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Analytical Instruments for Science

NEW UPGRADE AVAILABLE
Full Automation for multi-element analysis

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:

- Agricultural
- Clinical
- Environmental
- Food
- Metal
- Mining
- Geological
- Petrochemical
- Pharmaceutical

The versatile instrument is available in three configurations:

AA500F – The instrument is equipped with a flame atomiser only. The positioning of which is fully controlled by the embedded computer system and AA Win software.

Three flame options are available to the user with the Air/Acetylene being the standard configuration. This flame can be used for nearly all standard elements while the N2O/Acetylene and the Air/LPG (Natural gas) are available as an option for the more demanding of elements. All three flame configurations offer coded burner for full safety protection.

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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 temperature of the transversely heated graphite tube is accurately controlled by means of a precision feedback system. Pyrolytically coated platform tubes are supplied as standard to improve the performance and eliminate many analytical problems associated with this technique.

AA500FG – The instrument is equipped with both Flame Atomiser and Graphite Atomiser as described above. Both configurations are installed into the instrument and can be changed over by a simple selection in the versatile AA Win software.

FEATURES & FUNCTIONS

- Embedded PC system built into the instrument as standard on all configurations. Pre-installed AAWin3 software, user manuals, cook book and Windows operating system.
- AAWin3 software provides full control of the instrument and autosampler with easy method change for each technique. **Now GLP compliant.**
- Automatic 8 Hollow Cathode lamp turret controlled and optimised by the AAWin3 software. Operating lamp current and warm-up lamp current can be individually controlled to eliminate drift commonly associated with lamp warming.
- D2 lamp background correction system fitted as standard to all configurations. High energy D2 lamp and adjustable beam splitter mirror are optimised by the AAWin3 software.
- Self Reversal background correction system fitted as standard to all configurations. The high performance background system uses the same hollow cathode lamp as installed for the analysis. Minimum extra components are required and optical alignment is very simple. Self Reversal can be used for any element at any wavelength making it extremely versatile.
- High precision minimal optics ensures maximum light throughput to the computer controlled Czerny-Turner monochromator.
- A universal autosampler is available as an optional accessory which is conveniently mounted on the front of the AA500 instrument.
- Optional XYZ autosampler provides high sample volume for multi element analysis along with scalable sample capacity for high ample throughput.
- Absorption and Emission modes are standard features in the AAWin3 software as well as peak height, peak area, sequential and manual integration modes.

FLAME ATOMISER FEATURES

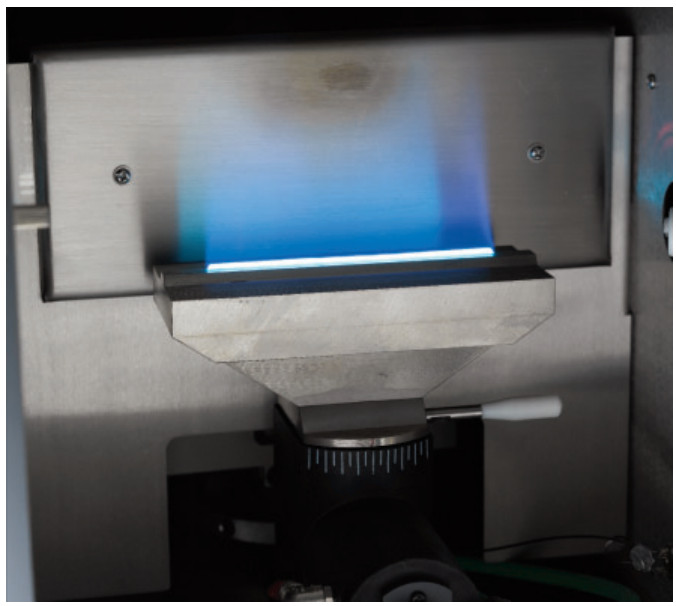
The flame atomiser offers three flame options: Air/acetylene is the standard configuration with the N2O/acetylene and Air/LPG as options.

Air/Acetylene

- The Air/Acetylene flame uses a 100mm single slot burner for the standard configuration.
- The high sensitivity (Cu 2ppm >0.280abs) is due to the efficiency of the fixed position glass nebuliser fitted as standard. An acid resistant replacement is available as an option.
- The flame can be easily set from blue lean flame through stoichiometric to fuel rich by means of computer control.

N20/Acetylene

- The N2O/Acetylene flame uses a 50mm single slot burner and is available as an optional extra.
- This flame configuration is used to measure elements less prone to ionization such as: Aluminium, Tin, Titanium, Calcium, Vanadium and Molybdenum.
- Switching from Air/Acetylene to N2O/Acetylene to Flame Off is fully controlled by the AAWinPro software.



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 low temperature of the flame it is ideal for analysing alkali metals such as: Potassium, Sodium and Lithium, especially when used in the emission mode.
- Some remote areas of the world have difficulty obtaining Acetylene gas of a high enough purity to operate the flame correctly, LPG can give a real alternative and offer comparable results for most elements throughout the wavelength range.

Safety Features

- Pressure monitoring for all gases
- Burner Identification
- Flame sensor
- Drain Trap level Sensor
- Gas Leak Detector
- Over Pressure in Premix
- Safety Cut off Switch

GRAPHITE ATOMISER FEATURES

The integrated Graphite Furnace Atomiser is available in two instrument configurations.

- In the AA500G instrument the graphite furnace head is fixed into the light path so alignment with the optical path is simple and accurate.
- 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 AAWinPro software. The positions for the flame and graphite are saved making it easy to swap between modes for different analysis.
- The temperature of the transversely heated graphite tube is accurately controlled by means of a precision 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 graphite tubes are supplied as standard and will accept volumes up to 20µl. Non-platform graphite tubes are also available as an optional extra.
- Up to 10 heat stages are available for the programming of the graphite atomiser. These can be set and stored within the AAWinPro software.
- The graphite tube is held in position by means of a gas piston. Replacement of the graphite tube is performed by a simple command in the AAWin Software.
- The graphite tube is efficiently cooled by an additional water circulation system (supplied separately).

Safety Features

- Argon Gas pressure Sensor
- Water flow sensor
- Over Temperature Sensor
- Broken graphite tube protectionBoth configurations are installed into the instrument and can be changed over by a simple selection in the versatile AA-Win software.

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Specifications

Wavelength Range	185nm - 910nm
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	Inert Adjustable Nebuliser, Flow Rate from 2ml - 6ml/min. Pt/Ir capillary available for high acid concentration
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)

We reserve the right to modify, revise/upgrade, suspend or discontinue any Product in whole or in part, either temporarily or permanently, with or without notice.

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