



**PG INSTRUMENTS LIMITED**  
Global Manufacturer of Analytical Instruments



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**HIGH PERFORMANCE  
LIQUID CHROMATOGRAPHY**

PG INSTRUMENTS LIMITED



## Character

### Accurate

"Accuracy is the spirit of analysis." Based on a well structured design and manufacturing process, unquestionable accuracy and precision were a prerequisite, secondly quantification and precision of analysis were dependent on accurate flow rate.

### Stability

Excellent reliability and stability. The pump heads have been machined using a first class CNC process; the innovative structural design has been designed to achieve minimum pressure fluctuation. Consequently stable flow, low noise and overall quality provides the foundation for reliable results.

### Powerful

LCWin 1.0 software offers complete control, powerful data processing, reporting functions, intelligent diagnostic systems and maintenance utility ensure a complete and flexible software solution for your analytical work.

### Beautiful

Art combined with practicality. The modular system provides shape and character whilst being aesthetically pleasing. The unique and practical design ensures ease of use and maintenance. In essence, the combination of art and practicality compliment each other.

### Economical

The LC200 is a high performance yet cost effective solution. The modular design ensures that you can configure the system to meet your application requirements. A dedicated team of product specialists will provide technical support and provide an applications development service.

LC200

**High Performance  
Liquid Chromatography**

## Configuration



LC200-1 Isocratic configuration



LC200-2 Gradient configuration



LC200-2 Gradient configuration with auto sampler and column oven

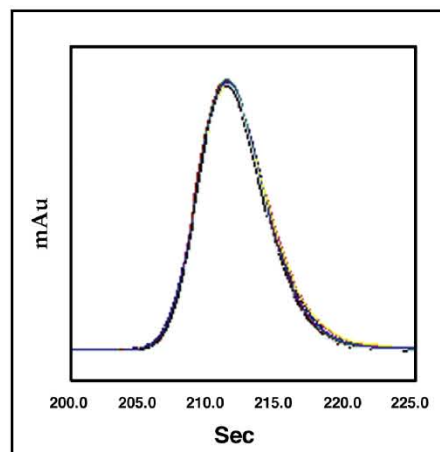
LC200-2 Gradient configuration with column oven



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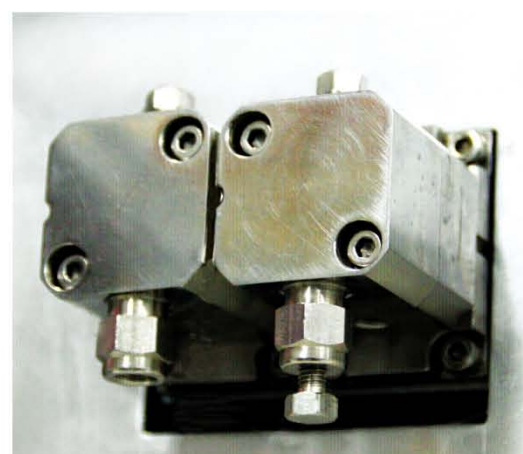


## LC210 High pressure pump

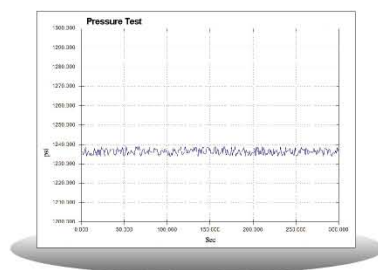


Item	Retention Time(s)	Area (μAbs.s)
1	211.5	354986.7
2	211.9	355102.1
3	212.2	353989.3
4	212.6	357527.6
5	212.0	357115.9
6	210.1	356984.3
7	211.8	360583.8
8	211.3	359729.9
9	211.6	357272.6
10	210.6	352621.6
Average	211.6	356591.4
RSD%	0.35	0.69

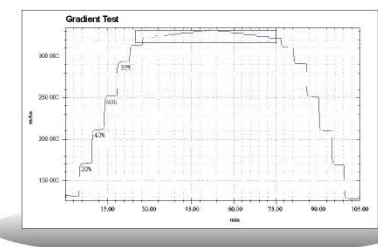
The figure above shows comparison of 10 injections (Response time 0.1 s). From this figure we can see that the P6 pump exhibits good repeatability on both retention time and peak area, which leads to accurate results.



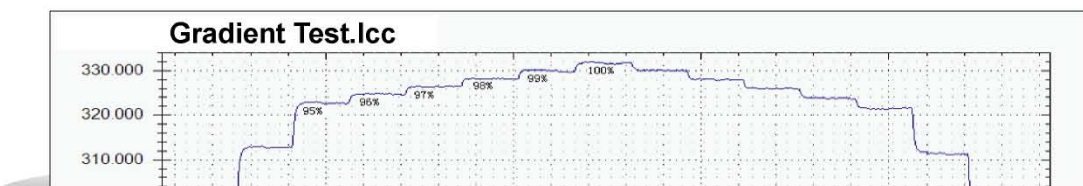
The solvent system incorporates a fluidic design that uses a serial flow path. The system employs dual plungers and two check valves for enhanced reliability. The dual cam gear is calculated to ensure optimal flow control whilst an integral seal wash system will extend the serviceable life of the pistons and seals



Optimised solvent delivery is achieved using pulse dampening compensation. This system optimises pump stability and decreases pressure ripple to 1%.

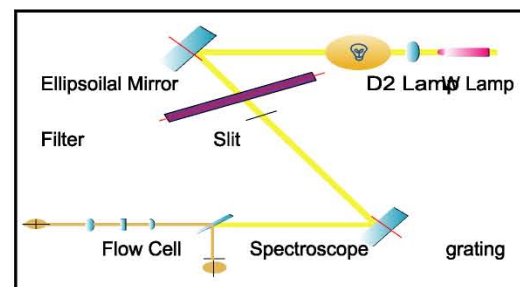


Accurate gradient elution: composition accuracy ≤ 2%.

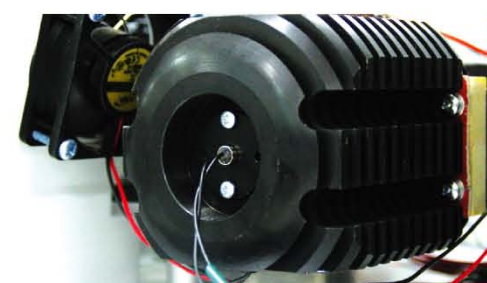


Minor change in composition down to 1% can be distinctly observed.

## LC220 Detector



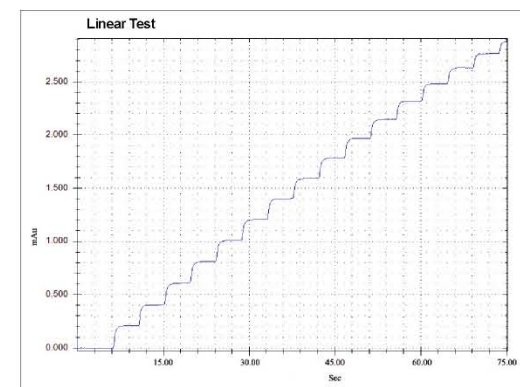
Simplified optics: comprising of an advanced ellipsoidal mirror and concave grating. Compared with the traditional configuration, this arrangement greatly reduces the chromatic aberration and stray light and reduces the number of optical components ensuring wavelength accuracy.



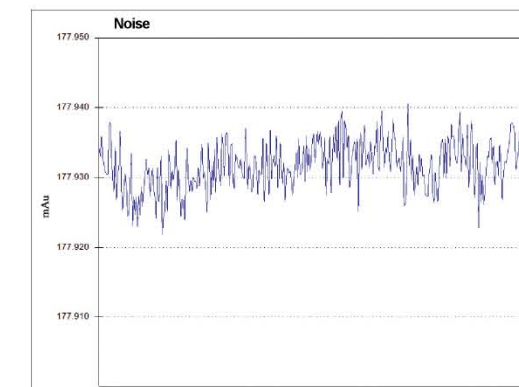
Transmission deuterium lamp combined with tungsten lamp provides a wavelength range of 190 - 800nm. The shine through deuterium lamp eliminates moving components, reduces noise whilst offering increased reliability.



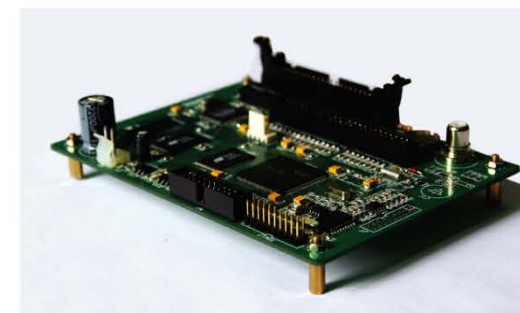
The lowest baseline noise  $\leq 0.75 \times 10^{-5} \text{Au}$  allows sensitive analyses to be achieved. The thermostatic flow cell reduces the influence of room temperature and fluctuations on absorbance and provides a stable baseline.



Linearity range ≥ 104



Low noise and drift  
 Noise  $\leq 0.75 \times 10^{-5} \text{Au}$  (25°, 254nm, dry cell, responds time 1 s)  
 Drift  $\leq 1 \times 10^{-4} \text{Au/h}$  (25°, 254nm, dry cell, responds time 1 s)



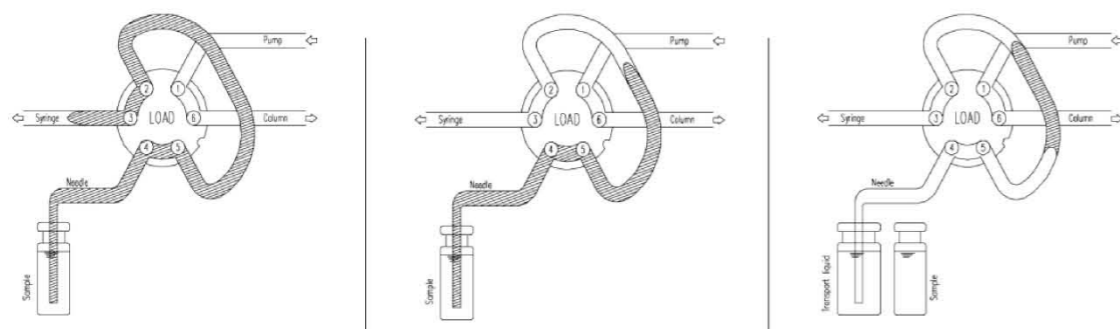
Integral large capacity memory, which can save the data in the event of accidental power shortage.



## LC230 Auto Sampler

The LC230 high performance Auto Sampler delivers superior repeatability (<0.3% Full loop mode). This fully automated solution can precisely measure sample volume with no sample loss and has an impressive high speed 17 second injection cycle.

### Flexible injection modes:

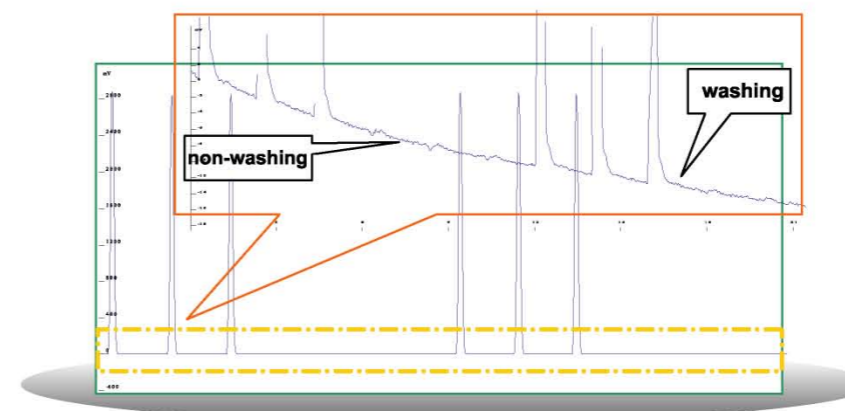
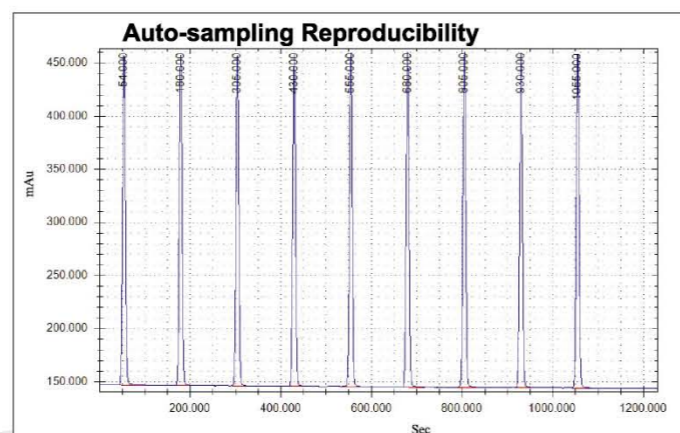


- Full loop mode  
(Most accurate)

- Partial loopfill mode  
(More flexible)

- $\mu\text{L}$  pickup mode  
(Minimal sample loss)

- Extra injection range: 1-5000 $\mu\text{L}$
- Ultra high reproducibility:  
Full loop <0.3%  
partial loopfill <0.5%  
 $\mu\text{L}$  pickup <1%



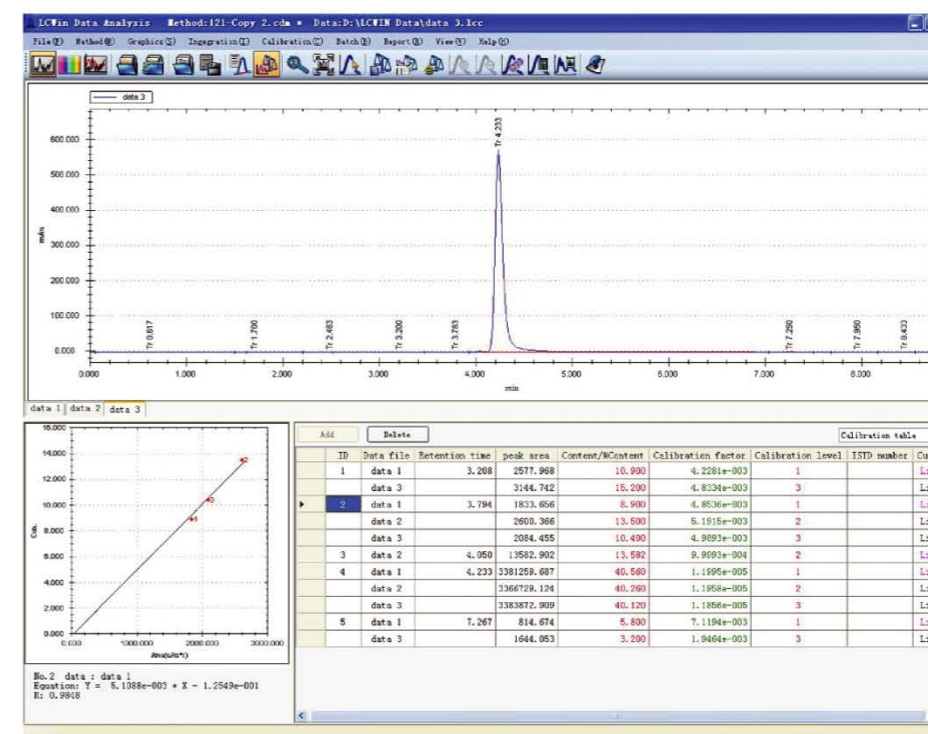
- Sample carry over:  
The special design of the needle wash station and rapid wash solvent delivery enable efficient removal of contaminants. Extensive wash routines ensure minimal carry over even for highly absorptive compounds.

- Ultra fast sampling cycle:  
Minimum sampling cycle of 17 seconds, greatly improves throughput time.

- Optional sample tray cooling:  
with built in peltier cooling, temperature can be reduced to 4 °C

## LCwin1.0

LCWin1.0 is a liquid chromatography software package developed by PG Instruments. It provides complete instrument control and data processing functions with a simple and efficient operation.



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### Interface types

- RS232 serial interface: The most common way for communication with fast signal exchange.
- CAN interface and CAN Bus technology provides rapid data exchange, anti-interference capability and supports unlimited peripheral or additional devices.
- LAN network interface: Provide remote control and remote diagnostics across your network.



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### Function areas

Instrument control, data analysis, diagnostics, report editing. These four modules provide comprehensive functionality. The modern layout provides a convenient and simple user interface whilst wizard operations simplify configuration and operation.

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### Functional approach

Powerful data processing functions, intelligent batch processing and report capabilities provide the users with multiple operations and reporting formats. All six quantitative functions include programmable integral parameters and over 20 chromatographic parameters to satisfy all your demands for analysis and calculation.

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### Diagnostics

The maintenance utility tracks the usage on wear and tear components and prompts replacement at specified intervals.

10Hz

### Sampling frequency

High sampling frequency ensures standard peaks and accurate results.

12

### Programmable report components within report manager

Flexible reporting, 12 editable components provides complete control over the reporting styles.



## Application

HPLC analysis usually applied to different polarity involatile or thermostable organic compounds, also a variety of bioactive substances and natural products; synthetic and natural polymers amongst many. Today, 80% of the organic compounds can use liquid chromatography for analysis and detection.

### Medical and pharmaceuticals

Drug analysis for pharmacy, detection of effective components, drug metabolite control, micro toxin in-vivo analysis, and microbial drug analysis.

### Health and epidemic prevention

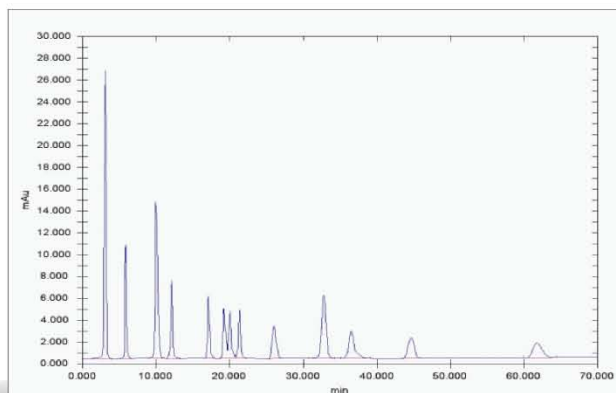
Clinical analysis, research of disease control, micro-analysis in biological areas, human biochemical analysis, and metabolite analysis.

### Environmental monitoring

Water, air, rainfall monitoring and determination of the content of various pollutants.

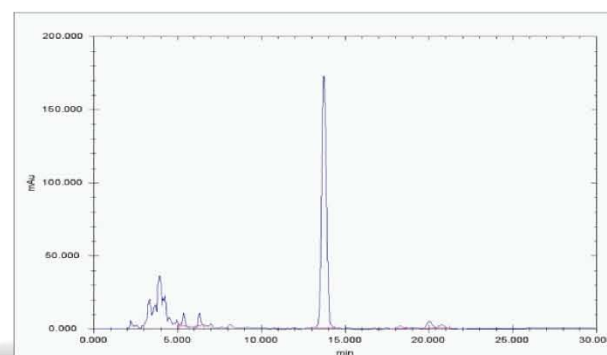
### Agriculture, forestry, fisheries, animal husbandry

Pesticide residue detection, crop detection, chemical fertiliser detection, plant quarantine, veterinary drug detection, aquamarine detection.



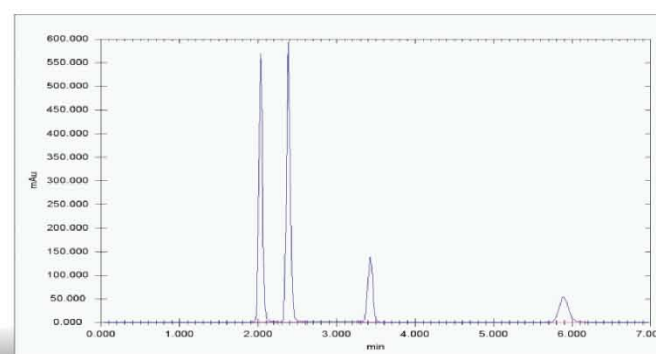
#### 14 DNPH Aldosterone Derivatives Analysis

Mobile phase: Water/Acetonitrile=40/60  
Wavelength: 360 nm,  
Flow rate: 1 ml/min,  
Temperature: ambient



#### Baicalin Analysis

See Pharmacopoeia 2005 (first edition)



#### Hydrophilic Vitamins Analysis

Mobile phase: 0.1% TFA/Acetonitrile=40/60  
Wavelength: 280 nm,  
Flow rate: 1 ml/min,  
Temperature: 30?

### Manufacturing

Process control and product testing, such as analysis of food preservatives, sweeteners, spices, food enzyme, carbohydrate, vitamins, nutrients, cosmetics preservatives and antimicrobial agent detection.

### Petrochemical

Industrial process control, product testing and manufacturing processes.

### Quality control

Quality control of commodity inspection, quality inspection, import/export quarantine departments.

### Education and scientific research

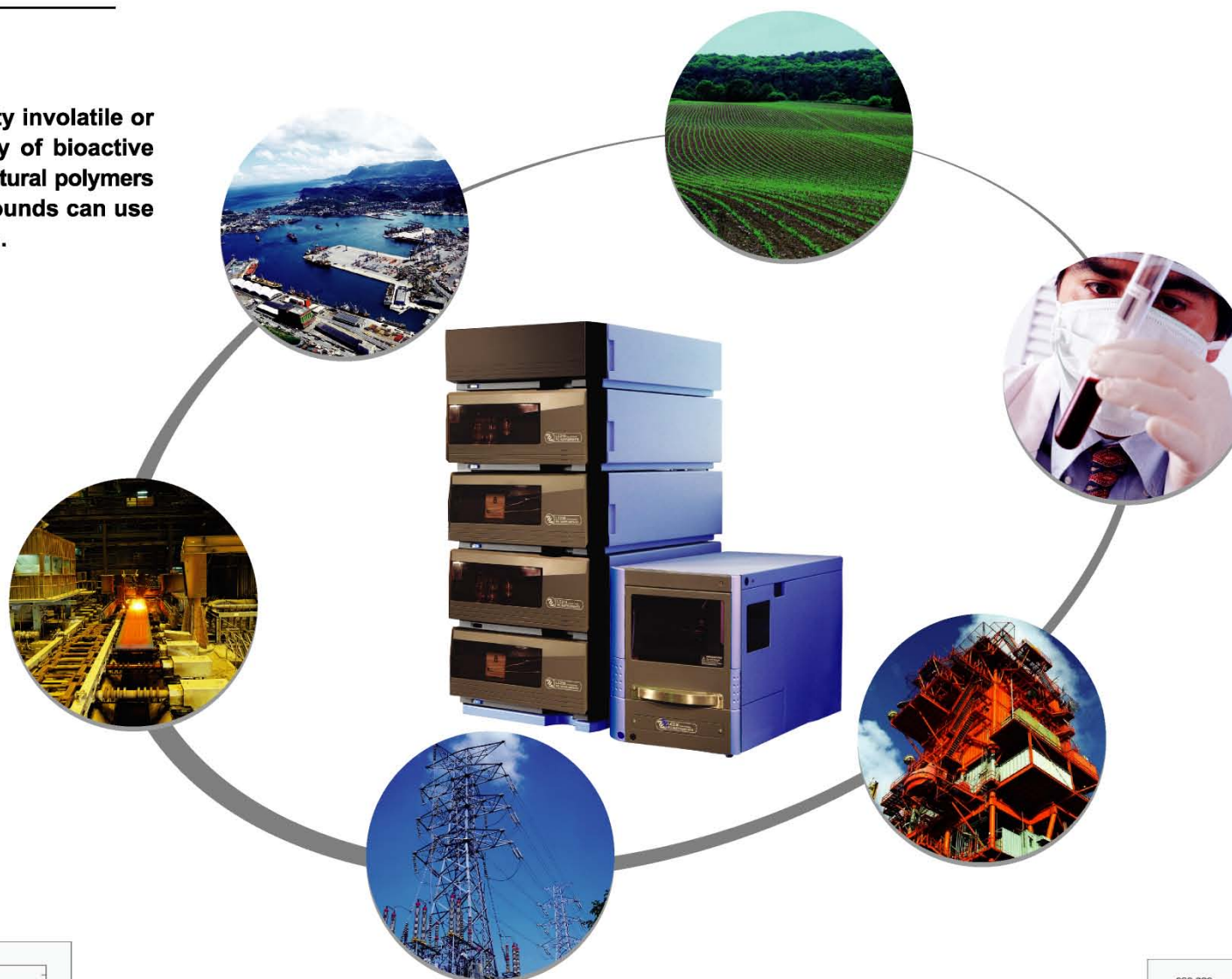
Educational establishments, institution for experiment, scientific research, teaching and demonstration.

### Water conservation system

Water quality and environmental monitoring, fresh water and sewage treatment plants.

### Other areas

Power station, military, judicial, public security detection and forensics amongst others.



## Specifications

LC210 Pump	
<b>Condition</b>	<b>Specification</b>
Type	Serial Dual Plunger
Flow range	0.001 ~10.000 ml / min, 0.001 ml / min increments
Seal wash	Manual
Max pressure	40 Mpa / 5800 PSI
Pressure ripple	≤1% (1 ml / min, degassed methol)
Flow precision	±0.3% RSD
Flow accuracy	±1%
Number of solvents and setting range	Isocratic, 0-100%, 0.1 increments
Composition accuracy	≤2%
Power requirements	95 - 240V 150VA 50Hz
Size	392(w) x 550(d) x 169(h) mm
Weight	14.5Kg
Sound pressure level	<70 dB
LC220 Detector	
<b>Condition</b>	<b>Specification</b>
Lamp source	Deuterium lamp, Tungsten lamp
Wavelength range	190 - 800 nm
Bandwidth	6 nm
Wavelength accuracy	±1 nm
Wavelength precision	±0.3 nm
Linear range	>10 <sup>4</sup>
Noise	±0.75×10 <sup>-8</sup> AU (dry cell, 254 nm, responses time 1s)
Drift	1×10 <sup>-4</sup> AU / h (dry cell, 254 nm, responses time 1s)
Detection limit	≤5×10 <sup>-8</sup> g / ml (naphthalene / methanol)
Flow cell volume	10mm, 10 µL
Pressure limit	10 Mpa / 1450 PSI
responses time	0.1 s—2 s
Operating temperature range	10-40°C
Power requirements	95 - 240V 150VA 50Hz
Size	392(w) x 550(d) x 169(h) mm
Weight	12Kg
Sound pressure level	<70 dB
LC250 Thermostatted Column Oven	
<b>Condition</b>	<b>Specification</b>
Model	LC250 Column Oven LC251 Column Oven/Chiller
Type	Block Heating / Cooling
Temperature range	CO6 ambient~100°C, 0.1°C increments CO7 ambient~100°C, 0.1°C increments / ambient~15°C, 0.1°C increments
Temperature accuracy	±0.5°C
Temperature stability	±0.1°C
Columns accommodated	3 Columns, 15-25cm
Power requirements	220V 50Hz
Size	95 - 240V 150VA 50Hz
Weight	392(w) x 550(d) x 169(h) mm
Sound pressure level	<70 dB
LC230 Auto Sampler	
<b>Condition</b>	<b>Specification</b>
Loop volume (100 ul)	1~5000 µL programmable (10 ml loop optional)
Syringe volume	500 µL (2500 µL optional)
Sample capacity	2×48-vial tray for 1.5 mL vial ; (optional 12 position 10ml vial tray, 96 well plate formats, 384 well plate formats)
Switching time of injection valve	< 100 ms
Piercing precision needle	±0.6 mm
Injection cycle time	17s (60 s while needle washing)
Injection modes	Full loop, partial loopfill and µL pickup mode
Reproducibility	Full loop <0.3% partial loopfill <0.5% µL pickup <1%
Carry over	< 0.05%
Cooling (optional)	4°C to Ambient-3°C
Power requirements	95 - 240V 200VA 60/50Hz
Size	300 (w) x 510(d) x 360(h) 300 (w) x 575(d) x 360(h) with Cooling
Weight	19Kg 21Kg with Cooling
Sound pressure level	<70 dB
LC240 Degasser	
<b>Condition</b>	<b>Specification</b>
Type	LC240 Membrane online degasser 2 Channel LC241 Membrane online degasser 3 Channel LC242 Membrane online degasser 4 Channel
Volume	10ml/min

## Accessories

