

AA500

ATOMIC ABSORPTION SPECTROMETER

The AA500 Atomic Absorption Spectrometer is a high performance automated instrument designed to meet the requirements of the modern laboratory. Due to its versatility and performance it can be used for a wide range of applications including: Agriculture, Clinical, Environmental, Food, Metal, Mining and Petrochemical.

The Instrument is available in three configurations:

- **AA500F** – The Instrument is equipped with a Flame atomiser only. 3 flames are available with the air/acetylene as standard configuration and N₂O/acetylene or air/LPG(natural gas) available as an option. All 3 flame configurations offer coded burner for full safety protection.
- **AA500G** – The Instrument is equipped with a Graphite Furnace Atomiser only. The Graphite head is fixed into the optical path to maximise performance and eliminate drift. The transversally heated graphite tube is efficiently heated and cooled due to the precision feedback system.
- **AA500FG** – The Instrument is equipped with both Flame and Graphite Furnace Atomiser's as detailed in the previous description. Both configurations are installed into the instrument and can be changed over by a simple selection in the versatile AA-Win software.



STANDARD FEATURES

- Embedded PC system built into the instrument as standard. Windows 7 professional operating system.
- Full software control of the instrument and autosampler.
- Pre-installed AA-Win software.
- Automatic 8 lamp turret controlled and optimized by the AA-Win software.
- D2 lamp and Self reversal background systems fitted as standard.
- High precision minimal optics ensures maximum light throughput to the computer controlled Czerny-Turner monochromator.
- A universal autosampler is available which is conveniently mounted to the front of instrument.
- Absorption and Emission modes are standard as well as peak height, peak area, sequential and manual integration modes.

FLAME ATOMISER FEATURES

3 flame systems are available. Air/acetylene is the standard configuration with the N₂O/acetylene and Air/LPG as options.

Air/Acetylene

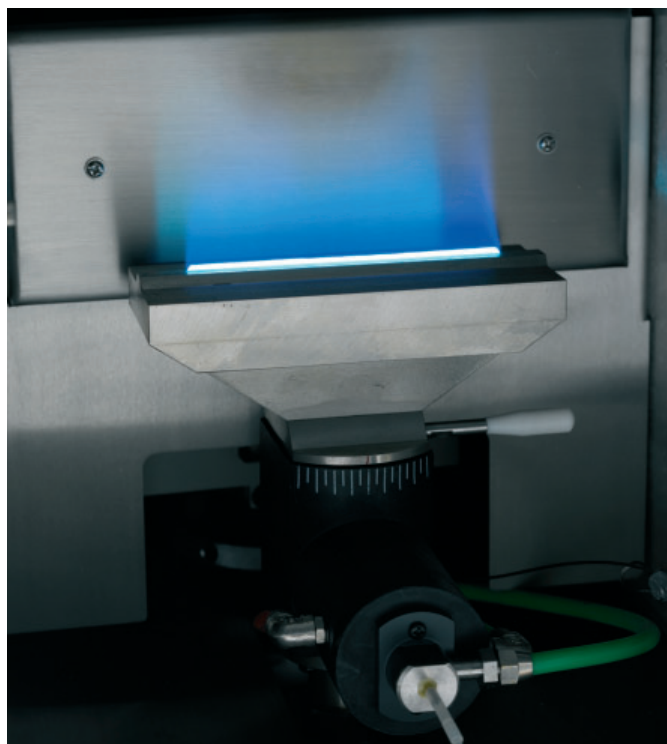
- This flame uses a 100mm single slot burner for standard configuration.
- The high sensitivity (Cu 2ppm > 0.28A) is due to the efficiency of the fixed position glass nebuliser fitted as standard. An acid resistant replacement is available as an option.

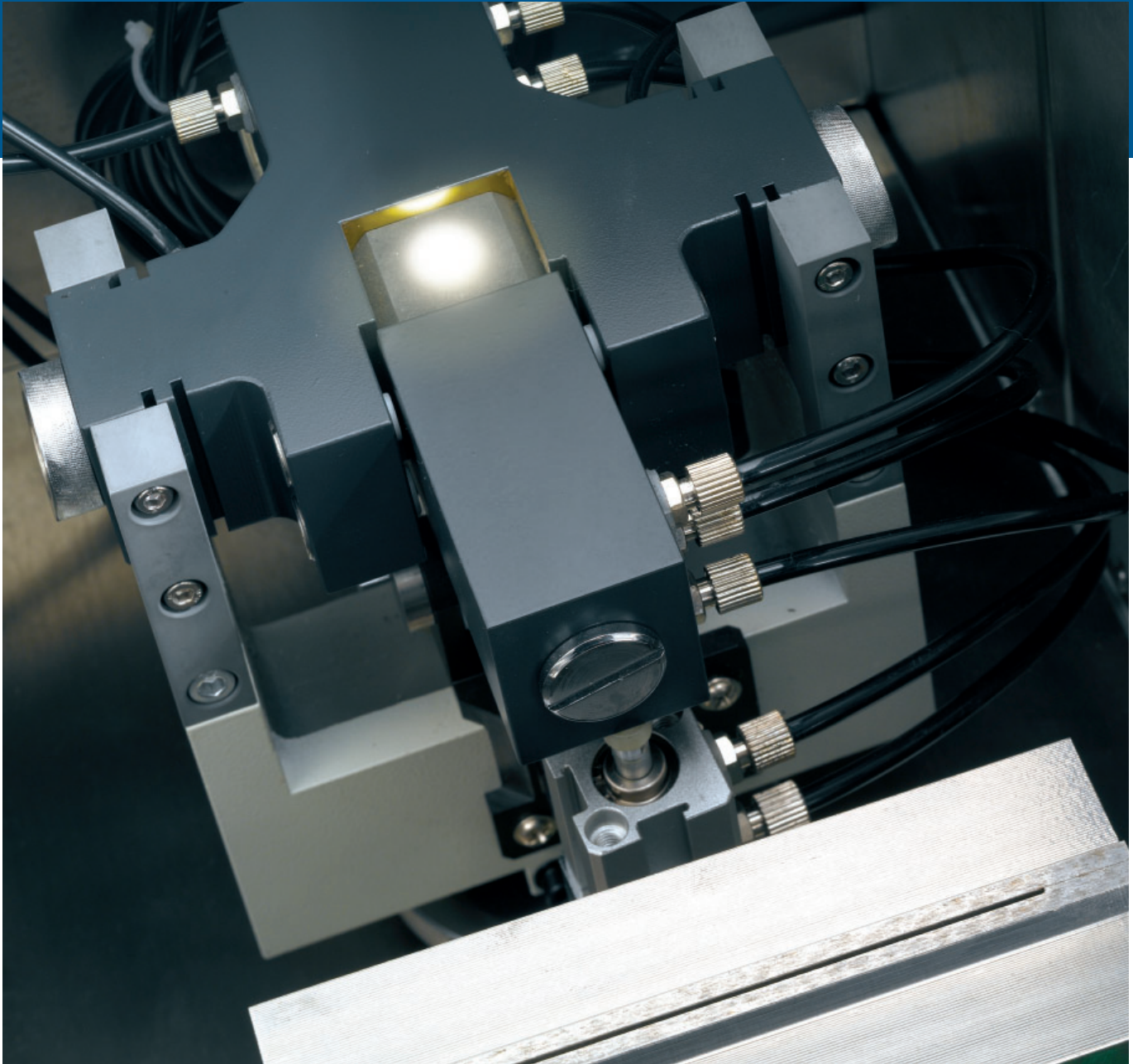
N₂O/Acetylene

- The burner for this gas has a 50mm slot and is used to measure elements less prone to ionization such as: Aluminium, Tin, Titanium, Calcium and Vanadium.
- The switchover from air/acetylene and flame off is fully computer controlled.

Air/Propane (LPG)

- This flame uses a 3 slot burner and with the low pressure requirement it is also much safer to operate. Due to the lower temperature it is ideal for analysing alkali metals such as Potassium, Sodium and Lithium, especially when used in the Emission mode.
- There are some remote areas in the world that have difficulty obtaining acetylene or even a high enough purity to operate the flame, so LPG can give a real alternative and offer comparable results throughout the wavelength range.
- **Safety Features**
 - Gas Pressure Monitoring for all gasses
 - Burner Identification
 - Flame Sensor
 - Drain Trap level Sensor
 - Gas Leak Detector
 - Safety cut off switch





GRAPHITE FURNACE ATOMISER FEATURES

- **The integrated graphite furnace atomiser is available in 2 formats:**
 - In the AA500G instrument the graphite furnace head is fixed into the light path.
 - In the AA500FG instrument the graphite furnace head is fixed behind the flame atomiser assembly and is motorised into position by a simple operation in the AA-Win software.
- **Furnace Head Design**
 - The Transverse head is heated and cooled efficiently due to the feedback system and has been designed to reduce analytical problems normally associated with this type of technique.
 - Pyrolytically coated graphite tubes are used as standard and are manufactured to improve performance as well as increase the analytical life.
- Platform Tubes are supplied as standard and will accept volumes up to 20ul.
- **Heating Program**
 - Up to 10 heat stages are available. These can be set up and stored in the AA-Win software.
- **The graphite furnace tube is cooled efficiently by an optional water circulation system.**
- **Safety Features**
 - Argon Gas Pressure Sensor
 - Water Flow Sensor
 - Over Temperature Sensor

Specifications

Wavelength Range	190nm – 900nm
Monochromator	Czerny-Turner Configuration
Spectral Bandwidth	0.1nm, 0.2nm, 0.4nm, 1.0nm, 2.0nm, (software selectable).
Wavelength Accuracy	± 0.15nm
Wavelength Reproducibility	< 0.05nm
Resolution	0.2nm ± 0.02nm
Baseline Stability	0.005A/30min
Sensitivity (Cu)	2 µg/ml Absorption > 0.28A (flame)
Detection Limit	Cu < 0.004 µg/ml (flame) Cd < 0.4 x 10 ⁻¹² g (graphite furnace)
Repeatability	Cu < 0.7% (Air/Acetylene flame) Ba < 1.0% (Nitrous oxide/Acetylene flame) Cu < 2.0% Cd < 2.0% (Graphite Furnace)
Background Correction	Deuterium Arc, Self reversal
Characteristic Concentration	Cu < 0.02 µg/ml, Ba < 0.15 mg/ml (N2O/Acetylene)
Burner Heads	Titanium Alloy
Nebuliser	High-efficiency glass, Acid proof available as an option
Atomization Chamber	Corrosion-resistant material
Position Adjustment	Automatic changeover (AA500GF) Manual (AA500F) Automatic Setting of Optimum Height for Flame Burner.
Safety Functions	Burner Identification, Flame Sensor, Gas leak Sensor, Low Gas Pressure Sensor, Drain Trap Sensor, Power Loss Protection, Circulation Water (graphite), Over Temperature Sensor (graphite)