



Analytical chromatograph CLAS P is a compact with integrated photometric detector SAPHIRE and double piston pulsless pump CP 05. It includes column oven and manual loop injector.

Unit is controlled by microprocessor, 4 line alphanumeric display and keyboard. External control is possible (serial line).

Installed CP 05 analytical HPLC pump combines reliable mechanical unit (made in USA) with Labio electronics. Pump is equipped with step motor and specially formed cams to exclude pulsations. Sapphire made pistons have diameter 2,4 mm and stroke 8 mm (12 ul/stroke). It brings high precision especially in small flow rate range and gradient applications. Ball valves are made of sapphire and ruby monocrystals.

The liquid is in contact with stainless steel class 316 (AISI), polytetrafluoroethylene (PTFE), synthetic sapphire and ruby. On the output is installed small volume pressure measuring gauge in combination with bypass valve.

System employs a new generation UV-VIS detector with variable wavelength. Its output signal is available in analog or in digital form. Detector is equipped with efficient deuterium lamp which is easy changeable. Wavelength change during analysis can be programmed from central keyboard. Lamp calibration is automatic. Analytical cell is delivered with the instrument.

Standard manual 6 port loop injector has a polyimide rotor and is delivered with changeable loop (10 ul volume). There is a solid state column oven (CLAS PT type only) which is opened from right side of the system box. Up to 3 analytical columns 300 mm in length (or 250 mm with precolumn) can be installed in.

System can be extended in case of gradient applications. Three phases low pressure gradient mixer is delivered for such purposes in type CLAS PG. Gradient can be set from central keyboard in 10 linear steps.

Technical parameters

Flow rate	0,01ml – 9,99 ml.min ⁻¹
Max. pressure	300 bar (4500 PSI)
Variable wavelength (upto 3 changes in analysis)	190-800 nm
Detector noise (drift)	0,5.10 ⁻⁵ AU (1.10 ⁻⁴ AU)
Band width	6 nm
Time constant	fast, middle and slow
Cell volume (length)	10 ul (8 mm)
Injector volume	10 ul
Oven temperature	ambient + 5 upto 99 °C
Dimensions (d x w x h) in mm	480 x 220 x 380

Compact analytical microchromatograph CLAS MP with integrated photometric detector SAPHIRE. Equipped with microcell, microsyringe pump LINAR 30, column oven and microcolumn loop injector. System is controlled by microprocessor, 4 line alphanumeric display and keyboard. External control is possible (serial line).

The heart of the system is linear pump **LINAR 30**. Its stainless steel precisely polished cylinder has volume 30 ml. A piston with front PTFE sealing is moving in the cylinder. Piston drive uses special ball screw which is connected to the gearbox and step motor. Mechanical part is situated in chromatograph box in horizontal position and pump cylinder is slightly inclined to leave all air bubbles from the cylinder (see Fig 2). Input needle valve is closed and opened by a motoric drive. Ball valve (saphir, ruby) with spring is on the output together with a pressure gauge.

The suction (full cylinder within 2 min) can be done either manually or automatically when pump stop the action. The flow rate calibration is enabled using special password. Upper pressure limit setting is available.



Column oven is a solid state one with possibility to set the temperature up to 99 °C. For special purposes a cooled oven can be delivered.

System employs a new generation UV-VIS detector with variable wavelength. Its output signal is available in analog or in digital form. Wavelength change during analysis can be programmed. Lamp calibration is automatic. Microcell is delivered with the instrument.

Loop injector has polyimide rotor and internal loop. Instrument can be used with Labio microcolumns **MAGic** 0 type.

Technical parameters

Flow rate	1 ul – 1999 ul.min ⁻¹
Max. pressure	300 bar (4500 PSI)
Variable wavelength	190-800 nm
Detector noise (drift)	0,5.10 ⁻⁵ AU (1.10 ⁻⁴ AU)
Band width	6 nm
Time constant	fast, middle and slow
Cell volume (length)	0,5 ul (0,8 mm)
Injector volume	1 ul
Temperature of the oven	ambient + 5 - 99 °C

Compact analytical ion chromatograph LION 02 with integrated new conductometric detector CD DUO and microsyringe pump LINAR 30, together with a column oven and manual loop injector. System controlled by microprocessor, 2 line alphanumeric display and keyboard. External control is possible (serial line).

The heart of the unit is linear pump **LINAR 30**. Its stainless steel precisely polished cylinder has volume 30 ml. A piston with front PTFE sealing is connected to special ball screw which is connected to the gearbox and step motor.

Mechanical pump part is situated in chromatograph box in horizontal position and the cylinder is slightly inclined to ensure that all air bubbles leave lightly the cylinder (see Fig 2).

Input needle valve is closed and opened by a motoric drive. Ball valve (saphir, ruby) is on the output united with a pressure gauge.

The suction (full cylinder within 2 min) can be done either manually or automatically when pump stop the action. The flow rate calibration is enabled using special password. Upper pressure limit setting is available.

System employs a new generation conductivity detector CD DUO. It has two important features – signal sampling on the puls end and two cells (measuring reference) conductivity comparison. Common conductivity detectors utilize square AC pulses on electrodes and integral current is measured. It brings an inaccuracy, as pulses are deformed due non-conductivity influences.

CD DUO circuits select from each puls only its end where the current is measured (see the picture 3). In addition the measured current is directly compared with the reference cell signal. Reference cell is filled with the same electrolyte as measuring one and their differences appear only in time when sample zone is present.

Technical parameters

Flow rate	2 ul – 1999 ul.min ⁻¹
Cylinder volume	30 ml
Suction rate	20 ml/min (1,5 min for full cylinder)
Max. pressure	300 bar (4500 PSI)
Conductivity ranges	a) 10 mS - 0,1 us
Time constant	fast, middle and slow
Cell volume	1 ul
Oven temperature	Ambient + 5 - 99 °C
Output signal	0 – 2V analog
Power/input	230 V / 400 W
Weight	11 kg
Dimensions (d x w x h)	420 mm x 240 mm x 320 mm

