



ATOMIC ABSORPTION SPECTROPHOTOMETER

version
2006

PG INSTRUMENTS LIMITED

PG 990 Atomic Absorption Spectrophotometer

Features

Fully Automated

- ◆ The flame and graphite furnace is integrated into one instrument. The change over from one technique to another is carried out by simple keystrokes within the software.
- ◆ The instruments have a motorised 8 hollow cathode lamp turret which allows the automatic positioning and optimisation of each hollow cathode lamp by the software.
- ◆ The control of the gas flows for the fuel gas (C_2H_2) and the positioning of the burner is also carried out directly from the software thus allowing optimisation of the instruments for the best analytical parameters for a selected analysis.
- ◆ Two methods of background correction are available. The first utilises a deuterium lamp and the second is the proven method of self reversal.
- ◆ The location of the wavelength and peak selection is automatic and controlled from the software.
- ◆ The spectral bandwidth is automated and is available with a choice of five slit sizes.



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Atomic Absorption Spectrophotometer

PROVEN SAFETY FEATURES

- ◆ The flame conditions are continuously monitored and should the flow rates change an audible alarm sounds.
- ◆ The pressure of the support gas (oxidant) is monitored constantly. If the pressure changes then the flow of the fuel gas will be stopped and the flame will be safely extinguished.
- ◆ A sensor monitors the level of liquid in the drain and will prevent ignition if too low. The flame will also be extinguished if the level of liquid in the drain changes significantly.
- ◆ The argon pressure for the graphite furnace is constantly monitored and should it change the heating cycle for the graphite electrode will immediately cease and the graphite electrode will be de-energised.
- ◆ Cooling water flow rates for the graphite furnace are also monitored for changes and should changes occur the heating program will cease.
- ◆ If the graphite tube should fracture during the heating program the heating will cease.



Elements that can be analysed with the PG990

Periodic table of chemical elements | Details

1A	2A	3B	4B	5B	6B	7B	8	9	10	11	12	3A	4A	5A	6A	7A	0	
H													B	C	N	O	F	Ne
Li	Be											Al	Si	P	S	Cl	Ar	
Na	Mg																	
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
Fr	Ra	Ac																

Legend:

- Flame
- Furnace
- Hydride

Additional elements listed: Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, Lr

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Specifications

Optic System

Wavelength Range:	190nm - 900nm
Monochromator:	Czerny-Turner configuration
Spectral Bandwidth:	0.1nm, 0.2nm, 0.4nm, 1.0nm, 2.0nm (5 steps. with automatic changeover)
Wavelength Accuracy:	± 0.25nm
Wavelength Repeatability:	0.15nm
Baseline Stability:	0.005A/30 min

Flame analysis

Sensitivity (Cu):	0.03 µg/ml/1%
Burner Head:	Titanium alloy burner
Nebulizer:	High-efficiency glass nebulizer
Atomization Chamber:	Corrosion-resistant material
Position Adjustment:	Automatic changeover of flame and furnace
	Automatic setting of optimum height for flame burner
Safety:	Automatic ignition and of mixing air-acetylene gas with safety control

Graphite furnace analysis

Character Value (Cd):	0.5Pg
Temperature Range:	Ambient - 2650 °C
Heating:	Voltage feedback control when drying and ashing; Optical temperature control when atomizing
Heating program:	Up to 9 steps with choices of ramp, temperature increase and full-power heating

Background correction

Deuterium Lamp Background Correction:	1.0 Abs	Self-Reversal Background Correction: 3.0 Abs
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Data processing

Analytical method:	flame, graphite furnace and hydride
Determination method:	calibration curves using 1 st , 2 nd and 3 rd order of fit, standard addition method
Repetitions:	1-20 with calculations of average, SD and RSD
Result Printout:	output of parameters, data, spectra and calibration curves

Mainframe

Light Source:	8 hollow cathode lamp turrets with 2 lamps simultaneously lit (one lamp pre-heated)
Power Supply:	110V/60Hz or 220V/50Hz three-phase AC 200W (mainframe) 5000W (graphite furnace)
Dimensions:	mainframe 110 cm x 50cm x 45cm graphite furnace 50cm x 50cm x 45cm

Note:

Typical response: 2µg/ml Cu gives about 0.38Abs.

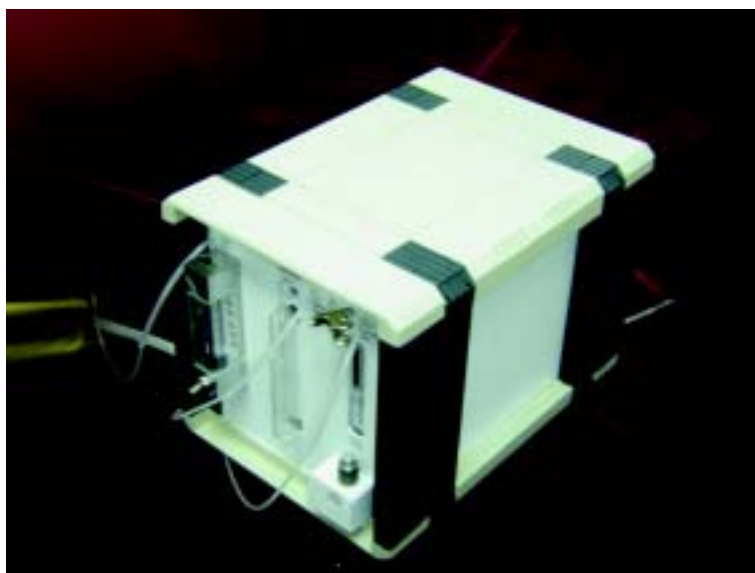
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Accessories

HYDRIDE AND COLD VAPOUR ANALYSIS

- ◆ A hydride generator is available for the determination of elements such as Arsenic, Selenium, Antimony, Tellurium and mercury at ultra low levels. The hydride generator is supplied with an absorption cell, and electrical absorption cell heater and controller and all necessary burner fittings.



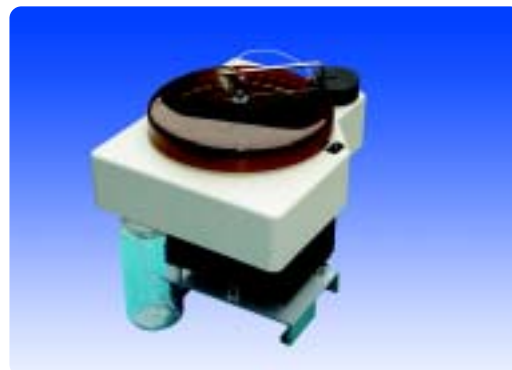
AAS FLAME AUTOSAMPLER

- ◆ Sequential auto-sampler allows the automated analysis of 50 or more samples and calibration standards. The system allows for automatic update of standard values and curve parameters by using up to 8 standards, blanks and QC standards. A double wash station with facility for use of sample blank or pure water for probe wash avoids sample and standard contamination. An inert Teflon probe is supplied.



GRAPHITE FURNACE AUTOSAMPLER

- ◆ The graphite furnace auto-sampler system allows automatic update of calibration data, matrix modifications and automatic dilution of samples.



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