



## In-line Gas Ionizer

### MODEL 4210U/UN

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 ceiling-mounted 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, Ion's 4210 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 is plumbed to the static-sensitive product or fixture through thin (6-10 mm) ultraclean Teflon™ tubing, bathing the area in conductive gas. Manifolds can be routed through the equipment to the desired area, while staying clear of moving products and robotics.

### Features and Benefits

- Directly connects to delivery manifolds
- Precise delivery of balanced ionization to confined areas
- Ionizes either Clean Dry Air or Nitrogen (u/un models)
- Class 1 operation (u/un models)
- IsoStat® technology
- No calibration needed
- Steady-state DC ion emission
- Fast discharge times
- Single crystal silicon emitter points (u/un models)
- Cleanest emitter points available
- Ultraclean construction with carefully controlled current and geometry
- Maintenance-free for two years



# Specifications

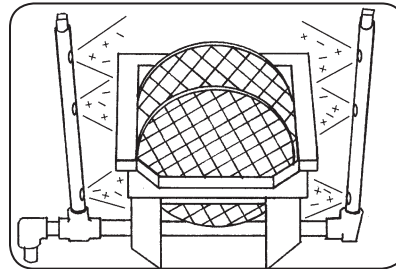
In-line Gas Ionizer Model 4210	
<b>Ion balance</b>	±25V at specified flow and pressure Measured at 6" from CPM; tested in accordance with Ionization Standard ANSI EOS/ESD S3.1-1991.
<b>Discharge</b>	4210: 10 sec., 4210u: 6 sec., 4210un 10 sec.; Measured through 6" long, 1/4" ID Teflon tube held 6" from the CPM; airflow rate of 120 SCFH (2 SCFM)
<b>Ion emission</b>	Steady-state DC
<b>Input power</b>	120 VAC, 50-60 Hz, approximately 2 watts; 100 and 230 VAC models available
<b>Temperature</b>	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
<b>Gas flow rate</b>	Minimum: 1.5 CFM Maximum: set by manifold back pressure
<b>Input pressure</b>	10-50 psi safe range; unit is NOT designed to withstand high pressures. It should be installed downstream from any valves, with the output open to atmospheric pressure.
<b>Manifold pressure</b>	Model 4210: 0-70 psi; 4210u 0-50 psi; Model 4210un: 0-15 psi to achieve ionization
<b>Manifold</b>	Teflon tubing with flare fittings for interconnects; nitrogen: 3/8" (9.5 mm) ID tubing; CDA: 1/4" (6 mm) ID tubing. For details on manifold design, refer to Ion's Technical Note, In-line Gas Ionization Considerations: 4210 Use and Application Guide.
<b>Gas connectors</b>	1/4" NPT female Teflon fittings, at both gas input and output
<b>Casing</b>	Painted cast aluminum
<b>Mounting</b>	Four 6-32 threaded holes provided; wall and bulkhead mount brackets available
<b>Dimensions</b>	2.5D x 4.75L x 3.2W inches (6.3D x 12.1L x 8.1W cm)
<b>Weight</b>	37 oz (1.04 kg) including fittings
<b>Maintenance</b>	2 years continuous use (suggested)
<b>Warranty</b>	2 year limited warranty
<b>Certifications</b>	  

## Ordering Information

<b>91-4210</b>	Model 4210 In-line Gas Ionizer with tungsten emitter points, 120 VAC, US wall plug -100V, -230V, -UK
<b>91-4210U</b>	Model 4210 In-line Gas Ionizer with silicon emitter points, 120 VAC, US wall plug -100V, -230V, -UK
<b>91-4210UN</b>	Model 4210 In-line Gas Ionizer with silicon emitter points for nitrogen, 120 VAC, US wall plug -100V, -230V, -UK
-100V includes US wall plug -230V includes German Schuko plug -UK includes UK wall plug	

## Ultraclean Ionization

When fed from an ultraclean gas source, the 4210u and 4210un typically operate 10 times better than Class 1 cleanroom requirements. To virtually eliminate particle emissions, their designs include tightly controlled emitter point shape, corona voltage and current. Careful material selection, including single crystal silicon emitter points, and control of internal geometry ensure ultraclean ionized gas delivery.



For details on measuring cleanliness, refer to Ion's Technical Note, "Particulate Cleanliness Certification for the 4210 Family of In-line Gas Ionizers."

## Applications

The 4210 has been used to solve static charge problems in a variety of applications, including:

- Steppers
- Spin rinser dryers
- Load and unload stations
- Disk certifiers
- Wafer management systems
- Furnaces

## The 4210 Family

Versions of the 4210 are available for use with both CDA and nitrogen, using either ultraclean single crystal silicon emitter points or high output tungsten alloy points. The following table provides a product family overview:

	4210	4210u	4210un
<b>Environment</b>	Class 100	Class 1	< Class 1
<b>Gas Ionization</b>	CDA/ Nitrogen	CDA	Nitrogen
<b>Emitter Point Materials</b>	Tungsten Alloy	Silicon	Silicon



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