SIMCO ION™
An ITW Company

In-line Gas Ionizer

MODEL 4210

Most high technology manufacturers rely on air ionization to control problems associated with static charge—thus increasing yields, minimizing down-time and microprocessor lock-up and reducing cost of ownership. Unfortunately, mini-environments and process equipment prevent traditional ionizers from reaching one of the most important production areas—the inside of process equipment.

In the heart of process equipment, where limited space or proximity to sensitive products makes ionizing bars impractical, the Model 4210 In-line Gas Ionizer pipes compressed ionized gas for balanced charge neutralization. Either Clean Dry Air (CDA) or nitrogen can be ionized, depending on process requirements. The ionized gas can be plumbed to the static-sensitive product or fixture using ultra-clean Teflon™ tubing, bathing the area in ions. Manifolds can be custom designed which provide ions to the desired area, while staying clear of moving products and robotics.

Features

- Easily connects to delivery manifolds
- Ionizes either Clean Dry Air or Nitrogen
- IsoStat® technology
- Steady-state DC ion emission
- Ultra-clean emitter points (u/un models)
- Ultra-clean construction with carefully controlled current and geometry

Benefits

- Precise delivery of balanced ionization to confined areas; ideal for use in caustic environments where emitter points cannot be exposed
- Can be used in a variety of applications
- No calibration needed
- Fast discharge times
- Provide ISO 14644-1, Class 3 cleanliness
- Maintenance-free for two years

Ionization Solutions

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Specifications

Ion Balance	±25V at specified flow and pressure measured at 6" from CPM; tested in accordance with Standard ANSI/ESD STM3.1-2006 Ionization
Discharge	4210 10 sec, 4210u 6 sec, 4210un 10 sec; measured through 6" long, 1/4" ID Teflon tube held 6" from the CPM; airflow rate of 120 SCFH (2 SCFM)
Ion Emission	Steady-state DC
Emitter Points	Tungsten or single-crystal silicon
Input Power	120 VAC, 50-60 Hz, approximately 2W; 100/230 VAC models available
Temperature	Ambient -4°F (-20°C) -140°F (60°C) max; inlet gas supply 250°F (120°C) in a 73°F (23°C) ambient environment
Gas Flow Rate	Minimum 1.5 CFM; maximum set by manifold back pressure
Input Pressure	10-50 psi safe range; unit is NOT designed to withstand high pressures; should be installed downstream from any valves with the output open to atmospheric pressure
Manifold Pressure	Model 4210 0-50 psi; 4210u 0-50 psi; Model 4210un 0-15 psi to achieve ionization
Manifold	Teflon tubing with flare fittings for interconnects; nitrogen 3/8" (9.5 mm) ID tubing; CDA 1/4" (6 mm) ID tubing; details on manifold design, refer to Simco-Ion Technical Note, In-line Gas Ionization Considerations 4210 Use and Application Guide
Gas Connectors	1/4" NPT female Teflon fittings at both gas input and output
Cleanliness	4210 ISO 14644-1 Class 5 standards (Fed. Std. 209e Class 100 equivalent); 4210u ISO 14644-1 Class 3 standards (Fed. Std. 209e Class 1 equivalent); 4210un ISO 14644-1 Class 3 standards (Fed. Std. 2093 Class 1 equivalent).
Gas Ionization	CDA and/or Nitrogen
Casing	Power-coated white aluminum
Mounting	4-6/32 threaded holes provided; wall and bulkhead mount brackets available
Dimensions	2.4D x 4.75L x 3.13W (6.1D x 12.1L x 8.0W cm)
Weight	37 oz (1.04 kg) including fittings and power cord
Maintenance	Two-years continuous use (suggested)
Warranty	Two-year limited warranty
Certifications	RoHS 2 Compliant

Ultra-clean Ionization

When provided with gas from an ultra-clean source, the 4210u and 4210un operate 10 times better than Class 3 cleanroom requirements. Careful material selection and control of internal geometry ensure ultra-clean ionized gas delivery.

Applications

The 4210 has been used to solve static charge problems in a variety of wafer fab applications, including steppers, spin rinser dryers, load and unload stations, disk certifiers, wafer management systems, and furnaces.

The 4210 Family

Versions of the 4210 are available for use with both CDA and nitrogen, using either ultra-clean emitter points or high output tungsten alloy points.

Ordering Information

91-4210-01	4210 Gas Ionizer w/tungsten emitter points for CDA/Nitrogen; 120 VAC, US wall plug
91-4210-100V-01	4210 Gas Ionizer w/tungsten emitter points for CDA/Nitrogen; 100 VAC, US wall plug
91-4210-230V-01	4210 Gas Ionizer w/tungsten emitter points for CDA/Nitrogen; 230 VAC, German Schuko wall plug
91-4210-UK-01	4210 Gas Ionizer w/tungsten emitter points for CDA/Nitrogen; 230 VAC, UK wall plug
91-4210U-01	4210U Gas Ionizer w/silicon emitter points for CDA; 120 VAC, US wall plug
91-4210U-100V-01	4210U Gas Ionizer w/silicon emitter points for CDA; 100 VAC, US wall plug
91-4210U-230V-01	4210U Gas Ionizer w/silicon emitter points for CDA; 230 VAC, German Schuko wall plug
91-4210U-UK-01	4210U Gas Ionizer w/silicon emitter points for CDA; 230 VAC, UK wall plug
91-4210UN-01	4210UN Gas Ionizer w/silicon emitter points for nitrogen; 120 VAC, US wall plug
91-4210UN-100V-01	4210UN Gas Ionizer w/silicon emitter points for nitrogen; 100 VAC, US wall plug
91-4210UN-230V-01	4210UN Gas Ionizer w/silicon emitter points for nitrogen; 230 VAC, German Schuko wall plug
91-4210UN-UK-01	4210UN Gas Ionizer w/silicon emitter points for nitrogen; 230 VAC, UK wall plug

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