



AAS-3800

Atomic Absorption Spectrophotometer Fully Automated Flame System



AAS-3800 Atomic Absorption Spectrophotometer Flame

The AAS-3800 Atomic Absorption Spectrophotometer Flame 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
- Environmental
- Metal
- Geological
- Pharmaceutical
- Clinical
- Food
- Mining
- Petrochemical

AAS-3800 Atomic Absorption Spectrophotometer Flame is equipped with Flame Atomiser as described above. Comes with a versatile AA- Win 3.0 software.

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.

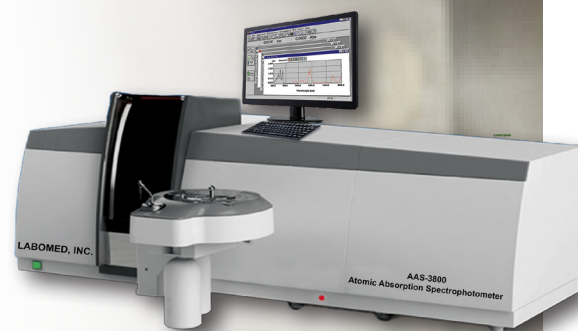
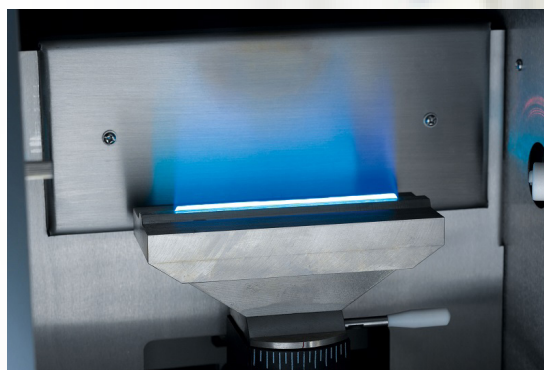
N₂O/Acetylene

- 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 AAWin3.0 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.



FLAME ATOMISER FEATURES & FUNCTIONS

- PC System is used to control the instrument. Pre-installed AA-Win 3.0 software, user manuals, cook book and Windows operating system.
- AA-Win 3.0 software provides full control of the in-strument and autosampler with easy method change for each technique.
- Automatic 8 Hollow Cathode lamp turret controlled and optimised by the AA-Win 3.0 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 stan-dard to all configurations. High energy D2 lamp and adjustable beam splitter mirror are optimised by the AA-Win 3.0 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 AAS-3800 Atomic Absorption Spectrophotometer Flame instrument.
- Absorption and Emission modes are standard features in the AA-Win3.0 software as well as peak height, peak area, sequential and manual integration modes.

FLAME ATOMISER SAFETY FEATURES

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



Spectrometer System	
Wavelength range	185nm -910nm
Light Source	Hollow cathode lamp (HCL), Deuterium Arc lamp (D2)
Modulation	Square Wave Pulse
Modulation frequency	100Hz Self reversal (SR) background, 400Hz Deuterium Arc (D2) background
Monochromator	
Grating	1800 grooves/mm diffraction grating
Blazed Wavelength	250nm
Focus	300nm
Bandwidth	0.1nm, 0.2nm, 0.4nm, 1.0nm, 2.0nm (Software selectable)
Scan mode	Automatic
Photometric Type	Single Beam
Wavelength Accuracy	$\pm 0.15\text{nm}$
Wavelength Resolution	$0.2\text{nm} \pm 0.02\text{nm}$
Wavelength Reproducibility	$< 0.05\text{nm}$
Baseline Stability	0.005Abs/30min
Background Correction	Deuterium Arc (D2) 1.0Abs, Self Reversal (SR) 3.0Abs
Flame Analysis	
Flame Types	Air/Acetylene, Nitrous Oxide/Acetylene, Air/Propane (LPG)
Sensitivity (Cu)	2ug/ml Absorption $>0.28\text{Abs}$
Characteristic Concentration	Cu $< 0.02\text{ug/ml}$, Ba $< 0.15\text{mg/ml}$ (N20/Acetylene)
Detection Limit	Cu $< 0.004\text{ug/ml}$
Repeatability	Cu $< 0.7\%$ (Air/Acetylene Flame) Ba $< 1.0\%$ (Nitrous Oxide/Acetylene Flame)
Burner heads	Titanium Alloy
Nebuliser	High efficiency glass, Acid proof available as an option
Pre-mix Chamber	Corrosion Resistant
Atomiser Selection	Manual
Safety Features	Burner identification, Flame Sensor, Gas Leak Sensor, Low Gas Pressure Sensor, Drain Trap Sensor, Power Loss Protection
Data Processing	
PC System	PC, Windows Operating System
Operating Program	AA Win 3.0 software
Analytical Methods	Flame AA, Flame AE, Hydride Generation
Readout Mode	Continuous, Peak Height, Peak Area
Calibrations	Multi-Standard Calibration, Standard Addition, Interpolation

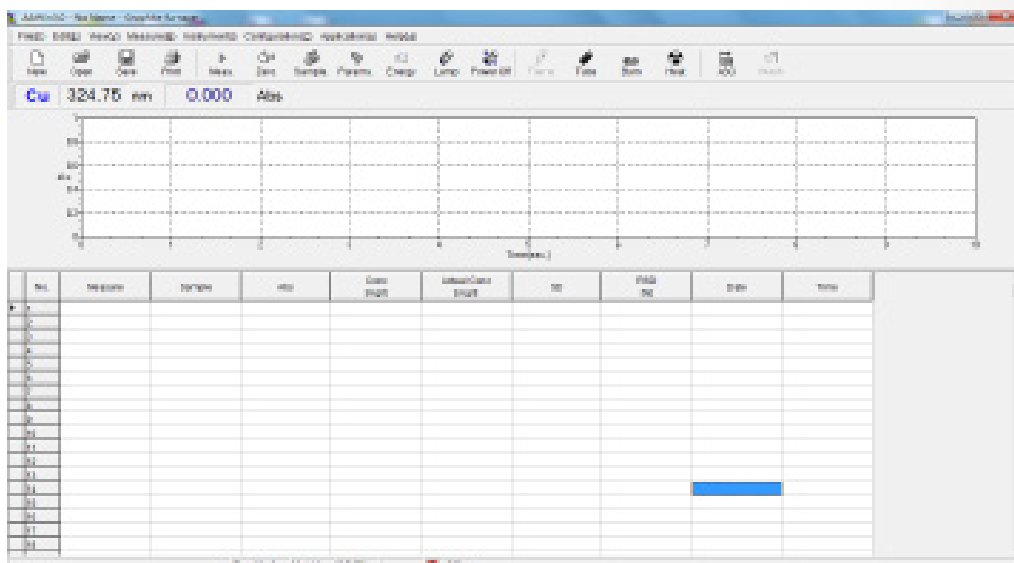


Data Storage	Analytical results, instrument and measurement parameters, signal profile, calibration curve
Power Requirements	
Main Unit	220VAC 50/60Hz
Dimensions	
Main unit	110cm x 54cm x 54cm 75Kg

STANDARD PACKAGING

Qty	Item
1	Main unit
1	AAS-3800 Instruction Manual
1	Cook Book
1	Safety Manual
1	System validation document
1	Data coded Air/Acetylene burner
1	Glass Nebuliser
8	Hollow cathode Lamp Holders
2	Power Cables
1	Gas Tubing Air
1	Gas Tubing Acetylene
1	Drain Trap and Tubing
1	Tool Kit
1	Various gas Fittings
1	Gas Tubing Argon
1	Connection Cable (graphite)
1	Pipette
1 bag	Pipette Tips

AA-Win 3.0 Software is a powerful and intuitive software product designed to allow control and data acquisition from the AAS-3800 Atomic Absorption Spectrometer Flame.



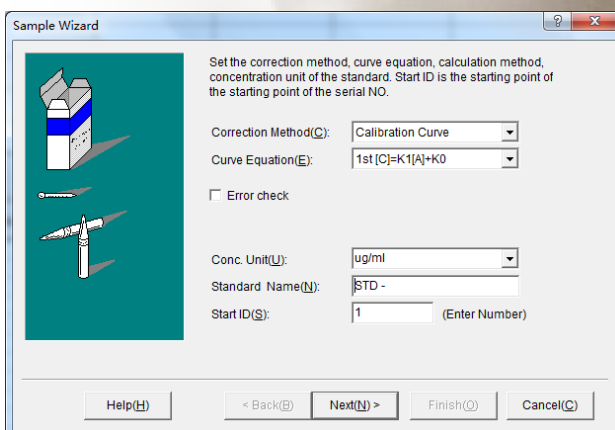
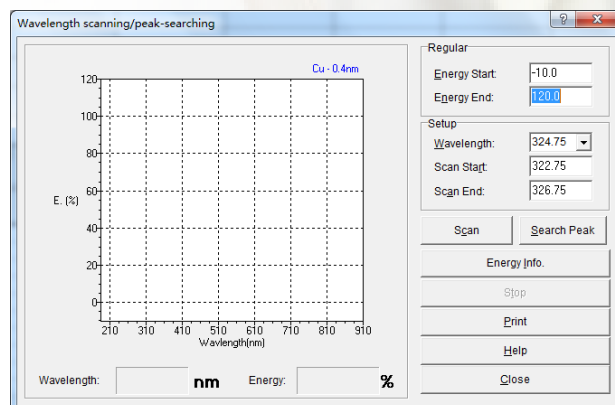
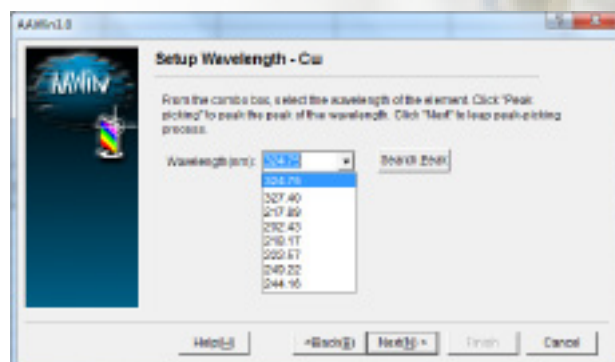
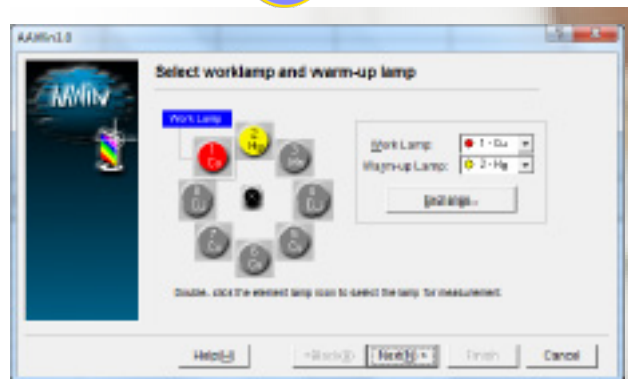
The AA-Win 3.0 software allows the Analyst to control all aspects of their analytical method whilst providing an extensive range of tools for data collection, storage and interpretation.

The software interface consists of three key work areas, whilst having toolbars to access many others. These work areas allow the user to view real-time signal acquisition, up-to-date display of calibration curves and a flexible, sample table.

Lamp turret setup, operating and warm-up currents, along with the desired analytical wavelength are easily selected in the configuration.

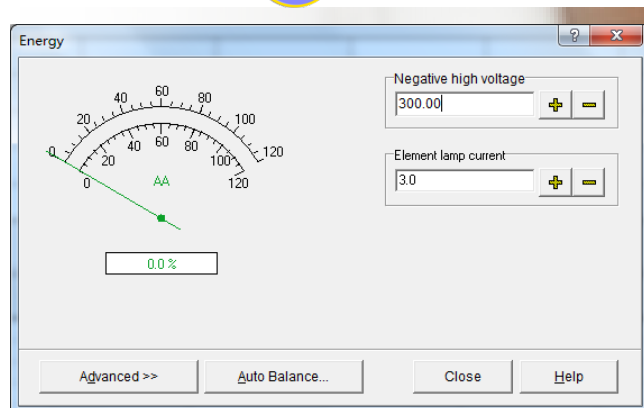
Ensure optimal peak position at the chosen analytical line by scanning the emissions spectra.

Each stage of analysis setup is made quick and simple by means of the Sample Wizard.



Obtain reliable and accurate results by using the Energy control feature to manually optimise atomiser position and setup.

Use the Auto-balance feature to ensure energy level, and optical alignments are optimised when using background correction.



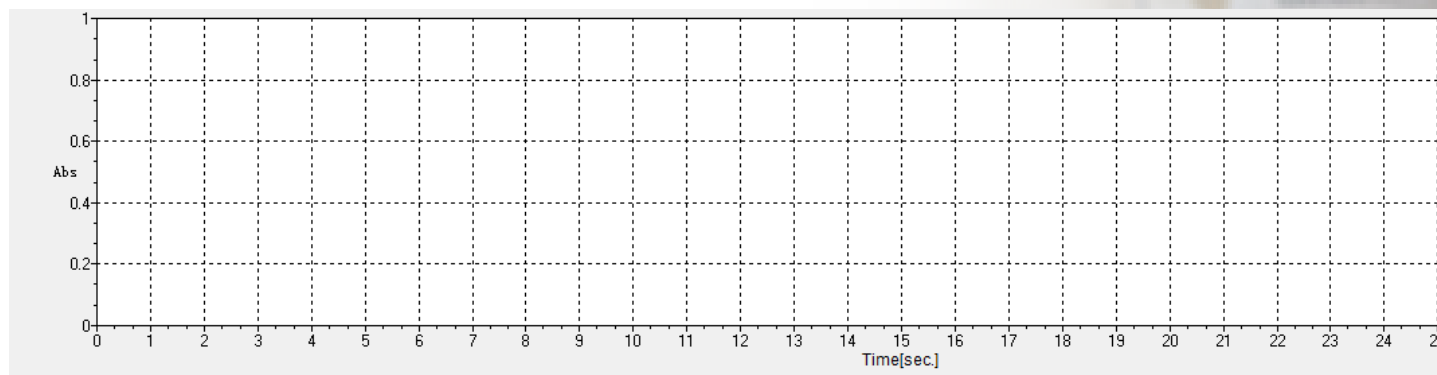
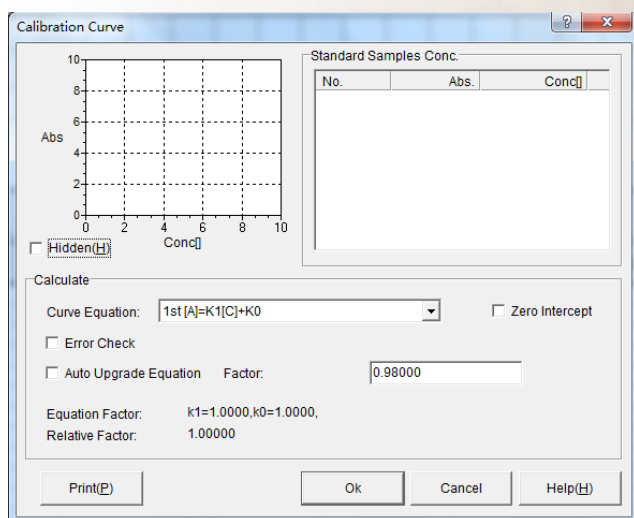
Use the sample table to perform quick measurements of both Standards and Samples.

Easily append the sample table to add new samples or even revise calibration curves either by manual introduction or using an Autosampler.

No.	Measure	Sample	Abs	Conc (mg/l)	Actual Conc (mg/l)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

View up-to-date calibration curves using a standard calibration or standard addition.

Perform retrospective curve fits to ensure optimum correlation.



View real-time signal acquisition for flame and hydride generation analysis.

The AAS-3800 Autosampler is an accessory specifically designed for the AAS-3800 Atomic Absorption Spectrometer Flame. The AAS-3800 can be used to automatically introduce standard and unknown samples to the atomiser for analysis. It can be used with flame furnace instruments.

OPTIONAL ACCESSORIES

Flame Analysis

- 38 sample positions (6 for standard samples, 32 for unknown samples).
- Sample vial size 6ml
- Standard sample vial size 12ml
- Pressure protection for wash
- Position adjustment by AA-Win 3.0 software
- Reproducibility Cu < 0.6% (air/acetylene) Cu < 1.0% (air/LPG)
- Ba < 1.0% (nitrous oxide/acetylene)



Nitrous Oxide/Acetylene Burner(500-023)

- Titanium alloy construction
- 50mm single slot
- Coded for safety
- Direct replacement for standard burner
- Designed for higher temperature flame



Acid resistant Nebuliser(500-010)

- Resistant to most acid samples
- Higher uptake rate for improved high solids samples
- Higher air pressure required
- Robust construction
- Fixed flow for easy installation



Air/Propane(LPG)Burner(500-030)

- Titanium Alloy construction
- 3 slot burner
- Coded for safety
- Direct replacement for standard burner
- Designed for lower temperature flame
- Adjustment of burner rotation for sensitivity optimisation



Hydride Unit(500-007)

- Universal design
- Full reaction cycle from press of start button
- Supplied with temperature controlled heated absorption cell
- Cell is easily installed with burner attachment
- Can be used for Mercury cold vapour analysis
- Sensitivity for most elements <math><1\text{ng}/\text{ml}</math>
- Only 2.0ml - 2.5ml per sample required
- RSD <math><3\%</math>
- Quick analysis <math><30</math> seconds per measurement



Acetylene Flame Arrestor(GS-004)

- Direct fitting to gas regulator output
- Required for acetylene gas
- Non-resetting easy to replace





Gas Regulators (GS-001,GS-002,GS-006,GS-007)

- Direct fitting to gas cylinder
- Comply to British Standards
- Supplied with hose fitting and crimp
- Various gas cylinder fittings available
- Regulators for Air, Acetylene, Nitrogen, Argon, Nitrous Oxide, LPG
- Specify fitment to European standard



Hollow Cathode Lamp

- Sharp line source
- About 5000 milliampere-hours



Water Circulator(GS-005)

- Cooling capacity 2000W
- Temperature range 0-50°C
- Temperature accuracy 1°C
- Maximum input power 1000W
- Fuse 10A
- Power 220V 50Hz
- Work Pressure 0~0.6MPa
- Rated flow rate 3.5L/min
- Rated lift 10M
- Tank capacity 32L
- Noisiness <65
- Dimension(L×W×H) 650×400×950
- Weight 50Kg



Air Compressor(GS-003)

- Rated discharge pressure: 0.3MPa
- Output rate: 0.3-0.9m³/h (adjustable)
- Noise: smaller than 55dB
- Power supply: AC220V 50HZ
- Dimension: 400×300×620(mm)
- Ambient condition: ambient temperature less than 35°C
- Relative humidity less than 80%

