, and autosamplers to compliment your existing system.

LC 1200 Variable Wavelength UV-Vis Detector

Flexible operation at single wavelengths within the range of 190-600 nm makes for versatility. For example, rather than being restricted to one or two wavelengths, you can use the LC1200 at 254 nm for the detection of aromatic compounds, improve sensitivity and selectivity for proteins, peptides, phenols and catecholamines at 280 nm, detect analytes of interest in the visible range, or monitor nitrate and carboxylic acids at 200 nm.

Optical Design

High energy forward optical design with concave holographic grating monochromator.

Wavelength Range

UV and Visible (190 - 600 nm)

Noise

$< \pm 2 \times 10^{-5}$ AU at 254 NM,
0.1 sec time constant.

Drift

$< 5 \times 10^{-4}$ AU/hour after warm-up
at 254 nm

Wavelength Accuracy

± 2 nm

Spectral Bandwidth

10 nm

Absorbance Range

.001 - 2.0 AUFS

Absorbance Linearity

$\pm 1\%$ to 1.0 AU at 254 nm

Time Constant

User-selectable from 0.1, 0.2, 0.5 sec

Lamp

Deuterium (pre-aligned)

Flowcell

10 mm pathlength with 10 μ l volume
Pressure Limit: 7 MPa (1029 psi)

Display

Liquid crystal display
Displayed Parameters: Operating
Wavelength, Reference Energy,
Sample Energy and Absorbance.

Analog Outputs

Two outputs (Integrator and Chart Recorder)
Integrator output
1.0 AU/V (unattenuated)
Chart Recorder Output:
10 mV FS (attenuated)

Diagnostics

Reference energy and sample energy.

Operating Environment

4 to 40°C, < 85% relative humidity

Power Requirements

100 -120/220-240V, 50-60 Hz

Dimensions

263 x 183 x 450 mm (W x H x D).

Weight

Nett 13.2 kg, Shipping 16.2 kg

Turn-key Systems or Stand Alone Modules

LC1205K programmable and LC1210K dual wavelength UV-Vis Detectors



LC1205K UV-Vis Detector

The LC1205K is a *programmable variable wavelength* UV-Vis detector and can operate with interchangeable flow cells for micro, analytical and preparative HPLC. The wavelength can be set between 190 nm and 740 nm for a run and can also be changed during the measurement. This makes programming various wavelengths for different runs easy. To acquire UV-spectra the detector is switched to the stop-flow mode.

Wavelength Range

190 - 740 nm
Edge Filter (2nd order) 370 nm

Light Source:

Deuterium lamp, Optional tungsten - halogen lamp

Band Width/Wavelength Accuracy:

$\Delta\lambda$ 8nm / ± 2 nm

Drift:

$< 15 \times 10^{-5}$ AU/h at 254 nm

Noise:

$< 1 \times 10^{-5}$ AU/h at 254 nm, $t=1$ s

Sensitivity:

2×10^{-5} AU/h at 254 nm, $t=1$ s

Scan Speed:

Complete wavelength range on-flow
100nm/s

Digital Output

RS-232 connector

Analog Output

± 1 V

Dimensions

106 x 185 x 340 mm. (W x H x D)

LC1210K UV-Vis Detector

The LC1210K UV-Vis Detector can *simultaneously acquire multiple chromatograms at different wavelengths*.

The LC1210K offers two adjustable wavelengths per run in the stand-alone mode whereas four wavelengths are available with external control. UV spectra can be acquired in the on-flow mode.

Wavelength Range

190 - 740 nm
Edge Filter (2nd order) 370 nm

Light Source:

Deuterium lamp, optional tungsten - halogen lamp

Band Width/Wavelength Accuracy:

$\Delta\lambda$ 8nm / ± 1 nm

Drift:

$< 1 \times 10^{-4}$ AU/h at 240 nm

Noise:

$< 1 \times 10^{-5}$ AU/h at 254 nm, $t=1$ s
With fibre optics: $< 8 \times 10^{-5}$ AU/h at 254 nm, $t=1$ s

Sensitivity:

$< 2 \times 10^{-5}$ AU/h at 254 nm, $t=1$ s

Scan Speed:

Complete wavelength range on-flow
100 nm/s

Digital Output

2 x RS-232 connectors

Analog Output

(TTL, OC, relays) signal output for fraction collector

Integrator output: ± 0.1 V / ± 1 V / ± 10 V

Dimensions

160 x 185 x 340 mm (W x H x D)

The units are now lighter and much smaller in size. The LC1205K and LC1210K have improved with regards to drift and noise. The electronics and the unique optical alignment result in high throughput light and sampling. The specially designed capillary flow cells make the LC1205K and LC1210K detectors the most sensitive in the market place. Some features include fast scanning of 100 nm/s for spectral acquisition, simultaneous detection of up to two wavelengths, analogue output of up to two signals, ratio plots, low noise level and an open interface protocol for remote instrument control with other software.

The LC1205K and LC1210K detectors have no confined flow cell compartment. The flow cell is simply installed on a rail at the front of the detector. This allows the use of flow cells with much longer path lengths than in conventional arrangements as well as for easy, quick flow cell exchange. The absence of any dead volume and the superior flushing characteristics of the flow cell fully preserve the chromatographic resolution. A variety of flow cells are available.



Sophisticated and Easy to Use

LC1255s Fluorescence Detector and LC1245K Refractive Index Detector

LC1255s Fluorescence Detector

GBC's new LC1255s fluorescence detector comes with new "DC arc High Pressure Xenon Lamp" technology offering significant improvements over traditional "Xenon Flash" tube design of the old LC1255. The new detector offers a refined design for the ultimate in high sensitivity detection. The LC1255s offers an improved Raman signal-to-noise ratio of 300 for excellent sensitivity, improved wavelength accuracy of ± 2 nm for strong between-unit consistency and a newly developed ratio system which compensates for lamp intensity fluctuation and provides superb noise characteristics. The LC1255s features other enhancements including a new remote lamp on-off function to allow lamp shutdown upon run completion, and a new rugged flow cell design with elevated back-pressure tolerance. This offers the user more effective and durable operation.

Light Source:

High Precision Xenon Lamp 150W

Excitation/Emission monochromators:

Concave, blaze holographic grating monochromators, F 2.4

Measuring wavelength range:

200-600 nm (200-900 nm option)

Spectral Bandwidth:

15 nm both in excitation and emission sides

Wavelength accuracy:

± 2 nm

Wavelength reproducibility

± 0.2 nm



LC1255s Fluorescence Detector

Sensitivity

The S/N ratio is 300 for the Raman line of distilled water (350 nm excitation wavelength and 1.5 sec. time constant).

Detector:

Photomultiplier

Cell (volume, pressure, material):

12 μ l, approximately 20kgf/cm² (2Mpa) SUS316, Quartz, PTFE, as standard (2 μ l cell and insert cells are available as options)

Wavelength scanning:

Possible for both excitation and emission wavelengths.

Time programming:

Wavelength parameters may be programmed in up to 32 steps

Dimensions:

260 x 205 x 520 mm (W x H x D)

Weight:

17 kgs

LC1245K Refractive Index Detector

The refractive index detector is suitable for detecting little or no UV active compounds such as sugars or polymers. With a user-friendly keypad and LCD display, the LC1245K continuously monitors signal output and provides immediate visual feedback on detector performance and operation. For unattended operation, all detector controls can be interfaced with your data station through relay contacts.

Wavelength

950 nm \pm 30 nm

Measuring Range

$\pm 1 \times 10^{-3} \Delta n$

Sensitivity

$< 8 \times 10^{-8} \Delta n$

Noise

$< 4 \times 10^{-8} \Delta n$

Cell Angle

45°

Cell Volume

15 μ l

Maximum Flow Range

Maximum 5 ml/min

Autozero

Full range

Analog Output

± 1 V analog, RS-232 connector, remote connection

Dimensions

106 x 185 x 340 mm (W x H x D)

Weight: 8.0 kg



LC1245K Refractive Index Detector

High Sensitivity Detection

LC1260 Electrochemical Detector and LC1275 Conductivity Detector



LC1260 Electrochemical Detector



LC1275 Conductivity Detector

LC1260 Electrochemical Detector

The LC1260 electrochemical detector provides enhanced detector performance in a robust and easy to use instrument. It adopts a patented Wall Jet Flowcell design optimised for high assay sensitivity, wide linear dynamic range, response stability and reproducibility. In LCEC the electrode surface is in direct contact with the test medium, resulting in gradual fouling of the electrode surface due to the absorption of chemicals. The washing effect of the impinging jet made possible by the wall jet design improves electrode stability and precision with much-reduced down-time for electrode cleaning.

Detector Design

High sensitivity amperometric open wall jet flowcell design with integrated cell compartment.

Operating Modes

DC and Pulse

Working Potential

± 2.000 V in 1 mV increments

Pulse Cleaning Potential

± 2.000 V in 1 mV increments

Current Range

10pA to 5000 nA FS (Recorder Output) (15 steps in 1,2,5, sequence).

1 nA to 1000 nA FS (Integrator Output) (4 steps in decade sequence).

LC 1275 Conductivity Detector

The LC1275 is a high performance conductivity detector for the rapid determination of anions, cations, metals, organic acids and surfactants down to ppb levels.

A temperature stabilised flow cell is isolated from external temperatures fluctuation, and active temperature control of the detector eliminates temperature induced variations in analyte or background signals.

The LC1275 is suitable for both suppressor based and single column IC applications. The detector auto-zero can offset high conductivity mobile phase for sensitive detection of ions, essential in single column applications.

Detection: Alternating Current, Synchronous Detection 10kHz Frequency

Range Display: 0.01 - 5000 s in 12 steps

Auto-zero: Offsets up to 10,000 s

Time Constant: 0.1, 0.5, 1, 5, 10 seconds, software selectable

Method Storage: 0-10 user defined

Size: 262 x 482 x 117 mm (W x D X H)

Weight: 17lbs (5.9kg)

Output: Analog - 10mV, 100mV, 1V Full-Scale voltage

Remote Auto-zero: Contact Closure

Computer Interface: RS-232 Serial Communication

Power: 120/240 VAC 50/60 HZ, 100 Watts (Field Selectable)

Cell Compartment Size:

57.2 x 57.2 x 158.8 mm (W x H x D)

Insulation: Minimum 1/2" all sides

Heater: 25 W DC heating element vulcanized to aluminium block

Cell Temp: Factory set at 35°C, User adjustable ambient to 60°C

Temp. Stability: ±0.05°C

Cell Type: 2 gold-plated SS electrodes

Cell Volume: 0.5

Pressure Rating: 400 psig

GBC Auto Suppressor

The GBC auto suppressor is a continuous, reagent free solid-phase suppressor for ion chromatography. In addition to reducing background conductance and enhancing analyte signal, the GBC auto suppressor removes carbonic acid before entering the detector. This enables powerful carbonate/bicarbonate gradients and increases sensitivity by 20%. Continuous operation and solid - phase chemistry eliminates reagents, swithing valves, down time and cumbersome multiple operating modes.

Wide Linear Dynamic Range

LC5100 Photo-Diode Array Detector

The LC5100 Photo-Diode Array Detector

The LC5100 is a very high performance photodiode array detector for HPLC. Precision optics ensures high sensitivity, superior spectral resolution as well as high stability.

This very compact PDA provides the latest validation tools to support GLP/GMP. The LC5100 delivers a superb noise level of $\pm 0.8 \times 10^{-5}$ AU for unsurpassed sensitivity, bringing new levels of accuracy to trace component identification, spectral elucidation and library searching. Full scan spectra can be continuously collected in the flowing analyte stream



LC5100 Photo-Diode Array detector

The detector is equipped with both a deuterium lamp and a tungsten-halogen lamp to provide superior sensitivity over the 190 - 800 nm range and provide real time spectra using a 512 element photodiode array. Full spectral information can be provided at any time during the chromatographic run. Chromatograms can be generated at individual wavelengths or as three-dimensional plots showing absorbance against both time and wavelength. An automatic wavelength accuracy check is performed at four wavelengths as part of the validation procedure.

The LC5100 is very easy to use, with the light sources and flow cell located at the front of the instrument. A leak sensor alerts the user to any solvent leak and an interlock switch protects the user during lamp replacement when the protection cover is removed. These features increase operational safety.

The WinChrom Chromatography Data System software package Version 1.32 provides complete instrument control.

Wavelength Range
190-800 nm

Light Source
Deuterium on, Tungsten-Halogen on or both on

Diodes
Single array, 512 photodiodes

Wavelength Accuracy
1.0 nm

Resolution
Spectral Range nm/diode
190 - 800 nm 1.2

Noise
 $\pm 0.8 \times 10^{-5}$ AU (250 nm, 600 nm)

Baseline Drift
< 1×10^{-3} AU/hr

Flow Cells
10 mm pathlength, (standard)

Maximum Pressure
12MPa

AC Power
100/120/220/240 Volts, 50/60 Hz,
150 watts

Dimensions
260 x 420 x 140 mm (W x D x H)

Weight
10.5 kg

Safety
Leak sensor

Automatic lamps shut off when lamp cover is removed.

Thermostatted at lamp housing surface temperature fuse at power supply

Ease of Use
Light sources and cell are pre aligned and accessible from front of instrument

OO
Instrument performs automatic wavelength accuracy function at four wavelengths upon power up

Superior Spectral Resolution

Ordering Information

Part Number	Description
100-121700	LC1200 Variable Wavelength UV-Vis Detector
99-0517-00	LC1205K Programmable UV-Vis Detector
99-0518-00	LC1210K Dual Wavelength UV-Vis Detector
99-0533-00	LC1245K Refractive Index Detector
99-1485-00	LC1255s Fluorescence Detector
99-0272-00	LC1260 Electrochemical Detector
100-1275-00	LC1275 Conductivity Detector
99-1472-01	LC5100 Photo-diode Array Detector 220V
99-1473-01	LC5100 Photo-diode Array Detector 110V

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specifications without prior notice.

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GBC SCIENTIFIC EQUIPMENT

Manufacturer of world-class scientific
instruments and accessories -
AA, HPLC, ICP-OES, ICP-oTOFMS,
Rheometry, UV-Vis and XRD

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