

# Aridus II



## Desolvating Nebulizer System for ICP-MS





# Aridus II Desolvating Nebulizer System

The CETAC Aridus II Desolvating Nebulizer System is a specialized sample introduction accessory for inductively coupled plasma mass spectrometry (ICP-MS). The Aridus II can enhance analyte sensitivity up to 10 times and can greatly reduce solvent-based interferences such as oxides and hydrides.

## Features

- Sensitivity enhanced by a factor of 4 to 10 times
- Low volume sample uptake rates of 50, 100 or 200  $\mu\text{L}/\text{min}$
- C-Flow PFA Nebulizer with integrated autosampler probe
- Heated PFA spray chamber for high sample transport efficiency
- Both nebulizer and spray chamber are behind a secured door to alleviate electrostatic effects
- Patented fluoropolymer membrane desolvator for lowest oxide and hydride levels
- Built-in gas flow controllers for both argon sweep gas and  $\text{N}_2$  addition gas
- Built-in spray chamber drain pump with acid resistant PVDF parts
- Dedicated, adjustable temperature controllers for both spray chamber and membrane desolvator
- Modular membrane desolvator for easy cleaning and/or replacement

## Principle Of Operation

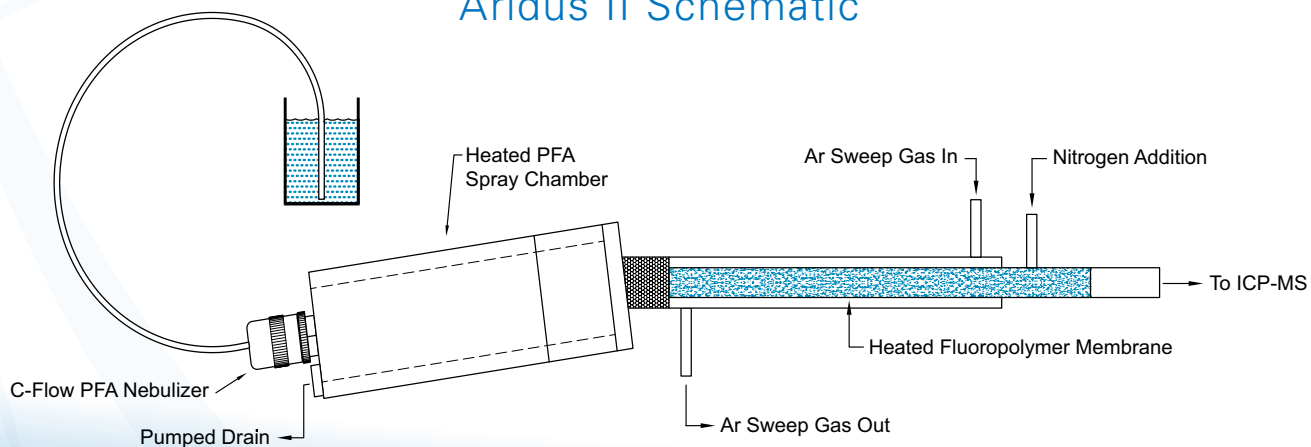
Sample solution is introduced to the Aridus II by a self-aspirating C-Flow PFA Nebulizer. The nebulizer aerosol is sprayed into a heated (up to 110  $^{\circ}\text{C}$ ) PFA spray chamber to maintain the sample in a vapor phase. The sample vapor then enters a heated fluoropolymer membrane desolvator module.



C-Flow PFA Nebulizer

A countercurrent flow of argon sweep gas is added to remove solvent vapors that permeate the porous wall of the membrane. Nonvolatile sample components do not pass through the membrane wall and continue to the ICP-MS instrument.

## Aridus II Schematic





## ASX-112FR Micro Autosampler

The ASX-112FR (Flowing Rinse) Micro Autosampler is designed specifically for use with the Aridus II. This compact autosampler includes a protective enclosure and dual flowing rinse stations to ensure sample integrity from the first to the last sample. The ASX-112FR is ideal for handling small volume, corrosive liquid samples in a cleanroom environment.

### Features

- Modular design allows placement directly on top of the Aridus II to conserve bench space
- Minimized sample path length using the C-Flow PFA nebulizer with integrated sample probe
- Dual continuous flowing rinse stations, operable in gas displacement or peristaltic pump mode, minimize sample contamination and carryover
- All sample wetted parts constructed of inert, metal-free, high-purity materials
- Multiple rack configurations for sample volumes as low as 200  $\mu$ L, and up to 15 mL
- Easy access to samples and racks (during operation, if desired) through a hinged door



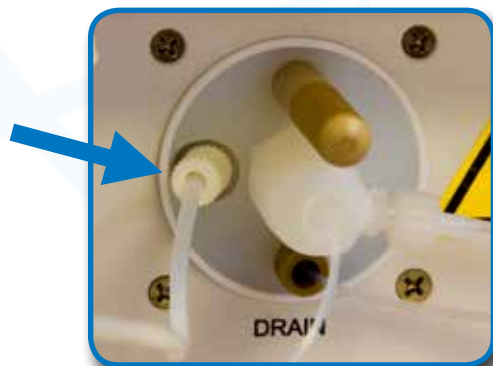
Close-up of ASX-112FR Dual Flowing Rinse Station



## QuickWash Accessory

The QuickWash fast washout accessory for the Aridus II rapidly rinses the inner wall of the PFA spray chamber between samples, providing greatly reduced washout times for higher concentration analytes. The QuickWash can be used manually or can be set to start automatically when used with the ASX-112FR autosampler.

The QuickWash controls a second pneumatic nebulizer in the spray chamber; this nebulizer generates a tangential aerosol to efficiently rinse the chamber. The tilted position of the spray chamber prevents liquid from reaching the Aridus II membrane desolvator while the on-board peristaltic pump rapidly removes any liquid in the chamber to waste.



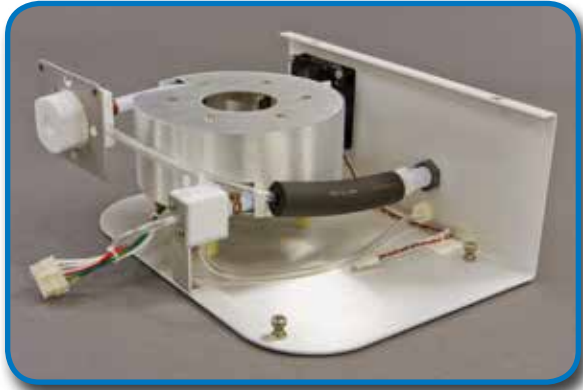
QuickWash gas-liquid line to spray chamber

### Features

- Preset wash times in increments of 10 seconds up to 160 seconds (typical range of 30 to 60 seconds)
- Mounts directly to the left or right side of the Aridus II, depending on the ICP-MS configuration
- Operates automatically when paired with the ASX-112FR autosampler

## Membrane Desolvator Module

The Aridus II is equipped with a modular membrane desolvator (shown below). The module is an integral part of the Aridus II chassis and can be quickly removed or replaced. Once removed from the Aridus II, the membrane desolvator can be conveniently cleaned. A specialized rinse kit is provided to introduce an appropriate cleaning solution such as dilute nitric acid.



Aridus II Membrane Desolvator Module

## Integrated Autosampler Enclosure

The ASX-112FR Micro Autosampler includes an integrated enclosure with an easy access front door to allow for easy sample placement within the rotary tray.



Enclosure door opens for easy access to samples

## Technical Specifications

### Aridus II Specifications

**Nebulizer:** C-Flow PFA 50, 100 or 200  $\mu\text{L}/\text{min}$  uptake

**Inert Desolvating Membrane:**

**Argon Sweep Gas:** 0 – 9.0 L/min

**Nitrogen Gas:** 0 – 50 mL/min

**Membrane Oven Temperature:** 160 °C

**Spray Chamber:** PFA with pumped drain

**Temperature:** 110 °C

**Voltage:** 120 VAC  $\pm$  10%, 50/60 Hz, 6A

220 VAC  $\pm$  10%, 50/60 Hz, 3A

**Dimensions:**

**Height:** 24.8 cm (9.75")

**Width:** 33.6 cm (13.25")

**Depth:** 55.9 cm (22")

**Weight:** 10.5 kg (23.1 lb)

**Warranty:** 12 month limited

### ASX-112FR Specifications

**Standards Tray Size:** 5 positions (20 mL vial)

9 positions (4 mL vial)

**Sample Rack Configurations:** CETAC racks – 24, 48, and 96 positions; BelArt half racks – 30 and 42 positions

**Computer/Hardware Interfaces:** USB, RS-232, IEEE-488

**Power Requirements:** 100 – 240 VAC  $\pm$  10%, 50/60 Hz

**Dimensions:**

**Height:** 42.9 cm (16.9")

**Width:** 33.4 cm (13.1")

**Depth:** 50.8 cm (20")

**Weight:** 14.1 kg (31.0 lb) with transparent cover

**Warranty:** 24 month limited

### QuickWash Specifications

**Power Requirements:** 100 – 240 V, 47 – 63 Hz, 3.3A

**Power Supply Voltage:** 24 VDC

**Argon Gas Flow:** 2 L/min (factory setting)

**Dimensions:**

**Height:** 14.3 cm (5.6")

**Width:** 6.7 cm (2.6")

**Depth:** 27.6 cm (10.9")

**Weight:** 1.07 kg (2.35 lb)

**Warranty:** 12 month limited