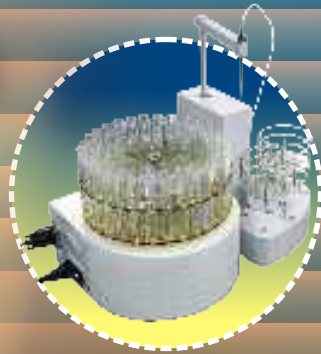


Atomic Absorption Spectrophotometer



THE LAAS SERIES OF OUR ATOMIC ABSORPTION SPECTROPHOTOMETERS COME WITH INNOVATIVE DESIGN AND ARE FULLY AUTOMATED. FLAME ATOMIC ABSORPTION, GRAPHITE FURNACE, ATOMIC ABSORPTION, HYDRIDE ATOMIC ABSORPTION AND FLAME EMISSION TECHNIQUES ARE ALL AVAILABLE.



LAAS-A SERIES

Features:

Innovated rich oxygen air-acetylene flame analysis technique (LAAS-110A):

- The flame analysis technique adopting rich oxygen air-acetylene flame as the substitution for nitrous oxide-acetylene flame for high temperature element analyses, such as Ca, Al, Ba, W, Mo, Ti, V, etc. Flame temperature is continuously adjustable between 2300-2950°C, with makes it possible to choose the best atomization temperature for different elements. It features easy operation, low analysis cost and wide flame AAS analytical range. Rich oxygen flame will not pollute the environment and is not harmful to human bodies.

Integrated flame/graphite furnace atomization system, changeable with flame emission burner:

- Automatically controlled changeover of the integrated flame and graphite furnace atomizer featuring easy operation and time saving eliminates human labor flame emission burner head can be installed to perform flame emission analysis to alkali metals as K, Na etc. (LAAS-110A/120A).

Accurate fully automated control system:

- Automatic multi-lamp turret, automatic adjustment of lamp current and optimization of light beam position.
- Automatic wavelength scanning and peak picking.
- Automatic spectral bandwidth changing.
- Automatic changeover between flame and graphite furnace operation, automatic optimization of position parameters and automatic ignition.

Reliable fully automatic graphite furnace analysis:

- Adopting FUZZY-PID and dual curve mode light-controlled temperature control technique, temperature auto-correction technique, ensures fast heating, good temperature reproducibility and high analytical sensitivity. The temperature control accuracy is less than 1%.
- Graphite furnace with pneumatic control and pressure lock ensures constant pressure and reliable contact.

Perfect safety protection measures:

- Alarm and automatic protection to fuel gas leakage, abnormal flow, insufficient air pressure and abnormal flame extinction in flame system.
- Alarm and protection function to insufficient carrier gas and protective gas pressure, insufficient cooling water supply and over-heating in graphite furnace system

Advance and reliable electronic design:

- Adopting large-scale programmable logic array and Inter I2C bus technology.
- European type sockets and AMP adapters with high reliability to ensure long term reliability of the whole electronic system.

Easy and practical analysis software:

- Easy-to-use AAS analysis software is made under Windows operating system, realizing fast parameter setting and optimization.
- Automatic sample dilution, automatic curve fitting, automatic sensitivity correction.

LAAS-A SERIES

Specification

Model No.		LAAS-110A	LAAS-120A	LAAS-130A
Main Specification	Wavelength range	190-900nm		
	Wavelength accuracy	±0.25nm		
	Resolution	Two spectral lines of Mn at 279.5nm and 279.8nm can be separated with the spectral bandwidth of 0.2nm and valley-peak energy ratio less than 30%.		
	Baseline stability	0.004A/30min		
	Background correction	The D2 lamp background correction capability at 1A is better than 30 times. The S-H background correction capability at 1.8A is better than 30 times		
Hollow Cathode Lamps	Lamp turret	6-lamp turret	4-lamp turret	
	Lamp current adjustment	Auto-aignment, fully automated scan and peak-picking		
	Lamp power supply mode	Automatic adjustment and display. Wide pulse current: 0~25mA, Narrow pulse current: 0~10mA.		
		100Hz narrow square wave pulse+400Hz	-	
		wide square wave pulse	-	
Optical System	Monochomator	400Hz square wave pulse Single beam, Czerny-Turner design grating monochromator		
	Grating	1800 l/mm		
	Focal length	277mm		
	Blazed Wavelength	250nm		
	Spectral Bandwidth	0.1nm, 0.2nm, 0.4nm, 1.2nm, auto-switch over		
Flame Atomizer	Burner	10cm single slot all-titanium burner		
	Spray chamber	Corrosion resistant all-plastic spray chamber		
	Nebulizer	High efficiency glass nebulizer with metal sleeve, sucking up rate:6-7ml/min		
Graphite Furnace	Emission burner	Yes	No	
	Temperature range	Room temperature~3000°C		
	Heating rate	2000°C/s		
	Graphite tube dimensions	28mm(L) x 8mm(OD)		
	Characteristic mass	Cd≤0.5 x 10 ⁻¹² g, Cu≤5 x 10 ⁻¹² g, Mo≤1 x 10 ⁻¹¹ g		
Detection and Data Processing System	Precision	Cd≤3%, Cu≤3%, Mo≤4%		
	Detector	R928 Photomultiplier with high sensitivity and wide spectral range.		
	Software	Windows operating system		
	Analytical method	Working curve auto-fitting; standard addition method; automatic sensitivity correction; automatic calculation of concentration and content		
	Repeat times	Maximum 20 times of repeat measurement, automatic calculation of mean value, standard deviation and relative standard deviation.		
	Multi-task Functions	Sequential measurement for multi-element determination to the same sample (Max. 6 elements).		
	Condition reading	With model function		
	Result printing	Measurement data and final analytical report printout, editing with Excel.		
Characteristic Concentration and Detection Limit	Air-C ₂ H ₂ flame	Cu: Characteristic concentration≤0.025mg/L, Detection limit≤0.006mg/L; Ba: Characteristic concentration ≤ 0.22mg/L		
	Oxygen-rich Air-C ₂ H ₂ flame	Al: Characteristic concentration ≤ 0.4mg/L		
	Function Expansion	Hydride vapor generator can be connected for hydride analysis		
Dimensions and Weight	Main unit	102 x 49 x 54cm, unpacked 80kg		
	Graphite furnace	42 x 42 x 46cm, unpacked 65kg		
Catalog No.		35260101	35260102	35260103

Accessories	Catalog No.
Air compressor	35260111
Hydride vapor generator	35260112
Pyrolytically coated platform graphite tube	35260113
Pyrolytically coated graphite tube	35260114
Normal graphite tube	35260115
High efficiency glass nebulizer	35260116

LAAS-B SERIES

**Features:****Innovated rich oxygen air-acetylene flame analysis technique(LAAS-110B):**

- The flame analysis technique adopting rich oxygen air-acetylene flame as the substitution for nitrous oxide-acetylene flame for high temperature element analyses, such as Ca, Al, Ba, W, Mo, Ti, V, etc. Flame temperature is continuously adjustable between 2300-2950°C which makes it possible to choose the best atomization temperature for different elements. It features easy operation, low analysis cost and wide flame AAS analytical range. Rich oxygen flame will not pollute the environment and is not harmful to human bodies.

Flame atomization system with flame emission burner:

- A flame emission burner head can be installed to perform flame emission analysis to Alkali metals as K, Na etc. (LAAS 110B/120B).

Accurate fully automated control system:

- Automatic multi-lamp turret, automatic adjustment of lamp current and optimization of light beam position.
- Automatic wavelength scanning and peak picking.
- Automatic spectral bandwidth changing.
- Automatic ignition.

Perfect safety protection measures:

- Alarm and automatic protection to fuel gas leakage, abnormal flow, insufficient air pressure and abnormal flame extinction in flame system.
- Alarm and protection function to insufficient carrier gas and protective gas pressure, insufficient cooling water supply and over-heating in graphite furnace system.

Advance and reliable electronic design:

- Adopting large-scale programmable logic array and Inter I2C bus technology.
- European type sockets and AMP adapters with high reliability to ensure long term reliability of the whole electronic system.

Easy and practical analysis software:

- Easy-to-use AAS analysis software is made under Windows operating system, realizing fast parameter setting and optimization.
- Automatic sample dilution, automatic calculation and analytical result automatic print out.

LAAS-B SERIES

Specification

Model No.		LAAS-110B	LAAS-120B	LAAS-130B
Main Specification	Wavelength range	190-900nm		
	Wavelength accuracy	±0.25nm		
	Resolution	Two spectral lines of Mn at 279.5nm and 279.8nm can be separated with the spectral bandwidth of 0.2nm and valley-peak energy ratio less than 30%.		
	Baseline stability	0.004A/30min		
	Background correction	The D2 lamp background correction capability at 1A is better than 30 times The S-H background correction capability at 1.8A is better than 30 times.		
Light Source System	Lamp turret	6-lamp turret	4-lamp turret	
		Auto alignment, fully automated scan and peak-picking		
	Lamp current adjustment	Automatic adjustment and display		
		Wide pulse current: 0~25mA, Narrow pulse current: 0~10mA		
	Lamp power supply mode	400Hz square wave pulse		
		100Hz narrow square wave pulse+400Hz wide square wave pulse	-	
Optical System	Monochromator	Single beam, Czerny-Turner design grating monochromator		
	Grating	1800 l/mm		
	Focal length	277mm		
	Blazed Wavelength	250nm		
	Spectral Bandwidth	0.1nm, 0.2nm, 0.4nm, 1.2nm, automatic change		
Flame Atomizer	Burner	10cm single slot all-titanium burner		
	Spray chamber	Corrosion resistant all-plastic spray chamber		
	Nebulizer	High efficiency glass nebulizer with metal sleeve, sucking up rate:6-7ml/min		
	Emission burner provided			
Detection and Data	Detector	R928 Photomultiplier with high sensitivity and wide spectral range.		
Processing System	Software	Under Windows operating system		
	Analytical method	Working curve auto-fitting; standard addition method; automatic sensitivity correction, automatic calculation of concentration and content.		
	Repeat times	Maximum 20 times of repeat measurement, automatic calculation of mean value, standard deviation and relative standard deviation		
	Multi-task Functions	Sequential measurement for multi-element determination to the same sample		
	Condition reading	With model function		
	Result printing	Measurement data and final analytical report printout, editing with Excel		
		Standard RS-232 serial port communication		
Characteristic	Air-C ₂ H ₂ flame			
Concentration and	Oxygen-rich Air-C ₂ H ₂ flame	Cu: Characteristic concentration≤0.025mg/L, Detection limits≤0.006mg/L;		
Detection Limit		Ba: Characteristic concentration ≤ 0.22mg/L Al: Characteristic concentration ≤ 0.4mg/L		
Function Expansion	Hydride vapor generator can be connected for hydride analysis			
Dimensions and Weight	Main unit	102 x 49 x 54cm, unpacked 80kg		
Catalog No.		35260104	35260105	35260106

Accessories	Catalog No.
Air compressor	35260111
Hydride vapor generator	35260112
Pyrolytically coated platform graphite tube	35260113
Pyrolytically coated graphite tube	35260114
Normal graphite tube	35260115
High efficiency glass nebulizer	35260116

LAAS-210

**Features:****Innovated rich oxygen air-acetylene flame analysis technique:**

- The flame analysis technique adopting rich oxygen air-acetylene flame as the substitution for nitrous oxide-acetylene flame for high temperature element analyses, such as Ca, Al, Ba, W, Mo, Ti, V, etc. Flame temperature is continuously adjustable between 2300-2950°C with makes it possible to choose the best atomization temperature for different elements. It features easy operation, low analysis cost and wide flame AAS analytical range. Rich oxygen flame will not pollute the environment and is not harmful to human bodies.

Integrated flame/graphite furnace atomization system, changeable with flame emission burner:

- Automatically controlled changeover of the integrated flame and graphite furnace atomizer featuring easy operation and time saving eliminates human labor.
- A flame emission burner head can be installed to perform flame emission analysis to alkali metals as K, Na etc.

Accurate fully automated control system:

- Automatic 6-lamp turret, automatic adjustment of lamp current and optimization of light beam position.
- Automatic wavelength scanning and peak picking.
- Automatic spectral bandwidth changing.
- Automatic changeover between flame and graphite furnace operation, automatic optimization of position parameters, automatic ignition and automatic gas flow setting.

Reliable fully automatic graphite furnace analysis:

- Adopting FUZZY-PID and dual curve mode light-controlled temperature control technique, temperature auto correction technique, ensures fast heating, good temperature reproducibility and high analytical sensitivity. The temperature control accuracy is less than 1%.
- Graphite furnace with pneumatic control and pressure lock ensures constant pressure and reliable contact.
- Multi-function auto-sampler features automatic standard sample preparation, automatic correction of sampling probe depth, automatic tracing and correction of liquid surface height in the sample vessel, with the sampling accuracy of 1% and reproducibility of 0.3%, realizing fully automation of graphite furnace analysis.

Perfect safety protection measures:

- Alarm and automatic protection to fuel gas leakage, abnormal flow, insufficient air pressure and abnormal flame extinction in flame system.
- Alarm and protection function to insufficient carrier gas and protective gas pressure, insufficient cooling water supply and over-heating in graphite furnace system.

Advance and reliable electronic design:

- Adopting large-scale programmable logic array and Inter I2C bus technology.
- European type sockets and AMP adapters with high reliability to ensure long term reliability of the whole electronic system.

Easy and practical analysis software:

- Easy-to-use AAS analysis software is made under Windows operating system, realizing fast parameter setting and optimization.
- Automatic sample dilution, automatic curve fitting, automatic sensitivity correction.
- Automatic calculation of sample concentration (content), mean value, standard deviation and relative standard deviation calculation.
- Multi-elements determination in sequence to the same sample.
- Measured data and final results can be printed out and edited in Excel format.

Specification

Model No.		LAAS-210
Main Specification	Wavelength range	190-900nm
	Wavelength accuracy	Better than $\pm 0.25\text{nm}$
	Resolution	Two spectral lines of Mn at 279.5nm and 279.8nm can be separated with the spectral bandwidth of 0.2nm and valley-peak energy ratio less than 30%.
	Baseline stability	0.004A/30min
	Background correction	The D2 lamp background correction capability at 1A is better than 30 times The S-H background correction capability at 1.8A is better than 30 times.
Light Source System	Lamp turret	Motorized 6-lamp turret (Two high performance HCLs can be mounted on the turret to increase the sensitivity in flame analysis.);
	Lamp current adjustment	Wide pulse current: 0~25mA, Narrow pulse current: 0~10mA
	Lamp power supply mode	400Hz square wave pulse; 100Hz narrow square wave pulse+400Hz wide square wave pulse
	Monochomator	Single beam, Czerny-Turner design grating monochromator
Optical System	Grating	1800 l/mm
	Focal length	277mm
	Blazed Wavelength	250nm
	Spectral Bandwidth	0.1nm, 0.2nm, 0.4nm, 1.2nm, auto-switch over
	Flame Atomizer	Burner
Spray chamber		Corrosion resistant all-plastic spray chamber
Nebulizer		High efficiency glass nebulizer with metal sleeve, sucking up rate:6-7ml/min
Emission burner provided		
Graphite Furnace	Temperature range	Room temperature~3000°C
	Heating rate	2000°C /s
	Graphite tube dimensions	28mm(L)×8mm(OD)
	Characteristic mass	$\text{Cd} \leq 0.5 \times 10^{-12}\text{g}$, $\text{Cu} \leq 5 \times 10^{-12}\text{g}$, $\text{Mo} \leq 1 \times 10^{-11}\text{g}$
	Precision	$\text{Cd} \leq 3\%$, $\text{Cu} \leq 3\%$, $\text{Mo} \leq 4\%$
Detection and Data	Detector	R928 Photomultiplier with high sensitivity and wide spectral range.
Processing System	Software	Under Windows operating system
	Analytical method	Working curve auto-fitting; standard addition method; automatic sensitivity correction, automatic calculation of concentration and content.
	Repeat times	1-99 times, automatic calculation of mean value, standard deviation and relative standard deviation.
	Multi-task Functions	Sequential measurement for multi-element determination to the same sample
	Condition reading	With model function
	Result printing	Measurement data and final analytical report printout, editing with Excel
	Standard RS-232 serial port communication	
Graphite Furnace	Sample tray capacity	55 sample vessels and 5 reagent vessels
Autosample	Vessel material	Polypropylene
	Vessel volume	3ml for sample vessel, 20ml for reagent vessel
	Minimum sampling volume	1 μl
	Repeatable sampling times	1-99 times
	Sampling system	Accurate dual pump system, with 100 μl and 1ml injectors
Characteristic	Air-C ₂ H ₂ flame	Cu: Characteristic concentration $\leq 0.025\text{mg/L}$, Detection limit $\leq 0.006\text{mg/L}$;
Concentration and Detection Limit	Oxygen-rich Air-C ₂ H ₂ flame	Ba: Characteristic concentration $\leq 0.22\text{mg/L}$
		Al: Characteristic concentration $\leq 0.4\text{mg/L}$
Function Expansion	Hydride vapor generator can be connected for hydride analysis	
Dimensions and Weight	Main unit	107 x 49 x 58cm, 140kg
	Graphite furnace	42 x 42 x 46cm, 65kg
	Auto sampler	40 x 29 x 29cm, 15kg
Catalog No.		35260108

Accessories	Catalog No.
Air compressor	35260111
Hydride vapor generator	35260112
Pyrolytically coated platform graphite tube	35260113
Pyrolytically coated graphite tube	35260114
Normal graphite tube	35260115
High efficiency glass nebulizer	35260116

LAAS-320

Features:**High cost-effective flame AAS:**

- Reasonable design, adopting the same key parts as in high end instruments, ensures basic functions but less automation to provide an economic model for users.

Reliable integration of main unit with microprocessor:

- Built-in microprocessor with necessary auto-control and data processing functions achieve high reliability of the instrument.

Simple and easy operation:

- Eye-catching digital display, multi-function data processing ability and fast function-key direct input realize easy and fast analysis.

**Specification**

Model No.		LAAS-320
Main Specification	Wavelength range	190-900nm
	Wavelength accuracy	±0.5nm
	Resolution	Two spectral lines of Mn at 279.5nm and 279.8nm can be separated with the spectral bandwidth of 0.2nm and valley-peak energy ratio less than 30%.
	Baseline stability	0.005A/30min
	Background correction	The D2 lamp background correction capability at 1A is better than 30 times.
Hollow Cathode	Lamp turret	2 lamps are powered simultaneously (one preheating)
Lamps	Lamp current adjustment range	0-20mA
	Lamp power supply mode	00Hz square wave pulse;
Optical System	Monochromator	Single beam, Czerny-Turner design grating monochromator
	Grating	1800 l/mm
	Focal length	277mm
	Blazed Wavelength	250nm
Flame Atomizer	Spectral Bandwidth	0.1nm, 0.2nm, 0.4nm, 1.2nm, 4 steps
	Burner	10cm single slot all-titanium burner
	Spray chamber	Corrosion resistant all-plastic spray chamber
	Nebulizer	High efficiency glass nebulizer with metal sleeve, sucking up rate:6-7ml/min
	Position adjustment	Manual adjusting mechanism for vertical, horizontal positions and the rotation angle of the burner
	Gas line for protection	Fuel gas leakage alarm
Detection and Data	Detector	R928 Photomultiplier with high sensitivity and wide spectral range.
Processing system	Electronic and micro? computer system	Automatic adjustment of light source power. Light energy and negative high-voltage auto-balance
	Display mode	LED display of energy and measurement values, concentration direct reading
	Read mode	Transient, time average, peak height, peak area.
		Integral time is selectable in the range of 0.1-19.9s
	Scale expansion	0.1-99
	Data processing mode	Automatic calculation of mean, standard deviation and relative standard deviation. Repeating number is in the range of 1-99
	Measurement mode	Automatic curve fitting with 3-7 standards; Sensitivity auto-correction
	Result printing	Measurement data, working curve, signal profile and analytical conditions can all be printed out.
Characteristic	Instrument self-check	Check current status of each function key
	Normal Air-C ₂ H ₂ flame	Cu: Characteristic concentration≤0.025mg/L, Detection limit≤0.006mg/L;
Concentration and Detection Limit		
Function Expansion	Hydride vapor generator can be connected for hydride analysis	
Dimensions and Weight	Main unit	102 x 49 x 54cm, unpacked 80kg
Catalog No.		35260107

Accessories	Catalog No.
Air compressor	35260111
Hydride vapor generator	35260112
Pyrolytically coated platform graphite tube	35260113
Pyrolytically coated graphite tube	35260114
Normal graphite tube	35260115
High efficiency glass nebulizer	35260116

LAAS-810

**Features:****Dual light source and dual atomizers, a unique integrated structure design with a high degree of user friendliness:**

- Parallel flame and graphite furnace atomizer, without mechanical movements and changeover, ensuring long time stability and reliability.
- Time-sharing dual light sources, no need for changing lamps, increasing the number of analyzable elements to the maximum and reducing operation and adjustment time to the minimum.
- Alternate use of the shortest optical path, to reduce light energy losses.

More powerful dual magnetic fields Zeeman background correction technology:

- Adopting constant magnetic field, transverse Zeeman background correction device for both flame and graphite furnace analysis, with super powerful dual atomizer high background correction capability over the whole wavelength range.
- Intensified flame constant magnetic field to improve the analytical sensitivity.
- Quasi double beam design to correct baseline drift, shorten preheating time and improve analytical accuracy.

Integrated design of graphite furnace power supply with the main unit:

- Multiple shielding technology successfully decreases magnetic interference.
- Shortening the distance of power supply reduces power losses dramatically.
- Compact structure, small space requirement, easy and simple installation and moving.

Advanced electronic design:

- New generation large scale integration technology with simple and reliable PC boards.
- New generation bus and internal network technology, enhancing the anti-interference capability of the system.

Fully automatic operation with high accuracy:

- Automatic 8×2 lamp turrets, automatic adjustment of lamp current and optimize of light beam position.
- Automatic wavelength scanning and peak picking.
- Automatic spectral bandwidth changing.
- Automatic changeover between flame and graphite furnace operation, automatic ignition and automatic gas flow setting.

Brand-new fully automated flameless analysis technology with high reliability:

- Newly designed graphite furnace and its power supply system with ultra-rapid heating, super long time stability and super high power efficiency.
- Intelligent fully automated sampler, with automatic working curve generation, automatic tracing and correction of liquid surface height in the sample vessel, automatic long term memorizing of the sampling probe position.

Perfect safety protection measures:

- Alarm and automatic safety protection to fuel gas leakage, abnormal flow, insufficient air pressure and abnormal flame extinction in flame system.
- Monitoring, alarm and protection function to insufficient protective gas pressure and cooling water supply in graphite furnace system.
- Cooling water monitoring and protection in magnetic field system.
- Drain tube water seal monitoring and alarm.

User friendly operation software:

- Convenient, friendly and reliable AAS software under Windows XP operation system.
- Quick setting, automatic adjustment and automatic optimization of instrument parameters.
- Safety monitoring, quick prompt and protection.
- Intelligent analytical quality control, precision control, standard sample check and Spike check functions.
- User selectable analytical report formats.

LAAS-810

Specifications:

Model		LAAS-810
Main Specification	Wavelength range	190-900nm
	Wavelength accuracy	±0.5nm
	Resolution	Better than 0.3nm
	Baseline stability	0.005A/30min
Light Source System	Lamp turret	Automatic 8×2-lamp turrets (Two high performance hollow cathode lamps can be mounted on each turret);
	Lamp current	0~15mA
	Lamp power supply mode	200Hz square wave pulse
Optical System	Monochomator	Czerny-Turner type
	Grating	1800 l/mm
	Focal length	430mm
	Blazed Wavelength	250nm
	Spectral Bandwidth	Flame mode: 0.2, 0.4, 0.8, 1.6mm Graphite furnace mode: 0.2, 0.4, 1.2mm
Atomizer	Flame atomizer	Burner: 10cm single slot all-titanium burner
		Spray chamber: directly formed and made of corrosion resistant material. Nebulizer: High efficiency glass nebulizer with metal sleeve. Position adjustment: flame height is adjustable.
	Graphite furnace atomizer	Temperature range: room temperature~3000°C Heating rate: 3000°C/S Graphite tube dimensions: 30mm(L) X 7mm (OD)
Graphite Furnace	Sample tray capacity	55 sample vessels and 5 reagent vessels
Autosampler	Vessel material	Polypropylene
	Vessel volume	2ml for sample vessel, 20ml for reagent vessel
	Minimum sampling volume	1µl
	Repeatable sampling times	1~99 times
	Sampling system	Accurate dual pump system, with 100µl and 1ml injectors.
Detection and Data	Detector	R955 Photomultiplier with high sensitivity and wide spectral range.
Processing System	Software	Professional AAS software under Windows XP operating system
	Analytical method	Working curve auto-fitting; standard addition method automatic sensitivity correction; automatic calculation of concentration and content.
	Repeat times	1~99 times, automatic calculation of mean value, standard deviation and relative standard deviation.
	Multi-task Functions	Sequential determination of multi-elements in the same sample.
	Condition reading	With model function
	Result printing	Measurement data and final analytical report print out, editing with Excel.
	Communication	Standard RS-232 serial port; supporting USB port communication
Background Correction System	Flame constant magnetic field Zeeman background correction	Magnetic flux density: 1.0T
System	Graphite furnace constant magnetic field Zeeman background correction	Magnetic flux density: 1.0T
Dimensions (LxWxH) mm	Main unit	1160 x 630 x 570
	Auto-sampler	320 x 270 x 260
Weights	Main unit	160Kg
	Auto-sampler	15Kg
Catalog No.		35260109

Accessories	Catalog No.
Air compressor	35260111
Hydride vapor generator	35260112
Pyrolytically coated platform graphite tube	35260113
Pyrolytically coated graphite tube	35260114
Normal graphite tube	35260115
High efficiency glass nebulizer	35260116



LAAS-990

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 motorized 8 hollow cathode lamp turret which allows the automatic positioning and optimization 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 optimization of the instruments for the best analytical parameters for a selected analysis.
- Two methods of background correction are available. The first utilizes 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.
- The electronic parameters for the photomultiplier 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.

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.

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.

Operating System:

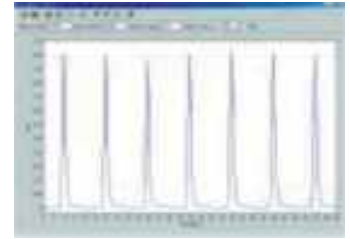
- The user friendly software requires a Windows platform and operates within Win95, Win98, Win NT, Win 2000 and Win XP. The system uses a number of software wizards to guide the operator through setting up procedures.
- The software controls the automatic switch over for the Hollow Cathode Lamps and automatically optimizes working parameters for the system. The software also allows manual input of data to ensure that the operator always stays in control. The software will automatically complete the configuration of the system for analysis.
- The user has the choice of two methods of background correction namely the self reversal system OR the traditional



LAAS-990

deuterium lamp background correction system.

- During the analysis cycle of both the flame and graphite furnace the software shows the entire measurement process. This includes measured values, temperature steps, time etc. all signal and temperature data is stored for future re-call and printout.
- Detailed reporting and QC control software is included within AAWin allows printout of spectra, standard calibration curves, analysis and signal data. Full printout of operating parameters is also available for user references.



- The following methods of analysis can be carried out using the PGI 990 system Absorption, emission, graphite furnace analysis, hydride and cold vapour analysis.

Specifications:

Model		LAAS-990
Main Specification	Wavelength Range	190nm ~ 900nm
	Wavelength Accuracy	0.25nm
	Wavelength Repeatability	0.15nm
	Baseline Stability	0.005A/30 min
Optical System	Monochromator	Czerny - Turner Configuration Single Beam
	Spectral Bandwidth	0.1nm, 0.2 nm, 0.4 nm, 1.0 nm, 2.0 nm
		5 steps with automatic changeover
Flame Analysis	Sensitivity (Cu)	0.03 ug /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 Automatic ignition and of mixing air - acetylene gas with safety control
Background correction	Deterium Lamp	1.0 Abs self-reversal background correction: 3.0 Abs
Graphite Furnace Analysis	Character Value (Cd)	0.5 pg
	Temperature Range	Ambient - 2650 °C
	Heating	Voltage feedback control when drying and ashing, optical temperature control when atomising
	Heating Programme	Upto 9 steps with choices of ramp, temperature increase and full power heating
Data Processing	Analytical Method	Flame , graphite furnace and Hydride
	Determination methods	Calibration curves using 1st, 2nd and 3rd order of fit, standard addition method
	Repetitions	1-20 with calculations of average, SD and RSD
	Result printout	Output of parameters, data, spectra and calibrations curves
Mainframe	Light Source	8 hollow cathode lamp turrets with 2 simultaneously lit, one lamp pre heated
	Power Supply	110V/60Hz or 220V/50Hz three phase AC 200V (main frame) 5000W (graphite furnace)
	Dimensions (cm)	Main frame 110 x 50 x 45 Graphite furnace 50 x 50 x 45
Catalog No.		35740101

Compatible Accessories for LAAS-990

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.

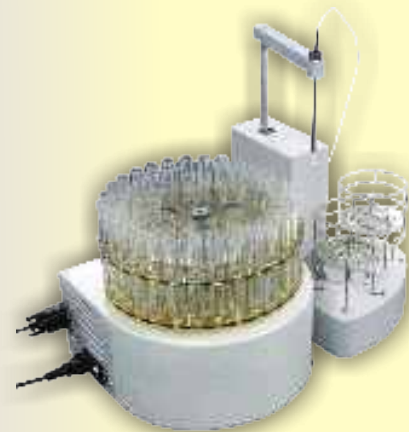
Catalog No. 35740111



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 avoid sample and standard contamination. An inert Teflon probe is supplied.

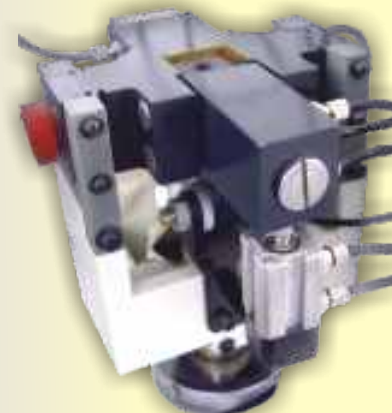
Catalog No. 35740112



Graphite Furnace Autosampler

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

Catalog No. 35740113





LAAS-8000 SERIES

Features:

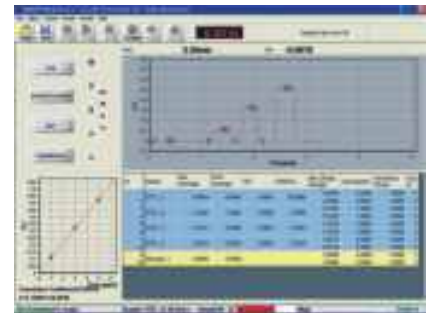
- Designed with a floating optical system to ensure no effects from environmental conditions
- Compact design integrating all parts such as Flame, Graphite furnace, Optical system, Atomizer, Graphite furnace, power supply and electronics in one.
- Titanium nebulizer and burner head are protected against corrosion and oxidation for long time use.
- The use of 1800 lines/mm diffraction grating for strong energy and high resolution.
- Optical single beam for strong energy to ensure a very low limit of detection for atoms such as As, Se, etc.
- Automatic switching between Flame and Graphite furnace within seconds.
- D2 lamp background correction and self-absorption background correction for more accurate results.
- Hollow cathode lamp protection from current surge and insufficient pressure.
- Gas leak detection and alarm for over-heating in graphite furnace mode.
- Hydride generator (Optional) for analysis of As, Pb, Se, Hg, etc. with high sensitivity.
- Auto sampler (Optional) for automatic analysis process and preparation of standard solutions.

LAAS-8000 Series comprises of two models

- LAAS-8010: Fully Automatic Flame Atomic Absorption Spectrophotometer
- LAAS-8020: Fully Automatic Flame / Graphite Atomic Absorption Spectrophotometer

Common Features:

- Fully controlled by PC.
- Automatic wavelength set-up, automatic slit switching, automatic lamp current and gain set-up within 40 seconds.
- Auto switching and control of 6 lamps on rotating turret.
- Automatic flame ignition, automatic flow control for gases and gas leak detection.
- Nitrous Oxide Gas/Acetylene Gas selection (Optional) to analyze elements under the condition of high temperature.
- The use of advance garting for strong energy and high resolution.
- Compatible with MS Windows XP and user-friendly graphical user interface.



LAAS-8020:

- Automatic switching between flame and graphite furnace.

Specification

Model No.		LAAS-8010	LAAS-8020
Main Specifications	Wavelength Range	190nm ~ 900nm	
	Grating	1800 lines/mm	
	Wavelength Repeatability	Full wavelength $\leq \pm 0.1$ nm	
	Blaze Wavelength	250nm	
	Focal length	300mm	
	Spectral Bandwidth	5-steps: 0.1nm, 0.2nm, 0.4nm, 1.0nm and 2.0nm	
	Mono-Chromator	Czerny-Turner Grating Mono-Chromator	
	Background Calibration	> 50 times	
	Accuracy	Full Wavelength $\leq \pm 0.2$ nm	
	Resolution	Better than 0.3nm	
Flame Method	Position Adjustment	Best Adjustment of height and angle. Finish switch between Flame/Hydride in 1 minute	
	Burner Head	Interchangeable full titanium burner heads of 50mm and 100mm, full titanium atomizing cell	
	RSD	$\leq 1\%$	
	MDL	≤ 0.005 mg/L	

LAAS-8000 SERIES

Specification

Model No.		LAAS-8010	LAAS-8020
Graphite Furnace Method	MDL	-	1pg
	Temp. Control Range	-	Room temp. ~ 3000°C
	Graphite Furnace Repeatability	-	3µg/L Cd 11 injections, RSD ≤2%
	Temp. ramping rate	-	≤ 2000°C/second
	Temp. Control Program	-	Max. 20 steps temp. ramping program
	Mode of Temp. Ramping	-	Step, Slope and Flat
Data Processing	Measurement Method	Flame absorption, flame emission, graphite furnace and hydride	
	Analysis Method	Linear equation, non-linear equation, standard with added standard	
	Print Output	Calibration curve, signal spectrogram, instrument conditions, analysis parameters, analysis results and other all can be stored automatically and printed	
Catalog No.		35630101	35630102

Accessories:

Hydride Generator

The hydride generator is for the low concentration analysis of elements such as As, Se, Hg, Pb, Bi, Sb, Sn and Te with high sensitivity. The sample injection by a peristaltic pump and atomizer made of quartz tube with an electrical heating mode are provided for easy and fast operation. It is also easily applied to any AAS with hydride-atomic absorption.

- Non-stop injection from 3 channels by a peristaltic pump. Injection volume: 1~5ml/min
- Longest life of Tygon peristaltic pump tube (500 ~ 1,000hr)
- The use of quartz electric heating tube to resist oxidation and contamination. (Heating available up to max. 1,000°C with no damage)
- Rapid ramping rate: 100 ~ 1,000°C set-up available.
- Temp. set-up accuracy : ±2°C
- Compact design to optimize space

Sensitivity and minimum detection limit in use of Hydride generator

	Sensitivity	MDL	RSD
As	0.11ng/ml	0.015ng/ml	0.82%
Pb	0.21ng/ml	0.27ng/ml	1.03%
Catalog No.:	35630111		



Chiller

Supply of cool water for use of Graphite furnace (LAAS-8020)

Water Temp.	Flow Rate	Power Supply
4°C ~ Room temp.	2.5L/min	220V
Catalog No.:	35630112	



Autosampler for Flame

The Labnics autosampler provides both individual sample injections and batch sample injections. For the bath sample injection type, it performs washing, stand-by time and injection time for each sample.

- Up to 60 ea of 5ml vials, Carousel type.
- Max. injection volume : 4ml.
- Accuracy : 2 ~ 3%.

Catalog No.:	35630113
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Autosampler for Graphite Furnace (LAAS-8020)

This autosampler for the use of Graphite Furnace provides multi-function and high precision for convenient and automatic operation.

- Up to 70 sample vials and 6ea of 25ml glass for solutions, blank solution and chemical modifier (Carousel type).
- Installation wizard for convenient use.
- Accuracy : < 0.1µl.
- Precision : <1% (RSD).
- The function of standard chemical addition. Full control of all process related to samples, standard chemicals and chemical modifier.
- Air separating different solutions ensures no contamination.
- Up to 20 repetitions for same sample, up to max. 70µl injection.
- Automatic heating of Graphite furnace after injections.

Catalog No.:	35630114
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