



AA-7020Series

Atomic Absorption Spectrometer

A & E LAB UK CO.,LTD

CHASE BUSINESS CENTRE (CHD) 39-41 CHASE SIDE

LONDON, N14 5BP, UK

Phone: 0044-20-36271763

Website: WWW.UKAELAB.COM

Email: SALES@UKAELAB.COM

AA-7020Series



Atomic Absorption Spectrometer

EAST & WEST ANALYTICALINSTRUMENTS,INC

Application

The AA-7020 series atomic absorption spectrophotometer can be widely used in the fields of metallurgy, petrochemical industry, geology, medical science, environmental protection, scientific research, agriculture, disease control, food, material science, quality inspection etc.

The AA-7020 series can be used to analyze over 70 elements at both normal or trace levels.

Features

Advanced Optical System

- The AA-7020 series features a unique suspension design for the optical system. Shaking of the instrument bench or change of the environmental temperature will have no effect on the instrument's stability.[Patent No.ZL200620023296.X]
- First domestic manufacturer to use an 1800 lines/mm diffraction grating, which increases resolution and energy efficiency.
- A single beam and short optical system allows for a strong signal and very low detection limits for elements such as As, Se among others.
- Carefully designed deuterium lamp background reduction and self-absorption background reduction results in more accurate calibration.

Integrated Design

- The AA-7020 features an integrated flame and graphite furnace design that contains the optical system, atomizer, graphite furnace power supply and electronics all in one unit. It is first such design and one of the most compact AAS in the world. (Patent No.ZL200620023298.9)
- Optimized lamp power supply technology to prolong lifetime of element lamps.

Automated Switch between Flame and Graphite Furnace

- Features automated or manual switching between flame and graphite furnace in less than 2seconds.
- Optics do not need to be adjusted between switches. [Patent No.ZL200620023297.4]

Reliable Safety System

- Safe and reliable control alarm devices to ensure over-current protection for hollow cathode lamps.
- Under-pressure protection of combustion gas/protection gas, leakage alarm of combustion gas, over-heating protection of graphite furnace and protection against abnormal flame.

Flexibility

- Optional HG-01 hydride generator that utilizes a heated ceramic tube to realize trace analysis of As, Pb, Se. Hg, Bi, Sb, Sn, Te with high sensitivity.
- Optional graphite furnace auto sampler that allows for automated preparation of standard solutions and automated analysis.

High Degree of Automation

- Automatic wavelength positioning, automatic slit switch and automatic optimization of lamp current and gain. All of these operations can be completed within 40 seconds.
- The six lamp rotating turret is controlled by computer for automated element lamp selection, which allows for automated analysis of up to six elements in sequence.
- Automatic flame ignition, automatic control of the combustion gas flowrate, and automatic gas leakage alarm.

Additional Features



Auxiliary Gas

- Auxiliary gas, such as oxygen, can be used in the internal gas path of the graphite furnace to sufficiently remove organic components of the sample during the ashing treatment phase in order to reduce interference and increase analysis accuracy.

Automatic Flame Height Adjustment

- Automatically find the optimal flame height for best analysis condition.

Automatic Liquid Trap Protection

- Flame ignition is controlled with a combination of a float inside the liquid trap and a solenoid to avoid acetylene leakage due to lack of water in the liquid trap. This increases operation safety.

Configurations

This single beam instrument comes in two configurations, listed below.

Mode	Major Configuration		
AA-7022	Main unit with flame space, Fast wavelength scan Automatic gain and slit control Six lamp rotating turret Automatic lamp current control	Automatic high voltage control Deuterium background correction Self absorption background correction Electronic gas flow control	Water level monitoring Computer controlled flame ignition Nitrous oxide gas route Ethernet communication
AA-7023	Main unit with flame and graphite furnace Fast wavelength scan Automatic gain and slit control Six lamp rotating turret Automatic lamp current control Automatic high voltage control Deuterium background correction Self absorption background correction Electronic gas flow control Rectangular shaped graphite furnace	design allows for replace able graphite cones Computer controlled flame ignition Nitrous oxide gas route Automatic flame height adjustment Automated pneumatic switching between flame and graphite furnace	Work Table gas-driven displacement Water level monitoring Water coolant flow monitoring Double internal gas route Graphite furnace optical control temperature measurement Ethernet communication

Complete Set of AAS

1. Main Unit (Any Model)
2. PC, Printer, Workstation Software
3. Gas Sources: Oil-less air compressor
C₂H₂[99.9% [optional]
Ar/N[99.99% [optional]
4. Element Lamps (based on user selection)
5. Hydride Generator (optional)
6. Auto sampler for Graphite Furnace (optional)
7. Graphite Furnace Water Cooling System [optional]
8. Auto sampler for Flame (optional)
9. Spare Parts

Excellent Graphite Furnace

Advanced Longitudinal Heating Mode

Atomization temperature can reach 3000 °C. This meets the atomization temperature demands of Ni, Mo, V, Co. etc.

High Stability

Advanced optics system ensures high optical energy of the instrument. High signal-noise ratio ensures repeatable data.

Maximum Sample Size Increased

Maximum sample size is 70 µL. This feature is useful for multiple samples and analysis of samples with low concentrations.

High Performance Background Correction

Continuous light source [D₂] and self absorption background correction is capable of 1 A of background correction

Fast Heating

Optical temperature control greatly increases heating rate and allows for rapid atomization.

High Precision Homogeneous Heating

Unique design of the graphite furnace ensures homogeneous heating during atomization to obtain accurate data. Titanium

Nebulizer and Burner

Utilizing aerospace technology, the industrial grade pure titanium nebulizer and burner head is cast using the paraffin method. These parts have excellent resistance to corrosion and oxidation, can withstand high temperatures, and are extremely durable.

Convenient Injection Port

Design of the injection port simplifies sample injection and decreases error. Good precision can be obtained even by manual injection.

Advanced Graphite Furnace

Graphite cone can be replaced when worn to ensure stable conductivity of electrodes:[Patent No.ZL200720104071.1]

Technical Specifications

Optical System

Wavelength range:	:190~900 nm	Spectral bandwidth:	Automatic switching between 5 levels:0.1.0.2.0.4.1.0.2.0 nm
Mono-Chromator:	:C-T Grating Mono-Chromator	Wavelength accuracy	:+0.1 nm
Wavelength repeatability:	0.05 nm	Grating:	1800 lines/mm
Blaze Wavelength:	250 nm	Baseline Stability:	+0.003A/30 min (Static)+0.002A30 min (Dynamic)
Resolution:	better than 0.1nm		

Flame Method

Benchmark Concentration of Cu:	0.02 g/ml	Detection Limit:	0.003 g/ml
Precision RSD:	0.6%	Burner:	:Interchangeable full titanium burner of 50mm and 100 mm
Position Adjustment:	Adjustable height and angle Flame to hydride can be Detection Limit:0.003 g/ml Burner:Interchangeable full titanium burner of 50mm and 100 mm switched in less than 1 minute		

Graphite Furnace Method

Benchmark Concentration of Cd:	0.3X10 ⁻¹² g	Detection Limit	:0.2x10 ⁻¹² g
Temperature Range:	Room temperature to 3000	Precision RSD:	2%
Temperature Control Program:	Max 20 step temperature program.3 modes of temperature	Optical Control Temperature Rise Rate:	3000 /s
rise:	step.slope and flat	Heating Modes:	Max power heating and optical control rapid heating
Max Power Temperature Rise Rate:	2000 /s		

Background Correction

Background correction is available for both flame and graphite furnace method.

Correction mode:Deuterium lamp,self absorption background correction [optional]



Correction capability:When background absorption approaches 1.0 Abs,the instrument is capable of a background correction of 60 times or more

Data Processing

Measurement methods:Flame absorption,flame emission,graphite furnace,and hydride method

Analysis method:Linear fitting,nonlinear fitting,standard addition method

Printing output:Calibration curve,spectrum,analysis conditions,analysis parameters,and analysis results can be automatically stored and printed

Main Unit with Integrated Graphite Furnace Power Supply

Dimensions:880 (L)x540 (W)x450(H)mm,125 kg

Power Supply:~220 V50 Hz single phase,main unit power:200W,graphite furnace power:4 KW

High Accuracy Graphite Furnace Analysis System

The most important specification of a graphite furnace analysis system is the repeatability of analysis data. The precision requirement of trace analysis depends on the concentration level of the sample, which varies based on application, A quality graphite furnace analysis system must satisfy all such requirements, Additionally, it must have accurate temperature control, high quality graphite tubes, a fast heating system, fast signal processing electronics and easy to use analysis software.

HG-01 Hydride Generator

The HG-01 uses a peristaltic pump for sample injection, and has an atomizer consisting of a ceramic electric heating tube heating a quartz tube. It allows for ultra low trace analysis of the eight elements IAs, Se, Hg, Pb, Bi, Sb, Sn and Tel, which have relatively low sensitivity using the atomic absorption method. The instrument is fast and easy to operate. It is compatible with any AAS using the hydride-atomic absorption method.

Features

- Samples are continuously pumped by 3 channels using a peristaltic pumps. Injection volume is 1-5 ML.
- Uses Tygon wear-resistant durable pump tube. The life span of these pump tubes can be as long as 500~1000 hr.
- Using a uniquely designed ceramic electric heating tube, the HG-01 is oxidation-resistant and expels no waste. It can withstand temperatures of up to 1000 °C for a many hours with no damage to the quartz tube.
- Temperature control is fast and accurate. The temperature range is 100~1000°C with an accuracy of +2 °C. The optimal atomizing temperature can be quickly reached and precisely controlled
- Compact design and easily mounted on the AAS in the flame nebulizer base position.



AS-600 Flame/Furnace Auto-sampler

Features

- At most 133 sample holders including 5 holders used for solutions. Many kinds of sample plates and both plastic and quartz injection tubes are compatible.
- Without moving the auto sampler, automatic sampling can be switched from flame to graphite furnace or vice versa. Manual injection can be processed without removing the auto sampler. Sampling depth and injection depth are software controlled.
- Sampling of tested samples, standard samples and chemical modifiers are all software controlled.
- After solution injection, the software will start the graphite furnace heating program automatically.
- After each injection, the system runs an automatic rinse procedure to prevent samples from being contaminated.
- Automatic concentration and dilution.
- Graphite furnace supports hot injection and reservation function.



AS-200 Auto-Sampler for Flame

123 positions for samples, 6 positions reserved for standard solution, blank solution, etc.

The injection time and frequency can be set automatically through software.

Automatic rinse.



EW-320AC Air Compressor

The EW-320AC is a double cylinder piston compressor that is stable reliable and oil-less.

It uses three filters (two filters for gas inlet and one filter for gas outlet) to ensure that the gas output is pure.

Provides clean and dry compressed air with constant pressure for atomic absorption spectrometers.



Model	Gas Flow	Pressure Range	Dimensions	Features	Note
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EW-320AC	20L/min	0.005~0.3Mpa	400x300x635mm	Quiet oilless dual piston compressors	Manual drain
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EW-900CH Water Cooling system

The EW-900CH Water Cooling System is designed for various industrial applications with a strong protection and alarm system.

It has the unique option of a purification configuration that ensures pure water is produced. This system provides a variety of alarms and output connections, along with a water level alarm, over temperature alarm and water flow alarm. All configurations can be customized according to the user's requirements.

Features

- Large volume open tank, easy to clean, easy to do water bath testing.
- Multiple alarm protection, including water level alarm, water flow alarm and over temperature alarm
- Optional configurations for water purification The first option: full stainless steel water pipelines The second option: built-in filtering devices to ensure water quality.

