

U5000AT+

Ultrasonic Nebulizer for ICP-AES/ICP-MS

The U5000AT+ Ultrasonic Nebulizer offers lower detection limits (up to 10x or more) for ICP-AES and ICP-MS. Samples are introduced onto a highly efficient piezoelectric transducer, providing greater analyte transport efficiency to the ICP.



SENSITIVE

Higher Nebulization Efficiency: Conventional pneumatic nebulizers are generally only 2-3% efficient under normal operating conditions. The U5000AT+ converts more of the liquid sample into a usable aerosol, with an efficiency of 10-15%. The result is up to 10+ times improvement in analyte signal.

Lower Detection Limits: For ICP-AES detection, limits fall below 1ppb for many elements. For ICP-MS, sub-ppt limits can be achieved. Even lower limits may be obtained under clean-room conditions.

STABLE

Short-Term and Long-Term Stability: Short-term (60 min.) and long-term (8 hour) stability is excellent, with %RSDs typically <1%.

Fewer Adjustments: The U5000AT+ has an auto-tuned power supply for stable operation. No adjustment is necessary between different sample types.

EFFICIENT

An efficient electrothermal desolvation system is used instead of a re-circulating chiller. This prevents solvent overloading of the ICP, saves laboratory bench space and reduces maintenance. A built-in drain pump removes condensed sample solvent and excess sample liquid from the spray chamber.

SIMPLE

Quick Setup All U5000AT+ units are shipped with an interface kit for fast and easy connection to the ICP. The kit includes a nebulizer gas line for the host ICP instrument and an ICP torch adapter for the sample out line.

Easy Operation: Once sample liquid is introduced to the U5000AT+, simply press the operate button to generate the aerosol.

COMPACT

Bench-Top Operation: The U5000AT+ has a small footprint allowing for placement on a bench-top or laboratory cart.

Modular Design: A modular design allows easy replacement of the entire glassware assembly. This unique feature can be useful when switching between very different sample types (ex. low dissolved solids versus high dissolved solids; aqueous versus organic).

An optional membrane desolvator (CETAC MDX-200) can be added for further removal of sample solvent (aqueous or volatile organic).

NEBULIZERS

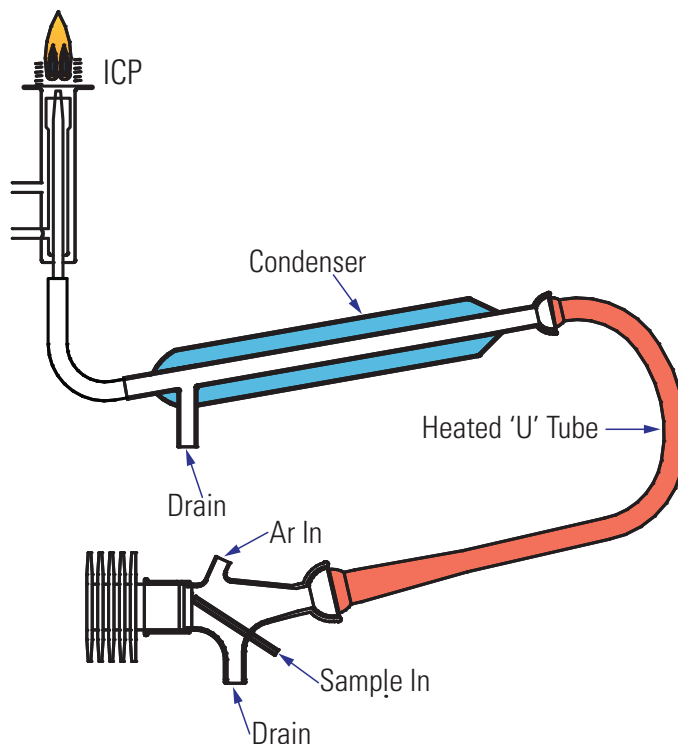


PRINCIPLE OF OPERATION

A peristaltic pump introduces liquid sample across an oscillating piezoelectric transducer. The oscillations disperse the sample into a fine aerosol, which is swept out of a spray chamber by a flow of argon gas from the host ICP-AES or ICP-MS instrument.

The aerosol passes through a heated tube and an electrothermally cooled condenser. An integrated drain pump removes the condensed sample solvent and any excess sample liquid from the spray chamber.

After passing through the condenser, the dried aerosol particles are swept by the nebulizer gas to the ICP instrument for analysis.



Schematic of U5000AT+ USN



Close-up of USN aerosol

Technical Specifications

Sample Uptake Rate: 0.5 to 2.5 mL/min

Nebulizer Gas Flow: 0.5 to 1.5 L/min

Heater Temperature: 120 °C to 160 °C

Cooler Temperature: -20 °C to +10 °C

Voltage: 100-120 VAC, 50/60 Hz, 4.5A
220-240 VAC, 50/60 Hz, 2.5A

Dimensions:

Height: 25.4 cm (10")

Width: 35.6 cm (14")

Depth: 34.9 cm (13¾")

Weight: 12.3 kg (27 lbs)

Warranty: 12 month limited

U5000AT+

BGX-100

Blend Gas Accessory

The CETAC BGX-100 Blend Gas Accessory can be used to add a low flow of oxygen (10 to 50 mL/min) between the U6000AT+ Ultrasonic Nebulizer / Membrane Desolvator and the ICP-AES or ICP-MS. This capability is especially useful for the analysis of organic solvents.



Some ICP-AES or ICP-MS instruments may not be equipped with an oxygen addition capability. If organic solvents are to be analyzed, oxygen addition to the central channel of the ICP can help prevent carbon build-up on the ICP torch and on the ICP-MS sampling cones (sampler and skimmer).

The CETAC BGX-100 Blend Gas Accessory incorporates a mass flow controller for oxygen addition up to 50 mL/min \pm 1 mL/min. A flow adjustment knob and a digital readout display of gas flow are provided.

Oxygen gas is usually teed into the sample out line that is connected between the nebulizer/membrane desolvator system (U6000AT+) and the host ICP torch; typical oxygen flow rates range from 10 to 30 mL/min.

The BGX-100 completion kit includes an external 24V power supply, power cord, and gas connection tubing.

Technical Specifications

Voltage: 24 VDC Power Supply

Power Supply: 100-240V, 50/60 Hz, 2.2A

O₂ Flow Range: 0 to 50 mL/min

Dimensions:

Height: 11.2 cm (4½")

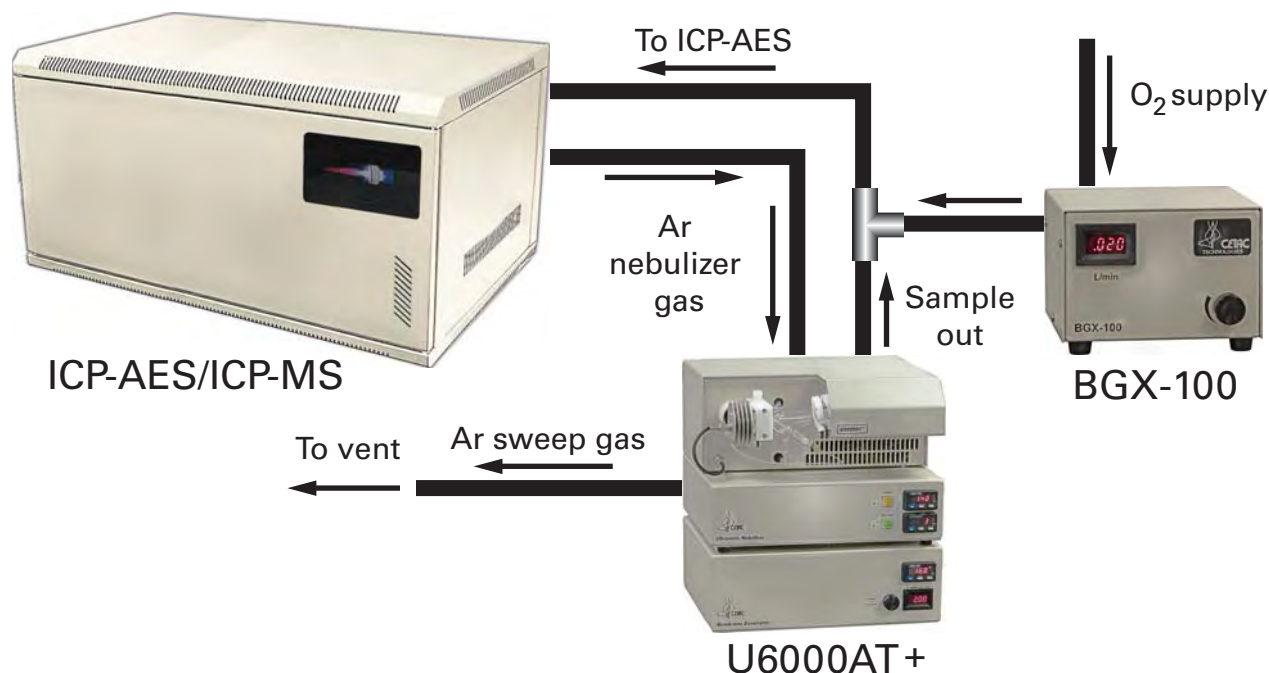
Width: 16.0 cm (6½")

Depth: 18.9 cm (7½")

Weight: 1 kg (2.2 lbs)

Warranty: 12 month limited

Schematic of BGX-100 Setup with U6000AT+



NEBULIZERS

