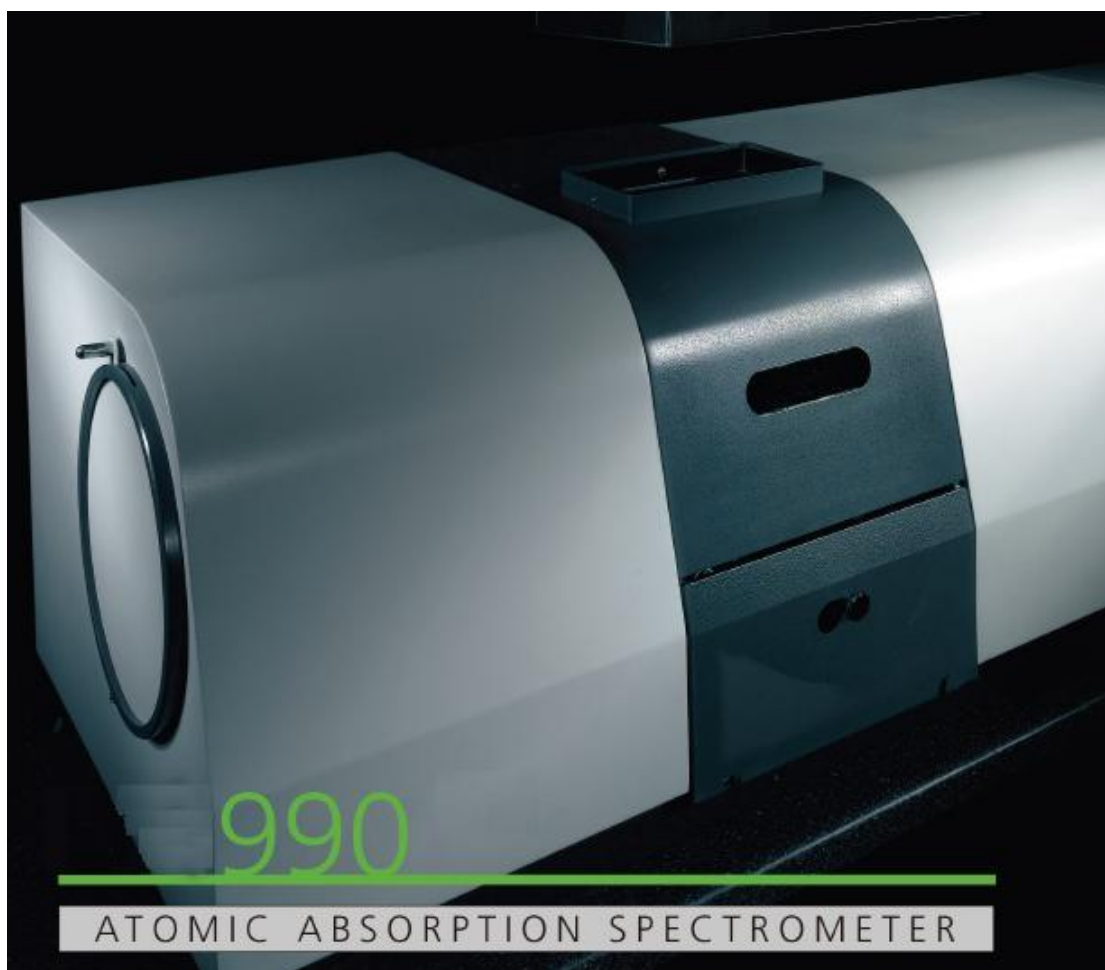




Affordable and Reliable Technology



The AA990 Atomic Absorption Spectrophotometer is a versatile entry level instrument with a computer controlled Air Acetylene flame and Graphite furnace for general laboratory requirements. Due to its high sensitivity and excellent performance the instrument can be used for a wide range of application including:

- Agricultural
 - Food
 - Geological
 - Clinical
 - Metal
 - Petrochemical
 - Environmental
 - Mining
 - Pharmaceutical
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FEATURES & FUNCTIONS

- The instrument has 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) of the burner is also carried out directly from the software thus allowing optimisation of the instrument for the best analytical parameters for a selected analysis.
- Two methods of background correction are available. The first utilises a Deuterium Arc lamp and the second is the proven method of Self Reversal.
- High precision minimal optics ensures maximum light throughput to the computer controlled Czerny-Turner Monochromator.
- The location of the wavelength and peak selection is automatically controlled from the software.
- The spectral bandwidth is automated and is available with a choice of five slit sizes.
- The electronic parameters for the photomultiplier tube detector, the hollow cathode lamp current and the balancing of the absorbance and background energies are controlled from the software.
- The ignition of the flame is computer controlled and the various safety interlocks offer a very safe operating system.

SAFETY

- 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.
 - A flame sensor monitors the flame and safely turns off the gas flow to the burner if the flame suddenly extinguishes.
 - The burner is identified by a switch making it impossible to light without the burner being fitted.
 - An emergency flame off button is installed in case a problem is observed. The flame can be extinguished safely.
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Specifications

Optical System	
Wavelength Range	190nm-900nm
Monochromator	Czerny-Turner Configuration
Grating Groove	1800/mm
Spectral Bandwidth	0.1nm, 0.2nm, 0.5nm, 1.0nm, 2.0nm (with automatic changeover)
Wavelength Accuracy	$\pm 0.25\text{nm}$
Wavelength Reproducibility	$\leq 0.15\text{nm}$
Wavelength Resolution	$0.2\text{nm} \pm 0.02\text{nm}$
Baseline Stability	$\pm 0.004\text{Abs}/30\text{min}$
Background Correction	Deuterium Arc 1.0Abs Self Reversal 1.0Abs
Flame Analysis	
Flame Types	Air/Acetylene
Characteristic Concentration	$\text{Cu} < 0.04\mu\text{g}/\text{ml}/1\%$ (Air/Acetylene)
Detection Limit	$\text{Cu} \leq 0.006\mu\text{g}/\text{ml}$
Burner	Metal Titanium Alloy Burner
Repeatability	$\text{Cu} < 1.0\%$ (air – acetylene method) $\text{Ba} < 1.0\%$ (air – acetylene method)
Sensitivity	$\text{Cu } 2\mu\text{g}/\text{ml}$ Absorption $> 0.28\text{Abs}$
Nebulizer	High-efficiency glass nebulizer, Acid proof available as an option
Atomization Chamber	Corrosion-resistant material
Position Adjustment	Automatic changeover of flame and furnace, automatic setting of optimum height for flame burner
Safety	Various auto safety functions
Graphic Furnace Analysis	
Temperature Range	Ambient-2650 $^{\circ}\text{C}$
Detection Limit	$\text{Cd} \leq 0.01\text{ng}/\text{ml}$
Repeatability	$\text{Cu} < 3\%$, $\text{Cd} < 4\%$
Heating Methods	Advanced graphic furnace horizontal heating
Heating and Temperature Control	Voltage feedback control when drying and ashing; Multi-Standard Calibration, Standard Addition, Interpolation
Temperature Control Precision	$< 1\%$
Background Correction	(Deuterium Lamp Background Correction and Self-reversal Background Correction) > 55 times



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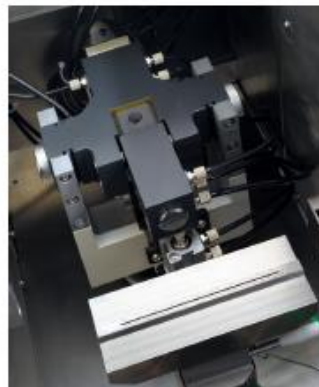
ADVANCED GRAPHITE FURNACE

- The unique design of the graphite furnace reduces the chemical interference effects and memory effects by uniformly heating the graphite electrode.
- The computer controlled heating program allows the user to select the best heating program for the analysis.
- The optical temperature during the atomization stage ensures the rapid heating and rapid analysis. This helps to extend the life of the graphite tube and enhances analytical accuracy.



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-energized.
- 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.



Accessories

GRAPHITE FURNACE AUTOSAMPLER

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



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.



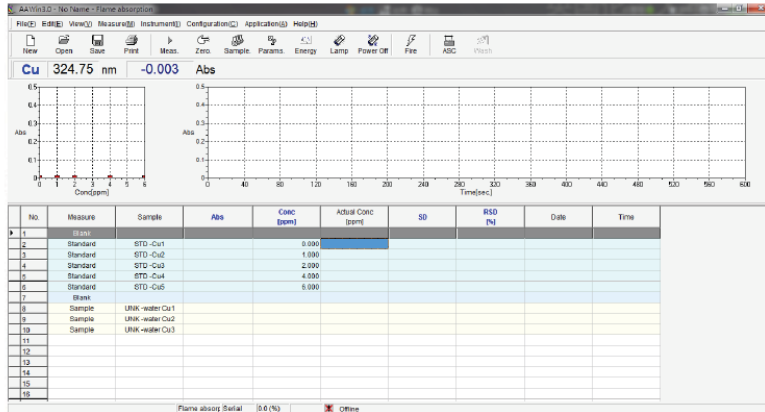
HYDRIDE AND COLD VAPOUR ANALYSIS

- 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.



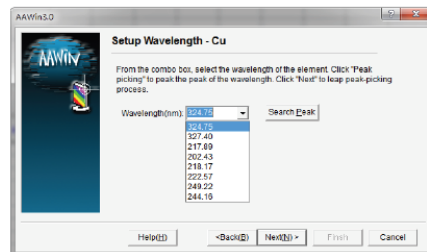
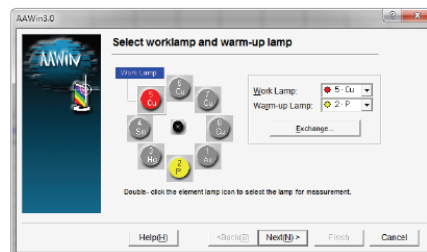


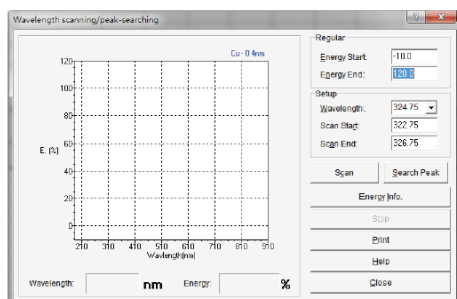
AAWin Software is a powerful and intuitive software product designed to allow control and data acquisition from the AA990 series Atomic Absorption Spectrometer.



The AA-Win 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 workareas, 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.

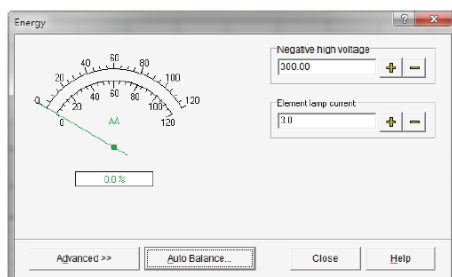




Ensure optimal peak position at the chosen analytical line by scanning the emissions spectra.

Sample Wizard window. It includes a diagram of a sample and a list of elements. The window is used to set the correction method, curve equation, calculation method, concentration unit of the standard, and the starting point of the serial NO. The current settings are: Correction Method: Calibration Curve, Curve Equation: 1st (A-K)(C)+K0, Conc. Unit: ppm, Standard Name: STD-A, and Start ID: 1.

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

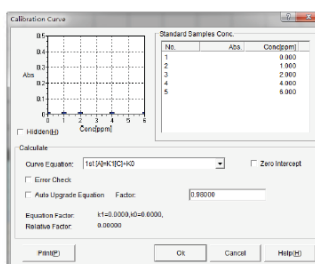


Obtain reliable and accurate results by using the Energy control feature to manually optimise atomiser position and setup, Use the Auto-balance feature to ensure energy level, and optical alignments are optimised when using background correction.

No.	Measure	Sample	Abs	Conc [ppm]
1	Blank			
2	Standard	STD-Cu1		
3	Standard	STD-Cu2		
4	Standard	STD-Cu3		
5	Standard	STD-Cu4		
6	Standard	STD-Cu5		
7	Blank			
8	Sample	UNK-water Cu1		
9	Sample	UNK-water Cu2		
10	Sample	UNK-water Cu3		
11				
12				
13				
14				
15				

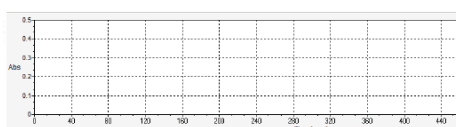
Use the sample table to perform quick measurements of both Standards and Samples.

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



View up-to-date calibration curves in 1st, 2nd, or 3rd order using a standard calibration or standard addition.

Perform retrospective curve fits to ensure optimum correlation.



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

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