

# ATOMIC ABSORPTION SPECTROPHOTOETER



**MODEL: TL-2808AA**

## DESCRIPTION

TOPLAB INDIA'S Fully Automatic Atomic Absorption Spectrophotometer is best choice for any laboratory operator/user for advanced trace element analysis measurement. TL-2808AA Atomic Absorption Spectrophotometer is Eight Lamp Turret intelligent system with the background correction technology of deuterium lamp buckle. It has high precision, humanized fully automation to meet the different requirements of users. Users can choose Graphite furnace control, automatic sampler, hydride generator and so on.

TOPLAB INDIA'S AAS is a great tool for any Soil testing laboratory, Fertilizer Testing Laboratory, Agriculture and Environmental Testing Laboratory operator, which is one of the most accurate and economy AAS available in the market.

TL-2808AA can be widely used in the fields of Soil and Water testing Labs, Geology, Metallurgy, Pharmaceutical, Chemical industry, Petroleum, Agriculture, Environment protection, Commodity inspection and many other industries. The analysis and application of trace elements has gradually permeated from inorganic chemistry to organic chemistry in recent years.

**Features:**

- TL-2808AA is Fully Automatic Atomic Absorption Spectrophotometer.
- TL-2808AA has Eight-lamp position Automatic Turret Holder, and the pre-heat lamp number can be customized, which can short the waiting time of operating process.
- The lamps can auto switch the turret, auto adjust the power and optimize beam position.
- It can preset and optimize the working condition of the hollow cathode lamp so that convenient to detect multi elements.
- Automatic setting for flow, auto-ignition and flameout automatic protection
- Automatic adjustment for negative high-voltage and lamp current
- Automatic setting for the best flame height and atomizer position, while select the best analyzing conditions and make sure the analysis results reliable
- Automatic switching of spectrum bandwidth, 0.1nm, 0.2nm, 0.4nm, 1.0nm, 2.0nm for option
- Automatic control for wavelength scanning and peak searching
- The lamps have the functions of self-optimized and three-dimensional self-adjustment to maximize the energy.
- TL-2808AA has fully Automated Electronic Gas flow control system.
- TL-2808AA has Automatic Flame ignition System through software.
- The elements have the functions of negative high-voltage self-memory, wavelength scanning, lamps self-optimization and energy optimization with one key step.
- The structure designation of integrated flame atomizer and graphite furnace atomizer realizes the auto-switching between them
- Hydride Vapour Generator can be used in attachment.
- The automatic injector is easy to operate with high accuracy, automatic control, remote monitoring and can operate without manual monitoring, thereby improving the working efficiency and reducing the operation error
- The reliable safety protection system protects the operators safety all-around: Reliable position identify, Real-time monitoring for flame, Acetylene leak protection system, Real-time monitoring for abnormal pressure, Emergency brake button for accidents
- All New design of flame atomizer
- Graphite Furnace of high sensitivity controlled by digital power
- The graphite tube has long using time
- The workstation Software adopts expert database information system which can support fast and accurate detecting information and methods. The operation of the workstation is simple

## SPECIFICATION

### A. Optical System:

- **Wavelength Range:** 185nm ~ 900nm
- **Optical Grating:** 1800 lines/mm, Single Beam Fully closed Optics
- **Monochromator:** Czerny-Turner (C-T) of eliminating aberration monochromator
- **Spectral Bandwidth:** 0.1nm, 0.2nm, 0.4nm, 1.0nm, 2.0nm  
For multiple auto-switching
- **Wavelength Precision:**  $\pm 0.1$ nm
- **Wavelength Repeatability:** 0.025nm
- **Resolution:** 0.2nm (Copper lamp 324.7nm)
- **Baseline Drift:**  $\pm 0.003$ A/30min (static) 0.005ABS/15min (dynamic)
- **Absorbance Range:** 0 ~ 4 A
- **D<sub>2</sub> Background Correction:** Deuterium Lamp background signal for 1Abs, background correction ability > 60 times.
- **Detectors:** PMT – High Sensitivity Wide spectral range Photomultiplier Tube
- **Bandwidth Deviation:** within  $\pm 0.02$ nm
- **Precision:** RSD  $\leq 0.7\%$

### B. Light Source System:

- **Lamp Holders:** Eight Lamp holders can auto-switching & auto-alignment
- **Lamp power supply mode:** 400Hz square wave pulse
- **Lamp current adjusting range:** Auto Lamp current adjustment
- **Deuterium lamp Background Correction:**  $\geq 60$  times at 1ABS
- **Self-priming Background Correction :**  $\geq 60$  times at 1ABS

### C. AAS System Configuration:

#### Flame Atomization System (FAS):

- **Burner:** 100mm, Titanium Alloy burner, which is air-cooled pre-mixed type
- **Detection Limit (Cu):** 0.006  $\mu\text{g/ml}$  (0.006ppm)
- **LOQ (Cu):** 0.006  $\mu\text{g/ml}$
- **Precision:** RSD  $\leq 0.7\%$
- **Flame Ignition:** Automatic ignition through Software control
- **Gas Control:** Automatic Electronic Gas Control through Software
- **Sprayer:** High efficiency glass sprayer of metal sleeve set
- **Atomization Chamber:** Corrosion-resistant Polymer explosion-proof spray chamber
- **Position adjustment:** The flame height and the front & back position are automatically
- **Safety Measures:** It has functions of various auto safety Protection acetylene leak alarm and system turn off, Air pressure system, cooling system failure protection, power monitoring.

**Graphite Atomization System (GAS):**

- **Detection Limit (Cd):**  $1.5 \times 10^{-12}$ g (0.0015ppb)
- **LOQ (Cd):**  $1.5 \times 10^{-12}$  g
- **Precision:** RSD $\leq$ 3%
- **Heating range:** RT ~ 3000°C
- **Heating operation methods:** Power control method for dry ashing stage, max power light control for atomization stage
- **Temperature control precision:**  $\leq$ 1%
- **Heating rate:**  $>2000^\circ\text{C}/\text{sec}$
- **Heating condition setting:** Up to 11 programs, ramp heating , stage heating and max power heating
- **Safety protection:** Functions of argon under voltage instruction, water flow discharge cooling, overheating or overflow alarm and auto-protection
- **Graphite Furnace GFTV visual system:** CCD camera real-time monitoring of graphite furnace atomizer , prolong the service life of graphite tube **(Optional)**
- **Autosampler system:** optional 85 -bit Autosampler. Automatic configuration of standard curve, automatic dilution, high-precision injection **(Optional)**

**Hydride Vapour Generator (HVG):**

- **Hydride generator:** The hydride generation device can detect the low temperature elements, such as Mercury(Hg), and Arsenic(As), Selenium(Se), Antimony(Sb), Bismuth(Bi), Lead(Pb), Tin(Sn), Tellurium(Te) and Germanium(Ge)
- **Highly automatic:** After pressing the start key, the whole process (sampling, reacting, calibrating and cleaning) will be finished automatically.
- **High Sensitivity:** The sensitivity of most elements is better than 1ng/ml/1%A. Sensitivity of Arsenic is better than 0.15ng/ml/1%A.
- **RSD:** Less than 3%
- **Measurement time:** The single measurement will take 25 to 35 sec
- **Less solution:** sample 2-2.5mL (including clean), potassium borohydride 1-1.5mL, carrier liquid 5-6mL.

**D. Analysis method:**

- **Measuring Methods:** Air-acetylene Flame method, Graphite Furnace method and Hydride generator method
- **Concentration Calculate Method:** Automatically fit the working Curve, calibrate sensitivity and calculate the concentration & content
- **Repeat Measuring Times:** 1~99 times, automatically calculates the average value, content, standard deviation and relative standard deviation
- **Result Print:** Print the stage test data or final analysis report, and the results can be exported to Excel
- **Software Compatibility:** Windows XP/Windows7/Windows10 etc.
- **Communication interface:** standard RS232 , USB interface

**E. Oil Free Air Compressor:** Flow 118 L/min, 8 bar Pressure, 20Litre Tank

**F. Power supply:** AC 220V/50HZ

**G. Power:** 150VA

**H. Weight:** 70kg

**I. Working environment temperature:** 10°C ~35°C

**J. Working environment humidity:** ≤80%

## SPARE PARTS AND ACCESSORIES



**BURNER ASSEMBLY**



**AUTOMIZER**



**INJECTION TUBE**



**DATA CABLE**



**ACETYLENE HOSE**



**HOLLOW CATHODE LAMPS**



**HYDRIDE GENERATOR**



**AAS FUME HOOD**



**CHILLER**