AA-7050Series

Atomic Absorption Spectrometer

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AA-7050 Series

Atomic Absorption Spectrophotometer

Application

The AA-7050 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-7050 series can be used to analyze over 70 elements at both normal or trace levels.

Features

Advanced Optical System

- The AA-7050 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-7050 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 2 seconds.
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 for 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.
Flame autosampler (optional).

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 eight lamp rotating turret is controlled by computer for automated element lamp selection, which allows for automated analysis of up to eight elements in sequence.

Automatic flame ignition, automatic control of the deuterium lamp and its facula, and automatic switch of graphite furnace power supply.

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.

Deuterium lamp background

When using deuterium lamp background correction, the instrument will automatically configure the deuterium lamp and optimize its position to increase the concentricity between the deuterium beam and element beam to the greatest extent, which allows for the best background correction results.

Graphite furnace saving gas mode

The intelligent control of the protection gas switch maximizes the effective use of protection gas and reduces waste when the gas is not needed, cutting down on the cost of operation.

Temperature correction programs

Temperature correction programs for two types of graphite tubes, standard and extended lifespan tubes, are built into the software. Using the extended lifespan tubes, for typical analysis of Pb, tube firings can reach >1,000 firings before replacement.

Multi-Element analysis

•Automatic multi-element analysis: After editing method, in cooperation with autosampler, the instrument can automatically set method parameters, including automatic

•Optional graphite furnace autosampler that allows for automated preparation of standard solutions and automated analysis.

Graphite furnace viewing system

The graphite furnace can be observed in real time through the graphite furnace viewing system which uses a camera. The whole analysis process from sample injection to atomization can be observed. By observing the desolventizing, drying and ashing process, parameters can be optimized to obtain more accurate results. The position of injection probe and light beam can be constantly monitored to check for probe damage and alignment issues which may lead to inaccurate

results.

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.

•Intelligent frequency conversion

The software can intelligently identify the power frequency and automatically match it. Suitable for the power supply frequency instability or other frequencies power grid.

The AA-7050series of the simplified table

Model	Explanation
AA-7050	Flame atomizer, graphite furnace
AA-7050F	atomizer
AA-7050G	Flame atomizer

Technical Specifications

OpticalSystem

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:	±0.1nm
Wavelength repeatability:	≤0.05 nm	Grating:	1800 lines/mm
Blaze Wavelength:	250 nm	Baseline Stability:	≤0.003A/30 min (Static) ≤0.002A/30 min (Dynamic)
Resolution:	better than 0.1nm		

Flame Method

Benchmark Concentration of Cu:	≤0.02 μg	Detection Limit	≤0.003 μg/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 switched in less than 1		

	minute.		

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.

Graphite Furnace Method

Benchmark Concentration of Cd	0.3×10 g	Detection Limit	0.2×10 g
Temperature Range	Room temperature to 3000 ℃	Precision RSD:	≤1.8%
Temperature Control Program:	Max 20 step	Precision RSD:	≤1.8%
Temperature Control Program:	Max 20 step temperature program. 3 modes of temperature	Optical Control Temperature Rise Rate:	≥3000 ℃/s
rise:	step, slope and flat.	Max Power Temperature Rise Rate:	≥2000 ℃/s
Heating Modes:	Max power heating and optical control rapid heating	power control mode	Accuracy≤1%, Reproducibility≤0.5%
Optical control mode	Optional		

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) x 540 (W) x 450 (H) mm, 125 kg	Power Supply	~220 V 50 Hz single phase
main unit power	200 W	graphite furnace power	4 KW

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 (As, Se, Hg, Pb, Bi, Sb, Sn and Te), 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 ℃ for a many hours with no damage to the quartz tube.

Temperature control is fast and accurate. The temperature range is 100~1000 ℃ with an accuracy of ±2 ℃.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

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 autosampler, automatic sampling can be switched from flame to graphite furnace or vice versa. Manual injection can be processed without removing the autosampler.

• Sampling depth and injection depth are software controlled.

• Sampling of tested samples, standard samples and chemical modifiers are all software controlled.

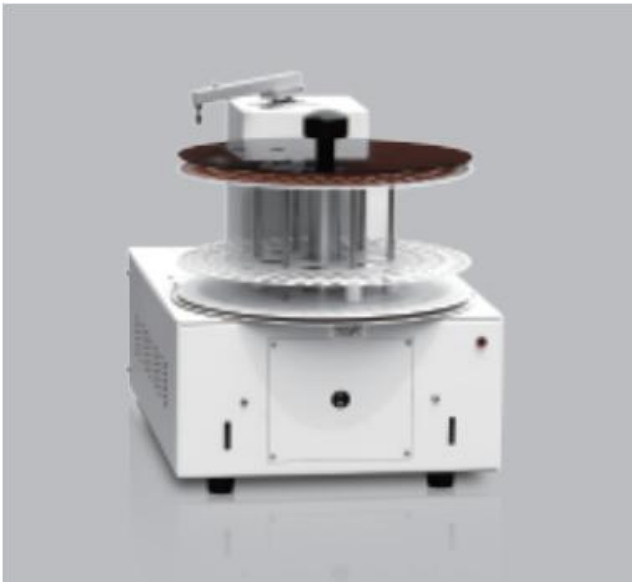
• After solution injection, the software will start the graphite furnace heating program automatically.

• The system immediately enters the automatic cleaning procedure after each injection to prevent pollution of samples. 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 freguency 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
EW-320AC	20L/min	0.005～0.3 Mpa	400(W)×300 (L)×635 (H)	Quiet oilless dual piston compressors	Manual drain

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.