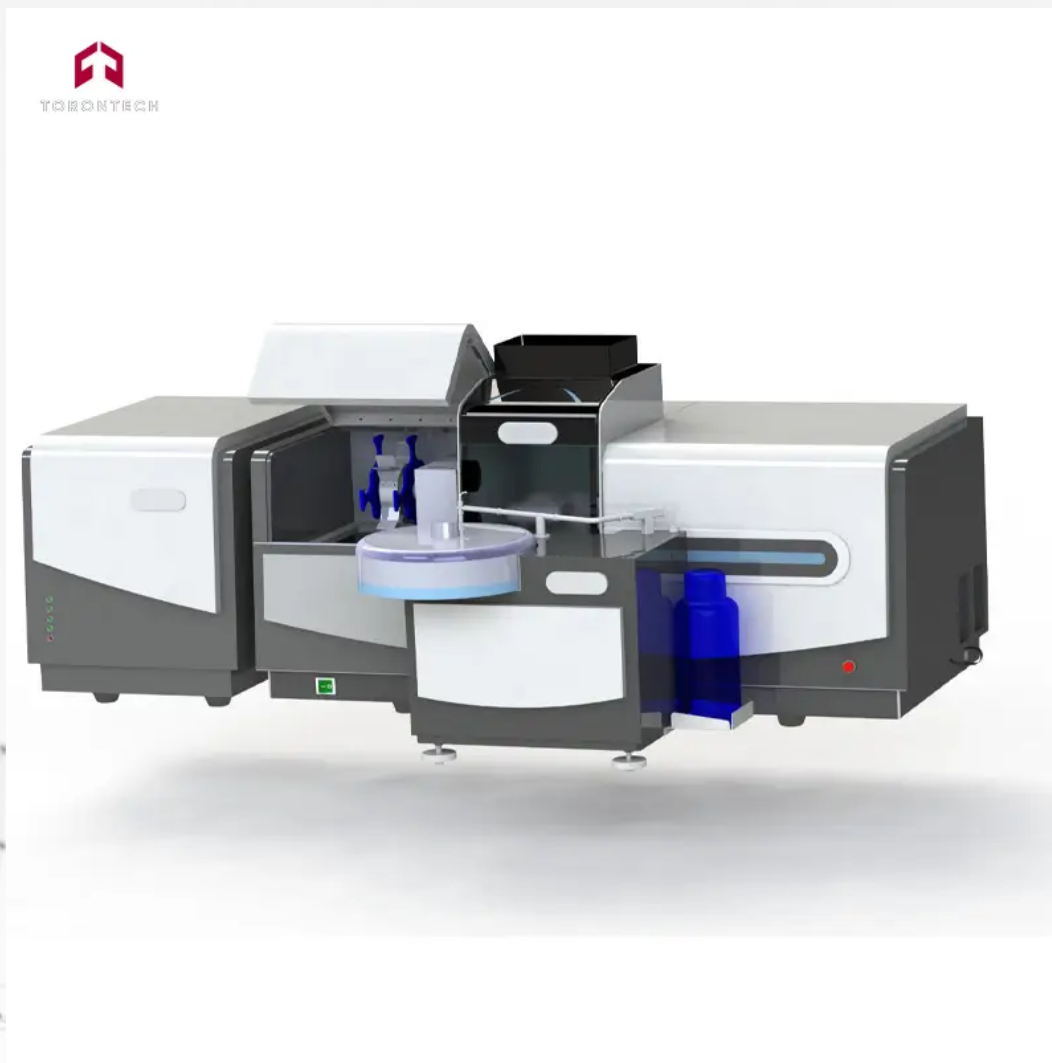




TORONTECH

AAS - ATOMIC ABSORPTION SPECTROPHOTOMETER AAS3000FG (FLAME + GRAPHITE FURNACES TYPE)



AAS - Atomic Absorption Spectrophotometer AAS3000FG (Flame + Graphite Furnaces Type), featuring both flame and graphite furnace capabilities, is a highly accurate and versatile instrument for precise metal analysis. Known for its outstanding selectivity, broad range of applications, high sensitivity, ease of use, cost efficiency, and exceptional accuracy, the AAS3000FG is essential for laboratories and research centers. It is widely utilized across diverse fields, including geology, mining, metallurgy, agriculture, forestry, soil and fertilizer management, hydrology, environmental protection, petrochemical industries, food and drug safety, and third-party testing.

APPLICATIONS

The Torontech AAS3000FG is a high-performance instrument for the quantitative determination of metallic elements in a vast range of samples. By combining the capabilities of both flame and graphite furnace atomizers, it provides an exceptionally wide analytical range, from trace and ultra-trace contaminant levels to major constituent concentrations. It is the definitive tool for generating the precise elemental data required for regulatory compliance, process control, and advanced research.

This critical elemental analysis is essential for quality, safety, and process control in:

- **Environmental Monitoring:** For the analysis of water, soil, and air to quantify toxic heavy metal pollutants like lead, cadmium, mercury, and arsenic, ensuring compliance with strict environmental protection regulations.
- **Food Safety & Pharmaceuticals:** To perform essential quality control by detecting and quantifying trace levels of toxic metals and essential minerals in raw materials and finished products, safeguarding public health and meeting regulatory standards.
- **Mining & Metallurgy:** For ore grade control by accurately determining the concentration of precious and base metals (e.g., gold, copper, zinc) and for verifying the precise elemental composition and purity of finished metal alloys.
- **Agriculture & Soil Science:** To analyze soils, fertilizers, and plant tissues for essential micronutrients (e.g., iron, manganese, zinc) to guide crop management and to monitor for the presence of undesirable heavy metal contaminants.

FEATURES

Fully Automatic Switching

The AAS3000FG's flame and graphite furnace components switch seamlessly, saving time and eliminating manual intervention.

Reliable Flame System

Equipped with automatic flow control and ignition for consistent and efficient performance.

Graphite Furnace Safety

Advanced temperature protection, including dual circuit breakers, prevents overloads and temperature irregularities.

Gas-Liquid Separation System

Optimized for performance under high humidity and limited gas supply conditions.

Safety Interlocks

Includes multi-level safety devices and alarms for automatic shutdowns during safety issues.

Modular Design

User-friendly modular structure and circuit design for quick part replacement or repairs.

Extended Functionality

Compatible with hydride and flame emission methods, high-temperature flame method, and add-ons such as automatic samplers for flame and graphite furnaces.

Performance Index and Major Technical Indicators

- **Wavelength Range:** 170–900 nm

- **Wavelength Accuracy:** ± 0.10 nm
- **Wavelength Repeatability:** ± 0.05 nm
- **Baseline Stability:** Drift ≤ 0.002 Abs; Noise ≤ 0.001 Abs (30 min steady, 15 min dynamic)
- **Resolution:** Spectral bandwidth deviation ≤ 0.02 nm, Manganese line ratio $\leq 25\%$
- **Flame Method (Copper):** LOD ≤ 0.002 $\mu\text{g/mL}$, characteristic concentration ≤ 0.025 $\mu\text{g/mL}/1\%$, precision $\leq 0.3\%$
- **Graphite Furnace Method (Cadmium):** LOD ≤ 0.4 pg, characteristic content ≤ 0.5 pg, precision $\leq 2.0\%$
- **Background Correction:** Deuterium lamp at 1.0 Abs, self-absorption at 2.0 Abs, exceeding 90x background capacity

Light Source System

- **8-Lamp Position Design** with automatic rotation, switching, and collimation
- **Simultaneous Illumination** for up to 6 lamps, increasing analysis efficiency through simultaneous preheating
- **Memory Function** enables custom-free, editable lamp settings

Optical System

- **Monochromator:** Czerny-Turner design with 277 mm focal length
- **Diffraction Grating:** 1800 grooves/mm, blaze wavelength at 250 nm
- **Spectral Bandwidth:** Adjustable options from 0.1 to 1.6 nm
- **Detector:** High-sensitivity photomultiplier tube
- **Automation:** Auto peak selection, bandwidth adjustment, wavelength optimization without resets

Flame System

- **Burner Head:** 10 cm Ti for air-acetylene flame, includes emission burner
- **Spray Chamber:** PPS material, corrosion-resistant and flame retardant
- **Adjustable Burner Head** with customizable height, rotation, and horizontal position
- **Automatic Ignition/Flame-Out** with precision mass flow control
- **Flame Pedal Readout** for clear data visibility

Graphite Furnace System

- **Longitudinal Heating** up to 3000°C with rapid heating rate >3000°C/s
- **Temperature Control:** Optical and constant voltage options with 1% precision error
- **Automatic Adjustment:** Fully automated for height and horizontal optimization
- **Gas Control:** Monitors inner, outer, and make-up gas flows with water/gas monitoring
- **Graphite Tube Compatibility:** Supports various tube types including platform and concave

Software Workstation

- **One-Key Optimization** for multi-task analysis
- **Repeat Measurements** up to 99 times with automatic calculations for average, SD, RSD, etc.
- **Automated Data Handling** for curve fitting, concentration calculations, and standard additions
- **Data Output:** Formats include Word, Excel, and other report-friendly options

Safety Protection

- **Comprehensive Safety Package** with dual hardware and software alarms
- **Flame System Protections** for gas cutoff, shutdown, and alerts for abnormal conditions
- **Graphite Furnace System** with automatic pause, cooling, and alerts for faults in gas flow or temperature
- **Independent Safety Devices** for emergency shutdown and high-current protection

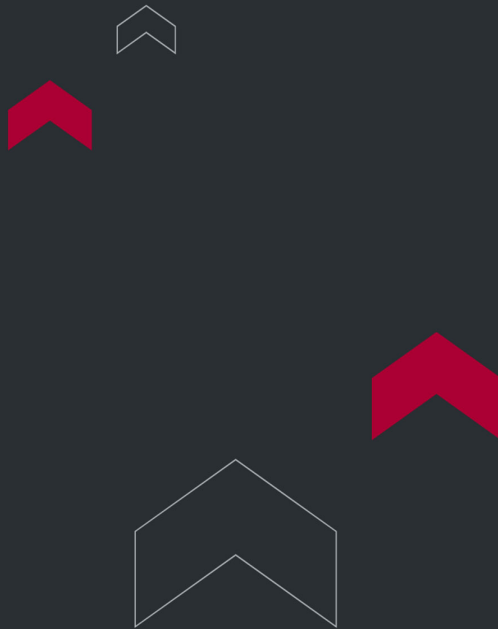
Additional Functional Configurations

- **Graphite Furnace Automatic Sampler (Optional):**
 - 150+5 slots, standard 60+6 slots
 - Dual pump sampling for high precision and reduced daily costs
 - Automated dilution, cleaning, and residue removal features
- **Flame Automatic Sampler (Optional):**
 - Supports 70 trays with ≥ 20 mL cups
 - Quick setup for flame/graphite switching without adjustments
- **Oxygen-Rich High-Temperature Flame (Optional):**
 - Safe high-temp element analysis (aluminum, barium, molybdenum, vanadium)
- **Wide Slit Combustion Head and Adjustable Nebulizer (Optional):**
 - For stable analysis of complex samples
- **Hydride Vapor Generator (Optional):**
 - Supports hydrogenation for expanded elemental analysis
- **Audit Trail Software (Optional):**
 - Electronic signature, user management, and traceability for compliance

TECHNICAL SPECIFICATIONS

- Main Unit: 1020mm×530mm×500mm(L×W×H), 85kg
- GF Power Supply: 350mm×530mm×430mm(L×W×H). 32kg

- GF automatic sampler(Optional): 350mm×250mm×300mm(L×W×H), 15kg
- Flame automatic sampler(Optional): 440mm×290mm×440mm(L×W×H), 14kg



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