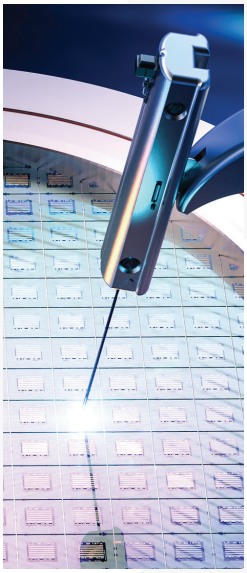
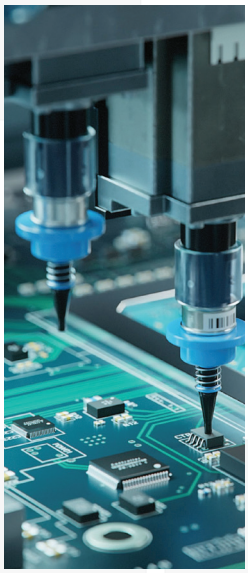
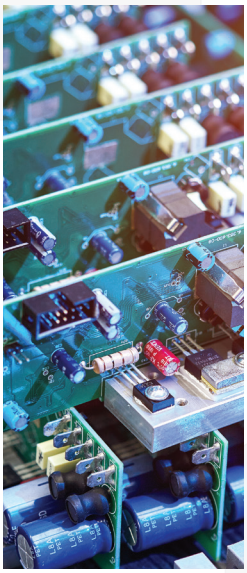
SIMCO ION™
An ITW Company

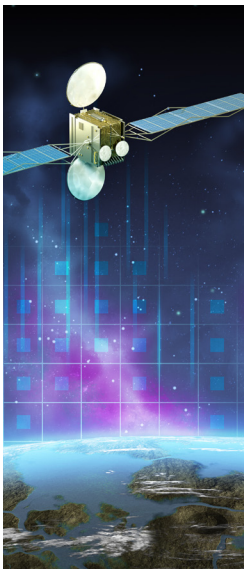
TECHNOLOGY GROUP

PROTECT

Ultra-clean Ionization & Advanced ESD Solutions



PRODUCT CATALOG 2025

WORLDWIDE LEADER IN IONIZATION SOLUTIONS

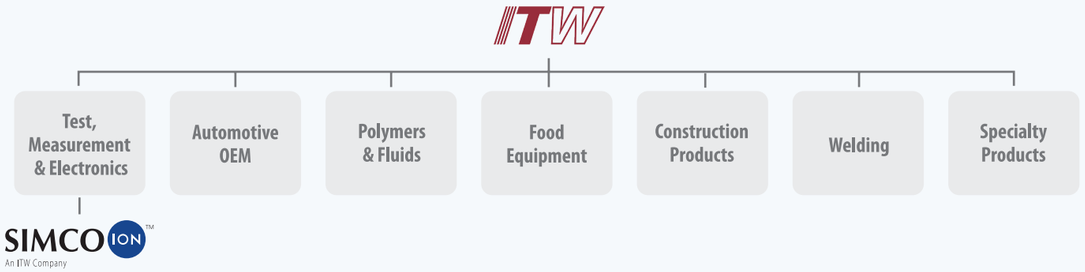
SIMCO ION™
An ITW Company

WORLDWIDE LEADERS IN STATIC CONTROL

Serving both Industrial and Technology markets and applications, our product lines consist of Static Neutralizing Systems and Bars and Power Supplies, Benchtop and Overhead Blowers, Air Guns and Nozzles, Electrostatic Charging, Sheet/Web Cleaners, Teknek Contact Cleaning Machines, Electrostatic Sensing and Process Environment Monitoring Products, Room Systems and Metering devices.

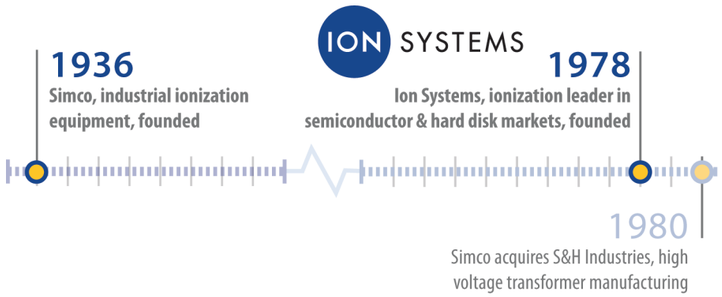
BEST IN Class

Simco-Ion is a division of ITW (Illinois Tool Works), a Fortune 200 global diversified industrial manufacturer of value-added consumable and specialty equipment with related service business. (www.itwinc.com, NYSE: ITW)



OUR HISTORY

Simco-Ion, the world's largest manufacturer of static control components and systems, has been providing solutions to electrostatic issues in a wide range of industries since 1936. Simco-Ion's comprehensive product line incorporates years of research, engineering and field experience.



KEY TECHNOLOGY MARKET SEGMENTS

Front-end Semiconductor
Back-end Semiconductor
Flat Panel Display
General Electronics
Life Sciences
Aerospace/ Defence
Automotive/ Autonomous

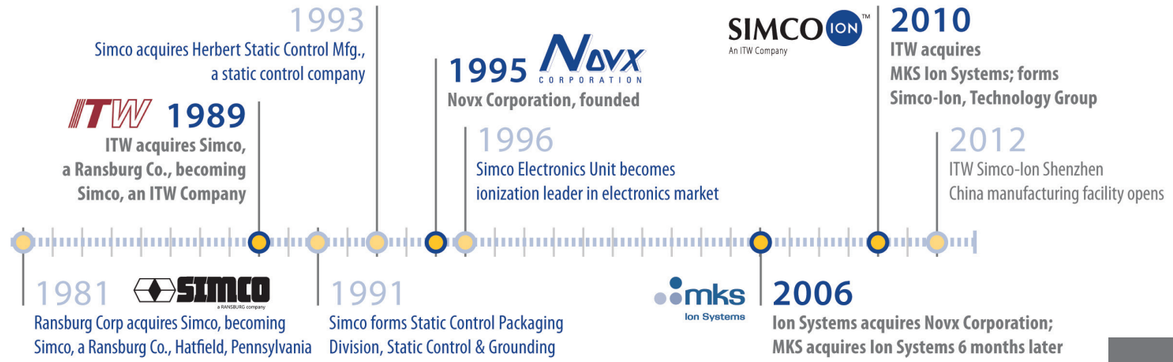
KEY OFFERINGS

EXPERTISE
Expert workflow analysis to compliance process reviews

NETWORK
Worldwide distribution network

TURNAROUND
Fast 24-hour shipping of stocked products

R&D
Continuing commitment to new product development



Sales Service +1 (510) 217-0460 or +1 (800) 367-2452
www.simco-ion.com/technology
salesservices@simco-ion.com

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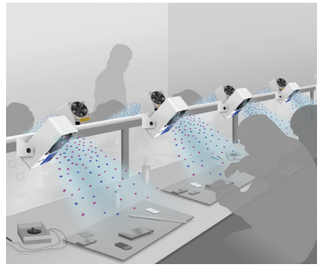
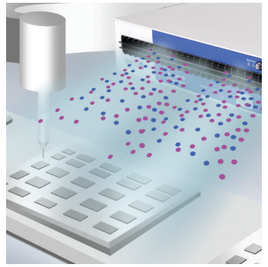
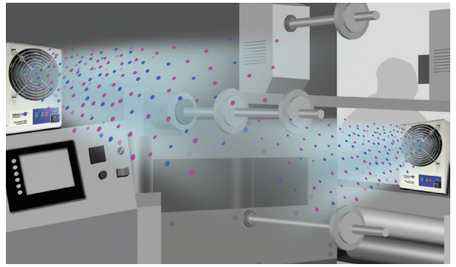
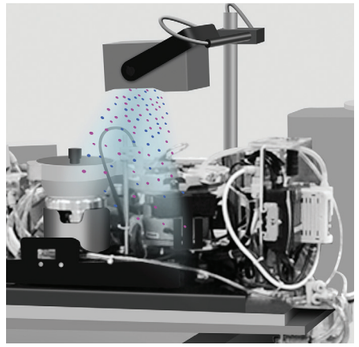
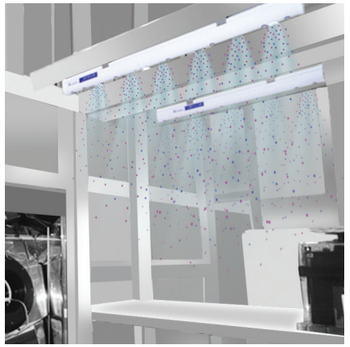
Strategic Intent

ULTRA-CLEAN IONIZATION

Deliver Ultra-clean Ionization solutions for in-tool and all cleanroom applications using bars, room systems, overhead blowers, and in-line technologies.

Products must meet and exceed all customer ESA (Electrostatic Attraction) airborne particle control requirements while also meeting their ESD (Electrostatic Discharge) control limits of 35V today and moving to 5V and below to minimize product yield loss caused by device damage, typically resulting in latent defects in Semiconductor Front-end and expanding in the Medical Device Manufacturing markets.



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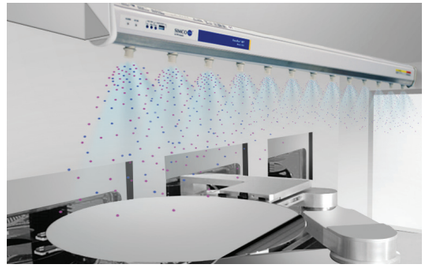
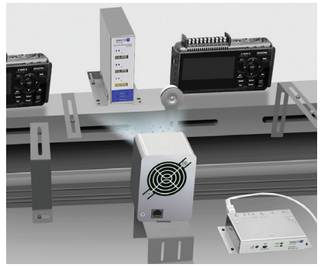
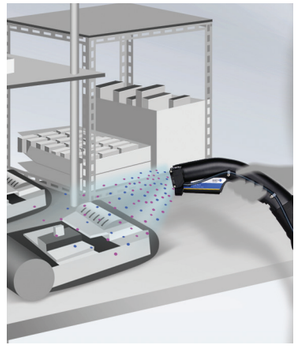
Strategic Intent

ADVANCED ESD PROTECT

Deliver Clean Ionization and Monitoring solutions for Semiconductor Back-end in-tool and high-end Electronic Assembly and Test applications using bars, blowers, guns/nozzles, instrumentation, and continuous monitoring with cost sensitivity a priority.

Products must meet and/or exceed customer form factor and performance requirements, including Active Feedback Control and FMS and Tool interface. Semiconductor Back-end requirements are at 10V today and rapidly transitioning to 5V and below, while electronics assembly and test are at 100V today and moving to 50V and below to eliminate latent product failures.



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WHAT'S INSIDE

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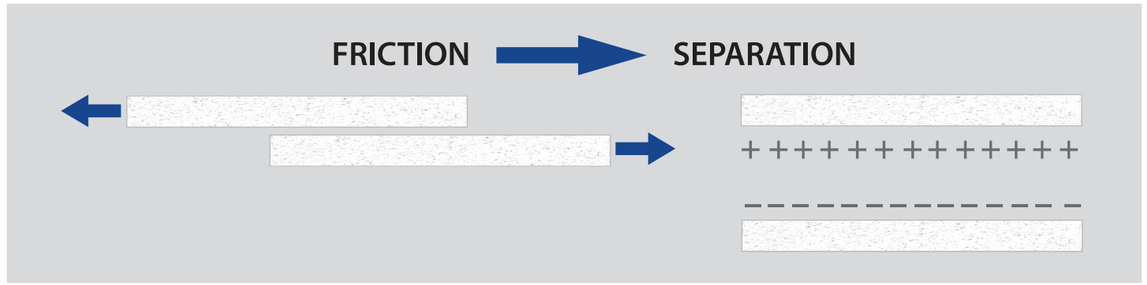
BASIC KNOWLEDGE

How Is Static Electricity Generated?

Charge generation will occur when two surfaces in contact are separated, one surface loses electrons and becomes positively charged while the other surface gains the same electrons and becomes negatively charged. Removing the charge on conductive materials can be accomplished by grounding; however, insulators (such as plastic, glass, ceramics, etc.) will need ionized air to remove the charge.

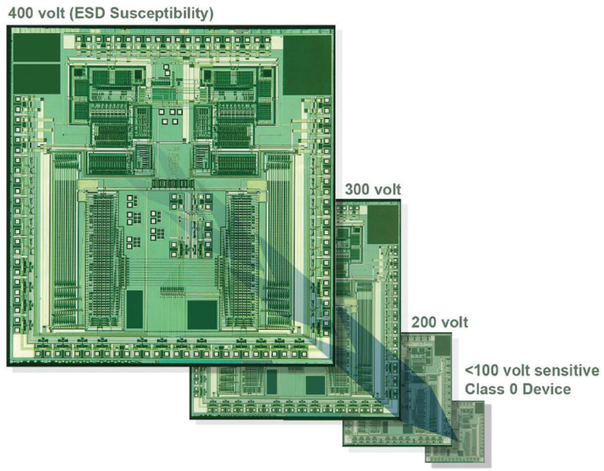
Why Is Static A Problem?

It is well-documented that damages and yield losses attribute to the effect of static charges. Particle contamination is a major issue as charged materials attract more particles to their surfaces than their non-charged counterparts, i.e., Electrostatic Attraction (ESA). Direct electrical damage caused by Electrostatic Discharge (ESD) devices can occur with a variety of ESD failure modes. Also, ESD events produce Electromagnetic Interference (EMI) that can cause equipment malfunctions, lockups and direct damage to the product via radiated and conducted forms.



Ultra-Sensitive Devices

Ultra ESD sensitive (ESDS) devices (especially those sensitive below 100V) are appearing in the various industries at a rapid pace. In the last few years, many facilities have struggled with ESD damage directly resulting from limitations of those standard ESD controls that have been used so effectively in the past. Ionization and continuous monitoring with the latest technology are crucial in combating the effects of static on these ultra-sensitive devices.



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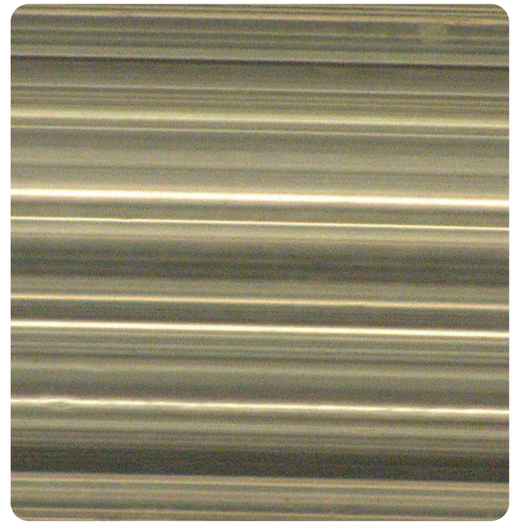
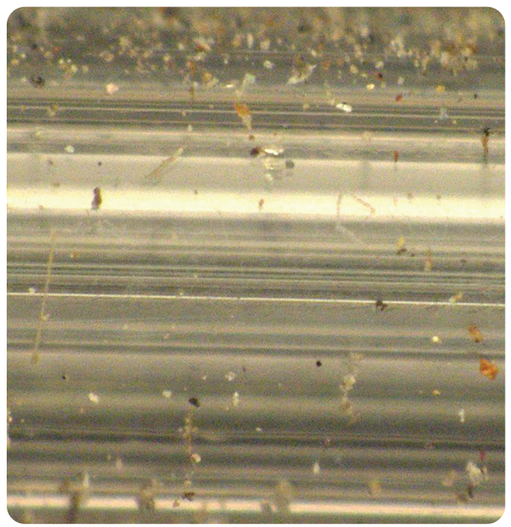
Features

ELECTROSTATIC ATTRACTION

Materials typically used in the manufacturing cleanroom – plastic, quartz, ceramic, glass, and silicon – are good insulators and become charged easily. Air entering the cleanroom is stripped of its normal ion content as it moves through the air filtration system. Thus, modern cleanrooms foster higher levels of static charge that remain on objects for long periods of time. The very nature of the cleanroom makes it difficult to apply antistatic measures because most surface treatments and many static-dissipative materials are not cleanroom compatible.



With Static Control



Without Static Control

If a critical product surface becomes charged and the charge is not removed, the surface will attract airborne particulates in the cleanroom. Regardless of the filtration system, personnel, machinery, and processes can introduce particulates into the air. The electrostatic attraction affecting these particles is surprisingly strong and is very difficult to remove. Contamination of this nature is a major contributor to product degradation and device failure.

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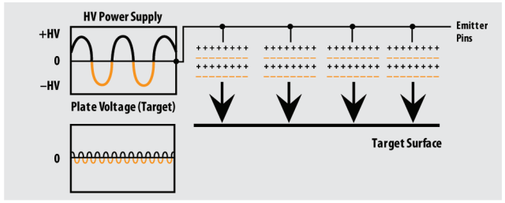
TECHNOLOGY

AC Technology: AC Ionizers are comprised of a single high voltage power supply connected to all emitters. All emitters receive both positive and negative voltage. Air-assist is critical with this arrangement because ion recombination frequently occurs. (Ref: FPD, Guardian)

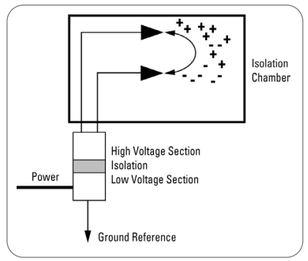


Advanced Feedback & Control Technology: Maintains balanced, high ion output over long periods for stable performance between emitter point cleanings. (Ref: 5802i, 5810i, 5822i, 5832)

Corona Technology: Air ions are produced by a phenomenon called "corona discharge' where a high voltage is applied to a sharp emitter point or wire. (Ref: All Products except 4901 and 4903)

High Frequency AC Technology: Sometimes called Pulsed AC, this is similar to AC Technology except that the frequency is not tied to the supplied voltage frequency. It can be set to other frequencies and has a higher frequency signal superimposed over the baseline AC signal. This can provide faster discharge times, especially with air or gas assistance. (Ref: 4214)

IsoStat® Technology: This is a balancing technology for ionizers that ensures inherently balanced ionization and eliminates complicated feedback circuits. IsoStat is based on a law of physics, Conservation of Charge, which states that charge cannot be created or destroyed in an isolated system. IsoStat ensures equal numbers of positive and negative ions. (Ref: 6422e, 6432e)



Modulated Pulse (MP) Technology: Combines a high-frequency sine wave with modulated pulses (MP) for high ion output with long-term stability. MP Technology, combined with ultra-clean silicon emitter points, allows these ionizer products to meet stringent ISO cleanliness requirements. (Ref: 5635, 5635M, 5645, 5645 LP)

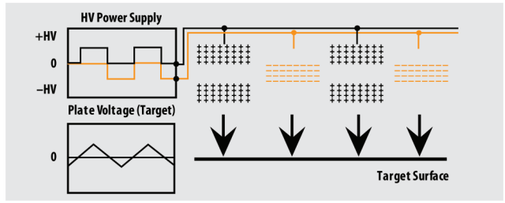
Piezoelectric Technology: Using ceramic material between two electrodes forms a high voltage transformer. This generates positive and negative ions in pulse mode from the emitter points. (Ref: IonOne Micro S, Micro SA)

MicroPulse (µP) Technology: Patented µPulse Technology with high-efficiency output to meet the performance, cleanliness, and low cleaning/maintenance requirements of large surface areas, especially in the FPD industry. MicroPulse Technology and wire emitters combine to provide long maintenance cycles. (Ref: PC2, XC2, 5710, 5711)

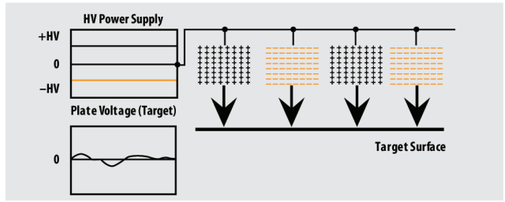
µWire Technology: µWire is utilized with µPulse Technology to create an ionizer that can be used for flat-panel or similar operations to prevent the striping effect found when emitter points are placed in close proximity to products. (Ref: 5710, 5711)

Photon Technology: Soft X-Rays are easily absorbed within the atmosphere to generate positive and negative ions. These positive and negative ions are attracted to the electrical charge of the electrified object according to the coulomb's force, ultimately meeting with the electrified charge to become neutralized. (Ref: 4901, 4903)

Pulse DC Technology: Pulse DC Ionizers allow positive and negative emitter points to turn on and off alternatingly, creating clouds of positive and negative ions. The discharge times can be substantially better than Steady-state DC ionizers; however, voltage offsets are typically greater than Steady-state Technology.



Steady-state DC Technology: Steady-state DC Ionizers are comprised of separate sets of emitters connected to separate positive and negative power supplies. The high voltages (positive and negative) both stay on simultaneously and constantly in this "Steady-state DC" configuration. Better discharge times can be realized versus AC Ionizers with air-assist.



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DISTINCTIVE FEATURES

Features

Emitter Technology

Emitter Cleaning: The regular maintenance of ionizers keeps sensitive environments as protected as possible from harmful static charge effects. Periodically inspect emitter points for breakage, buildup on the tips or any discoloration is required: usually, the cycle is quarterly; some may extend to yearly; tightening request may ask for monthly. It is one of the most important components of ionizer maintenance and ensures continued optimum performance from ionizers.

- *Manual Cleaning*: Simco-Ion ionizers are designed with an integrated brush, by a simple action–one turn, one press or one pull, the dirt on the emitter tips is removed.
- *Automated Cleaning*: Simco-Ion developed various types of Auto-Clean Systems to minimize the contamination and time involved. Some work automatically each time the ionizer is turned on or off. Some can run on an internal timer or when the input is activated. They reduce maintenance time and ionizer downtime.

Emitter Materials: Simco-Ion's ionizer emitter assembly are made of various materials and shapes: metallic (Stainless Steel, Tungsten, Titanium) and non-metallic (Single-crystal Silicon); pin-type or wire-type, providing a longer working life and better cleanliness for applications in various industries.

Single-crystal Silicon	
Simco-Ion's patented Single-crystal Silicon emitter points represent the cleanest option available in the industry. Far exceeding ISO Class 3 cleanliness requirements, these non-metallic points produce no particle bursts and emit an average of <5 particles per cubic foot (<0.05 micron in size verified with condensation nucleus (CNC) and optical particle counters).	
Electrode Type	Emitter point
Class Compatibility	ISO 14644-1 Class 3 or better
Particles	5 (average/cu. ft.)
Estimated Life	10-15 years (depending on maintenance & environmental conditions)
Maintenance	Recommended 3 months interval

Tungsten Alloy	
The most common material in industrial ionization applications, tungsten alloy, offers long emitter point life and low maintenance requirements. Simco-Ion's Tungsten Alloy emitter points will not erode as quickly as conventional tungsten wire, and fewer particle bursts result in cleaner operation.	
Electrode Type	Emitter point
Class Compatibility	ISO 14644-1 Class 4 or better
Particles	21 (average/cu. ft.)
Estimated Life	10-15 years (depending on maintenance & environmental conditions)
Maintenance	Recommended 3 months interval

Machined Titanium	
Simco-Ion's titanium emitter points are recommended for many cleanrooms. Titanium emitters meet ISO Class 3 requirements for particle emissions, erode less quickly than tungsten, produce no particle bursts and are easily maintained.	
Electrode Type	Emitter point
Class Compatibility	ISO 14644-1 Class 3 or better
Particles	21 (average/cu. ft.)
Estimated Life	10-15 years (depending on maintenance & environmental conditions)
Maintenance	Recommended 3 months interval

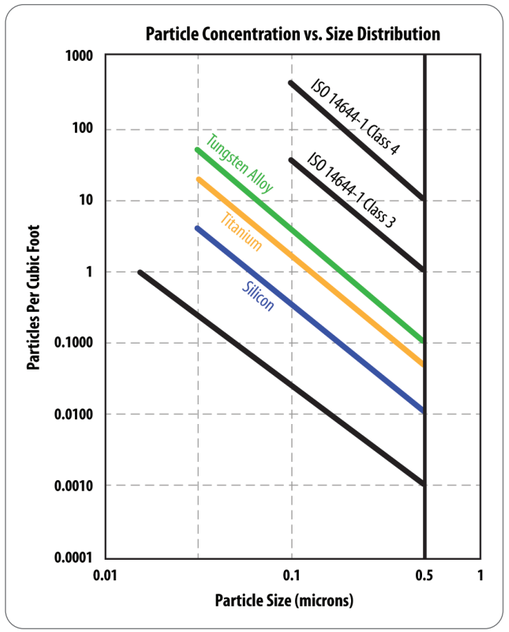
Facility Monitoring System (FMS)

Many of the process and manufacturing facilities where ionizers are used contain a remote system that monitors equipment status. Facility Monitoring System (FMS) capability offers an ionizer status connection from the ionizer to either the process monitoring or facility monitoring system.

Compatible to ISO 14644-1 Cleanroom Standards

The widespread use of ionizers in rooms, laminar flow hoods, and point-of-use applications has greatly improved the control of static charge in cleanroom environments.

Simco-Ion's ionizers are compatible with the different level of cleanroom; some can be up to Extended ISO Class 1 (≥10 nm particles), providing the best solution in static control industry.



Integrated Comfort Heater

Several products contain an integrated heater. While the heater is not intended to provide a significant source of room heat, it does provide user comfort and added productivity.

APPLICATIONS

PRODUCT GROUP	PRODUCT	UC	ESD	FE	BE	FPD	LS	PH	GE	AEA
ROOM SYSTEM	Model 5515 Ceiling Emitter	●		●	●	●	●	●	●	●
BARS	AeroBar 5225 In-tool with Software Control	●		●	●		●	●		
	AeroBar 5225S Standalone	●		●	●		●	●		
	AeroBar MP 5635	●		●						
	AeroBar MP 5635M (metal-free)	●		●						
	AeroBar MP 5645/5645 LP with Novx Feedback*	●	●	●	●	●				●
	AeroBar 5685	●		●	●	●				
	µWire AeroBar 5710	●	●		●	●			●	●
	µWire AeroBar 5711	●	●		●	●			●	●
ELECTROSTATIC MONITORING	Novx 7000 Process Monitor		●	●	●	●	●		●	●
	Novx 3352/3362 Detection/Feedback System*		●	●	●	●	●		●	●
	Novx 3352MP/3362MP with Minipulse*		●	●	●	●	●		●	●
	Novx MiniPulse ESD Event Detector		●	●	●	●	●		●	●
CARTRIDGES, GUNS, & NOZZLES	Model 6110/6110A In-line or Blow-off	●			●			●	●	●
	AirForce 6115 Blower-off Gun	●		●	●	●	●	●	●	●
	Top Gun Blower-off Gun		●		●	●	●	●	●	●
	orION Compressed Air Nozzle		●		●	●	●	●	●	●
SPECIAL APPLICATION	Model 4210 CDA or Nitrogen Gas	●		●	●			●		
	Model 4214 In-line Nitrogen Gas	●		●						
	Model 4612 Extreme Temp with Novx Feedback		●	●	●					
	Model 4612 Mini Extreme Temp with Novx Feedback		●	●	●					
	QuadBar 4630 In-tool	●		●	●					
	QuadBar 4635 In-tool with Air-Assist	●		●	●					
	Model 4901 Soft X-ray Photon Pin Ionizer*		●		●					
	Model 4903 Soft X-ray Photon Bar Ionizer*		●		●					
	fusION Bar with Fan Attachment		●		●		●		●	●
	fusION AA Bar with Air-Assist		●		●		●		●	●
	In-line fusION Bar	●			●		●	●	●	●
	ionONE Micro S & SA		●		●		●		●	●
BLOWERS	Model 5802i Benchtop		●		●				●	●
	Model 5810i Overhead	●	●	●	●				●	●
	Model 5822i In-tool		●		●				●	●
	Model 5832 with Novx Feedback, Benchtop*	●	●		●				●	●
	Model 5941 In-tool*		●		●					
	Model 6422e In-tool		●		●				●	●
	Model 6432e In-tool		●		●				●	●
	Model 6832 Benchtop	●	●		●		●		●	●
	minION2 In-tool		●		●		●		●	●
	Aerostat PC2 Benchtop		●		●	●	●	●	●	●
	Aerostat XC2 Extended Coverage Benchtop		●		●	●	●	●	●	●
	Model 5842 with Novx Feedback, Overhead*	●	●	●	●					
	Aerostat FPD Benchtop/Overhead	●	●			●	●	●	●	●
	Aerostat Guardian Overhead		●				●	●	●	●
	Guardian CR2000 Overhead	●	●		●	●	●	●	●	●
INSTRUMENTATION	Model 280A Charge Plate Monitor (CPM)	●	●	●	●	●	●		●	●
	FMX-004 Handheld Fieldmeter	●	●	●	●	●	●		●	●
	Model 775 Fieldmeter	●	●	●	●	●	●		●	●
	Model 775PVS Periodic Verification System	●	●	●	●	●	●		●	●

UC, Ultra-clean Ionization Solutions; ESD, Advance ESD Protection; * Low Voltage Ionization and Control Solutions
BE, Back-end Semiconductor; FE, Front-end Semiconductor; General Electronics; FPD, Flat Panel Display; LS, Life Sciences; PH, Pharmaceuticals; AEA, Advanced Electronic Assembly
Micro Series Ionizers

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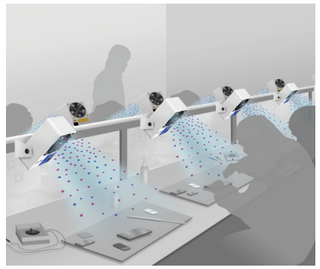
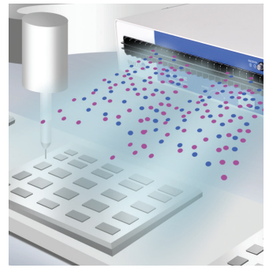
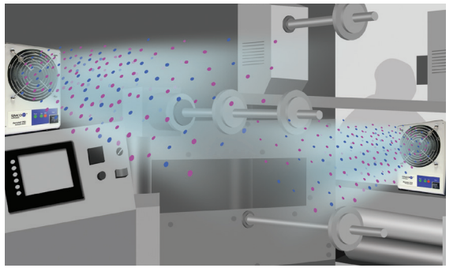
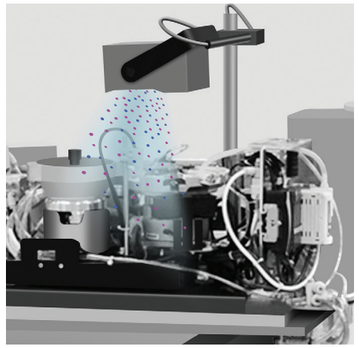
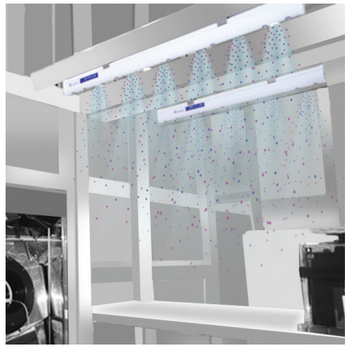
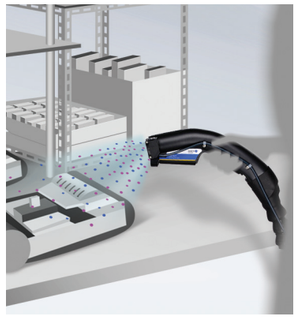
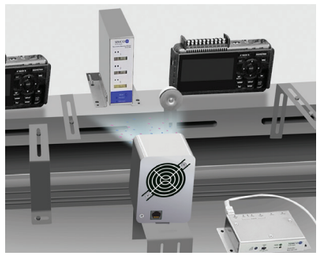
APPLICATIONS






ISO 14644-1 CLEANROOM STANDARDS (2015)

Cleanliness Level	ISO 14644-1 Class Number	Maximum Concentration Limits (particles/m³ of air) for Particles Equal To and Larger than the Considered Sizes Shown						FED STD 209E Equivalent*	Particles/Ft³ of Air
		≥0.1 μm	≥0.2 μm	≥0.3 μm	≥0.5 μm	≥1 μm	≥5 μm		≥0.5 μm
Extremely Clean	ISO 1	10	2						
	ISO 2	100	24	10	4				
	ISO 3	1,000	237	102	35	8		Class 1	1
	ISO 4	10,000	2,370	1,020	352	83		Class 10	10
	ISO 5	100,000	23,700	10,200	3,520	832	29	Class 100	100
	ISO 6	1,000,000	237,000	102,000	35,200	8,300	293	Class 1,000	1,000
	ISO 7				352,000	83,200	2,930	Class 10,000	10,000
	ISO 8				3,520,000	832,000	29,300	Class 100,000	100,000
Clean	ISO 9				35,200,000	8,320,000	293,000	Room Air	

* Canceled on 9/11/92–superseded by ISO Standards.

Standards	Title	Abstract
ISO 14644-1:2015	Part 1: Classification of air cleanliness by particle concentration	Specifies the classification of air cleanliness in terms of concentration of airborne particles in cleanrooms and clean zones.
ISO 14644-2:2015	Part 2: Monitoring to provide evidence of cleanroom performance related to air cleanliness by particle concentration	Specifies minimum requirements for a monitoring plan for cleanroom or clean zone performance related to air cleanliness by particle concentration.
ISO 14644-3:2019	Part 3: Test methods	Provides test methods in support of the operation for cleanrooms and clean zones to meet air cleanliness classification, other cleanliness attributes and related controlled conditions.
ISO 14644-4:2022	Part 4: Design, construction and start-up	Specifies the process for creating a cleanroom from requirements through to its design, construction, and start-up. It applies to new, refurbished, and modified cleanroom installations.
ISO 14644-5:2004	Part 5: Operations	Specifies basic requirements for cleanroom operations. It is intended for those planning to use and operate a cleanroom.
ISO 14644-7:2004	Part 7: Separative devices (clean air hoods, gloveboxes, isolators, and mini-environments)	Specifies the minimum requirements for the design, construction, installation, test, and approval of separative devices.
ISO 14644-8:2022	Part 8: Assessment of air cleanliness by chemical concentration (ACC)	Establishes typical assessment processes to determine grading levels of air chemical cleanliness (ACC) in cleanrooms and associated controlled environments
ISO 14644-9:2022	Part 9: Assessment of surface cleanliness for particle concentration	Establishes a procedure for the assessment of particle cleanliness levels on solid surfaces in cleanrooms and associated controlled environment applications.
ISO 14644-10:2022	Part 10: Assessment of surface cleanliness for chemical contamination	Establishes appropriate testing processes to determine the cleanliness of surfaces in cleanrooms with regard to the presence of chemical compounds or elements (including molecules, ions, atoms, and particles).
ISO 14644-12:2018	Part 12: Specifications for monitoring air cleanliness by nanoscale particle concentration	Covers the monitoring of air cleanliness by particles in terms of concentration of airborne nanoscale particles.
ISO 14644-13:2017	Part 13: Cleaning of surfaces to achieve defined levels of cleanliness in terms of particle and chemical classifications	Gives guidelines for cleaning to a specified degree on cleanroom surfaces, equipment surfaces in a cleanroom, and surfaces of materials in a cleanroom.
ISO 14644-14:2016	Part 14: Assessment of suitability for use of equipment by airborne particle concentration	Specifies a methodology to assess the suitability of equipment (e.g., machinery, measuring equipment, process equipment, components, and tools) for use in cleanrooms and associated controlled environments.
ISO 14644-15:2017	Part 15: Assessment of suitability for use of equipment and materials by airborne chemical concentration	Provides requirements and guidelines for assessing the chemical airborne cleanliness of equipment and materials which are foreseen to be used in cleanrooms and associated controlled environments
ISO 14644-16:2019	Part 16: Energy efficiency in cleanrooms and separative devices	Gives guidance and recommendations for optimizing energy usage and maintaining energy efficiency in new and existing cleanrooms, clean zones and separative devices.
ISO 14644-17:2021	Part 17: Particle deposition rate applications	Gives direction on the interpretation and application of the results of the measurement of particle deposition rate on one or more vulnerable surfaces in a cleanroom as part of a contamination control program.
ISO 14644-18:2023	Part 18: Assessment of suitability of consumables	Gives guidance for assessing personal and non-personal consumables for their appropriate use in cleanrooms, clean zones, or controlled zones, based on product and process requirements, cleanliness attributes, and functional performance properties.
ISO/TR 14644-21:2023	Part 21: Airborne particle sampling techniques	Discusses the physical limitations of probe and particle counter placement, and any tubing that connects the two, particularly in providing representative samples where particles 5 micrometres and greater are of interest.

Source: https://www.iso.org/

SIMCO ION™
An ITW Company

ISO CLASS 1 FOR 0.1 & 0.01 MICRON PARTICLES

ISO 14644-1 Class 1 (2015) establishes 9 particulate class limits. A class is met when airborne particles-per-cubic-meter (or particles-per-cubic-foot) do not exceed the class limit. The following graph summarizes the class limit lines for particles between 0.1 micron and 5 micron.

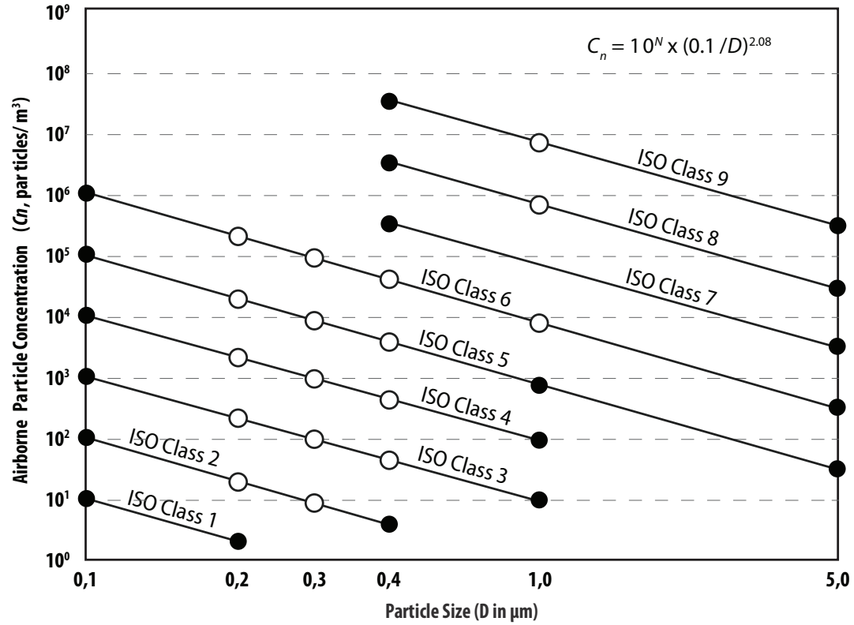


Chart from ISO 14644-1 (1999 version): Annex A - Informative

Single-Crystal Silicon (SCSi): AeroBar MP Ionizing Bars with OpenJet Silicon Emitter Nozzles, such as the 5635, 5635 Metal-free, and 5645 Low Profile, are designed to operate in and maintain ISO 14644-1 Class 1 cleanliness (10 particles or less per m³ for 0.1 micron and larger). Currently, no standard exists for measuring particles below 0.1 microns. Model 5645 LP, when operated at 45-50% output voltage and with OpenJet nozzles with single-crystal silicon emitters, has been tested using CPC techniques and generates fewer than 1200 particles (0.01 micron and larger) per cubic meter. Indeed, the state-of-the-art AeroBar MP Model 5645 LP surpasses ISO Class 1 cleanliness, meeting **Extended ISO Class 1*** for ≥10 nm particles", thereby providing the cleanest bar ionization for the ultra-clean semiconductor manufacturing process.

Titanium (Ti): Model 5630 with TurboJet Titanium Emitter Nozzles, and Model 5645 with OpenJet Titanium Emitter Nozzles, are designed to operate in and maintain ISO 14644-1 Class 3 cleanliness (1000 particles or less per m³ for particles of 0.1 micron and larger).

* Extended ISO Class 1: An extrapolation of ISO 14644-1 down to 0.01 micro (10 nm) particles, measured with a condensation nucleus counter (CNC).

Cleanroom Ionization System

Model 5515

The Model 5515 Ceiling Emitter and Controller Models 5522/5582 comprise our state-of-the-art digital room ionization system. The two controller models enable the user to start with the Model 5522 Controller capable of small system with 20 or fewer ceiling emitters, and grow into a large system with full software monitoring capabilities by simply moving to the Model 5582 Controller. Digital technology allows each ceiling emitter's parameters, including ion output, ion pulse timing or digital address, to be individually set at its location using the Model 5571 or Model 5572 Handheld Terminals. Precision fine tuning of each ceiling emitter enables the ionization system to achieve maximum performance in any airflow condition and for each application.

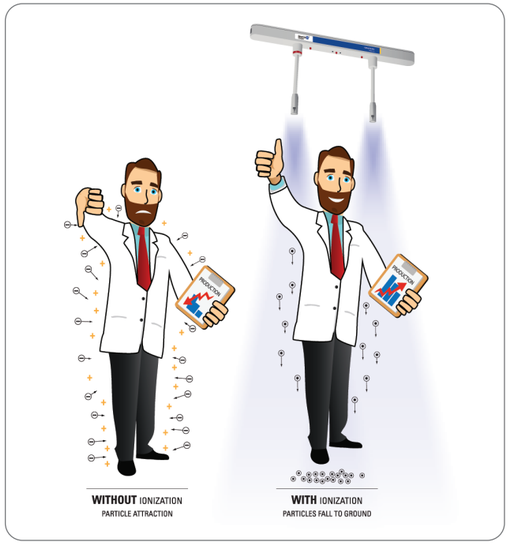
Features

- Fully digital technology
- Single-crystal Silicon or Titanium emitter points
- Advanced feedback technology
- Small and large capacity controllers

Benefits

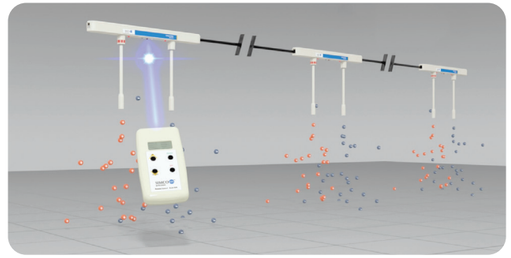
- Provides precision control of all parameters with expansive data output capabilities
- Ensures ultra-clean performance with low maintenance; Single-crystal Silicon emitter points meet the needs of leading-edge wafer processing applications
- Maintains balanced, high ion output over long periods for stable performance between emitter point cleanings
- Enables user to grow from a small system with FMS output only to a large system using IonManager Pro software as requirements change

A common and quite effective technique is to outfit the gown-up room with a complete room ionization approach. Ionizing "pods" attached to the ceiling in a grid formation generate the ionization, and all areas in the gown-up room are covered with ions, removing static charges on all objects, people, and on the particles as well. There is no additional airflow associated with such ceiling pod systems. Waves of positive and negative ions are generated and can go long distances in this arrangement.



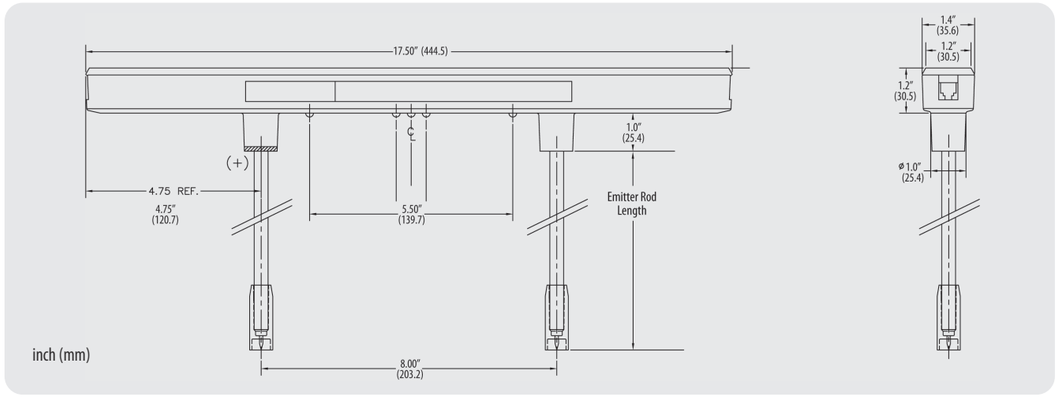
5515 Specifications

Voltage	Input: 24 VAC, 50/60 Hz, 1W (typ) Output: 0-20 kVDC for each polarity; positive and negative output levels adjusted separately
Ion Emission	Pulse DC, Steady-state DC, or Standby
Emitter	Single-crystal Silicon or Titanium; replaceable
Emitter Rod	2.5, 5, 7.5, 10, 15, 24, 36, 48, 60, 66 inch (6.35, 12.7, 19.1, 25.4, 38.1, 61.0, 91.4, 122, 152, 168 cm), custom lengths are available
Cleanroom Class	Single-crystal Silicon ISO 14644-1 Class 1 Titanium ISO 14644-1 Class 3
Connector	Telephone-type RJ-11 modular jack receptacle on each end of emitter
Control Signal	Ionization parameters are adjusted with the 5571 Handheld Terminal, 5572 IR Remote, or via IonManager Pro software
Timing	Precise timing (0-10 sec @ 0.1 sec resolution) is generated by a local microcontroller; LEDs on each emitter indicate the polarity of the ion emission
Regulation	Output and balance stability is achieved by independently regulating the ion emission current of each polarity at each emitter
Alarm	Alarm operates when emitter is no longer able to maintain preset ion output level; visual LED in the middle of the emitter; optional audible alarm at controller
Ozone	<0.005 ppm
Operating Env	59-95˚F (15-35˚C) nominal; 20-60% RH, non-condensing
Dimension	1.2"H x 1.4"W x 17.5"L (3.05 x 3.56 x 44.5 cm)
Weight	1.03 lb (0.47 kg)
Certification	CE cULus UKCA



System Performance Security

The Model 5515 Ceiling Emitter, Model 5582 Controller, and IonManager Pro software provide consistent ionization protection throughout your facility. The advanced notification system communicates system alarms and warnings immediately so corrective action can be taken. The alarm notifications are user configurable and can be sent to multiple personnel via email, SMS, or pager.



Cleanroom Ionization System Controllers

Model 5522 & 5582

Simco-Ion's small and large capacity controllers, enable the user to start with the Model 5522 controller capable of controlling a small system with 20 or fewer ceiling emitters, and grow into a large system up to 80 ceiling emitter with full software monitoring capabilities by simply moving to the Model 5582 Controller.

Model 5522 Controller

Model 5582 Controller

Application Evaluation Capabilities

Exclusive in the industry, Simco-Ion offers a full applications evaluation service to see whether your facility is operating at its peak efficiency.

We approach each customer's situation—whether it's a large facility, or in a limited/confined space or in a critical manufacturing environment—with earnest diagnostic evaluation supported by technical expertise to develop innovative solutions to improve operations, increase product quality and control cost. This approach has continued to earn high recognition globally throughout the OEM and end-user customers.

5522 / 5582 Specifications

Voltage	Input: 100/115/220-240 VAC ±10%, 50/60 Hz voltage selectable and fuse protected Output: 24 VAC
Capacity	Model 5522: 20 ceiling emitters Model 5582: 80 ceiling emitters
LED Indicator	Green POWER, red ALARM, audible ALARM
Output Signal	RS-485 to emitters (5522 & 5582), Ethernet or RS-485 to IonManager Pro (5582 only)
FMS	Relay or 4-20 mA output (available on Model 5522 / 5582 controllers, no software capability on the Model 5522 controller)
Dimension	Model 5522: 2.75"H x 2.88"W x 12.4"L (6.98 x 7.3.2 x 31.6 cm) Model 5582: 5.7"H x 4.4"W x 13.2"L (14.6 x 11.2 x 33.5 cm)
Weight	Model 5522: 3.2 lb (1.45 kg) Model 5582: 7 lb (3.18 kg)
Certification	CE cULus UKCA

Accessories

The **Handheld Terminal 5571** supplements and expands use of the controller. It is used to set Controller and emitter parameters. It connects to the controller with a modular cable at the port labeled "Input Module". The 5571 features 30 keys and a four-line LCD screen.

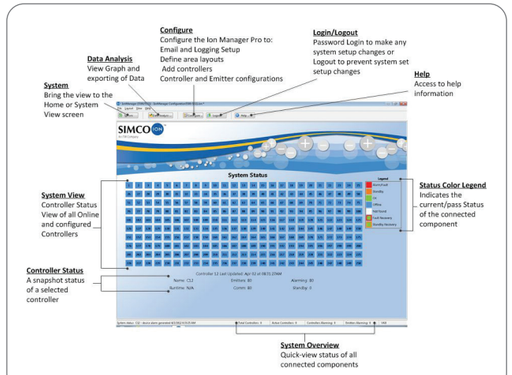
The **Infrared Remote Control Model 5572** is used to read and modify the emitter parameters directly at the emitter. It features a narrow infrared beam that prevents communication errors with nearby emitters. The Remote Control Model 5572 allows you to view current emitter settings and change the positive and negative output levels.

Cleanroom Ionization System Management Software

IonManager Pro

IonManager Pro software monitors, manages and analyzes Simco-Ion's Digital Room Ionization Systems (Ceiling Emitter Model 5515 and 5582 Controller).

The software provides customers with a cost-effective way to monitor system status and manage system maintenance requirements through visual indicators and automated notifications. IonManager Pro features simple graphical images of the ionization system with a drill-down hierarchy to individual components for instant identification of status and operational parameters. Fault conditions are easily viewed and identified with real-time graphical displays. Text messages or email notifications can automatically be sent to the maintenance team. Integrated summary reports based on user preferences, are available for management review. System performance can be easily analyzed by accessing history logs, using the built-in statistical and graphing tools, or exporting the data into common analysis packages.



The controller layout view offers status verification for each ionizer.

Features

- The standard system manages and monitors up to 10 controllers and up to 800 emitters; larger systems are available
- Configurable alarm event notifications based on user preferences
- Real-time event capture
- User-friendly visual interface

Benefits

- Provides a single monitoring system for large installations
- Enables automated text or email notifications to multiple users
- Assures fast notification of alarm or maintenance conditions; provides time stamped data log of system events and conditions
- Allows user to quickly identify and locate alarm conditions

IonManager Pro Specifications

Compatibility	Ionizer Model 5515 Digital Emitter and Model 5582 Controller
Data Collection	RS-485 or Ethernet ports, compares actual measured values to control limit values in real time, produces fault log data stream
Data Archive	Data stream from data collector, creates hour/day/month/year reports, user-selectable polling periods
Net Interface	Incoming TCP/IP connections, password verification
Data Viewer	Area selector, multiple graphs, user-selectable facility layout display, alarm status colored symbols, live data to historical data
Option	Larger system sizes available
Output File	CSV (imports into spreadsheets)
Operating System	Windows 7 and above (exclusion of Windows 8)
Hardware	PC-compatible computer (not provided) with 2 GHz processor, 1 GB RAM minimum (2 GB RAM for larger system >100 controllers), 80 MB of free disk space, CD-ROM, color monitor with 1280 x 1024 screen resolution minimum, one (1) Ethernet adapter, one (1) Serial port (optional) Layout drawings of each area are required in jpg, png or bmp file formats for system configuration
Interface	Graphic overview of the controller and ionizer system, facility layout
Notification	Text messaging or email, dependent upon system configuration

ULTRA-CLEAN CRITICAL ENVIRONMENT IONIZING BAR SOLUTIONS






AeroBar	5645/5645 LP	5635/5635M	5710	5711	5225/5225S	5685
Feature	Centralize Power & Control with MP Control Software Air-assist Capability FMS/Alarms/Power Same Location Standalone, Novx Inside, or Novx System	Low Field Voltages Air-assist Capability Metal-free Version Optional MP Control Software	Unique Corona Wire Design Air-driven Ion Delivery Flexible & Powerful Setup	Unique Corona Wire Design Air-driven Ion Delivery Compact Size (150 or 250 mm)	Fully Adjustable Parameters FMS Alarm Output Standalone or Max 8 Bar System	Steady-state DC Multiple lengths, shortest 11 inches
Discharge	15 sec @ 24″ (61 cm)	15 sec @ 24″ (61 cm)	<1.5 sec @ 12″ (30.5 cm)	3.5 sec @ 60 cm	Operation Mode DeOpendence	<25 sec or less @ 24″ (61 cm)
Balance	<±20V Standalone <±5V w/Novx System or Novx Inside	<±35V @ 18″ (45.7 cm)	<±25V	<±25V	Operation Mode Dependence	±50V @ 24″ (61 cm)
Ion Emission	Modulated Pulse (MP) Technology	Modulated Pulse (MP) Technology	MicroPulse (µPulse) Technology	MicroPulse (µPulse) Technology	Pulse DC, Steady-state DC	IsoStat Technology
Cleanroom Class	5645 (Ti): ISO 14644-1 Class 3 5645 LP (SCSI): ISO 14644-1 Class 1 & Extended ISO Class 1	(SCSI) ISO 14644-1 (0.1 µm particles) Extended ISO Class 1 cleanliness (10 nm particles/nanoparticles)	ISO 14644-1 Class 2	ISO 14644-1 Class 2	ISO 14644-1 Class 1 (SCSI) ISO 14644-1 Class 3 (TI)	ISO 14644-1 Class 3
Airflow	1-3.5 lpm/nozzle w/Air-assist	1-3.5 lpm/nozzle w/Air-assist	70 lpm (1500 mm bar)	10 lpm (150 mm) 18 lpm (250 mm)	Environment Laminar Flow	Environment Laminar Flow
Operating Environment	15-35°C (59-95°F) 30-60% RH, non-condensing	15-35°C (59-95°F) 30-60% RH, non-condensing	15-35°C (59-95°F) 30-60% RH, non-condensing	15-35°C (59-95°F) 30-60% RH, non-condensing		59-95°F (15-35°C), nominal 20-60% RH, non-condensing
Dimension	5645: 3.1″H & 5645 LP: 2.6″H x 1.3″W x 13.8/17.7/23.6/33.5/39.3/45.3/51.2/ 57.1/63.0/69.0/74.8/80.7/86.6/92.5″L (7.8 x 3.4 x 35/45/60/85/100/115/130/ 145/160/175/190/205/220/235 cm)	3.1″H x 1.3″W x 17.7/23.6/33.5/39.3/45.3/51.2/ 57.1/63.0/69.0/74.8/80.7/86.6/92.5″L (7.8 x 3.4 x 45/60/85/100/115/130/145/160/ 175/190/205/220/235 cm) 5635M: 13.8″ (35 cm) available	3.0″H x 1.3″W x 15.7/19.7/25.6/29.5/35.4/39.4/ 45.3/49.2/55.1/59.1/65/68.9/74.8/78.7/84.6/88.6/ 94.5/98.4/104/108/114/118″L (76.2 x 3.3 x 40/50/65/75/90/100/115/125/140/150/165/ 175/190/200/215/225/240/250/265/275/290/300 cm)	Ionizer: 3.0″H x 1.3″W x 6.3 or 10.2″L (7.62 x 3.30 x 16.0 or 25.9 cm) Controller: 4.7″H x 1.9″W x 3.2″D (11.9 x 4.82 x 8.2 cm)	2.1″H x 1.2″W x 22.4/28.4/35.7/44.4/55.6/64.4/75.5/84.4″L (5.3 x 3.1 x 56.9/72.1/90.7/112.8/141.2/163.6/191.8/214.4 cm) 22″ (55.9 cm): 1.13 lb (0.51 kg) (0.375 lb per additional ft/0.17 kg per additional 30.5 cm)	2.07″H x 1.16″W x 11.4/22.4/ 44.4/64.4″L (52.6 x 29.5 x 29.0/56.9/112.8/163.6 cm) 0.56 lb/foot of bar length (0.256 kg/30.5 cm)

Ultra-Clean In-tool Ionizing Bar with Software Control

AEROBAR® 5225

Simco-Ion's Digital AeroBar with Software Control Model 5225 is designed to handle the demanding requirements of in-tool ionization. With high ion output providing fast neutralization of electric charge on wafers, SEMI E78 compliance can be achieved at the most stringent levels.

An aerodynamic design and cleanroom-compatible materials allow the Model 5225 to deliver complete and efficient ionization in mini-environments without disrupting laminar airflow.

The AeroBar is easily integrated with your tool, using either precompiled routines or open-source code examples. Seamless integration with tool interfaces means a less costly solution to ionization, in addition to the benefits of reduced maintenance cost and better alarm handling. System alerts and messages are displayed at the tool controller for easy notification. Alternatively, simple FMS alarm output is available.

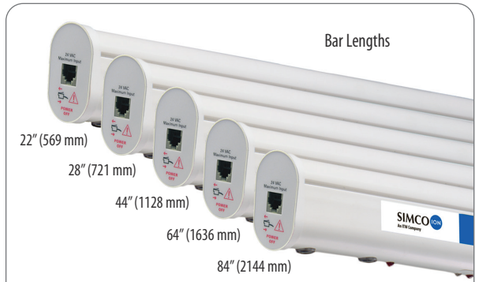
24V AC · CLEANROOM · In-Tool · ION MONITOR · SSDC Technology · PDC Technology · FMS · ULTRA CLEAN

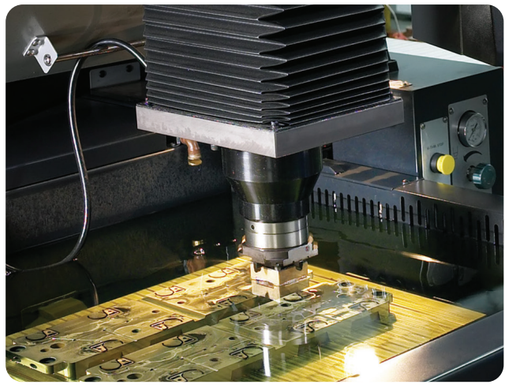
Features

- Complete integration with the tool control system
- Fully adjustable parameters for each AeroBar
- Ion current monitoring
- Several lengths available including 3 specifically designed for EFEMs
- Single-crystal silicon emitter points or titanium emitter points are also available

Benefits

- Setup, operation, & maintenance are controlled using an existing tool or IonMonitor software GUI
- Fine-tune ionization for individual process requirements in each area of the tool
- More consistent ion output & stable performance
- Flexible lengths mean versatility for a variety of application designs
- Industry demonstrated cleanest emitter material, with no risk of wafer contamination from dopants or metals





Designed for front-end and back-end semiconductor manufacturing to control electrostatic discharge and particle contamination in mini-environment and workstations

5225 Specifications

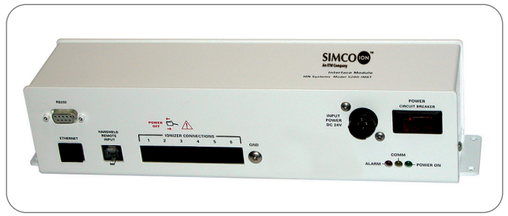
Voltage	Input: 24 VAC, 50/60 Hz, 1W (typ); powered by Interface Module Model 5200-IM6T Output: 0-20 kVDC, ±10% for each polarity on an individual AeroBar; positive or negative output levels can be adjusted separately through GUI
Output Current	<15 µA, current and voltage limited
Control Signal	RS-485 from the Interface Module
Regulation	Output and balance stability is achieved by independently regulating the ion emission current of each polarity at each ionizer
Timing	Both on and off timing for each polarity are settable from 0-10 sec @ 0.1 sec increments; LEDs on the bar indicate the polarity of the ion emission
Ion Emission	Pulse DC, Steady-state DC, or Standby
Emitter	Single-crystal Silicon or Titanium, replaceable
Cleanroom Class	ISO 14644-1 Class 1 (Single-crystal Silicon emitter) ISO 14644-1 Class 3 (Titanium emitter)
LED Indicator	Individual red LEDs flash on for each polarity; middle red LED flashes rapidly when in alarm, all 3 LEDs blink at once when communication occurs; alarm relayed to tool GUI
Alarm	Alarm activates when the bar is no longer able to maintain the preset ion output level; alarm is displayed visually by a red LED in the middle of the ionizer chassis as well as on GUI; settable threshold alarm limits for predictive maintenance
Connector	RJ-11 modular jack receptacles
Ozone	<0.005 ppm
EMI	Below background level
Maintenance	Annual, semi-annual or quarterly emitter point cleaning depending on process sensitivity and presences of AMCs in environment
Enclosure	ABS plastics, fire retardant
Dimension	2.1"H x 1.2"W x 22.4 / 28.4 / 35.7 / 44.4 / 55.6 / 64.4 / 75.5 / 84.4"L (5.3 x 3.1 x 56.9 / 72.1 / 90.7 / 112.8 / 141.2 163.6 / 191.8 / 214.4 cm)
Weight	1.13 lb (0.51 kg) for a 22" (55.9 cm) bar (0.375 lb per additional ft/0.17 kg per additional 30.5 cm)
Certification	SEMI-F47 CE UK CA

5200-IM6T Specifications

Input Voltage	24 VDC, 1.0A, ±5%
LED Indicator	Green POWER, yellow COMMUNICATION, red ALARM
Communication	Ethernet (RJ-45) or serial (RS-232/DB9)
Alarm Output	FMS, relay closure to ground (available on V4.0 and above)
Output Port	Six RJ-11 ports connect to up to six Model 5225 AeroBars
Dimension	2.76"H x 2.88"W x 12.4"L (7.01 x 7.32 x 31.5 cm) with flange
Weight	2.6 lb (1.18 kg)
Certification	CE UK CA

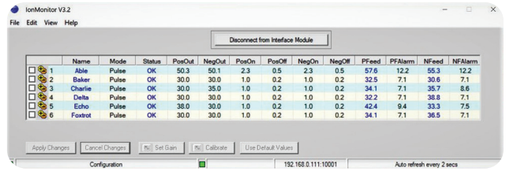
Interface Module Model 5200-IM6T

This interface module powers up to six AeroBars. Model 5200-IM6T features an Ethernet port and an RS-232 port for communication with process equipment or EFEM controllers.



IonMonitor Software

IonMonitor is industry-first graphical user interface (GUI) that monitors and controls the AeroBar Model 5225 and connects to the Interface Model 5200-IM6T. This software package centralizes all control and monitoring operations, simplifying operation and saving valuable time.



Intelligent Integration

Simco-Ion's specially developed software IonMonitor eases integration into your system. Three different components are available to best suit your needs:

- A fully documented Application Programming Interface (API) minimizes integration time and cost
- The library file provided in C/C++ can be used in developing your tool control software or can be used as a standalone application on your tool controller or laptop
- An ionizer hardware simulator allows for easy software development in the absence of ionizer hardware

Simco-Ion's powerful software provides complete control over the ionization system. Settings include adjustments for operating modes (including Pulse DC, Steady-state DC, or standby), synchronization, on-times, off-times, power output levels, and alarm thresholds for both positive and negative emitters, with independent control over each AeroBar. Sophisticated alarm and maintenance detection mean less downtime and costly diagnostic activity.

Ultra-Clean Standalone Ionizing Bar

AEROBAR® 5225S

Simco-Ion's Standalone Digital AeroBar Model 5225S Ionizing Bar is specifically designed to provide high performance with simple integration and operation. Adjustable and precise, easy-to-use digital settings allow the AeroBar to be used in a multitude of applications, ranging from inside tools to workstations and cleanroom areas. A choice of ionization modes, output voltage, and timing provide versatility to meet static charge neutralization requirements.

An aerodynamic design and cleanroom-compatible materials allow the Model 5225S to deliver complete and efficient ionization in mini-environments and cleanrooms without disrupting laminar airflow. Designed to operate as a standalone system, the Model 5225S AeroBar internally maintains critical settings, thereby ensuring continued optimal performance each time the system is powered up.

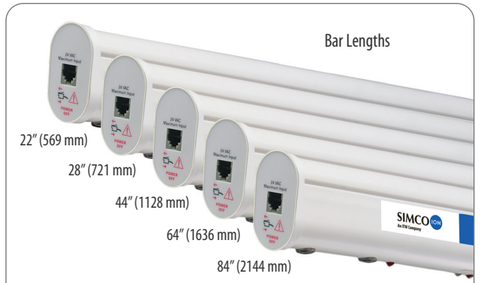
24V AC · CLEANROOM · In-Tool · Remote · SSDC Technology · PDC Technology · FMS · ULTRA CLEAN VENTILATION

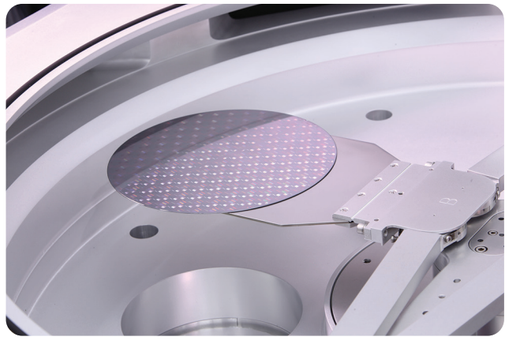
Features

- Complete integration with tool control system; no controller required
- Fully adjustable parameters for each AeroBar utilizing Pulse DC, or Steady-state DC modes
- Ion current monitoring
- Several lengths available including three lengths specifically designed for Equipment Front-end Modules (EFEM)
- Single-crystal Silicon emitter points

Benefits

- Continued optimal performance each time the system is powered up
- Alarm capability of ensured performance
- Fine-tune ionization for individual process requirements in each area of the tool
- More consistent ion output and stable performance
- Flexible lengths allow versatility for a variety of application designs
- Ultra-clean emitter material, with no risk of wafer contamination from dopants or metals





Designed for Front-End and Back-End Semiconductor Manufacturing to Control Electrostatic Discharge, Particulate Contamination in Mini-Environment and Workstations

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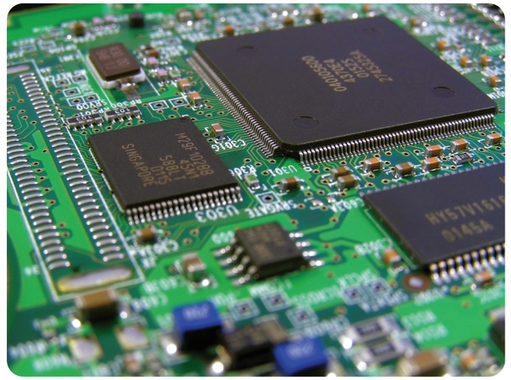
5225S Specifications

Voltage	Input: 24 VAC, 50/60 Hz, 1W (typ) Output: 0-20 kVDC, ±10% for each polarity on an individual AeroBar; positive or negative output levels can be adjusted separately with IR Handheld Remote Model 5570
Output Current	<15 µA, current and voltage limited
Connector	RJ-11 modular jack receptacles
Regulation	Output and balance stability is achieved by independently regulating the ion emission current of each polarity at each ionizer
Timing	Both on/off timing for each polarity are settable from 0-10 sec @ 0.1 sec increments; LEDs on the bar indicate the polarity of the ion emission
Ion Emission	Pulse DC, Steady-state DC, or Standby
Emitter	Single-crystal Silicon or Titanium, replaceable
Cleanroom Class	ISO 14644-1 Class 1 (Single-crystal Silicon emitter) ISO 14644-1 Class 3 (Titanium emitter)
LED Indicator	Individual red flash on for each polarity; middle red flashes rapidly when in alarm, all 3 blink at once when communication occurs
Ozone	<0.005 ppm
EMI	Below background level
Alarm	Alarm activates when the bar is no longer able to maintain the preset ion output level; alarm is displayed visually by a red LED in the middle of the ionizer chassis; settable threshold alarm limits for predictive maintenance
Maintenance	Annual, semi-annual or quarterly emitter point cleaning depending on process sensitivity and presences of AMCs in environment
Enclosure	ABS plastics, fire retardant
Dimension	2.1"H x 1.2"W x 22.4 / 28.4 / 35.7 / 44.4 / 55.6 / 64.4 / 75.5 / 84.4"L (5.3 x 3.1 x 56.9 / 72.1 / 90.7 / 112.8 / 141.2, 163.6 / 191.8 / 214.4 cm)
Weight	1.13 lb (0.51 kg) for a 22" (55.9 cm) bar (approx. 6 oz per additional ft/0.17 kg per additional 30.5 cm)
Certification	SEMI F47 CE UK CA



Specially Designed for Front-End and Back-End Semiconductor Manufacturing Process to Provide High Performance with Simple Integration and Operation

Simple Integration

The AeroBar Model 5225S is powered by a 24 VAC source, eliminating the need for an external controller. Wall transformer kits (24 VAC output) are available for easy installation using flat modular cables. An FMS output signal from the bar provides an immediate warning in the event of an alarm.

Several lengths of the AeroBar are available, including three specially designed for two, three, and four EFEM load port applications. Multiple AeroBars can be installed in either a daisy-chain or drop-tee configuration, creating a system that is versatile and easy to install in any customized equipment or application.

Infrared Handheld Remote Model 5570

As part of our line of digital ionizers, the Model 5225S provides excellent reliability and performance. Exacting parameters and easy setup using the infrared Handheld Remote means that the Model 5225S is ideal for retrofits, low volume tools, systems with programmable logic controllers (PLC) or cleanroom work areas where the performance, stability, and reliability of digital ionization is desired.

Optional Bar Lengths for use in 300 mm EFEMs

Option lengths available with optimized placement of emitter points over the Front Opening Unified/Universal Pod (FOUP) for use in 300 mm EFEMs.

Ultra-Clean Metal-free Modulated Pulse Bar

AEROBAR® MP 5635 (M)

The Model 5635 and 5635M Modulated Pulse (MP) ionizing AeroBar's are specifically designed to eliminate static charge in semiconductor and other ultra-clean manufacturing processes where fast discharge time, low swing voltages and precision balance are required. This breakthrough technology enables Model 5635 mounting within 150 mm of the wafer.

MP Technology, combined with ultra-clean silicon emitter points and precision adjustment, the 5635 MP bar exceeds ISO 14644-1 Class 1 cleanliness to meet the Extended ISO Class 1 level for particles down to 10 nm critical for smaller technology nodes.

MP Technology is easy to adjust and features the ability to fine-tune voltage, frequency and balance to meet differing environmental and product sensitivity requirements.

24V DC · CLEANROOM · EXTENDED · SOFTWARE MP Control · Metal-free · MP Technology · FMS · ULTRA CLEAN VACUUM

Features

- Extended ISO Class 1 (>10 nm) particles cleanliness
- Modulated Pulse Technology
- Excellent lateral uniformity
- Low field voltages
- Air-assist capability
- Optional software with an easy-to-use interface with wide adjustability
- Alarm output signal

Benefits

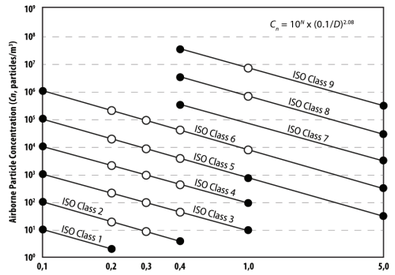
- Compatible with all wafer technology nodes including 14 nm and below
- Precision balance, high ion output with long-term stability
- Uniform balance across the AeroBar
- Safe placement as close as 150 mm of the wafer or reticle
- Enhanced static charge neutralization at fast automation speeds
- Fast setup and easy optimization in any environment

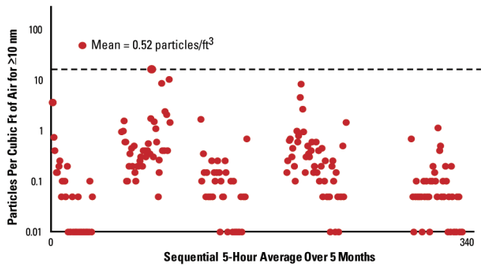
Model 5635

Model 5635M (metal-free)

Cleanliness—Extended ISO Class 1

Model 5635 and 5635M are designed to operate in and maintain ISO 14644-1 cleanliness (10 particles or less per m3 for particles of 0.1 micron and larger). Model 5635 will also perform to Extended ISO Class 1 cleanliness (1200 particles or less per m^3 (34 particles per ft^3) for particles of 10 nm and larger) when operated at 45-50% output voltage setting and OpenJet nozzles with Single-crystal Silicon emitters.





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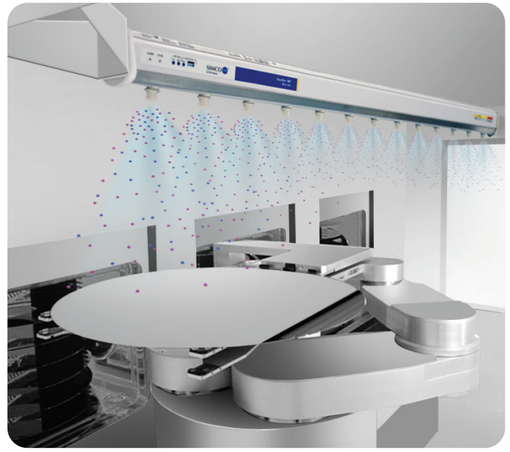
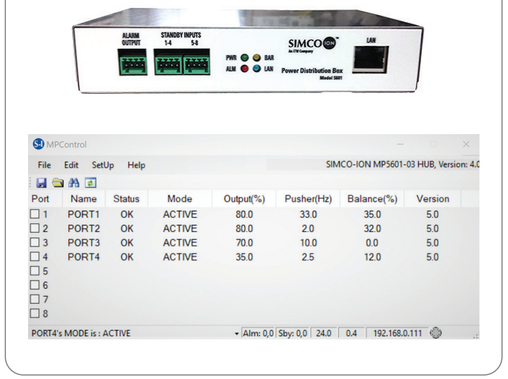


5635 (M) Specifications

Voltage	Input: 24 VDC ±10% power input RJ-45; 0.7A (max) Output: 13.5 kV p-p (max), adjustable
Discharge	15 sec (typ) with no air-assist, Vp-p Swing of 80 at 24″ below an emitter center group of points
Balance	<±35V measured in a controlled environment at 18″ (45.7 cm) distance
Range	150-1000 mm distance to surface; application & customer specification dependent
Ion Emission	Modulated Pulse (MP) Technology
Emitter	Points: ISO 14644-1 Class 1 Single-crystal Silicon Pitch: 50 mm spacing for bars shorter than or equal to 600 mm, 75 mm spacing between nozzles on all other lengths Frequency: Low 0.3-1.5 Hz; high 1-33 Hz
Cleanroom Class	ISO 14644-1 (0.1 µm particles) and Extended ISO Class 1 cleanliness (10 nm particles or nanoparticles) using 45-50% output voltage setting and OpenJet nozzles with Single-crystal Silicon emitters
Air Supply	Input: Clean Dry Air (CDA) or Nitrogen Pressure: 45 psi max Flow: 1-3.5 lpm/nozzle Connection: 8 mm OD one-touch fitting
Bar Setting	DIP switches for general power settings; trimpots for fine tuning balance, frequency, & power output; or use the Model 92-5635-001 Serial Adapter Kit or Model 5601 Power Distribution Box to the MP Control software for fine adjustments
Ozone	<0.05 ppm (24-hour accumulation)
EMI	Below background level
Operating Env	15-35°C (59-95°F); 30-60% RH, non-condensing
Enclosure	Model 5635: ABS chassis; stainless steel ground plate Model 5635M: ABS chassis; ABS ground plate with 20% carbon blend; no exposed metal
Dimension	3.1″H x 1.3″W x 17.7 / 23.6 / 33.5 / 39.3 / 45.3 / 51.2 / 57.1 / 63.0 / 69.0 / 74.8 / 80.7 / 86.6 / 92.5″L (7.8 x 3.4 x 45 / 60 / 85 / 100 / 115 / 130 / 145 / 160 / 175 / 190 / 205 / 220 / 235 cm) 5635M: Available shorter length of 13.8" (35 cm)
Certification	CE cULus UK CA

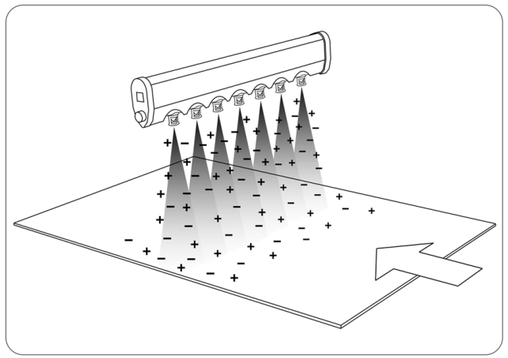
Power Distribution Box with MP Control Software

The Model 5601 Power Distribution Box with the MP Control Software can be used to centralize power and software control for up to 8 MP AeroBars.



5601 Specifications

Input Voltage	24 VDC for each bank of 4 bars; 5.6A total (0.7A max/port)
Communication	Ethernet (RJ-45) to/from PC; individual bar standby inputs
Output	8 RJ-45 ports (1 for each MP bar)
LED Indicator	Green POWER, Yellow COMMUNICATION, Red ALARM, Blue USB
Alarm Output	Relay closure to ground
Dimension	1.27″H x 6.95″L x 3.64″W (3.22 x 17.65 x 9.23 cm) with flange
Weight	0.94 lb (0.43 kg)
Certification	CE UK CA

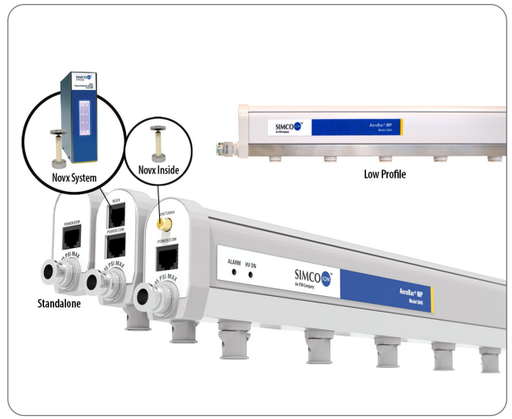


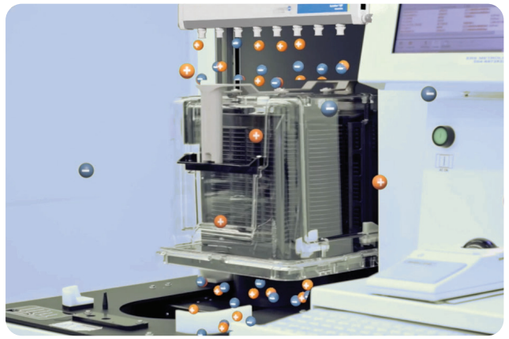
Model 5635 AeroBar MP with OpenJet Nozzles

Ultra-Clean 5V Modulated Pulse Bar

AEROBAR® MP 5645 (LP)

Simco-Ion's Modulated Pulse (MP) Technology Ionization Bars are available with active monitoring and feedback control through the Novx System and Novx Inside versions enabling the bars to maintain precise balance better than ±5V. The bars are designed to provide industry-leading balanced ionization performance for semiconductor back-end advanced packaging and test applications and front-end demanding ultra-clean applications for fast discharge time, low swing voltages, and precision balance and space constraint applications. The 5645 bar enables mounting within 150 mm of the wafer where as the 5645 low profile bar reduces its overall height to 2.6" (65.3 mm) for space constraint applications. Precision adjustment combined with ultra-clean silicon or titanium emitter points, exceeds ISO 14644-1 Class 1 cleanliness and meets the Extended ISO Class 1 level for particles down to 10 nm. The bar can easily adjust and fine-tune voltage, frequency, and balance to meet environmental and product sensitivity requirements.





Features

- ±5V with Novx System or Novx Inside version
- Model 5645 LP ISO 14644-1 Class 1 and Extended ISO Class 1 with SCSi emitter; Model 5645 ISO 14644-1 Class 3 with Ti emitter
- Centralize power and control with widely adjustable MP Control software
- Sensor input, FMS connection, alarms, power, and communications are located on the same end of the bar

Benefits

- Provides active monitoring and feedback control on ESD protection with precise and stable balance
- Compatible with all device technology nodes
- Eliminating manual adjustment at the installed location
- Designed for overall ease of use and long maintenance cycles

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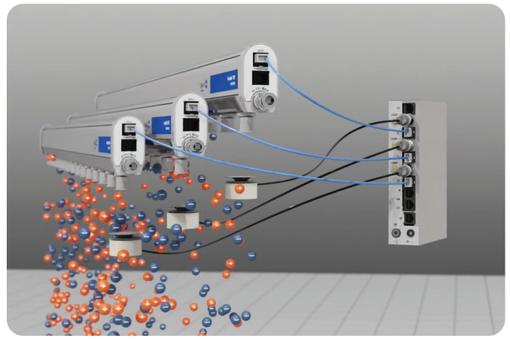
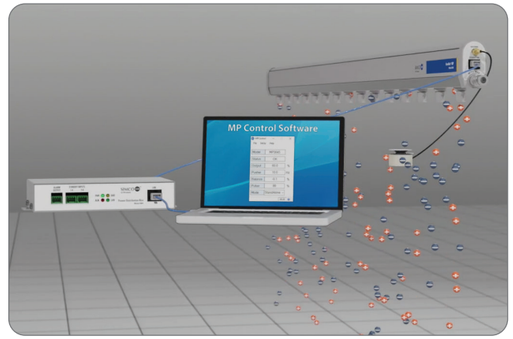




5645 (LP) Specifications

Voltage	Input: 24 VDC ±10%, 0.7A (max) Output: 13.5 kV peak-to-peak (max)
Discharge	15 sec (typ) with no air-assist measured @ 24" (61.0 cm) below AeroBar center
Balance	<±5V, Novx System or Novx Inside; <±20V, Standalone
Ion Emission	Modulated Pulse (MP) Technology
Emitter	Point: Model 5645 LP Single-crystal Silicon and Model 5645 Titanium Voltage: 13.5 kV peak-to-peak (max) Frequency: 0.3-60 Hz Pitch: 50 mm spacing (350/450/600 mm lengths only); 75 mm spacing between nozzles on all other lengths
Cleanroom Class	Model 5645 LP: ISO 14644-1 Class 1 & Extended ISO Class 1 (SCSi) Model 5645: ISO 14644-1 Class 3 (Ti)
LED Indicator	Green steady NORMAL operation, green flashing STANDBY, red ALARM
Bar Setting	Adjustment made remotely via software controlled with Model 5601 Power Distribution Box; no manual adjustment on the bar
Air Supply	Input: Optional Clean Dry Air (CDA) or Nitrogen Flow: OpenJet 45 psi max gas pressure, 1-3.5 lpm/nozzle thru 8 mm OD one-touch fitting Connection: 8 mm tubing (OD) bulkhead, one-touch fitting; no daisy-chain capability
Ozone	<0.05 ppm
EMI	Below background level
Operating Env	15-35°C (59-95°F); 30-60% RH, non-condensing
Enclosure	ABS chassis, stainless steel rail on the outside of the bar
Dimension	Model 5645: 3.1"H x 1.3"W x 13.8 / 17.7 / 23.6 / 33.5 / 39.3 / 45.3 / 51.2 / 57.1 / 63.0 / 69.0 / 74.8 / 80.7 / 86.6 / 92.5"L (7.82 x 3.4 x 35 / 45 / 60 / 85 / 100 / 115 / 130 / 145 / 160 / 175 / 190 / 205 / 220 / 235 cm) Model 5645 LP: 2.6"H x 1.3"W x 13.8 / 17.7 / 23.6 / 33.5 / 39.3 / 45.3 / 51.2 / 57.1 / 63.0 / 69.0 / 74.8 / 80.7 / 86.6 / 92.5"L (6.53 x 3.4 x 35 / 45 / 60 / 85 / 100 / 115 / 130 / 145 / 160 / 175 / 190 / 205 / 220 / 235 cm)
Certification	CE cULus KC UKCA

±5V Balance Performance

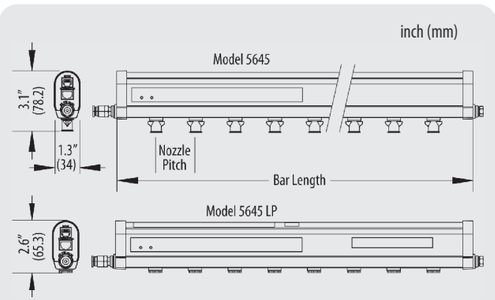
For ±5V balance performance, Models 5645/5645 LP are available with Novx System or with Novx Inside. Both options operate with the Novx to detect and automatically correct the balance. With the sensor placed at the target area, feedback is sent to the AeroBar's internal control system, ensuring that your target maintains a ±5V or better balance at all times.

Simple Installation with MP Control Software

Model 5645/5645 LP AeroBar is quickly installed by simply plugging into a 24 VDC source. MP Control Software accommodates one bar or multiple bars (8 max). Users can fine-tune the control parameters through the easy-to-use MP Control software for installations where optimized balance, swing voltage and discharge times are desired. An alarm connection in the Signal and Power Junction Box enables a signal output for FMS monitoring.

Power Distribution Box with MP Control Software

The Model 5601 Power Distribution Box with the MP Control Software can be used to centralize power and software control for up to 8 MP AeroBars.



Steady-state DC Ionization Bar

AEROBAR® 5685

Simco-Ion's AeroBar Ionizer Model 5685 is designed to control static charge in mini-environments, laminar flow hoods, and workstations. The Model 5685 features a unique aerodynamic design that ionizes a local area without disrupting the laminar flow. Ideal in 12-24 inch distance applications with laminar airflow, the Model 5685 utilizes Steady-state DC ion emission and Simco-Ion's IsoStat® Technology. IsoStat Technology guarantees intrinsically balanced ionization. No complicated feedback circuits are required to maintain balance, and adjustment is never needed. The Model 5685 is available in four lengths, and installation is fast, using easy-mount clips. Plug and play; the ionizer provides balanced ionization upon power up.

Available with ultra-clean Single-crystal Silicon emitter points, the Model 5685 meets ISO 14644-1 Class 3 standards.

24V AC · ISO Class 3 Cleanroom · IsoStat Technology · Ultra Clean Verification

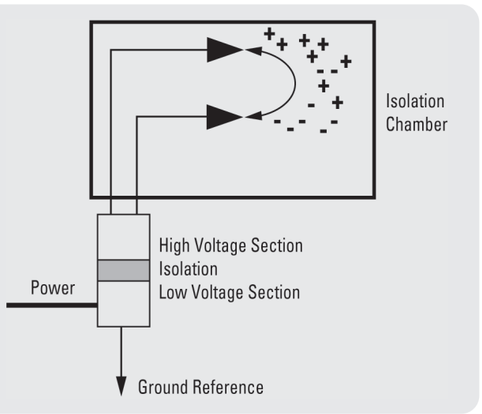
Features

- IsoStat Technology
- Steady-state DC ion emission for high ion density
- Single-crystal Silicon or Titanium emitter points
- Multiple lengths, including shortest 11-inch AeroBar

Benefits

- Intrinsically balanced output of both positive and negative ions, making it ideal for any surface charge applications; low offset voltages; no calibration needed
- Fast discharge when combined with typical laminar airflows for ion delivery
- Compatible material choices for any process: Silicon, the industry standard for semiconductor manufacturing, meets ISO 14644-1 Class 3 standard; Titanium for disk drive and other clean technology applications
- Ability to install in a multitude of hoods, workstations, and mini-environment sizes

IsoStat Technology



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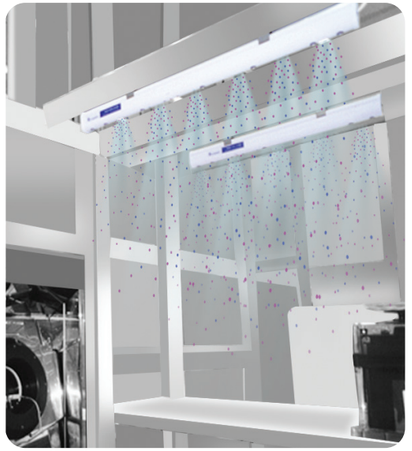


5685 Specifications

Voltage	Input: 24 VAC (±10%), 50-60 Hz, 3.5W (max) Output: 7.5 kV (typ)
Discharge	25 sec or less for ±1000V to ±100V discharge @ 24" with min 60 fpm airflow
Balance	±50V @ 24" (61.0 cm) measured directly below two opposite polarity emitter points (Model 5685 must be mounted at least 6" (15.2 cm) away from grounded surfaces for optimum balance performance)
Ion Emission	IsoStat Technology
Emitter	Titanium or Single-crystal Silicon; replaceable every 2-3 years depending on environment conditions
Cleanroom Class	ISO 14644-1 Class 3
LED Indicator	Green POWER
Airflow	60 fpm minimum required at bar for proper operation
Operating Env	59-95°F (15-35°C), nominal; 20-60% RH, non-condensing
Mounting	Two mounting clips provided, various clips and hangers available
Dimension	2.07"H x 1.16"W x 11.4 / 22.4 / 44.4 / 64.4"L (52.6 x 29.5 x 29.0 / 56.9 / 112.8 / 163.6 cm)
Weight	0.56 lb per foot of bar length (0.256 kg per 30.5 cm)
Certification	CE cULus UKCA

Convenient Power Choices

The Model 5685 may be powered by either of these available transformers for 24 VAC supplied by Simco-Ion:

- 120 VAC input, use P/N 33-1420-01 transformer
- 230 VAC input, use P/N 33-1430-01 and 33-1433-01 transformer

Emitter Point Technology

Single-crystal Silicon: Simco-Ion's patented Single-crystal Silicon emitter points represent the cleanest option available in the industry. Far exceeding Class 3 cleanliness requirements, these non-metallic points produce no particle bursts and emit an average of less than 5 particles per cubic foot (less than 0.05 microns in size verified with condensation nucleus (CNC) and optical particle counters).

Machined Titanium: Simco-Ion's titanium needles are recommended for many cleanrooms. Titanium emitters meet Class 3 requirements for particle emissions, erode less quickly than tungsten, produce no particle bursts, and are easily maintained.

Ionizing Bars

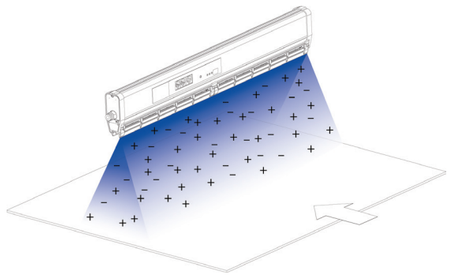
µWire "Microwire" Ionization Bar

AEROBAR® 5710

Simco-Ion's µWire ("Microwire") AeroBar Model 5710 is a cost-effective, high-performance ionizer specifically designed to eliminate static charge on large surface areas. It is particularly suited for sensitive flat panels where fast discharge times and low swing voltages are desired. The use of MicroPulse Technology applied to a corona wire system reduces ion recombination thus increasing production efficiency and performance.

The µWire Bar with its unique corona wire design not only produces more ions than emitter points, but the corona wire design also permits the bar to be placed closer to substrates without causing the "striping effect" that emitter point bars can generate.

The µWire AeroBar 5710 includes a 2nd air input connector which improves performance on bars 2500 mm and longer. Shields have also been added to protect wire contacts, making it truly a "one swipe to clean" bar.



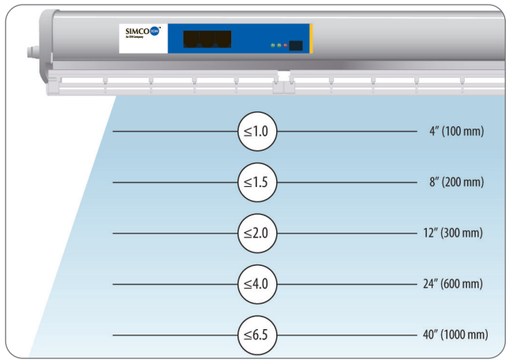
Features

- Unique corona wire design, no emitter points
- Micropulse Technology
- Flexible and powerful setup

Benefits

- Fast cleaning with a single swipe of the wire
- Allows mounting close to the product without danger of striping
- Long-term balance stability and discharge time performance
- Uniform balance over the length of the bar
- Lower cost-of-ownership than emitter-point technology ionizers
- Standard "plug-and-play" use or user-optimized performance for specialized applications performance

Typical Discharge Time



µWire AeroBar Model 5710 (500 mm length) with 50 mm Air Jet Spacing. Measured using Simco-Ion CPM Model 280A with HEPA flow (60 fpm or 0.3m/sec) and CDA flow at 50 lpm.

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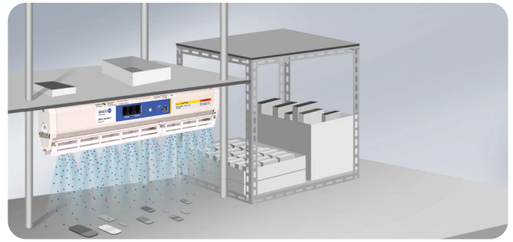
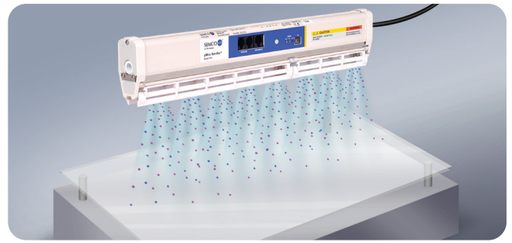


5710 Specifications

Voltage	Input: 24 VDC ±10%, 12W (max) Output: Adjustable, 13 kV pk-pk (typ)
Discharge	<1.5 sec for ±1000V to ±100V discharge @ 12" (30.5 cm), 50 mm airjet spacing with min CDA 2 lpm/airjet
Balance	Inherently self-balancing system <±25V over the length of the bar; maintain balance setting >6 months without cleaning in clean environments (in an ISO 14644-1 Class 4 or better environment)
Range	150-2000 mm; application and specification dependent
Frequency	Default setting at 1 Hz, adjustable from 0.1-35 Hz
Ion Emission	Micropulse (µPulse) Technology
Emitter	Tungsten Wire, 80 micron dia.
Cleanroom Class	ISO 14644-1 Class 2
LED Indicator	Green POWER; yellow COMMUNICATION; red ALARM (LED combinations indicate specific status conditions)
Bar Setting	All operating parameters set via a wired handheld terminal (HHT)
Air Supply	Input: Clean Dry Air (CDA) Flow: 70 lpm (1500 mm bar) Pressure: 50 psi (345 kPa) optimal; 90 psi (620 kPa) max **Bar Lengths (Air Jet Spacing)** — **Air Input Quick Fitting Connector** 400-1500 mm with 25 mm — 8 mm x 1 400-1500 mm with 50 mm — 6 mm x 1 1650-2400 mm with 50 mm — 8 mm x 1 >=2500 mm with 50 mm — 8 mm x 2
Ozone	<0.05 ppm
EMI	Below background level
Operating Env	15-35°C (59-95°F); 30-60% RH, non-condensing
Enclosure	ABS chassis; stainless steel reference plates
Dimension	3.0"H x 1.3"W x 15.7 / 19.7 / 25.6 / 29.5 / 35.4 / 39.4 / 45.3 / 49.2 / 55.1 / 59.1 / 65 / 68.9 / 74.8 / 78.7 / 84.6 / 88.6 / 94.5 / 98.4 / 104 / 108 / 114 / 118"L (76.2 x 3.3 x 40 / 50 / 65 / 75 / 90 / 100 / 115 / 125 / 140 / 150 / 165 / 175 / 190 / 200 / 215 / 225 / 240 / 250 / 265 / 275 / 290 / 300 cm)
Certification	



Application Flexibility

The µWire AeroBar can be operated with the factory default settings in "plug-and-play" mode or optimized for a specific Handheld Terminal. The bar's ability to perform well in either a vertical or horizontal position along with the µWire AeroBar low profile height design makes it easy to install in a variety of flat-panel tool locations, including mail-slot, conveyor and load/unload cassette areas. The Power-Signal Distribution Box accessory can be used to monitor the µWire AeroBar status in a convenient location.

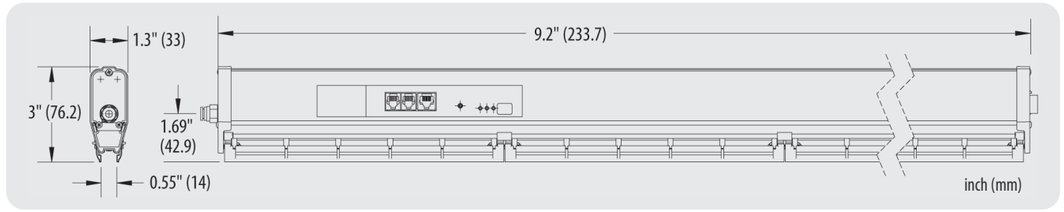
A maximum of three µWire AeroBars may be electrically connected together in a serial fashion ("daisy-chained"). Chaining bars together can create a simpler electrical wiring scheme that provides power and communication to all of the connected bars.

Handheld Terminal (HHT)

The HHT can be used to change the settings and use to monitor the bar's status and parameter, indicator LEDs is desired. The HHT can be used to monitor the 5710 AeroBar during operation such as bar address, frequency, power output, standby mode, alarm test, and firmware version.

Power/Signal Distribution Box

Available for use to monitor the µWire AeroBar status in a convenient location.



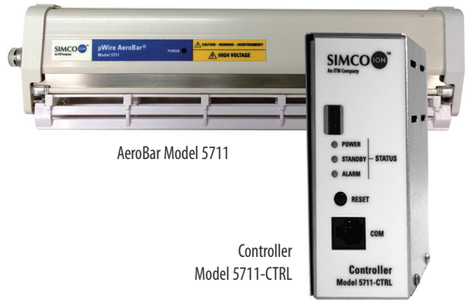
Ionizing Bars

µWire "Microwire" Ionization Bar

AEROBAR® 5711

Simco-Ion's µWire ("Microwire") AeroBar Model 5711 is a cost-effective, high-performance ionizer specifically designed to eliminate static charge on large surface areas, particularly suited for sensitive flat panels where fast discharge times and low swing voltages are desired. The µWire AeroBar utilizes MicroPulse Technology applied to a corona wire system for optimal performance. MicroPulse Technology reduces ion recombination at the corona wire. Corona wire design produces more ions than emitter points and also permits the bar to be placed closer to substrates, diminishing the recombination of ions and the resulting "striping effect."

The 5711 includes all the latest design features of the µWire AeroBar to make the bar easier to clean and provide higher performance. Shields have been added to protect the corona wire contacts during the cleaning process, making it truly a "one swipe to clean" bar.



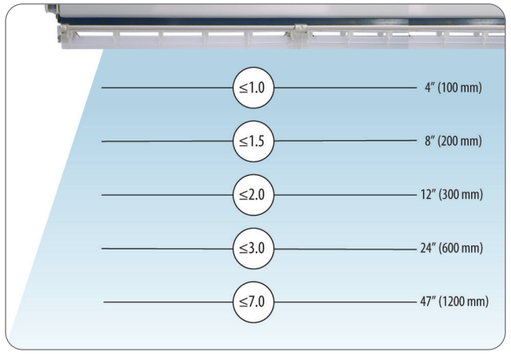
Features

- Compact size in 150 or 250 mm lengths
- Unique corona wire design, no emitter points
- MicroPulse Technology

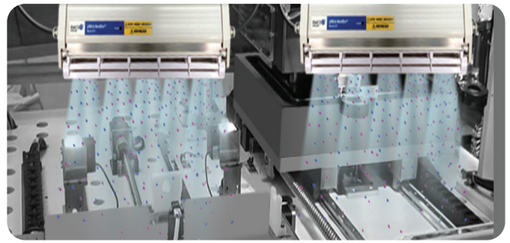
Benefits

- Charge protection for even the most space-limited automation tools
- Bar mounted closed to target without ionization "striping"; one swipe cleaning with the bar in place
- Long-term balance stability and discharge time performance
- Uniform balance over the length of the bar
- Innovative ionization generation that translates to lower total-cost-of-ownership
- Convenient access to the power input, status lights and remote alarm connection

Typical Discharge Time

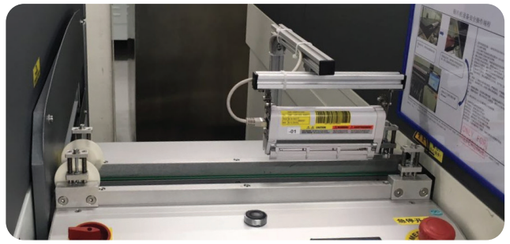


µWire AeroBar Model 5711 (250 mm length) with 25 mm Air Jet Spacing. Measured using Simco-Ion CPM Model 280A with CDA flow at 2 lpm per air jet (18 lpm total) and no HEPA flow.



5711 Specifications

Voltage	Input: 24 VDC to Model 5711-CTRL Controller Output: Adjustable, 13 kV pk-pk (typ)
Discharge	3.5 sec decay average @ 600 mm (typ) measured at 5711 AeroBar center & 25 mm straight airjet spacing, 18 l/m purging air, (250 mm long AeroBar), no laminar flow; setting 1 Hz, 100% output, CPM: balance <±10V; swing 100V pk-pk
Balance	<±25V over the length of the bar; maintains balance performance >6 months without cleaning (in an ISO 14644-1 Class 4 or better environment)
Range	150-2000 mm; application and performance specification dependent
Frequency	Factory default setting is 1 Hz, adjustable from 0.1-35 Hz
Ion Emission	Micropulse (µPulse) Technology
Emitter	Tungsten Wire, 80 micron dia.
Cleanroom Class	ISO 14644-1 Class 2
LED Indicator	Green POWER; yellow COMMUNICATION; red ALARM (combinations of LEDs indicate specific status conditions of the bar)
Bar Setting	All operating parameters set via a Handheld Terminal (HHT) by either wired connection or by battery powered IR control to the 5711-CTRL Controller
Air Supply	Input: Clean Dry Air (CDA) Flow: 150 mm AeroBar = 10 lpm, overall per bar; 250 mm AeroBar = 18 lpm, overall per bar (recommended flow is 2 lpm per jet orifice)
Alarm Output	Relay contact, rated ±24 VDC @ 0.2A max
Ozone	<0.05 ppm
EMI	Below background level
Operating Env	15-35°C (59-95°F); 30-60% RH, non-condensing
Enclosure	Ionizer: ABS chassis; stainless steel reference plates Controller: Stainless steel chassis
Dimension	Ionizer: 3.0"H x 1.3"W x 6.3 or 10.2"L (7.62 x 3.30 x 16.0 or 25.9 cm) Controller: 4.7"H x 1.9"W x 3.2"D (11.9 x 4.82 x 8.2 cm)
Certification	



Application Flexibility

The µWire AeroBar can be operated with the factory default settings in "plug-and-play" mode, or optimized for a specific application using the Handheld Terminal. The bar's ability to perform well in either a vertical or horizontal position along with the µWire AeroBar low profile height and length design makes it easy to install in a variety of flat-panel tool locations (mail-slot, conveyor and load/unload cassette areas as well as within many backend semiconductor assemblies and test areas.

5711-CTRL Controller

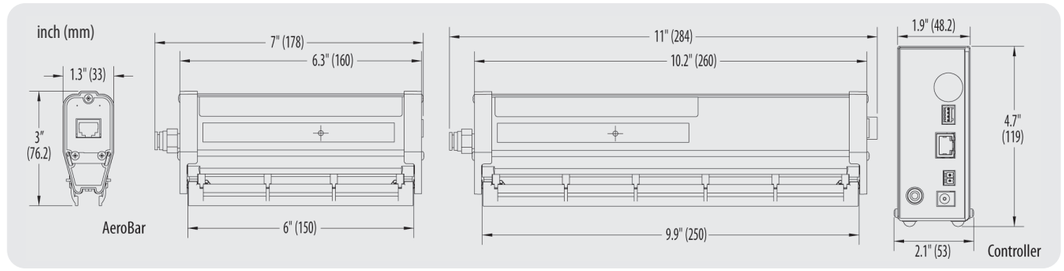
The 5711-CTRL controller can be placed in a convenient location for easy access to power input (local 24 VDC or power adapter from AC wall power), ionization status lights, handheld terminal setup connection and remote status connection.

Handheld Terminal (HHT)

Use the Handheld Terminal (HHT) to change the settings of the 5711 AeroBar. The HHT can also be used to monitor operation status and parameter, such as bar address, frequency, power output, standby mode, alarm test and firmware version.

Emitter Wire Cleaner

The 5711 µWire AeroBar has a specific design emitter wire cleaner, that places foam swap inside the swap along the emitter wire, so that accumulated dirt can be removed in a fast and simple way. The emitter cartridge can also be detached for replacement.



SIMCO ION™
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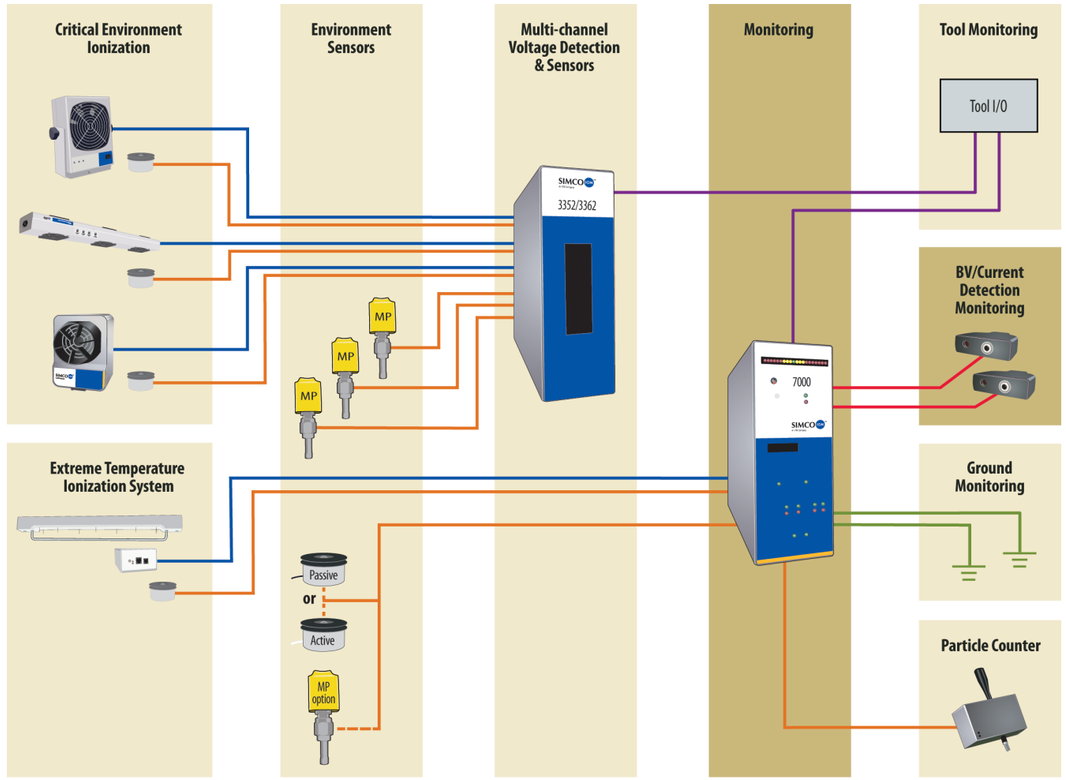
Ionizing Bars

Novx Product Line

Smart Manufacturing



	Novx MiniPulse	Novx 7000	Novx 3352	Novx 3362	Novx 3352 MP	Novx 3362 MP
Function	ESD event detection with specialized antennas to count and record event quantity	Multifunction microprocessor for monitoring	Ionizer monitoring multichannel voltage detection (monitoring to 500V)	Ionizer monitoring multichannel voltage detection, balance, and discharge time	Ionizer monitoring multichannel voltage detection (monitoring to 500V), and ESD event detection	Ionizer monitoring multichannel voltage detection, balance, discharge time, and ESD event detection
Software		Calibrator Reader	Calibrator Reader	Calibrator Reader	Calibrator Reader	Calibrator Reader
No. of Channels	1 channel	1 passive, 1 MP, 1 particle counter, 2 grounds	Up to 3 passive antennas	Up to 3 active antennas	Up to 3 passive antennas +3 MiniPulse	Up to 3 active antennas +3 MiniPulse

SIMCO ION™
An ITW Company

The Electrostatic Control Management System

Enhanced with the Novx Advantage

Simco-Ion offers a complete Electrostatic Control Management System to meet the challenges and requirements of Industry 4.0. These latest ionization products are specially designed to integrate with our Novx products for the **Novx advantage**—***the capability to simultaneously detect, measure, record and monitor electrostatic voltage***. Our Electrostatic Control Management System is an essential tool for today's semiconductor manufacturing industry.

CRITICAL ENVIRONMENT IONIZING BLOWERS

Balance: ±3V or better
±1V Novx closed-loop feedback

Cleanroom: ISO 14644-1 Class 3 (5832, 5842)
ISO 14644-1 Class 4 (5822i)

Model 5822i In-tool Ionizing Blower

- Compact, fan unit separates from Control Box
- Integrated collimator and FMS connection

Model 5832 CE Benchtop Ionizing Blower

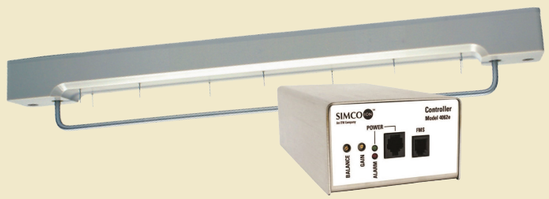
- FMS connection, Alarms with LED indicators
- Standalone, Novx Inside, Novx System versions
- Auto-clean System

Model 5842 CE Overhead Ionizing Blower

- 2-, 3-, or 4-fan configuration
- FMS connection, Alarms with LED indicators
- Standalone, Novx Inside, Novx System versions
- Auto-clean System

Extreme Temperature Ionization System Model 4612 Bar, Model 4062e Controller and 550 Sensor

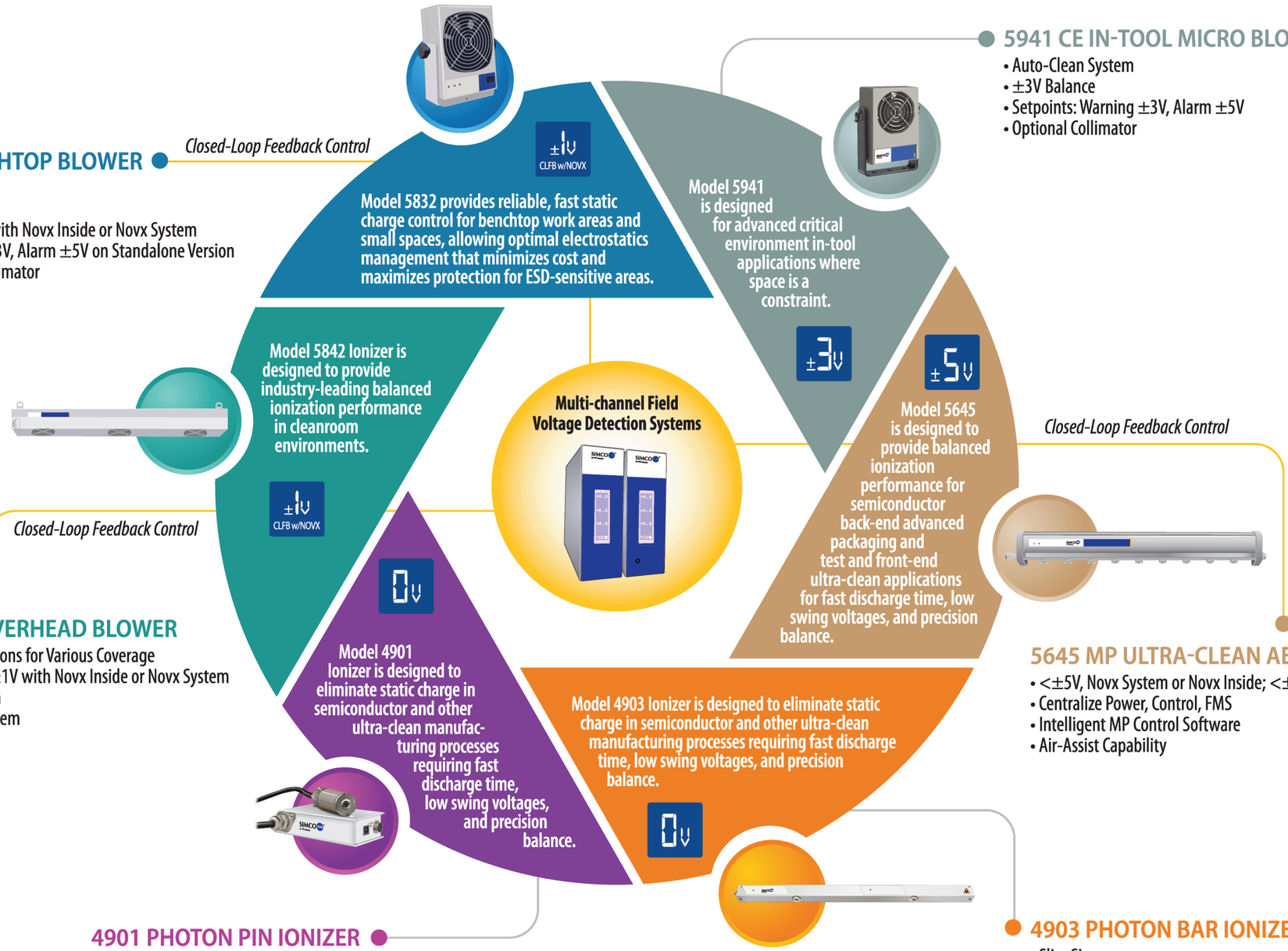
- Withstands up to 302°F (150°C), down to -94°F (-70°C)
- Sensor input, FMS connection, alarms, management control
- Meets ±10V or better balance
- Optional Novx 3362 active antenna feedback control



Novx MiniPulse for Process and Tool Monitoring ESD Event Detection

- Compact, embeddable monitor
- 9-24 VDC power input or 9V battery
- Variable antenna orientations

LOW VOLTAGE AND CONTROL IONIZATION SOLUTIONS



5941 CE IN-TOOL MICRO BLOWER

- Auto-Clean System
- ±3V Balance
- Setpoints: Warning ±3V, Alarm ±5V
- Optional Collimator

Closed-Loop Feedback Control

5832 CE BENCHTOP BLOWER

- FMS Connection
- Auto-Clean System
- ±3V Balance; ±1V with Novx Inside or Novx System
- Optional Warning ±3V, Alarm ±5V on Standalone Version
- Optional Angled Collimator

Closed-Loop Feedback Control

5645 MP ULTRA-CLEAN AEROBAR

- <±5V, Novx System or Novx Inside; <±20V, Standalone
- Centralize Power, Control, FMS
- Intelligent MP Control Software
- Air-Assist Capability

Closed-Loop Feedback Control

5842 CE OVERHEAD BLOWER

- 2-3-4 Fans Versions for Various Coverage
- ±3V Balance; ±1V with Novx Inside or Novx System
- FMS Connection
- Auto-Clean System

4901 PHOTON PIN IONIZER

- 24 mm Dia. Pin Head
- Inherently Balanced 0V
- Replaceable Photon Generating Tube
- Head Fail & System Fail Alarms

4903 PHOTON BAR IONIZER

- Slim Size
- Inherently Balanced 0V
- Replaceable Photon Generating Tubes
- 8 Tubes Max Per Bar Controller
- Head Fail & System Fail Alarms

LOW VOLTAGE AND CONTROL IONIZATION SOLUTIONS






Products	5941	5832	5842	5645 LP	4901	4903
Strategy	Sensing Grille for Monitoring <3V Balance Voltage	 Low Offset Voltage by Close-Loop Feedback Control with Novx Inside or Novx System Novx Inside: Passive Antenna Direct Connect to Ionizer Novx System: Active or Passive Antenna Connect to Novx 3352 or Novx 3362 for Ionizer Control			Soft X-ray Technology Using Photon Generating Tube	
Feature	Micro Blower Auto-Clean System ±3V Balance w/Warning-Alarm Optional Collimator	FMS Connection Auto-Clean System Standalone (±3V Balance w/Warning-Alarm Option) Novx Inside or Novx System Angled Collimator Option	2-3-4 Fans Versions For Various Coverage FMS Connection Auto-Clean System Standalone, Novx Inside, or Novx System	Centralize Power, Control, FMS Same Bar End Intelligent MP Control Software Air-Assist Capability	24 mm Dia. Pin Head Replaceable Photon Generating Tube Head Fail & System Fail Alarms	Slim Size Replaceable Photon Generating Tubes 8 Tubes Max Per Bar Controller Head Fail & System Fail Alarms
Discharge	w/o Collimator: <4 sec @ 12″ (30.5 cm) w/Collimator: <3 sec @ 12″ (30.5 cm)	w or w/o Collimator: <1 sec @ 12″ (30.5 cm) w/o Collimator: <2 sec @ 24″ (61 cm) w/Collimator: <1.5 sec @ 24″ (61 cm)	<2 sec @ 18″ (45.7 cm)	15 sec @ 24″ (61 cm)	<1 sec @ 6″ (15.2 cm)	<1 sec @ 12″ (30.5 cm)
Balance	±3V or better	±3V or better balance; ±1V w/Novx Inside or Novx System	±3V or better balance; ±1V w/Novx Inside or Novx System	<±20V Standalone <±5V w/Novx System or Novx Inside	Inherently Balanced 0V	Inherently Balanced 0V
Ion Emission	Steady-State DC Technology	Steady-State DC Technology	Steady-State DC Technology	Modulated Pulse (MP) Technology	Soft X-ray Technology	Soft X-ray Technology
Cleanroom Class	ISO 14644-1 Class 3	ISO 14644-1 Class 3	ISO 14644-1 Class 3	ISO 14644-1 (0.1 µm particles) Extended ISO Class 1 Cleanliness (0.01 µm particles)	Zero Particle Generation	Zero Particle Generation
Airflow	High 17 cfm, Low 7 cfm	High 129 cfm, Med-hi 117 cfm, Med-low 76 cfm, Low 41 cfm	Per Fan: High 129 cfm, Med-hi 117 cfm, Med-low 76 cfm, Low 41 cfm	1-3.5 lpm/nozzle w/Air-Assist	N/A	N/A
Dimension/ Weight	w/o Collimator: 4.33″H x 3.15″W x 1.60″D (11.0 x 8.00 x 4.06 cm) w/o bracket 0.70 lb (0.32 kg) w/Collimator: 4.33″H x 3.15″W x 2.93″D (11.0 x 8.00 x 7.45 cm) w/o bracket 0.72 lb (0.33 kg)	7.27″H x 6.95″W x 2.97″D (18.47 x 17.65 x 7.54 cm) 2.2 lb (1 kg)	2-fan: 32″L x 2.75″H x 5.44″W (81.3 x 6.99 x 13.8 cm) 5.5 lb (2.49 kg) 3-fan: 42″L x 2.75″H x 5.44″W (106.68 x 6.99 x 13.8 cm) 7.8 lb (3.55 kg) 4-fan: 52″L x 2.75″H x 5.44″W (132 x 6.99 x 13.8 cm) 10 lb (4.55 kg)	2.6″H x 1.3″W x 13.8/17.7/23.6/ 33.5/39.3/45.3/51.2/57.1/63.0/ 69.0/74.8/80.7/86.6/92.5″L (6.53 x 3.4 x 35/45/60/85/100/ 115/130/145/160/175/190/205/220/235 cm)	Pin Head: 0.94″ dia. x 3.35″L (2.40 x 8.50 cm) Ionizer: 3.3″ x 1.3″ x 4.8″L (8.38 x 3.40 x 12.4 cm) w/bracket 0.875 lb (0.40 kg)	Front Module: 1.4″W x 1.1″H x 11.8, 17.7, 23.6, 35.4, 47.2″L (3.6 x 2.7 x 30, 45, 60, 90, 120 cm) Controller: 8.46″W x 2.20″H x 5.35″L (21.5 x 5.60 x 13.6 cm) 2 lb (0.91 kg)

Critical Electrostatic Process Monitoring

Novx 7000

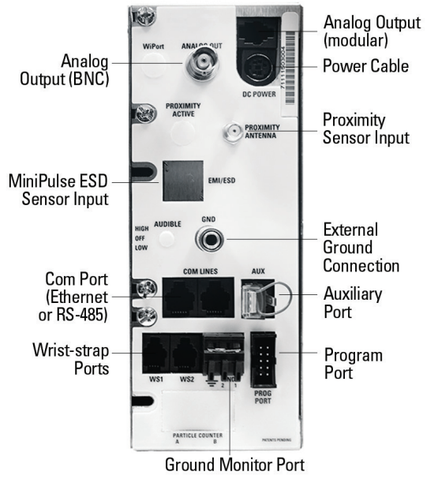
The Novx 7000 Process Monitor is a multi-purpose microprocessor-based instrument for monitoring critical electrostatic-related parameters in workstations and process environments. The six dedicated use channels provide the flexibility to customize the instrument for the monitoring capability and communication required at each location. Module options include field voltage detection/Ionizer balance, ESD event, body voltage detection or ground monitoring and particle counting.

Features

- Smart Signal Processing
- Multiple sensor and antenna styles
- Daisy-chainable, RS-485, or Ethernet output
- ESD event detection tracking
- Three options for field voltage monitoring
- User-programmable alarm setpoints with automated messaging
- Closed-loop control to tool computer
- Plug-in modules allow factory upgrades

Benefits

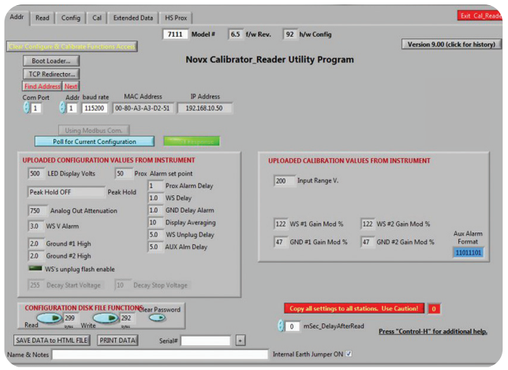
- Discriminates ESD events from other events and background noise
- Adapts to a variety of process applications, environmental conditions, and configurations
- Ability to connect multiple units with a single output or IP address
- Logs events with software
- Select appropriate detection method for the application
- Customize each sensor location; ensures prompt alarm notifications
- Provides ability to shut down tool when thresholds are exceeded
- Provides flexibility to reconfigure monitors for processes with differing requirements



7000 Specifications

Novx 7000		
Field Sensing & Decay Testing	**Passive**	**Active**
Antenna	±1V to ±5000V max	±150V max*
Accuracy	±1V @ ≤20V; ±5% @ >20V	5%
Voltage (full-scale)*	Input: ±15 to ±5000V Output: 0 to ±5.0	Input: +5 to ±150V Output: ±1V min
Input Impedance	>100 GΩ	100 MΩ
Bandwidth with Filter	5 Hz	
Peak Hold*	OFF, ON	OFF, ON
ESD Event Detection	MiniPulse	
Particle Counter Interface	Data acquisition/power available for most popular sensor models	
Body Voltage Detection		
Wrist-strap*	Voltage Threshold: 0.1-10V Alarm Delay: 1-25 sec	
Applied Voltage (dual-wire)*[1]	<0.5V	
Accuracy*	±0.5V	
Alarm 1 & 2 (adjustable)*	1-10V	
Ground Monitoring		
Range	1-20Ω	
Accuracy	0.5Ω	
Applied Voltage (open circuit)	<0.5V	
Applied Current (short circuit)	<1 mA	
GND 1 & 2 Threshold	1-20Ω	
General		
Input Voltage	100-240 VAC, 50/60 Hz	
Digital Display	4-Digit	
LED Display Scale	1-5000V	
Audible Alarm	Off, High, Low	
Communication	RS-485 or Ethernet	
Enclosure	Stainless Steel	
Dimension	2.7"W x 7"H x 5.5"D (6.86 x 17.8 x 14.0 cm)	
Weight	2.5 lb (1.14 kg)	

* = Programmable. 1 = Open circuit voltage measured with Fluke 45 meter.



Novx 7000 Inside an Automated HSA Tool

Module Options

LED Proximity Display: A visual field voltage level indicator with Red/Yellow/Green display.

Field Voltage Detection, Ionizer Balance: Provides local field voltage and ionizer balance monitoring along with closed-loop feedback control for the passive or active antenna system.

MiniPulse ESD Event Detection: Combines detection with specialized antennas to count and record event quantity.

Body Voltage Detection and Ground Monitoring:

1. Provides 2 each dual wire operator body voltage detection.
2. Provides Ground Monitoring of 1 each hard ground and 1 each soft ground at a workstation.

Particle Counter Interface: Collects output data from most particle counters and provides system status with data logging.

Communication: Choose from RS-485 or Ethernet.

Programming

The instrument is programmable through Calibrator_Reader Software, allowing the user to set thresholds and alarms, define data logging parameters and automate alarm notifications. The time-stamped graphical interface provides the ability to cross-correlate events to sensor measurements. Time-stamped data logging files provide the ability to cross-correlated events to the Novx 7000 measurements.

Calibrator Reader Software

For Novx instruments almost all the configuration and calibration parameters are set through the Novx Com Line communication port. This procedure is accomplished using the Novx Calibrator_Reader Program running on a desktop or notebook computer.

Novx Advanced Voltage Detection Systems

Novx 3352 (MP) / 3362 (MP)

The Simco-Ion Novx Passive and Active Multi-fan Closed-loop Ionizer Controllers deliver Novx Advantage—the capability to simultaneously detect, measure, record, and monitor electrostatic voltage; a cost-effective solution for multiple locations.

The versatile antennas used with these systems allow their use in a variety of applications including monitoring sensitive workstations, in-tool voltages, or ionizer performance with the option of closed-loop control to select ionizer products.

Data input is actively monitored and logged in with time stamps. User settable thresholds and alarm levels that provide a proactive safeguard for critical areas. Proven a solution to Industry 4.0 to monitor, analyze, and control ionization while providing traceability and control.

Features

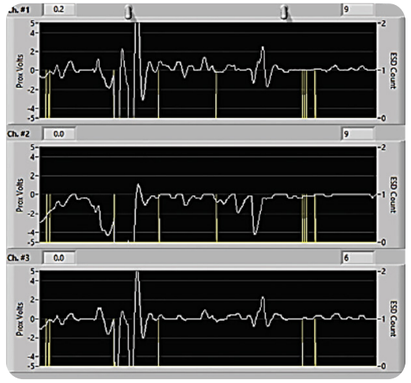
- Microprocessor-based controllers, multichannel, digital I/O, auxiliary I/O, local addressability, RS-485/Modbus, or Ethernet data output
- Passive and Active antenna configurations
- Precision resolution
- Programmable closed-loop control for up to 3 Steady-state DC ionizer fans or a 3-fan blower
- Voltage/polarity displays, local red/green LEDs

Benefits

- Provides easy integration, cost/performance advantages, direct communication to other Novx instruments, or a tool controller
- Monitor voltage at distances and ionizer balance; perform in situ decay testing without the added expense of a CPM
- Measure and record voltage down to 0.1V
- Enable closed-loop feedback control to select ionizers based on balance or decay test results
- Reduce process variations, decrease scrap/rework and improve process yields
- Visual indicators at the instrument

Special Features

Both the Novx 3352 and 3362 feature a front panel which have an LCD screen that displays the voltage and alarm status of each of the three channels in real-time. Files can be exported for Excel graphing and analysis. These instruments can operate as standalone systems and interface to the process controller to initiate response testing and data reporting.



Proprietary Calibrator Reader Program reading in real-time mode
3 channels: yellow = ESD white = proximity measurement

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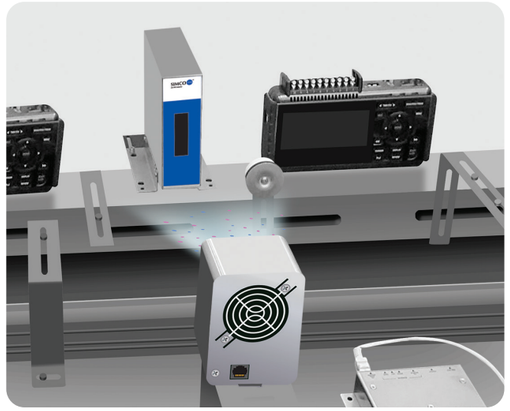
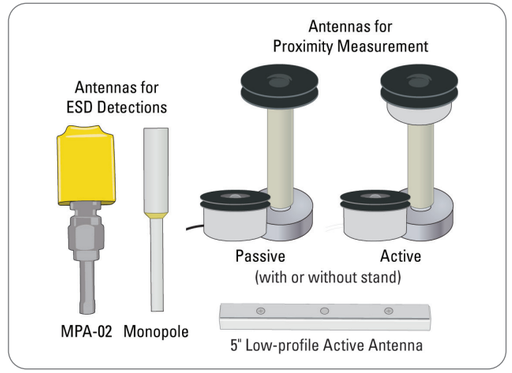


3352/3362 (MP) Specifications

	Novx 3352 (MP)	Novx 3362 (MP)
Input Voltage	24 VDC	24 VDC
Antenna	Passive (SMA connector)	Active (Triaxial connector)
Range	0 to ±500V	0 to ±150V
Accuracy	0.5V for <20V, ±5% for >20V	1V for <20V, ±5% for >20V
Decay Testing	N/A	up to 3 channels
Capacity	1, 2, or 3 fans	1, 2, or 3 fans
LCD Display	4-digit	4-digit
LCD Warning	ERR, ALRM	ERR, ALRM
Setpoint	Alarm: Programmable Audible Alarm: ±0.5V (min) Zero: Programmable	Alarm: Programmable Audible Alarm: ±1V (min) Zero: Programmable
Communication	RS-485/Modbus, Ethernet	RS-485/Modbus, Ethernet
Aux Out	Open collector	Open collector
Enclosure	Stainless Steel	Stainless Steel
Dimension	2.05"W x 6.93"D x 6.50"H (5.21 x 17.6 x 16.5 cm)	2.05"W x 6.93"D x 6.50"H (5.21 x 17.6 x 16.5 cm)
Weight	2.1 lb (0.95 kg)	2.2 lb (1 kg)
Certification	CE cULus KC EAC UKCA	CE cULus KC EAC UKCA

Antennas

The antennas have been designed for specific reception characteristics for radiated pulse transients that result from ESD events.



Applications

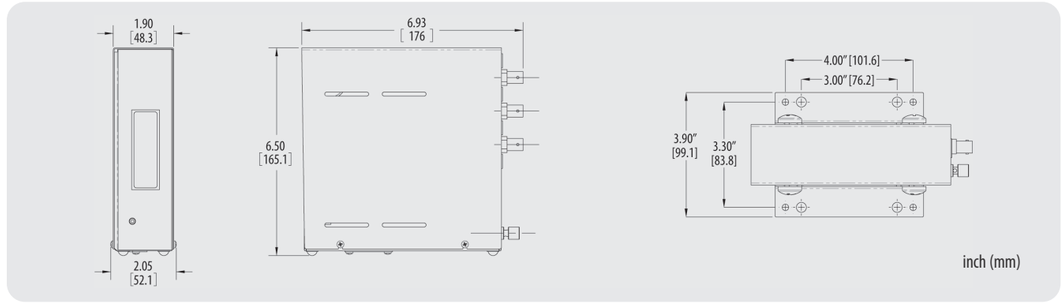
The **Novx 3352 Passive Multi-fan Closed-loop Controller** connects with passive antennas to detect low-level voltage change and ion current (≤400V) with sensitivity down to 1V. Antenna connection configurations:

- Monitor voltages on moving targets
- Monitor ionizer balance—provide closed-loop control to ionizer fans
- Distinguish the proximity of voltages from SSDC ionizer signals
- MiniPulse option for ESD Event Detection

The **Novx 3362 Active Multi-fan Closed-loop Controller** connects to active antennas, providing similar voltage and ion current detection capability as the 3352 with the addition of decay tests.

The powered antenna acts as a charged plate monitor (CPM) to periodically measure ionizer discharge times at programmable frequencies. A "Decay Test" button is provided on the front panel of the 3362 for manually initiating an ionizer decay test.
Antenna connection configurations:

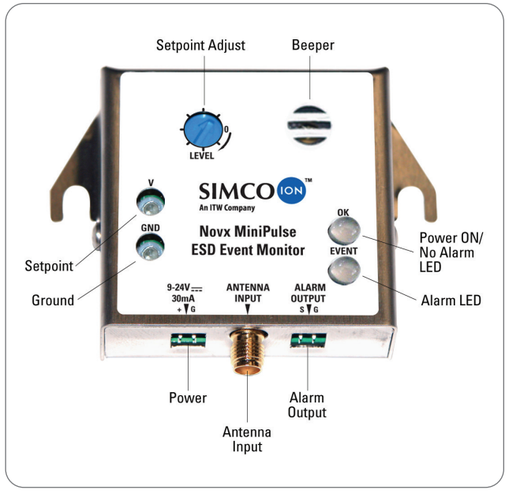
- Monitor voltages on moving targets
- Monitor ionizer balance—provide closed-loop control to ionizer fans
- Distinguish the proximity of field from SSDC ionizer signals
- Perform decay testing automatically or on command
- MiniPulse option for ESD Event Detection



Novx ESD Event Monitoring

Novx MiniPulse

The Novx MiniPulse ESD Event Detector is designed for tool and process monitoring. This affordable, small footprint embeddable monitor has been developed to warn of product damage risks at the point of electrostatic discharge. The MiniPulse uses time domain and threshold discrimination to detect pulse electromagnetic energy. Through the use of specific antenna configurations and placement, the MiniPulse can provide ESD event detection for well-defined small areas.



Features

- Small footprint
- Red/green LED alarm; audible alarm
- Open Collector Output on Alarm
- 9-24 VDC power input, including 9V battery operation
- Variable antenna orientations & adjustable threshold settings

Benefits

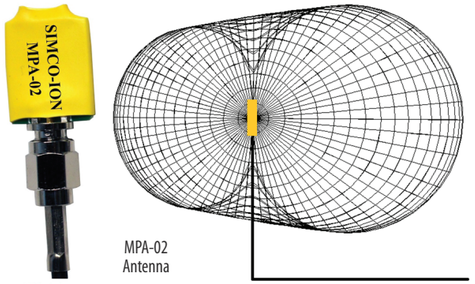
- Easily fit inside a tool or in a manufacturing line
- Visual and audible alarms of ESD events
- Able to integrate into a Factory Monitoring System (FMS)
- Multiple power options provide flexibility in use
- Tunable to specific applications while eliminating false alarms

Antennas

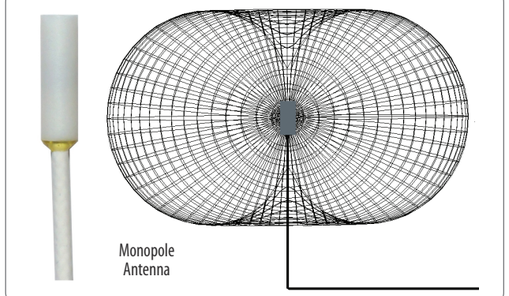
There are two standard antennas for use with the MiniPulse which serve different ESD detection purposes:

MPA-02 Microstrip ESD Antenna. Focused lobe directional design with packplane signal rejection ratio of 3 dB or greater. Developed for use with the Novx 3352MP, 3362MP, 7000, and the MiniPulse.

Monopole Antenna. General use with a 360° monitoring capability. This antenna has an isotopic nature and acquires ESD signals equally from different directions. This antenna is more appropriate for monitoring an area such as a workbench or other open area.



Microstrip ESD Antenna–Focused Lobe Directional Design



Omni-directional Antenna–360° ESD Monitoring

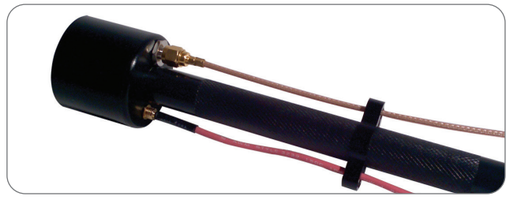
SIMCO ION™
An ITW Company

MiniPulse Specifications

Power	9-24 VDC, 30 mA (9V alkaline battery option can be used to provide up to 20 hours of operation, no ground required)
Range	1-1000 V/m radiated ESD event
Accuracy	±20 V/m radiated amplitude
Response	50 ms (reset time)
Indicator	Green NORMAL OPERATION and red ESD EVENT LEDs
Audible Alarm	Piezo buzzer sounds momentarily on ESD event
Alarm Output	Open collector pulls to GND on alarm +24 VDC max; 0.2A load max
Connector	Input & Alarm: Header receptacle 2-pin, female socket (mating connector is a Molex 22-01-3027, TE Connectivity 3-640440-2, or other equivalent connector) Antenna: SMA
User Adjustment	Detection level adjustment via "Level" trimpot; pulse detection length
Cleaning	The exterior of the MiniPulse stainless steel chassis may be cleaned with a dry cleanroom cloth or a cleanroom cloth dampened with distilled or deionized water
Operating Env	+40˚F to +120˚F (5-49˚C); 10-60% RH, non-condensing
Dimension	2.15"W x 2.08"L x 0.750"H (5.46 x 5.28 x 1.91 cm) not including mounting flanges
Weight	0.25 lb (0.11 kg)
Certification	CE

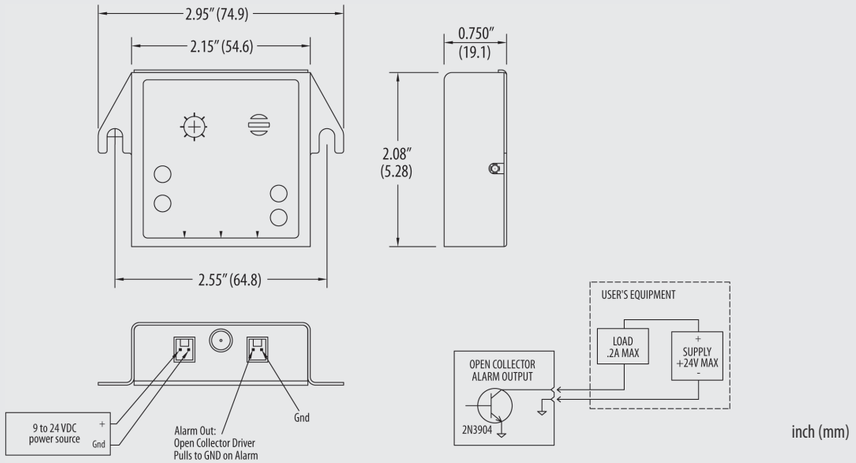
Charge Device Model Event Simulator (CDMES)

The optional CDMES was designed to allow ESD detectors to be calibrated inside the tools and processes where CDM events occur. This simulation tool allows calibrated CDM events of different magnitudes to be produced at the location where production devices are most vulnerable and where ESD monitoring sensors are located.



CDMES Specifications

Power	Variable benchtop DC power 2 kV supply
Range	25-2000 VDC (using 14-1245 power supply)
Accuracy	±10 V/m radiated amplitude
Response	50 ms
Connector	Input & Alarm: Header receptacle 2-pin, female socket (mating connector is a Molex 22-01-3027, TE Connectivity 3-640440-2, or other equivalent connector) Oscilloscope: SMA-male (RG-316 cable)
User Adjustment	Voltage input level controlled through DC power supply level
Operating Env	+40˚F to +120˚F (5-49˚C); 10-60% RH, non-condensing
Cleaning	Periodic point replacement only
Dimension	7.67"L x 1.65"W (19.5 x 4.19 cm)
Weight	0.23 lb (0.104 kg)
Certification	CE



SIMCO ION™
An ITW Company

Ionizing Air Cartridge

6110/6110A

Simco-Ion's self-contained compressed Air Ionizing Cartridge controls static charge in production, packaging, laboratory, and other environments where static build-up can cause contamination, ESD, material handling problems or microprocessor lock-up. Compact and rugged, the cartridge can be used either for in-line ionization or as an ionizing blow-off gun.

For in-line use, both models connect to a compressed air source, and it is ready to ionize any production equipment.

Model 6110A (with airflow sensor) may be attached to an ordinary air gun and the airstream is ionized for effective particle removal. An internal sensor initiates ionization only when the gun is triggered, ensuring on-demand control of static charge.

24V AC · IsoStat Technology · ULTRA CLEAN VENTILATION

Features

- IsoStat® Technology
- Shielded emitter points
- Compact size
- Internal airflow sensor (Model 6110A)
- Optional blow-off gun kit

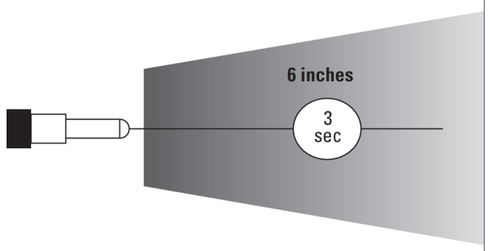
Benefits

- Intrinsically balanced; no calibration needed
- No shock hazard
- Adapts to compressed air lines
- On-demand ionization during gun operation
- Fits any air gun

Adapter

Air Gun/Hose Kit

Typical Discharge Time



<4 sec, 1000-100V for either polarity. Measured with 6110(A) air output connector 6" from the plate of a CPM and an inlet airflow rate of at least 2 scfm. 2 scfm is the minimum flow rate for operation of the 6110(A).

SIMCO ION™
An ITW Company

Cartridge, Guns, Nozzle

IsoStat Technology

Simco-Ion's IsoStat Technology guarantees intrinsically balanced ionization and eliminates complicated feedback circuits. Ionizers incorporating this technology never need calibration and require very little maintenance. IsoStat is based on a law of physics, Conservation of Charge, which states that charge cannot be created or destroyed in an isolated system. By isolating the ionizer's emitter points from ground, IsoStat ensures equal numbers of positive and negative ions.

Characteristics of IsoStat ionizers include:

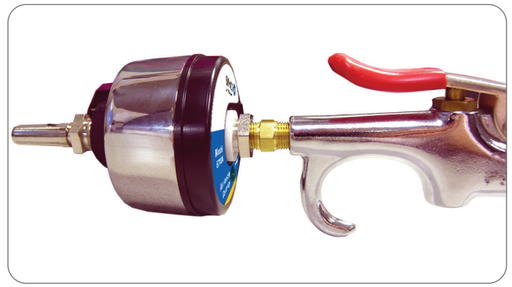
- Ionizers never need calibration and require very little maintenance
- Small size and operation without grounding wires

6110/6110A Specifications

Input Voltage	24 VAC, <1W from wall transformer
Discharge	<4 sec @ 6" (15.2 cm); ±1,000 to 100V
Balance	<±25V @ 6" (15.2 cm)
Ion Emission	IsoStat Technology
Emitter	Tungsten
LED Indicator	Green POWER
Air Supply	Flow: At least 2 scfm Connection: 1/4" NPT female (input and output); 1/8" NPT adapter available
Airflow Sensor	Model 6110A: Internal Airflow Sensor turns the ionizer off automatically when air is not flowing Model 6110: For continuous flow applications (without Airflow Sensor)
Dimension	Dia. 2.4" x 2.125"L (6.10 x 5.40 cm) not including fittings
Weight	0.375 lb (0.17 kg)
Certification	CE · UKCA

Accessories

The Model 6110A is supplied with a nozzle and adapter which may be used as an air gun using Simco-Ion Air Gun/Hose Kit (the Model 6110 does not operate with this kit).



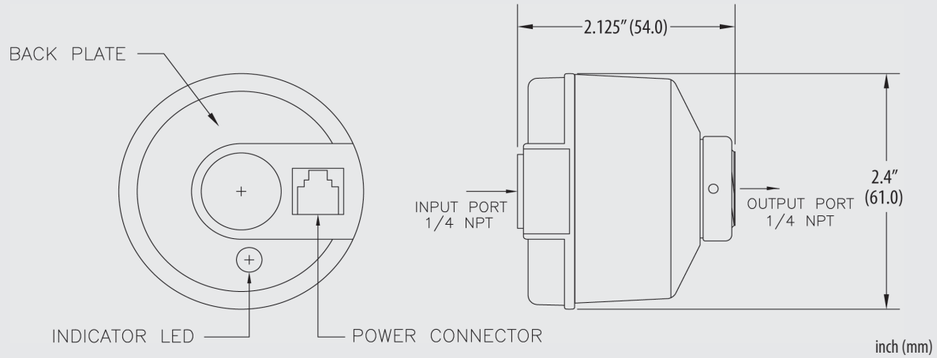
Applications

In-line Ionization: Reduces ESD damage and microprocessor lock-up in:

- IC packaging and marking
- Surface-mount equipment
- Device testing equipment

Ionizing Blow-off Gun: Removes particles in:

- Printed circuit board assembly
- Medical device manufacturing
- Film processing



SIMCO ION™
An ITW Company

Ionizing Blow-off Gun

AIRFORCE 6115

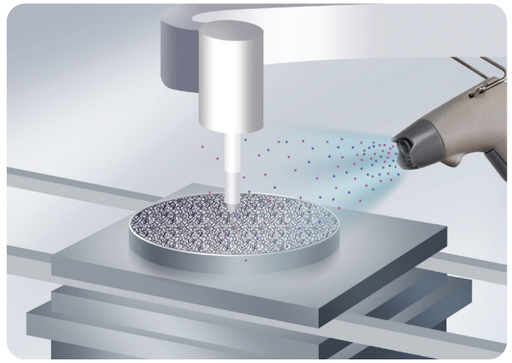
The Simco-Ion AirForce Ionizing Blow-off Gun Model 6115 is designed with the operator in mind. The AirForce's lightweight, flexible air hose—just 3/8" in diameter—moves with the operator and makes work easier. No high voltage cable means improved operator safety. The gun's ergonomic design—with a light touch trigger and easy-view LED—minimizes fatigue and eliminates wrist hyperextension. The compact console can be mounted anywhere, so it doesn't take up valuable workspace but is still easily accessible. To make the work environment more pleasant, the AirForce Model 6115 also features low audible noise.

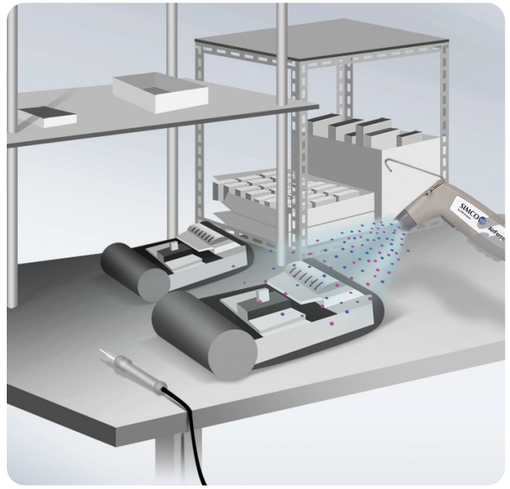
Features

- IsoStat® Technology
- ISO 14644-1 Class 4 cleanliness operation
- Ergonomic gun design in durable static dissipative material
- Flexible, lightweight air hose with integral low voltage power cable
- Strong blow-off force
- Replaceable emitter point assembly and quick-eject filter

Benefits

- Intrinsically balanced; no calibration needed
- Suitable for use in cleanroom applications for semiconductor, medical, and HDD applications
- Reduces fatigue and wrist hyperextension, and holds up to high impact; ESD safe
- Moves with the operator and does not interfere with work
- Effective removal of particle contamination
- Minimizes maintenance downtime





Optional Foot Pedal

Gooseneck Mounting Stand

6115 Specifications

Console Power	24 VAC, 10W powered from a wall transformer
Discharge	1.0 sec @ 6" (15.2 cm), 30 psi; ±1000-100V
Balance	±30V
Ion Emission	IsoStat Technology
Emitter	Tungsten
Cleanroom Class	ISO 14644-1 Class 4
LED Indicator	Green ON both console and gun
Blow-off Force	0.09 lb @ 30 psi; measured @ 3" (7.62 cm) from a 2" (5.08 cm) dia. target
Air Supply	Input: 20-65 psi, Clean Dry Air (CDA) or nitrogen Blow-off Force: 0.041kg @ 30 psi; measured @ 3" (7.6 cm) from a 2" (5.1 cm) diameter target Connection: 1/4" male industrial interchange quick disconnect Hose: Static-dissipative polyurethane, 3/8" outside diameter; 8 ft (2.4m)/65 psi Filter: 99.9% efficient, 0.01 micron or larger air particles; 99.9% coalescing efficiency
Audible Noise	70 dBA @ 1m, 30 psi
EMI	29 dbµV; average level 100 KHz to 1.1 MHz
Ozone	<0.005 ppm (typ)
Mounting	Metal mounting plate attaches to back of console
Enclosure	Gun/Console: Static-dissipative polycarbonate (gun hanger 302 stainless steel); optional mounting stand for hands-free operation
Dimension	Gun: 8.0"L x 3.1"W x 1.0"D (20.3 x 7.94 x 2.54 cm) Console: 8.2"L x 3.0"W x 1.7"D (20.9 x 7.59 x 4.29 cm)
Weight	Gun: 0.75 lb (0.34 kg) with 8 ft (2.4m) air hose Console: 0.72 lb (0.33 kg)
Certification	CE cULus UKCA

IsoStat Technology

Simco-Ion's IsoStat Technology is the first balancing technology for ionizers to guarantee intrinsically balanced ionization and elimination of complicated feedback circuits.

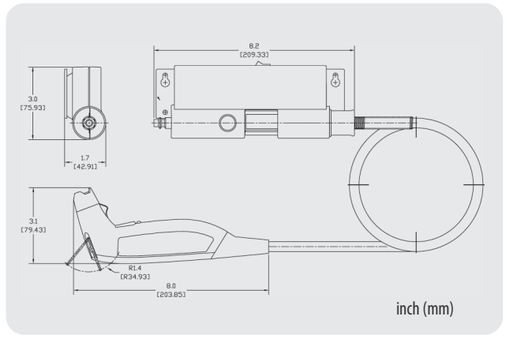
IsoStat is based on a law of physics–Conservation of Charge–which states that charge cannot be created or destroyed in an isolated system. By isolating the ionizer's emitter points from ground, IsoStat ensures equal numbers of positive and negative ions. Characteristics of IsoStat ionizers include:

- Ionizers never need calibration and require very little maintenance
- Small size and operation without grounding wires

High Reliability

IsoStat Technology also guarantees that the AirForce is calibration free and requires little maintenance when used with CDA or Nitrogen. When the air filter or emitter points need replacement, they snap in and out in less than a minute—reducing gun down-time and improving long-term performance.

To avoid replacement costs, the AirForce is made from durable polycarbonate that holds up to high impact. The gun body, air hose and control console are static dissipative and ESD-safe. And an extremely low EMI level ensures the AirForce Model 6115 won't interfere with other electronic equipment or operations.



SIMCO ION™
An ITW Company

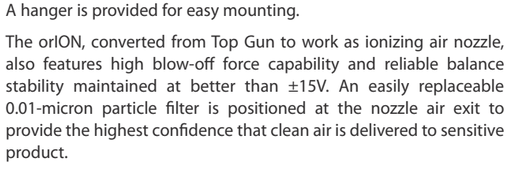
Ionizing Air Gun

TOP GUN™ 3

Simco-Ion's Top Gun Ionizing Air Gun is a high-performance ionizing air gun designed for a wide variety of electronic manufacturing, medical and assembly applications. Balanced to 0±15V, the Top Gun features high blow-off force and low air consumption providing high-efficiency cleaning and maximum static charge decay. A filter at the exit of the gun ensures that the air is clean.

The gun body is lightweight but durable. It features a light-touch trigger, making it comfortable even for extended use. All functionality is built into the gun, including a flow control valve, a balance adjustment for calibration, and a two-level LED which indicates both power and ionization. Both the gun and cable are static dissipative. A hanger is provided for easy mounting.

The orION, converted from Top Gun to work as ionizing air nozzle, also features high blow-off force capability and reliable balance stability maintained at better than ±15V. An easily replaceable 0.01-micron particle filter is positioned at the nozzle air exit to provide the highest confidence that clean air is delivered to sensitive product.

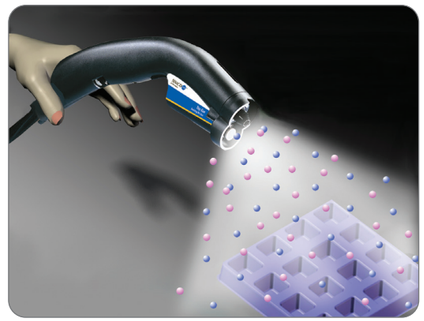


Features

- Lightweight, ergonomic design
- Flow control valve for adjustable airflow
- Electrically balanced ion output
- Integrated, replaceable filter-nozzle
- Ionization indicator light

Benefits

- Maximum user comfort prevents operator fatigue and increases productivity
- Airflow use that meets the specific application requirements
- Protects ESD-sensitive components and assemblies
- Insures air contacting the target area is clean
- Eliminates the guesswork of ionization at target area



Top Gun 3 Balance Long-term Stability (V)				
Distance	0 hr	195 hrs	465 hrs	1440 hrs
@ 2 Bar				
5 cm	-8	5	0	0
10.2 cm	-8	8	1	1
15.2 cm	0	6	5	5
@ 4 Bar				
5 cm	-2	2	-1	-1
10.2 cm	-5	2	-1	-1
15.2 cm	-1	1	1	1

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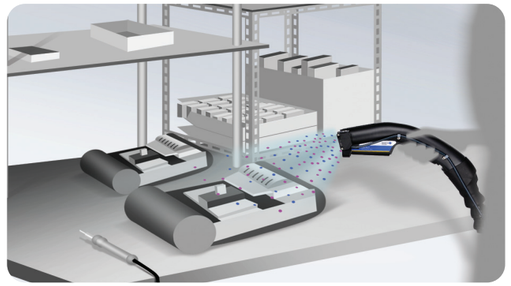


Top Gun 3 Specifications

Input Voltage	120 VAC, 60 Hz, 0.2A; 230 VAC, 50 Hz, 0.1A
Discharge	1.3 sec @ 6" (15.2 cm), 30 psi (±1000-100V) 0.5 sec @ 2" (5.08 cm), 60 psi (±1000-100V)
Balance	0±15V
Blow-off Force	0.4 lb @ 100 psi, 2" diameter target 3" from the gun
Air Supply	Input: 100 psi max; Clean Dry Air (CDA) or Nitrogen Flow: 2.4 scfm @ 30 psi (68 lpm, 2 bar); 4.6 scfm @ 60 psi (130 lpm, 4 bar); 7.4 scfm @ 100 psi (210 lpm, 7 bar) Pressure: Pressure relief in nozzle complies with OSHA requirements Filter: 0.01 micron rating; replacement filters available Connection: 1/4" NPT (female) Air Hose: 7' or 14' standard, 5' or 14' with optical sensor (integral to gun & controller)
Audible Noise	76 dbA @ 30 psi (2 bar) input; 89 dbA @ 60 psi (4 bar) input; 97 dbA @ 100 psi (7 bar) input; measured 24" (61.0 cm) from nozzle
Ozone	0.001 ppm; measured 18" (45.7 cm) from gun, operation @ 15 psi (1 bar)
Operating Env	32-104°F (0-40°C); 30-60% RH, non-condensing
Enclosure	Gun: Static Dissipative Polycarbonate/ABS blend Air Hose: Static Dissipative Polyurethane
Dimension	See the dimensional drawing
Weight	Gun: 0.41 lb (0.185 kg); Air Hose: 0.08 lb/ft (0.115 kg/m)
Certification	CE KC UKCA

Console Specifications

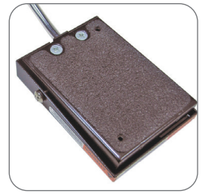
Power	120 VAC, 50/60 Hz, .10A, 230 VAC, 50/60 Hz, .05A
Pressure	Clean Dry Air (CDA) or Nitrogen 1/4" NPT connector, female (100 psi/7 bar max)
Enclosure	Powder-coated steel
Dimension	7.87"H x 5.12"W x 3.37"D with flanges (19.9 x 13.0 x 8.56 cm)
Weight	6.0 lb (2.72 kg)

Sidekick and Foot Pedal

The Top Gun with Sidekick offers hands-free operation and flexible positioning during assembly and manufacturing processes. A foot-pedal controls both ionization and airflow, which reduces compressed air costs and extends the life of the ionizer.

- Fully adjustable 18" (45.7 cm) neck focuses the ionized airflow
- Tabletop bracket provides easy mounting
- Foot-pedal permits hands-free operation

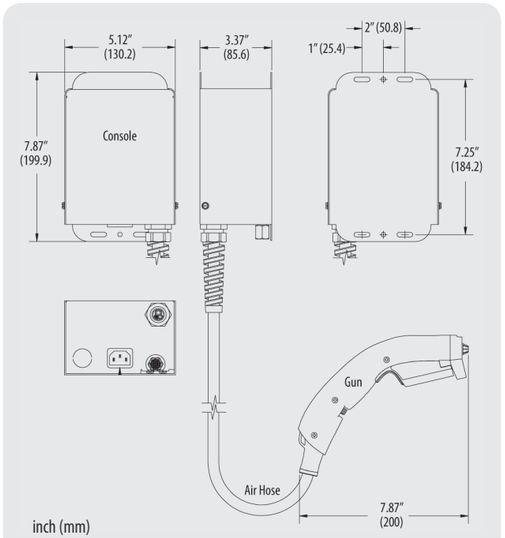

Hands-free Sidekick Option


Foot Pedal Option

Optical Sensor

For automated assembly, Top Gun is available with an optional optical sensor, which automatically activates Top Gun when an object is in range. The Optical Sensor has an adjustable sensing range from 1-30" (2.54-76.2 cm). Two LED indicators show when the optical sensor is turned on and when the object passing through the sensor area is automatically being ionized.


Optical Sensor



inch (mm)

SIMCO ION™
An ITW Company

Ionizing Air Nozzle & Controller

orION™

Simco-Ion's orION Ionizing Air Nozzle and Controller provides high performance and reliability in a compact, compressed air nozzle. It has been designed for use in fixed applications on manufacturing lines, equipment, and tool applications in the telecommunications, consumer electronics, semiconductor and medical device manufacturing industries.

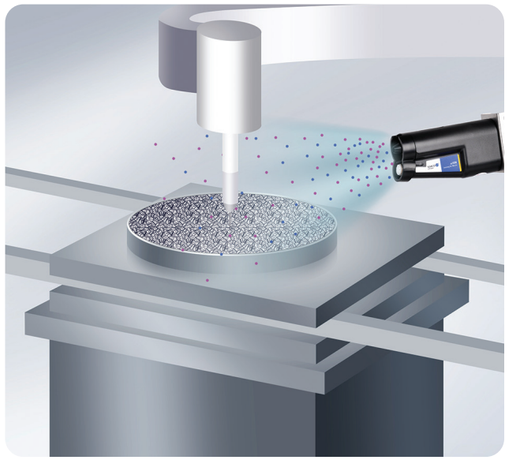
The orION features high blow-off force capability combined with fast removal of electrostatic surface charge. Reliable balance stability is maintained at better than ±15V. An easily replaceable 0.01-micron particle filter is positioned at the nozzle air exit to provide the highest confidence that clean air is delivered to sensitive product.

Features

- Compact nozzle and cable assembly
- Forceful gas-jet nozzle
- Integrated filter within nozzle
- Remote operation of ionization and nozzle gas flow
- Ionization balance adjustments at nozzle and at controller

Benefits

- Reduces fatigue and wrist hyperextension
- Moves with operator and does not interfere with work
- Minimizes maintenance downtime
- Perfect for tight-constrained applications
- Fast, effective charge neutralization and blow-off cleaning
- Contaminate free gas discharge
- Offers control of orION from most convenient operator location
- Convenient balance optimization



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Applications

- Medical device manufacturing and packaging
- Precision parts assembly
- Particulate removal in optics
- Cleaning glass or molded parts prior to finishing
- Cleaning thermo-formed trays

orION Specifications

Input Voltage	120 VAC, 60 Hz, 0.2A; 230 VAC, 50 Hz, 0.1A
Discharge	<2 sec @ 6" (15.2 cm), 30 psi (±1000-100V) <1 sec @ 2" (5.08 cm), 60 psi (±1000-100V)
Balance	0V ±15V
Air Supply	Input: Clean Dry Air, Nitrogen, or CO_2 Pressure: 100 psi (7 bar) max; pressure relief in nozzle complies with OSHA requirements Flow: 2.4 scfm @ 30 psi (2 bar); 4.6 scfm @ 60 psi (4 bar); 7.4 scfm @ 100 psi (7 bar) Connection: 1/4" NPT (female) Filter: 0.01-micron rating
Audible Noise	76 dB @ 30 psi (2 bar); 89 dB @ 60 psi (4 bar); 97 dB @ 100 psi (7 bar); measured 24" (61.0 cm) from nozzle)
Connector	4 position, keyed circular
Ozone	<0.5 ppm measured @ 12" (30.5 cm)
Operating Env	32-104°F (0-40°C); 30-70% RH, non-condensing
Dimension	Nozzle: see dimensional drawing
Weight	Nozzle: 0.41 lb (0.185 kg) Air Hose: 0.08 lb/ft (0.115 kg/m)
Certification	CE UK CA

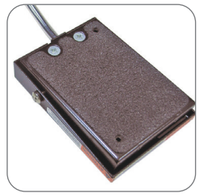
Console Specifications

Power	120 VAC, 50/60 Hz, .10A, 230 VAC, 50/60 Hz, .05A
Pressure	Clean Dry Air (CDA) or Nitrogen 1/4" NPT connector, female (100 psi/7 bar max)
Enclosure	Powder-coated steel
Dimension	7.87"H x 5.12"W x 3.37"D with flanges (19.9 x 13.0 x 8.56 cm)
Weight	6.0 lb (2.72 kg)

Flexible Neck Stand & Foot Switch

orION with Sidekick offers hands-free operation and flexible positioning during assembly and manufacturing processes. A foot-switch controls both ionization and airflow, which reduces compressed air costs and extends the life of the ionizer.

The flexible gun mount allows the operator to focus the ionized airflow where it is needed. The stand includes a steel bracket for easy bench top mounting.



Foot-switch Option

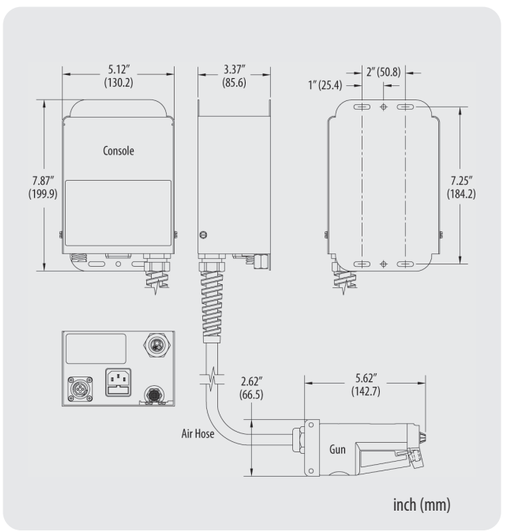
- Fully adjustable 18" (45.7 cm) neck focuses the ionized airflow
- Tabletop bracket provides easy mounting
- Foot switch permits hands-free operation

Optical Sensor

For automated assembly, orION offers an optional optical sensor, which automatically activates the orION when an object is in range. The Optical Sensor has an adjustable sensing range from 1-30" (2.54-76.2 cm).

Power Unit Assembly

Compressed gas is connected to a power unit with a solenoid to turn gas flow on and off. Gas tubing connects to nozzle that has been carefully designed to yield a forceful blast while keeping the noise level low.



Cartridge, Guns, Nozzle

ULTRA-CLEAN IONIZATION

Micro Series

ADVANCED ESD PROTECT

Micro Series












Products	Model 4210 (u)(n)	Model 4214 (un)	Model 4630 Quadbar	Model 4635 Quadbar	In-line fusION	Micro S & SA	fusION / fusION AA	Model 4612 Mini	Model 5822i	Model 6422e (AC)	Model 5941	Model 4901	Products
Feature	4210: CDA or N_2 high output Tungsten emitters for general use in-line applications 4210u: CDA with Single-crystal Silicon emitters for ISO 14644-1 Class 3 4210un: N_2 with Single-crystal Silicon emitters for ultra-clean applications	Self-balanced, no calibration required; unlike other N_2 ionizers which depend on the trace gases in the nitrogen stream to produce ionization, it is designed to ionize N_2 (99.999%) gas flow in ultra-clean semi-conductor & other high purity processes	Unique quadrupole ensure effective ionization as close as 3" from the product	Quadrupole configuration with unique cross-channel air cartridge around emitter points for independent air delivery in tight space Standard Cartridge: Fits around emitter points to provide CDA or N_2 Jet Cartridge: High-velocity jet for air centered between all 4 emitter points to greatly reduced discharge times	Fast decay times through output tubes; tubes may be split into multiple tubes to service multiple locations Optimal Performance: Use nitrogen kit for pure N_2 or 1-2% CDA mixture application	Auto-balancing Compact design Micro S: For no airflow operation Micro SA: Uses CDA airflow where better performance is required	Auto-balancing fusION: Optional fan assembly to increase performance fusION AA: Air-assist connection allows use of CDA or N_2 to improve performance Visual status indicator & digital level remote alarm output	Designed to provide closed-loop feedback control static neutralization in environments with low to elevated temps from -58°F to 302°F (-50°C to +150°C); enclosed in hi-temp PEEK chassis	Fan Unit & Control Box Designed to meet small-footprint ionizer requirements for ±3V or better balance, or ±1V or better balance with Novx monitoring	Auto-balancing FMS interface for immediate notification of operational failure 6422e-AC: Auto-clean System	Auto-clean System Visual indicators FMS interface for fan fault & out of balance Exclusive 2-level balance alarm notification	Suitable for critical cleanliness control Low voltage tube type Pin-type designed for narrow, confined space and in-tool applications Alarm output signal	**Feature**
Discharge	4210, 10 sec; 4210u, 5 sec; 4210un, 10 sec Measured thru 6" long, 1/4" ID Teflon tube held 6" from CPM, airflow rate 2 scfm	w/o Manifold: <10 sec @ 6" w/Manifold: <100 sec @ 19.6" (49.8 cm)	<30 sec @ 12" Directly under emitter points (80-100 fpm airflow)	Standard Cartridge: <15 sec @ 12" Jet Cartridge: <6 sec @ 12" Directly under emitter points (0.53 cfm purging gas airflow)	<5 sec @ 6" (10 psi gas pressure)	Micro S: <10 sec @ 3" Micro SA: <8 sec @ 6" (0.71 cfm min airflow)	fusION w/o fan: <15 sec @ 6" fusION w/fan: <10 sec @ 12" fusION AA: <5 sec @ 6" 10 psi gas pressure	Laminar Flow 10 sec @ 12" (100 fpm)	<2.5 sec @ 12"	<4 sec @ 12"	<4 sec @ 12"	<1 sec @ 6" (15.2 cm)	**Discharge**
Balance	<±25V @ 6" (specified flow & pressure)	±25V @ 6"	Intrinsically balanced ±50V @ 6" & 12" Directly under emitter points with airflow	Intrinsically balanced ±50V @ 6" & 12" Directly under emitter points with airflow	<±50V	Micro S: <±30V Micro SA:<±20V	±50V	±10V or better	±3V or better, ±1V with Novx	±10V or better	±3V or better	0V inherently balanced	**Balance**
Ion Emission	IsoStat	High Frequency AC	Steady-state DC	Steady-state DC	Steady-state DC	Piezoelectric	Steady-state DC	Steady-state DC	Steady-state DC	IsoStat	Steady-state DC	Soft X-ray Technology	**Ion Emission**
Cleanroom Class	4210: ISO 14644-1 Class 5 4210u/4210un: ISO 14644-1 Class 3	ISO 14644-1 Class 1 (0.1 µm particles) Extended ISO Class 1 (0.01 µm particles)	ISO 14644-1 Class 1 (24 VDC) ISO 14644-1 Class 2 (24 VAC & Ctrl)	ISO 14644-1 Class 1 (24 VDC) ISO 14644-1 Class 2 (24 VAC & Ctrl)	ISO 14644-1 Class 4	ISO 14644-1 Class 5	ISO 14644-1 Class 4	ISO 14644-1 Class 4	ISO 14644-1 Class 4	ISO 14644-1 Class 5	ISO 14644-1 Class 3	Zero Particle Generation	**Cleanroom Class**
Airflow	CDA or N_2 (min 1.5 cfm @ 10-50 psi)	N_2 3.53 cfm @ 30 psi (max 100 lpm @ 207 kPa)	Laminar Flow (80-100 fpm)	CDA or N_2 (0-25 lpm @ 0-7 psi)	CDA or N_2 (0.8 scfm @ 5 psi to 3.6 scfm @ 50 psi)	Ambient airflow (200 fpm) Micro SA: CDA (0.35-1.06 cfm)	CDA or N_2 (0.5-4 scfm @ 5-50 psi)	100 fpm CDA or N_2 (99.99% purity) passing through	20.5 cfm	23 cfm	High: 17 cfm Low: 7 cfm (Model 5941S only)	N/A	**Airflow**
Operating Environment	Ambient -4°F to -140°F (-20°C to 60°C) max	59-140°F (15-60°C) max	59-122°F (15-50°C) recommended 20-65%, RH, non-condensing	59-122°F (15-50°C) recommended 20-65% RH, non-condensing	32-122°F (0-50°C) 20-65%, non-condensing	40-122°F (5-50°C) 30-70% RH, non-condensing	32-122°F (0-50°C) 20-65% RH, non-condensing	58°F to 302°F (-50°C to +150°C) max	50-95°F (10-35°C) 30-65% RH, non-condensing	50-95°F (10-35°C) 20-60% RH, non-condensing	50-95°F (10-35°C) 30-70% RH, non-condensing	32-122°F (0 to +50°C) 35-85% RH, non-condensing	**Operating Environment**
Dimension/ Weight	2.38"D x 4.75"L x 3.13"W (6.06 x 12.0 x 7.95 cm) 2.31 lb (1.04 kg)	6.01"L x 2.85"W x 1.26"H (15.2 x 7.26 x 3.20 cm) 1.4 lb (0.64 kg)	1.38"H x 1.28"W x 4.50"L (3.56 x 3.30 x 11.4 cm) with flange 0.22 lb (0.10 kg)	1.42"H x 1.32"W x 4.50"L (3.61 x 3.35 x 11.4 cm) w/flange 0.24 lb (0.11 kg)	2.52"H x 1.28"W x 4.50"L (6.40 x 3.25 x 11.4 cm) incl air connectors 0.30 lb (0.136 kg)	2.5"L x 1.6"W x 0.65"H (6.35 x 4.06 x 1.65 cm) Micro S: 0.035 lb (0.016 kg) Micro SA: 0.042 lb (0.019 kg)	1.20"H x 1.28"W x 4.50"L (3.01 x 3.25 x 11.4 cm) fusION w/o fan: 0.25 lb (0.113 kg) fusION w/fan: 0.30 lb (0.136 kg)	Ionizer: 4.50"L x 1.53"H x 1.08"W (11.4 x 3.9 x 2.8 cm) 0.75 lb (0.34 kg) Sensor: 1.75 dia x 0.86"H (4.45 x 2.18 cm) 0.30 lb (0.136 kg) incl cable	Blower: 4.57"H x 3.27"W x 3.47"D (11.6 x 8.31 x 8.81 cm) 1.14 lb (0.52 kg) Controller: 1.00"H x 5.20"W x 2.35"D (2.54 x 13.2 x 5.97 cm) 0.56 lb (0.25 kg)	4.95"H x 4.10"W x 2.48"D (12.5 x 10.4 x 6.30 cm) 0.79 lb (0.36 kg) w/bracket	4.33"H x 3.15"W x 1.60"D (11.0 x 8.00 x 4.06 cm) 0.55 lb (0.25 kg)	Pin Head: 0.94" dia. x 3.35"L (2.40 x 8.50 cm) Ionizer: 3.3" x 1.3" x 4.8"L (8.38 x 3.40 x 12.4 cm) w/bracket 0.875 lb (0.40 kg)	**Dimension/ Weight**

In-line Ultra-clean Environment Gas Ionizer

Model 4210

Most high technology manufacturers rely on air ionization to control problems associated with static charge—thus increasing yields, minimizing downtime and microprocessor lock-up and reducing the 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.

Model 4210 In-line Gas Ionizer

±25V | Class 3 Cleanroom | In-line | IsoStat Technology | Ultra Clean Verification

Features

- Easily connects to delivery manifolds
- Ionizes either Clean Dry Air or Nitrogen
- IsoStat® Technology
- 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

The 4210 comes in three versions. The 4210un is an ultra-clean Nitrogen ionizer. The 4210u is an ultra-clean air ionizer. The 4210 is for ionizing Clean Dry Air (CDA) and Nitrogen in ISO 14644-1 Class 5 environments or environments not requiring clean standards better than ISO 14644-1 Class 5.

Model 4210UN In-line Gas Ionizer

Model 4210 Product Family

Features	4210	4210u	4210un
Environment	ISO Class 5	ISO Class 3	ISO Class 3
Gas Ionization	CDA/Nitrogen	CDA	Nitrogen
Emitter Point Materials	Tungsten Wire	Silicon	Silicon

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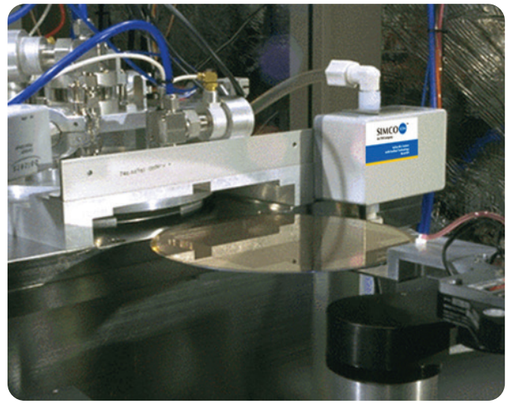
An ITW Company

Special Application Ionizers



4210 Specifications

Input Voltage	120 VAC, 50-60 Hz, approximately 2W; 100/230 VAC models available
Discharge	4210: 10 sec 4210u: 5 sec 4210un: 10 sec (measured through 6" long, 1/4" ID Teflon tube held 6" (15.2 cm) from the CPM, airflow rate of 2 scfm)
Balance	±25V at specified flow and pressure measured at 6" (15.2 cm) from CPM; tested in accordance with Standard ANSI/ESD STM3.1-2015 Ionization
Ion Emission	IsoStat Technology
Emitter	Tungsten or Single-crystal Silicon
Cleanroom Class	4210: ISO 14644-1 Class 5 standards 4210u: ISO 14644-1 Class 3 standards 4210un: ISO 14644-1 Class 3 standards
LED Indicator	Green, POWER ON
Air Supply	Input: Clean Dry Air (CDA) or Nitrogen Flow: 1.5 cfm (min); maximum set by manifold back pressure Temperature: 250°F (120°C) max; 73°F (23°C), ambient environment Connector: 1/4" NPT female Teflon fittings at both gas input and output Pressure: 10-50 psi safe range; unit is NOT designed to withstand high pressures
Manifold	Teflon tubing with flare fittings for interconnects; nitrogen 3/8" (9.5 mm) ID tubing; CDA 1/4" (6 mm) ID tubing; refer to Simco-Ion Technical Note TN-006, In-line Gas Ionization Considerations 4210 Use and Application Guide Back Pressure: With nitrogen, the limit is 12 psi; and with air (CDA), the limit is 50 psi; measured at the outlet of the 4210
Operating Env	Ambient -4°F to -140°F (-20°C to 60°C), max
Mounting	4-6/32 threaded holes provided; wall and bulkhead mount brackets available
Enclosure	Power-coated white aluminum
Dimension	2.38"D x 4.75"L x 3.13"W (6.06 x 12.0 x 7.95 cm)
Weight	2.31 lb (1.04 kg) including fittings and power cord
Certification	CE, UKCA

Ultra-clean Ionization

When provided with gas from an ultra-clean source, the 4210u and 4210un operate 10 times better than ISO 14644-1 Class 3 cleanroom requirements. Careful material selection and control of internal geometry ensure ultra-clean ionized gas delivery.

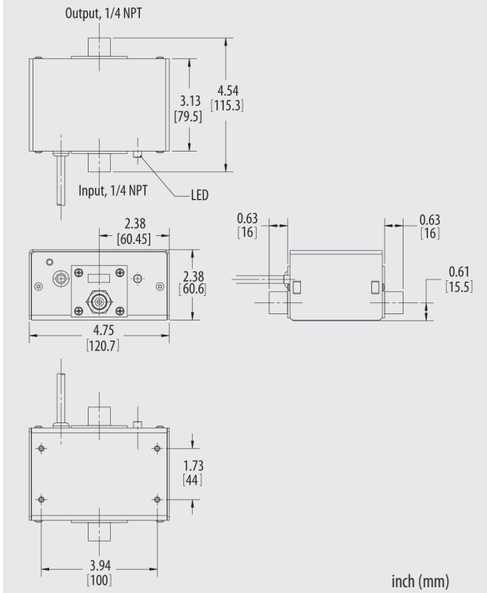
Applications

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.

Emitter Point Technology

Single-crystal Silicon: Simco-Ion's patented Single-crystal Silicon emitter points represent the cleanest option available in the industry. Far exceeding ISO 14644-1 Class 3 cleanliness requirements, these non-metallic points produce no particle bursts and emit an average of less than 5 particles per cubic foot (less than 0.05 microns in size verified with condensation nucleus (CNC) and optical particle counters).

Tungsten Alloy: The most common material in industrial ionization applications, tungsten alloy, offers long emitter point life and low maintenance requirements. Simco-Ion's tungsten alloy emitter points will not erode as quickly as conventional tungsten wire, and fewer particle bursts result in cleaner operation.



Ultra-clean Nitrogen In-line Gas Ionizer

Model 4214

Simco-Ion's In-line Ultra-clean Nitrogen Ionizer Model 4214 is specifically designed to ionize a nitrogen gas flow in ultra-clean semiconductor or other high purity processes. Unlike other nitrogen ionizers which depend on the trace gases in the nitrogen stream to produce ionization, this state-of-the-art product ionizes nitrogen molecules using a small but efficient power supply.

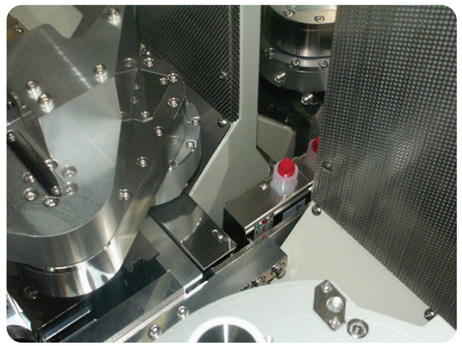
The Model 4214 utilizes High-Frequency AC Ionization Technology to provide a fast discharge time for optimal static charge neutralization. The microprocessor controls and small form-factor, make it an ideal nitrogen ionizer for in-tool integration. The ultra-clean design, utilizing an internal particle containment system assures the cleanest ionization for critical semiconductor processes. By providing a continuous flow of nitrogen through the ionizer, this breakthrough technology meets ISO 14644-1 Class 1 cleanliness requirements, making it ideal for 22 nm and below technology nodes

Features

- Extended ISO 14644-1 Class 1 cleanliness
- Alarms indicating low ion output, high voltage power supply failure, low gas flow
- Standby mode
- Self-balanced ionization
- Auto shutoff with low gas flow
- Compact size
- +24 VDC input power

Benefits

- Provides clean ionization for any ultra-clean process; ideal for 22 nm and below technology nodes
- Constant ionizer status monitoring for continued continuous optimal performance
- Nitrogen saving Standby mode that reduces gas flow while maintaining fast ionization startup
- Eliminates calibration or difficult setup
- Prevents product damage
- For in-tool applications with tight space constraints
- Connects to tool power for simple integration



The small size of the in-line ultra-clean gas ionizer Model 4214 provides superior static neutralizing ionization for semiconductor device manufacturing vertical furnaces.

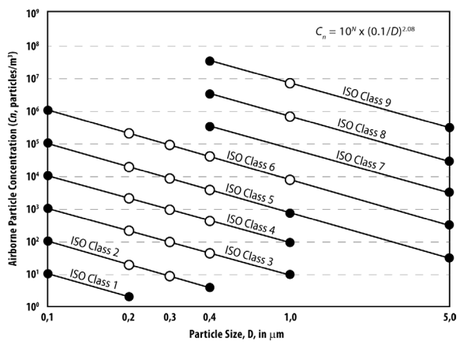


Chart from ISO 14644-1 (1999 version): Annex A - Informative.

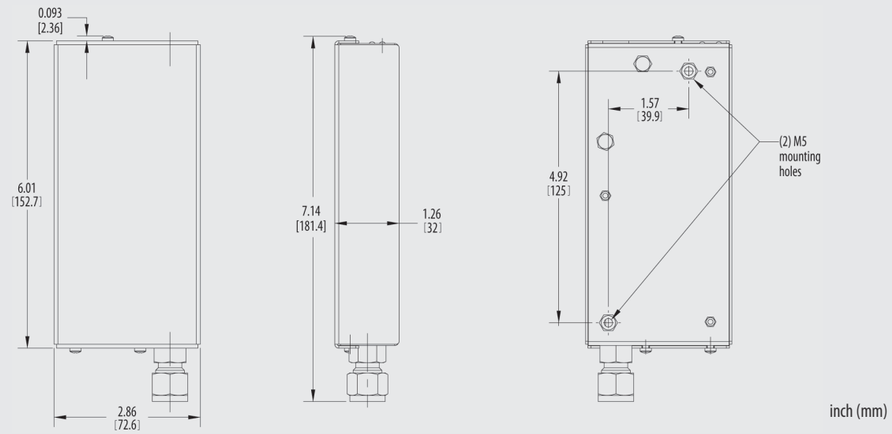
4214 Specifications

Input Voltage	+24 VDC, ±5% @ 0.25 A, 6W (typ)
Discharge	Without Manifold: ±1000-100V, <10 sec (typ), measured @ 6" (15.2 cm) to CPM, Nitrogen flow rate 1.4 cfm @ 5.3 psi (40 lpm @ 36.5 kPa) With Manifold: ±1000-100V, <100 sec (typ), measured @ 19.6" (49.8 cm) with custom manifold
Balance	±25V or less range with no output manifold, measured @ 6" (15.2) from CPM, standard Nitrogen flow rate 1.4 cfm @ 5.3 psi (40 lpm @ 36.5 kPa)
Ion Emission	High Frequency AC Technology
Emitter	Single-crystal Silicon
Cleanroom Class	ISO 14644-1 Class 1 (0.1 µm particles) Extended ISO Class 1 (0.01 µm particles)
LED Indicator	Green, POWER; red, ALARM; yellow/blue, WARNING, and LEARN
Air Supply	Input: Nitrogen Flow: 1.41 cfm @ 5.3 psi (40 lpm @ 36.5 kPa) min; recommended 3.18 cfm @ 24.8 psi (90 lpm @ 171 kPa); 3.53 cfm @ 30 psi (100 lpm @ 207 kPa), max Temperature: 140°F (60°C), max Connection: Inlet, Swagelok® 316L SST 1/8" FNPT Adapter to 3/8" OD tubing (#SS-600-7-2); outlet, internal 1/4" NPT female threaded in ionizer block; optional manifold 1/4" NPT male
Control System	Microprocessor-controlled ionization, self balancing
Alarm	Low ion output, high voltage power supply failure, low gas flow
Status Relays 1&2	±60V @ 0.2A (max)
Operating Env	59-140°F (15-60°C) max (custom manifold per individual specification)
Mounting	Two M5 threaded inserts provided on bottom of unit; M5 screws should not exceed 10 mm in length
Filter Cartridge	Disposable, 99.999% filtration efficiency for 0.01 micron particles
Enclosure	Stainless Steel
Dimension	6.01"L x 2.86"W x 1.26"H (15.2 x 7.26 x 3.20 cm) without manifold
Weight	1.4 lb (0.64 kg) without manifold
Certification	CE UK CA

Power-Signal Distribution Box

4214 Power Distribution Box

The Model 4214 is a standalone unit providing a high voltage power supply, an ultra-clean ionization cell, and I/O connections for remote status and control of ionization all within a small footprint package. The end-user's Nitrogen is plumbed through the unit where it is ionized and then delivered to the tool's static-sensitive product or process area. Custom manifolds or nozzles can be attached to shape the area of coverage to the customer's requirements.



Extreme Temperature Ionization System

Model 4612

Simco-Ion's new Extreme Temperature Ionization System provides <±10V balance in extreme environments from -58°F to 302°F (-50°C to +150°C). The 4612 Ionizer, along with its 4062e Controller and 550 Extreme Temperature Sensor, use closed-loop control to ensure the ionizer's output is balanced at the critical location—the product location itself.

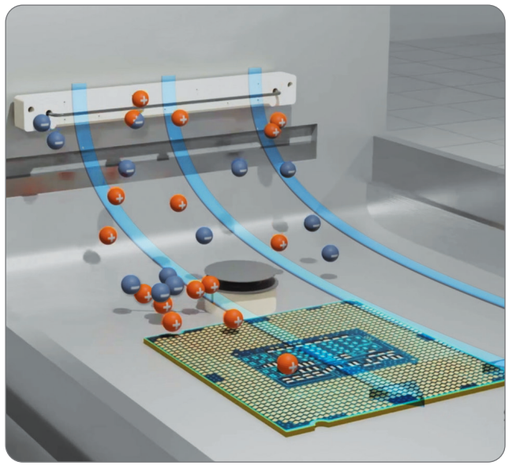
The compact size of the 4612 Precision Ionizer, 4062e Controller and 550 Sensor are the perfect answer to maintain tightly-controlled ionization in small test chambers with active robotics moving parts under extreme environments. The 4612 Precision Ionizer uses high voltage DC Technology with tungsten emitters so it can be used in ISO 14644-1 Class 4 cleanliness environments.

Features

- Operates in temperatures as high as 302°F (150°C) and as low as -58°F (-50°C)
- Balance control of better than <±10V standard meets the new stringent requirements for ESDA S20.20 standard
- Manual gain adjustment capability
- Sensor Model 550 measures balance at the device location
- Optional feedback control using Novx Active Sensor with the Novx 3362

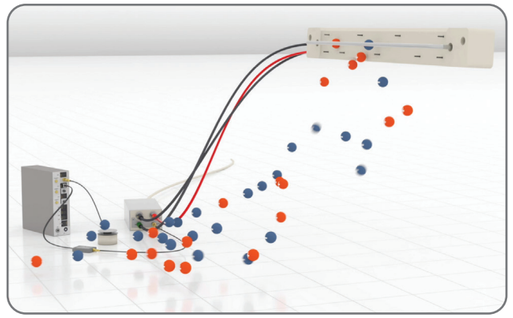
Benefits

- Eliminates static charge in extreme environments that cannot sustain any other static elimination method
- Self-balancing ionization eliminates calibration in the tight confines of the test chamber
- Adjust sensitivity to hold a steady balance over a wide range of air speed and sensor distances
- Ensures that balance is maintained at the target where it matters, not just at the ionizer itself
- Eliminates the need for two sensors for process monitoring



4612 Specifications

Input Voltage	±6.5 kV max, supplied by Model 4062e Controller
Discharge	10 sec (depending on environment) @ 12" (30.5 cm) with 100 fpm gas velocity (±1000-100V)
Balance	±10V (typ) around initial setpoint
Ion Emission	Steady-state DC Technology
Emitter	Tungsten
Cleanroom Class	ISO 14644-1 Class 4
Air Supply	Input: Clean Dry Air or Nitrogen with minimum purity 99.99% Flow: 100 fpm (min) velocity past 4612 Ionizer Temperature: 302°F (150°C) max
Operating Env	-58°F to 302°F (-50°C to +150°C) max
Alarm	Low input voltage; HV output fault; antenna signal too variable/noisy and/or out of range
FMS	Relay contact, rated ±24 VDC @ 0.2A, max 4-20 mA Current output
Mounting	4612-210 Ionizer: (2) M4 holes, 4612-526 Ionizer: (4) M4 holes
Enclosure	4612 Ionizer: PEEK; 550 Sensor: PTFE and Stainless Steel
Dimension	4612-210 Ionizer: 8.27"L x 0.83"W x 0.65"H (21.0 x 2.1 x 1.65 cm) 4612-526 Ionizer: 20.7"L x 0.83"W x 0.65"H (52.6 x 2.1 x 1.65 cm) 550 Sensor: 1.75 dia x 0.88"H (4.45 x 2.24 cm)
Weight	4612-210 Ionizer: 0.75 lb (0.34 kg) 4612-526 Ionizer: 1.125 lb (0.51 kg) 550 Sensor: 0.30 lb (0.136 kg) including cables
Certification	



4062e Specifications

Input Voltage	24 VDC ±5% @ 1.0A (optional external power supply to convert from 100-240 VAC to 24 VDC)
Output Voltage	±6.5 kV max, peak-to-peak
Control	Balance adjust
LED Indicator	Green POWER, red ALARM (indicates instability or HV power failure)
Connection	RJ-11 connector for 24 VDC input; two HV connectors; RJ-9 connector for FMS output (relay closure & 4-20 mA); SMA connector for antenna
Operating Env	50-95°F (10-35°C); 30-60% RH, non-condensing
Mounting	(2) M4 holes
Enclosure	Stainless Steel
Dimension	7.91"L x 3.64"W x 2.26"H (20.1 x 92.5 x 5.74 cm)
Weight	2.4 lb (1.09 kg)
Certification	

Ionizer Balance Control

The 4062e Controller, when paired with the 550 Sensor and 4612 Precision Ionizer, will provide balance within ±10V, following industry-standard protocols in a steady-state environment. Changes in temperature, humidity, air composition, and/or moving mechanical components in the area will temporarily impact balance.

Balance Control & Decay Test Option

The standard Novx 3362 with its standard sensor's, can replace the 550 Sensor to monitor and control the extreme temperature. Using the Novx 3362 with the feedback control kit, will allow active feedback and control.

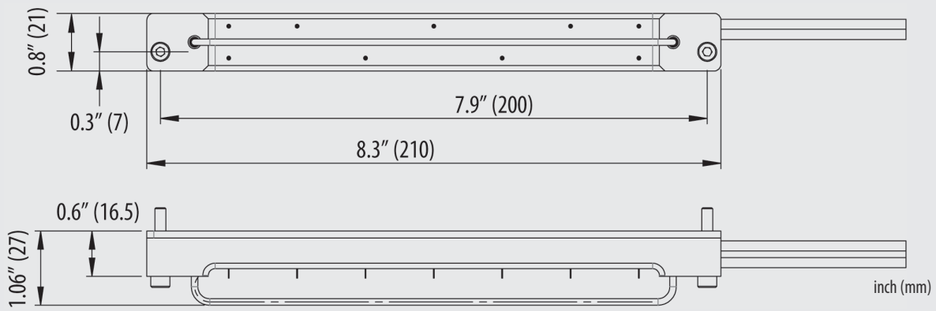
Gain Control

Model 4062e Controller with enhanced external gain control provide manual adjustment to hold a steady balance over a wide range of air velocity and sensor distances.

Model 4062e Controller

The 4062e Controller is a physically small unit, to allow it to be mounted almost anywhere inside a tool within a few meters of the Precision Ionizer itself.

4612-210 Ionizer



Extreme Temperature Ionization Mini System

Model 4612 Mini

Simco-Ion's new 4612-114 Extreme Temperature Ionization Mini System is specifically designed to handle processes in extreme temperature but with significant space constraints. Only 114 mm, the 4612-114 Mini handles the extreme temperature -58°F to 302°F (-50°C to +150°C) while providing an excellent <±10V balance. This system can also use a Closed-loop Feedback Controller to ensure the ionizer's output is balanced at the crucial product location.

The Ionization Mini System is the ideal solution to maintain tightly controlled ionization in small test chambers with active robotics moving parts under extreme environments.

24V DC · ±10V CLFB w/NOVX · Class 4 CLEANROOM · -50°C to +150°C · In-Tool · NOVX System · NOVX Inside · SSDC Technology · ESD Advanced Protection

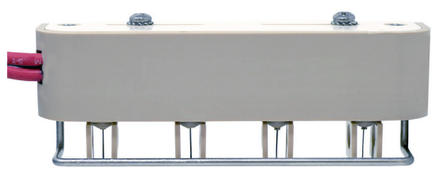
Features

- Mini size at 114 mm (4.5") in length
- Operates in temperatures as high as 302°F (150°C) and as low as -58°F (-50°C)
- Balance control of better than <±10V standard meets the new stringent requirements for ESDA S20.20 standard
- Measures balance at the device location with the Model 4062e Closed-loop Feedback Controller and Model 550 Sensor
- Air-assisted kit available

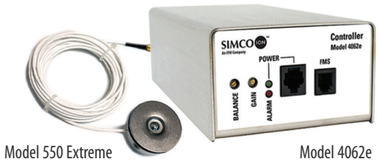
Benefits

- Especially suited for small test chambers with space constraint process
- Eliminates static charge in extreme environments that cannot sustain any other static elimination method
- Self-balancing ionization eliminates calibration in the tight confines of the test chamber
- Ensures that balance is maintained at the target where it matters, not just at the ionizer itself
- Enhanced static charge neutralization at fast automation speeds in weak environment airflow

Extreme Temperature Ionization Mini System

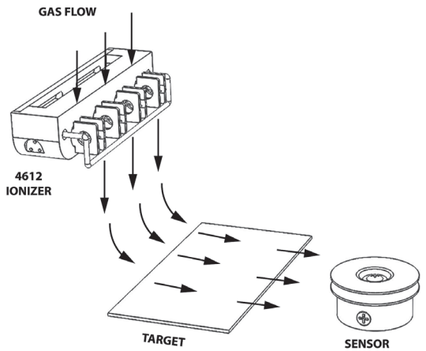


Model 4612-114



Model 550 Extreme Temperature Passive Sensor

Model 4062e Controller



SIMCO ION
An ITW Company

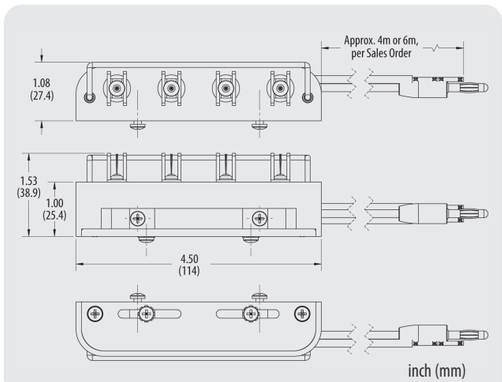
Special Application Ionizers

4612-114 Specifications

Input Voltage	±6.5 kV max, supplied by Model 4062e Controller
Discharge	10 sec (depending on environment) @ 12" (30.5 cm) with 100 fpm gas velocity (±1000-100V)
Balance	±10V (typ) around initial setpoint
Ion Emission	Steady-state DC Technology
Emitter	Tungsten or Single-crystal Silicon
Cleanroom Class	ISO 14644-1 Class 4
Air Supply	Input: Clean Dry Air (CDA) or Nitrogen with a minimum purity of 99.99% Flow: 100 fpm (min) velocity past 4612-114 Ionizer Temperature: 302°F (150°C) max
Alarm	Low input voltage, HV output fault, sensor signal variable/noisy, out of range
FMS	Relay contact, rated ±24 VDC @ 0.2A, max 4-20 mA Current output
Operating Env	-58°F to 302°F (-50°C to +150°C) max
Mounting	2 mounting slots are provided; methods vary depending on the environment
Enclosure	Ionizer: High temperature PEEK chassis Sensor: PTFE and Stainless Steel
Dimension	Ionizer: 4.50"L x 1.53"H x 1.08"W (11.4 x 38.9 x 2.74 cm) Sensor: 1.75 dia x 0.86"H (4.45 x 2.18 cm)
Weight	Ionizer: 0.75 lb (0.34 kg) Sensor: 0.30 lb (0.136 kg) including cables
Certification	CE cULus KC EAC UKCA

Ionizer Closed-loop Feedback Control

The 4062e Controller, when paired with the 550 Sensor and 4612-114 Mini Ionizer, will provide balance to within ±10V, following industry-standard ANSI/ESD STM3.1-2015 protocols in a steady-state environment. Changes in temperature, humidity, air composition, and moving mechanical components in the area will temporarily impact balance. The 550 Sensor and closed-loop control provide the fastest, most accurate corrections for such changes.

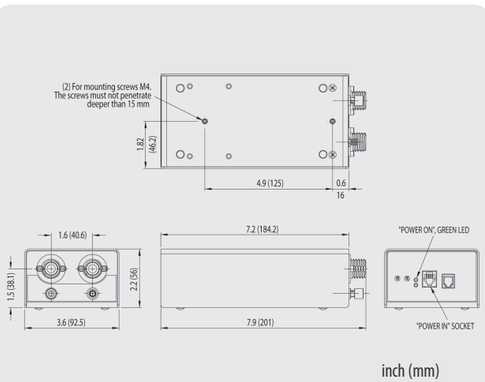


4062e Specifications

Input Voltage	24 VDC ±5% @ 1.0A; by optional external 100-240 VAC to 24 VDC power supply.
Output Voltage	±6.5 kV max, peak-to-peak
LED Indicator	Green POWER, red ALARM (indicates instability or HV power failure)
Control	Balance adjust
Connection	RJ-11 connector for 24 VDC input; two HV connectors; RJ-9 connector for FMS output (relay closure & 4-20 mA); SMA connector for sensor (not available in Model 4062e-NS)
Operating Env	50-95°F (10-35°C); 30-60% RH, non-condensing
Mounting	(2) M4 holes
Enclosure	Stainless Steel
Dimension	7.91"L x 3.64"W x 2.26"H (20.1 x 9.25 x 5.74 cm)
Weight	2.4 lb (1.09 kg)
Certification	CE cULus KC EAC UKCA

Model 4062e Controller

The 4062e Controller is a physically small unit, to allow it to be mounted almost anywhere inside a tool within a few meters of the Precision Ionizer itself.



In-tool Ionizer

QuadBar™ 4630

Simco-Ion's QuadBar Ionizer Model 4630 is the first corona ionizer to provide safe, effective static charge control in the ambient air inside a process chamber. Its unique quadropole configuration ensures effective ionization as close as 3 inches (7.6 cm) from the product. The 4630's compact size is designed to fit easily into the tight confines of any process equipment, and its ability to run on 24 VDC input power means it can connect to a tool's power source. In the rare event of system failure, the QuadBar's status output notifies the process tool controller or a Facilities Monitoring System (FMS).

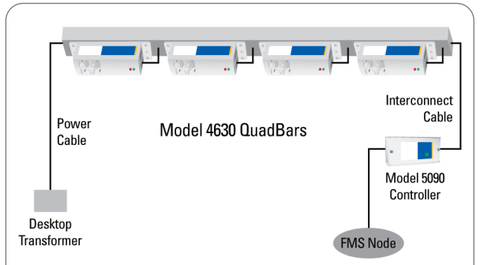
Simco-Ion developed the QuadBar to be the cleanest ionizer of its kind. When powered by 24 VDC, the QuadBar meets ISO 14644-1 Class 1 cleanliness levels.

Features

- Quadrupole configuration with IsoStat® Technology
- Compact size
- 24 VAC or 24 VDC operation
- Available with Single-crystal Silicon emitter points
- Alarm output to FMS or process tool controller

Benefits

- Provides fast discharge and stable balance at distances as close as 3 inches (7.6 cm) from the product
- Fits into the tight confines of any process tool
- Connects to a 24 VAC or 24 VDC power supply or operates with ion controller or small transformer
- Emitter points provide the cleanest emitter point material for ionization, meeting ISO 14644-1 Class 1 standards when operated with 24 VDC power, and ISO 14644-1 Class 2 standards when operated with 24 VAC power
- Ensures immediate notification of catastrophic system failure



QuadBar ionizers placed above and below the wafer accelerate discharge times on the front and back surfaces, regardless of airflow.

4630 Specifications

Input Voltage	24 VAC, 35 mA transformer, Model 4030 controller or properly grounded 24 VAC power supply or 24 VDC power from tool power supply (but with reduced ion output)
Discharge	<30 sec @ 12" (30.5 cm) directly under the emitter points with airflow (80-100 fpm)
Balance	±50V @ 6" (15.2 cm) & 12" (30.5 cm) directly under emitter points with airflow (80-100 fpm)
Coverage	12" x 12" (30.5 x 30.5 cm)
Ion Emission	Steady-state DC Technology
Emitter	Single-crystal Silicon
Cleanroom Class	ISO 14644-1 Class 1 when powered with 24 VDC; ISO 14644-1 Class 2 when powered with 24 VAC transformer or Model 4030 Controller
LED Indicator	Green POWER; red ALARM
Airflow	80-100 fpm recommended
Status Output	Model 5090 FMS Interface attachment; Model 4030 Controller signals OK or system failure
Operating Env	59-122°F (15-50°C) recommended; 20-65% RH, non-condensing
Daisy-chain	Up to 4 units via 24 VAC transformer; up to 16 units via Model 4030 controller
Maintenance	Emitter point cleaning at monthly to quarterly intervals, depending on environment; no adjustment or calibration required
Mounting	Can be mounted to any process tool or flowhood using 4 #6 screws
Enclosure	ABS
Dimension	1.38"H x 1.28"W x 4.50"L (3.56 x 3.30 x 11.4 cm) with flange
Weight	0.22 lb (0.10 kg)
Certification	CE cULus UKCA

4030 Specifications

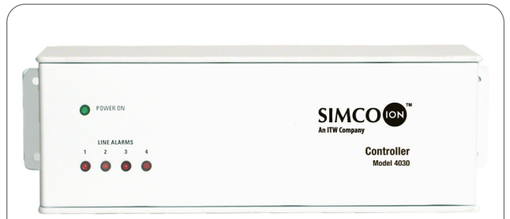
Input Voltage	100/120/230 VAC, 50/60 Hz, 30 VA
Bar Capacity	16 QuadBars (4/line), Models 4630 or 4635 2 AeroBar Model 5685 ionizers
LED Indicator	Green POWER; 4 red ALARM
FMS	Relay closure or 4-20 mA loop communication upon normal/alarm conditions
Dimension	9.25"L x 2.88"W x 2.72"H (23.5 x 7.32 x 6.91 cm)
Weight	2.9 lb (1.32 kg)
Certification	CE UKCA

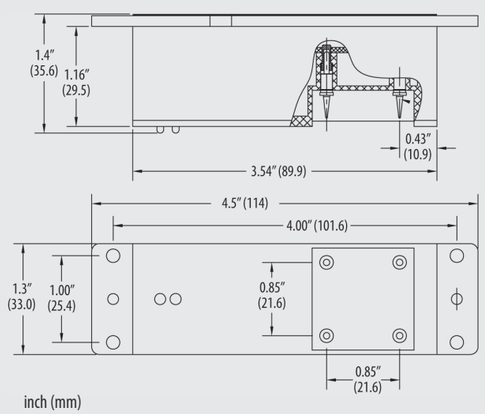
Power Flexibility

A number of different options exist for powering the QuadBar. These include the QuadBar Controller Model 4030, which powers up to sixteen QuadBars at once, connection to a properly grounded 24 VAC power supply, or connection to a 24 VDC tool power supply (although with reduced ionization output). The power choices available for the QuadBar are designed to accommodate varying installation sizes and power needs, making the QuadBar a versatile and effective ionizer.

Model 4030 Controller

The Model 4030 QuadBar Controller is a convenient solution for powering and monitoring multiple QuadBar installations. Four alarm LEDs provide fast and easy identification of the alarming ionizer, reducing tool downtime.





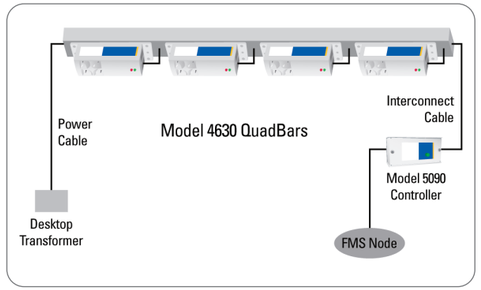
inch (mm)

In-tool Ionizer

QuadBar™ 4635

Simco-Ion's QuadBar™ Ionizer with Air-Assist Model 4635 provides effective static charge control in a small format. The unique Quadropole emitter point configuration enables the ionizer to be as close as 3 inches (7.6 cm) to the product. The Model 4635's compact size is designed to fit easily into the tight confines of any process equipment. With its independent air delivery system, the Model 4635 provides ionization where airflow is limited or unavailable.

The Model 4635 offers two air-assist cartridge design options. Each utilizes a cross-channel air cartridge built around the emitter points that provides optimal air distribution with minimal field voltage.



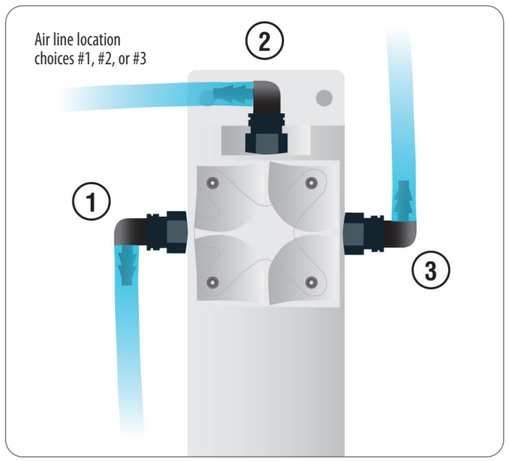
Features

- Air-assist cartridge design with cross-channel air delivery; two cartridge design options
- Rotatable cartridge design
- Quadropole configuration with IsoStat® Technology
- Compact size
- Single-crystal Silicon emitter points
- Alarm output to FMS or process tool controller

Benefits

- Choice of a Standard cartridge with sheathed emitter point for extended cleaning periods or a high velocity Jet cartridge for extremely fast discharge times
- Allows positioning of air inlet line on either side or the end for installation flexibility
- Provides stable balance at distances as close as 3 in. (7.6 cm) from the product
- Small format fits into the tight confines of process equipment
- Semi standard for emitter point material provides ISO 14644-1 Class 1 or Class 2 cleanliness depending on input power
- Ensures immediate notification of catastrophic system failure

Air Line Location Choices



4635 Specifications

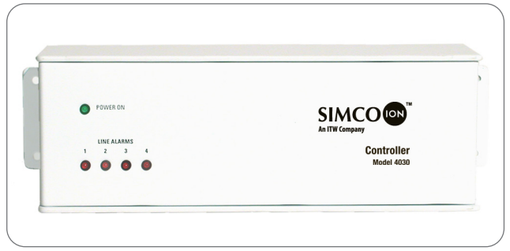
Input Voltage	24 VAC ±5% @ 0.10A, 50/60 Hz, 2.4W; 24 VDC ±5% @ 0.025A, 0.6W (typ)
Discharge	Standard Cartridge: <15 sec @ 12" (30.5 cm) directly under emitter points with 15 lpm (min) purging gas airflow Jet Cartridge: <6 sec @ 12" (30.5 cm) directly under emitter points with 15 lpm (min) purging gas airflow
Balance	±50V @ 6" & 12" (15.2 & 30.5 cm) directly under the emitter points
Coverage	12" x 12" (30.5 x 30.5 cm) at a distance of 12" (30.5 cm)
Ion Emission	Steady-state DC Technology
Emitter	Single-crystal Silicon
Cleanroom Class	ISO 14644-1 Class 1 when powered with 24 VDC ISO 14644-1 Class 2 when powered with 24 VAC transformer or Model 4030 Controller
LED Indicator	Green POWER; red ALARM
Air Supply	Input: Clean Dry Air (CDA) or Nitrogen Flow: 0-25 lpm @ 0-7 psi Connection: 0.15" (0.38 cm) OD tubing with 2 micron filter or better
Status Output	Model 5090 FMS Interface attachment Model 4030 Controller signals OK or system failure
Operating Env	59-122°F (15-50°C) recommended; 20-65% RH, non-condensing
Maintenance	Emitter point cleaning at monthly to quarterly intervals depending on environment; no adjustment or calibration required
Daisy-chain	Up to 4 units when used with 24 VAC transformer; up to 16 units via Controller Model 4030
Mounting	Can be mounted to any process tool or flowhood using 4 #6 screws
Enclosure	ABS, polycarbonate air-assist cartridges, mylar & stainless steel labels
Dimension	1.42"H x 1.32"W x 4.50"L (3.61 x 3.35 x 11.4 cm) with flange Air connection elbow on the side, width 1.92" (4.88 cm) Air connection elbow on the end, ionizer body length 3.9" (9.91 cm)
Weight	0.24 lb (0.11 kg)
Certification	

4030 Specifications

Input Voltage	100/120/230 VAC, 50/60 Hz, 30 VA
Bar Capacity	16 QuadBars (4/line), Models 4630 or 4635 2 AeroBar Model 5685 ionizers
LED Indicator	Green POWER; 4 red ALARM
FMS	Relay closure or 4-20 mA loop communication upon normal/alarm conditions
Dimension	9.25"L x 2.88"W x 2.72"H (23.5 x 7.32 x 6.91 cm)
Weight	2.9 lb (1.32 kg)
Certification	

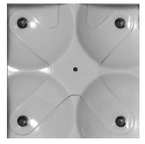
Model 4030 Controller

The Model 4030 QuadBar Controller is a convenient solution for powering and monitoring multiple QuadBar installations. Four alarm LEDs provide fast and easy identification of the alarming ionizer, reducing tool downtime.

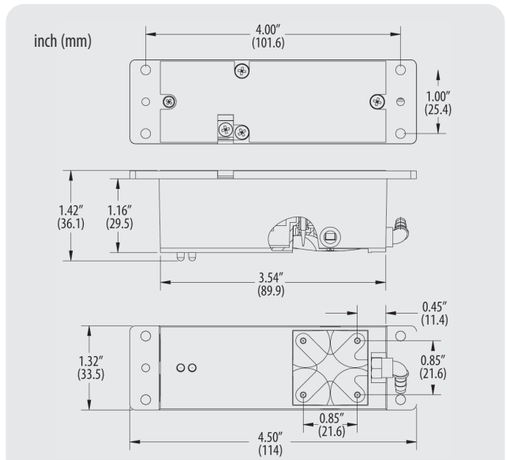


Insert Cartridge Options

Standard cross-channel cartridge with airflow sheath around the emitter points extends cleaning periods.



Jet cross-channel cartridge with center orifice produces high velocity for fast discharge times.



SIMCO ION™
An ITW Company

Photon Pin Ionizer

Model 4901

The Model 4901 Photon Pin Ionizer is designed to eliminate static charge in semiconductor and other ultra-clean manufacturing processes where fast discharge time, low swing voltages and precision balance are required. Model 4901 utilizes a soft X-ray source, a form of light, and does not require an air supply to deliver ionized molecules.

Soft X-rays are easily absorbed by the atmosphere generating an equal amount of positive and negative ions. Charged objects in the proximity of these positive and negative ions attract the opposite polarity ions to them neutralizing the charge on the object. Photon ionization is an advanced and essential solution for effective ESD, ESA, and ESC control.

The Model 4901 Photon Pin Ionizer designed with a convenient all-in-one, integrated head system accommodates narrow, confined space and in-tool applications.

Features

- Suitable for critical cleanliness control
- Low voltage tube type (exemption of safety licensing)
- Pin-type designed for narrow, confined space and in-tool applications
- Alarm output signal

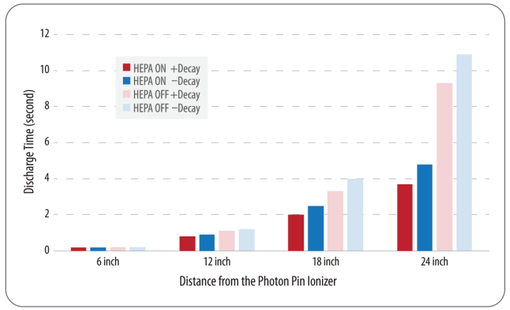
Benefits

- **Perfect ion balance**—the same amount of both positive and negative ions are generated when a molecule is exposed by soft X-ray's energy; thus, Photon ionizers are inherently free from ion balance issue
- **Free from particle attraction**—Photon ionizers does not require air supply (i.e., CDA) but utilizes a source of Soft X-ray, no contamination particles are generated
- **No maintenance is required**—unlike conventional ionizers of corona discharge on emitter tips, Photon ionizers do not need any cleaning or ion balance tuning during its lifetime

4901 Specifications

Power Input	24 VDC, 60W
Discharge	<1 sec @ 6" (15.2 cm); ±1,000V to ±100V
Balance	Inherently balanced 0V
Ion Emission	Soft X-ray Technology
Emitter	Photon generating tube with beam angle 150° in tube type Type: Hot filament Voltage: 4.98 kV Current: 400 µA (max), on-site receptacle
Cleanroom Class	Zero particle generation
LED Indicator	Run, Lifetime, Alarm
Alarm	Head Fail, System Fail
Operating Env	32-122°F (0 to +50°C); 35-85% RH, non-condensing
Dimension	Pin Head: 0.94" dia. x 3.35"L (2.40 x 8.50 cm) Ionizer: 3.3" x 1.3" x 4.8"L (8.38 x 3.40 x 12.4 cm) with bracket
Weight	0.875 lb (0.40 kg)
Certification	CE UL pending

Discharge Time Performance



Sales Service +1 (510) 217-0460 or +1 (800) 367-2452

SIMCO ION™
An ITW Company

Photon Bar Ionizer

Model 4903

The Model 4903 Photon Bar Ionizer is designed to eliminate static charge in semiconductor and other ultra-clean manufacturing processes where fast discharge time, low swing voltages, and precision balance are required. The Model 4903 Photon Bar Ionizer utilized soft X-ray source, a form of light, and does not require air supply to deliver ionized molecules.

Soft X-rays are easily absorbed within the atmosphere to generate positive and negative ions. Charged objects in the proximity of these positive and negative ions attract the opposite polarity ions to them neutralizing the charge on the object. Photon ionization is an advanced and essential solution for effective ESD, ESA, and ESC control.

Features

- Suitable for critical cleanliness control
- Low voltage tube type
- Maintenance-free
- Alarm output signal

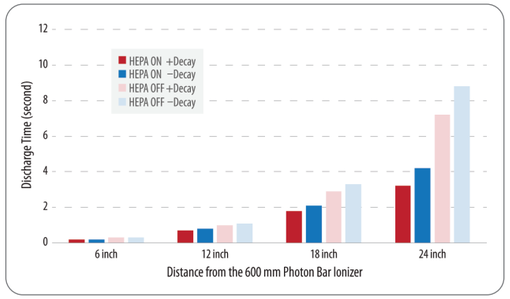
Benefits

- **Perfect ion balance**—Photon ionizers are naturally free from ion balance issues since they produce an equal number of positive and negative ions when molecules are exposed to soft X-ray energy
- **Free from particle attraction**—While CDA and laminar airflow help the decay time performance, Photon Ionizers utilize soft X-ray technology and do not need an air supply for operation, so no contamination particles are generated
- **No maintenance is required**—Unlike conventional ionizers of corona discharge on emitter tips, Photon ionizers do not need any cleaning or ion balance tuning during their lifetime

4903 Specifications

Power Input	Model 4093-CTRL Controller
Discharge	<1.5 sec @ 12" (30.5 cm); ±1,000V to ±100V
Balance	Inherently balanced 0V
Ion Emission	Soft X-ray Technology
Emitter	Photon generating tube with beam angle 150° in tube type Type: Hot filament Voltage: 4.98 kV Current: 400 µA (max), on-site receptacle
Cleanroom Class	Zero particle generation
LED Indicator	Normal, Alarm
Alarm	Head fail, System fail
Operating Env	32-122°F (0 to +50°C), 35-85% RH, non-condensing
Dimension	Front Bar: 1.4"W x 1.1"H x 11.8, 17.7, 23.6, 35.4, 47.2"L (3.6 x 2.7 x 30, 45, 60, 90, 120 cm)
Weight	Length (cm) 30 45 60 90 120 Front Bar (lb/kg) 0.93/0.42 1.32/0.60 1.72/0.78 2.58/1.17 3.48/1.58
Certification	CE UL pending

Discharge Time Performance



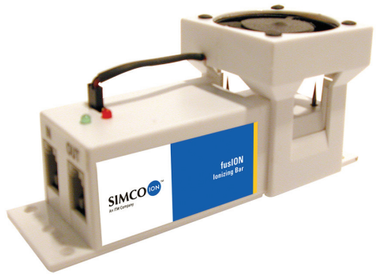
salesservices@simco-ion.com

Special Application Ionizers

Local Area Ionizer

fusION™

Simco-Ion's fusION Ionizer is capable of controlling electrostatic charge in the local area. Applications for fusION are those found inside process equipment and mini-environments in the semiconductor, flat panel display, pharmaceutical, and medical device industries. It is especially well suited for applications with tight space constraints and low clearance.



Features

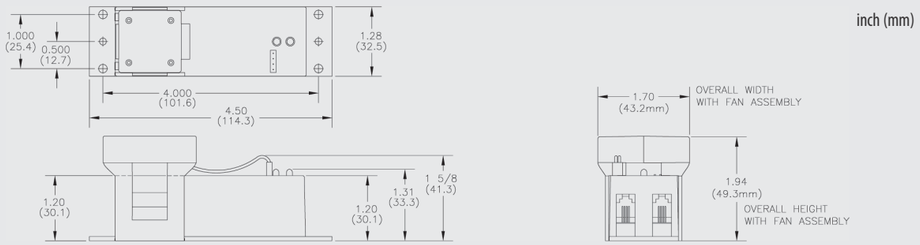
- Compact design
- Auto balancing technology
- Visual ionizer status indicator and digital level remote alarm output
- Single power source for multiple fusION ionizers
- Optional Fan assembly

Benefits

- Fits into the tight confines of any process tool
- No adjustments needed to maintain the required balance
- Standard features for convenient user operation
- Daisy-chain, up to 5 fusIONs, perfect for layered in-tool ionization protection
- Improved performance with extended coverage area

fusION Specifications

Input Voltage	24 VDC, 0.2A
Output Current	5 µA
Discharge	Without fan: <15 sec @ 6" (15.2 cm) with airflow (50 fpm) With fan: <10 sec @ 12" (30.5 cm)
Balance	<±50V
Coverage	12" x 12" (30.5 x 30.5 cm) @ 6" (15.2 cm) spacing
Ion Emission	Steady-state DC Technology
Emitter	Tungsten
Cleanroom Class	ISO 14644-1 Class 4
LED Indicator	Green POWER ON; Red FAULT (TTL level alarm output)
Connector	DC Power IN/OUT: 4 position modular, 4-pin "handset type"
Operating Env	32-122°F (0-50°C), 20-65% non-condensing
Mounting	Integrated mounting flanges accept four (4), #4 or #6 screws
Enclosure	White Polycarbonate
Dimension	1.20"H x 1.28"W x 4.50"L (3.01 x 32.5 x 11.4 cm) with flange
Weight	Without fan: 0.25 lb (0.113 kg); with fan: 0.30 lb (0.136 kg)
Certification	



Local Area Ionizer with Air-Assist

fusION™ AA

Simco-Ion's fusION AA Ionizer is capable of controlling electrostatic charge in the local area. The fusION AA delivers powerful electrostatic charge control independent of ambient airflow conditions. Using CDA (Clean Dry Air) at low flow rates the fusION AA will enjoy extended maintenance intervals. fusION AA incorporates miniature power and control circuitry in a compact package. No adjustments or calibration are necessary with Simco-Ion's patented auto balancing technology

Features

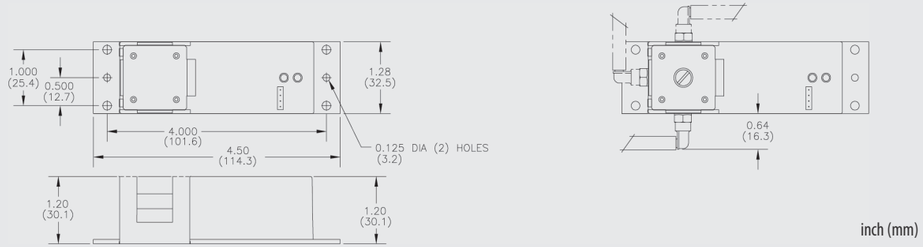
- Air-assist connection
- Compact design
- Auto balancing technology
- Visual ionizer status indicator and digital level remote alarm output
- Single power source for multiple fusION ionizers

Benefits

- Provides independent airflow, increasing performance and extending cleaning periods
- Fits into the tight confined spaces of any process tool
- No adjustments needed to maintain the required balance
- Standard features for convenient user operation
- Daisy-chain up to 5 fusION ionizers, ideal for providing ionization protection at multiple locations within a tool

fusION AA Specifications

Input Voltage	24 VDC, 0.075A
Output Current	5 µA
Discharge	<5 sec @ 6" (15.2 cm) at 10 psi gas pressure
Balance	<±50V
Coverage	12" x 12" (30.5 x 30.5 cm) @ 6" (15.2 cm) spacing
Range	Minimum 3" (7.62 cm) from target surface application dependent
Ion Emission	Steady-state DC Technology
Emitter	Tungsten
Cleanroom Class	ISO 14644-1 Class 4
Air Supply	Input: Clean Dry Air (CDA) or Nitrogen Flow: 5 scfm @ 5 psi to 4 scfm @ 50 psi Connection: 0.13" (0.33 cm) ID tubing
LED Indicator	Green POWER ON; Red FAULT (TTL level alarm output)
Connector	DC power IN/OUT: 4 position modular, 4-pin "handset type"
Operating Env	32-122°F (0-50°C), 20-65% non-condensing
Mounting	Integrated mounting flanges accept four (4), #4 or #6 screws
Enclosure	White Polycarbonate
Dimension	1.20"H x 1.28"W x 4.50"L (3.01 x 32.5 x 11.4 cm) with flange
Weight	0.25 lb (0.113 kg)
Certification	



In-Line Local Area Ionizer

In-Line fusION™

Simco-Ion's In-Line fusION Ionizer is capable of controlling electrostatic charge in the local area. Applications for In-Line fusION are those found inside process equipment and mini-environments in the semiconductor, flat panel display, pharmaceutical, and medical device industries. It is especially well suited for longer length delivery line applications.

Simco-Ion has developed a DC in-line ionizer that can provide fast decay times through output tubes up to six feet in length. Since the ion-to-ion recombination down the output tube is so limited, the single output tube can be split into multiple tubes each with excellent performance allowing the fusION ionization source to service multiple locations from a single ionization source. Multiple units can be linked together from one 24 VDC power source allowing up to 5 units to be daisy-chained. In-Line fusION can be powered directly from a process tool's 24 VDC power source or by the Simco-Ion fusION power supply kit. This unit comes equipped for use with Clean Dry Air (CDA); however, a Nitrogen kit is available.

Features

- Delivers ions through long tubes
- Compact Design
- Visual ionizer status indicator and digital level remote alarm output
- Single power source for multiple fusION ionizers
- Optional air knife, air ring, and N_2 attachments available

Benefits

- Convenient static control in difficult to access target locations
- Fits into the tight confines of any process tool
- Standard features for convenient user operation
- Daisy-chain, up to 5 In-Line fusIONs, perfect for layered in-tool ionization protection

Inline fusion with Nitrogen Kit

Typical Discharge Time

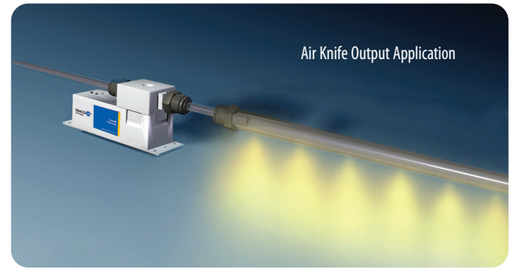
1/8" - Single Output Tube (inside diameter)				
Tube Length	**30 psi**	**15 psi**	**5 psi**	**2 psi**
6" Tube	0.5 sec	0.8 sec	1.4 sec	2.5 sec
12" Tube	0.8 sec	1.4 sec	2.2 sec	4.0 sec
18" Tube	1.0 sec	2.1 sec	3.5 sec	6.2 sec
24" Tube	1.8 sec	3.2 sec	5.2 sec	9.6 sec
36" Tube	6.0 sec	6.8 sec	10 sec	18 sec
48" Tube	9.5 sec	13 sec	22 sec	40 sec

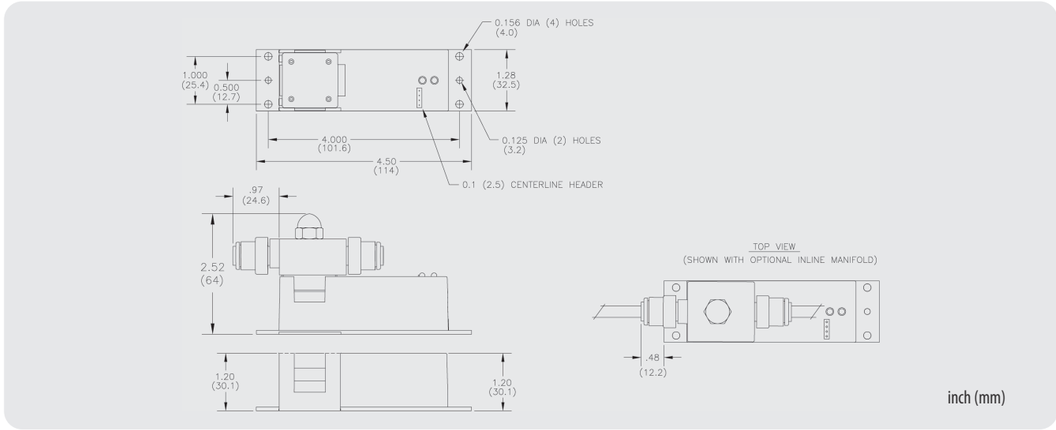
Offset voltage and discharge time determined as per ANSI/ESD STM3.1-2015 using a 6" x 6", 20 pF plate (charge plate monitor). Discharge times are from 1000-100V in seconds.

In-line fusION Specifications

Input Voltage	24 VDC, 0.075A
Output Current	5 µA
Discharge	See Typical Discharge Times table
Balance	<±50V
Coverage	Output tubes dependent
Ion Emission	Steady-state DC Technology
Emitter	Tungsten
Cleanroom Class	ISO 14644-1 Class 4
LED Indicator	Green POWER ON; Red FAULT (TTL level alarm output)
Air Supply	Inlet: Clean Dry Air (CDA) or Nitrogen Flow: 0.8 scfm @ 5 psi to 3.6 scfm @ 50 psi Connection: In-Line I/O 1/4" OD, 1/8" ID insulative tubing
Connector	DC Power IN/OUT: 4 position modular, 4-pin "handset type"
Operating Env	32-122°F (0-50°C), 20-65% non-condensing
Mounting	Integrated mounting flanges accept four (4), #4 or #6 screws
Enclosure	White Polycarbonate
Dimension	2.52"H x 1.28"W x 4.50"L (6.40 x 3.25 x 11.4 cm) with flange & air connectors
Weight	0.3 lb (0.136 kg)
Certification	CE cULus UKCA

Other Applications





inch (mm)

SIMCO ION™
An ITW Company

Special Application Ionizers

ionONE Spot Ionizers

Micro S / Micro SA

Simco-Ion's ionONE Spot Ionizers are designed for the control of static electricity and charge neutralization for small areas. Typical applications include inside production tools, inspection stations, and conveyor lines when the product to be protected is 3-12" (7.62-30.5 cm) distant. The Micro S Spot Ionizer is suited for applications where airflow from HEPA filters or fans is present, or when the area to be protected is in close proximity. The Micro SA Spot Ionizer uses compressed dry air (CDA) to provide the airflow necessary to ionize a nearby confined area when there is no existing airflow.

Both the Micro S and Micro SA provide excellent self-calibrating ion balance. An LED conveniently mounted on the ionizer will indicate the device is powered on.

Target Coverage · Confined Space · Advanced ESD Protect

Features

- Compact design
- Self-balancing technology
- Easy maintenance
- Power indicator status LED
- Air-assist version for precise ionized air delivery

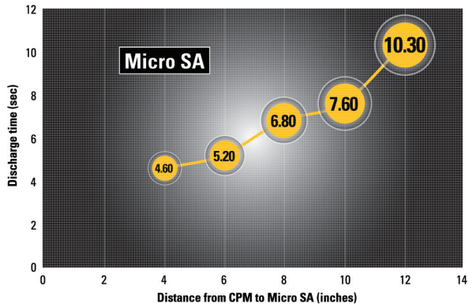
Benefits

- Fits into the tight confines of any process tool or application
- No adjustments needed to maintain the required balance
- Only occasional cleaning of the emitter points is required
- Convenient indication of power applied to the ionizer
- Efficiently delivers ionization to target area

ionOne Spot Ionizers

Micro S Micro SA

Typical Discharge Time

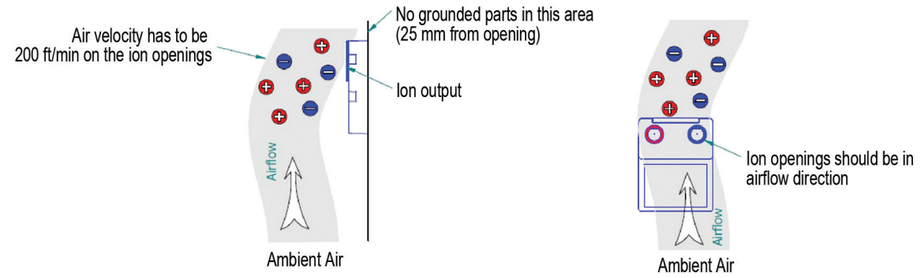


Results are for a static charge reduction of 1000-100V, 17 lpm airflow into Micro SA. Testing in accordance with ionization standard ANSI/ESD STM3.1-2015 of the ESD Association. Results may vary depending upon application and environment.

SIMCO ION
An ITW Company

Special Application Ionizers

Placement Recommendation

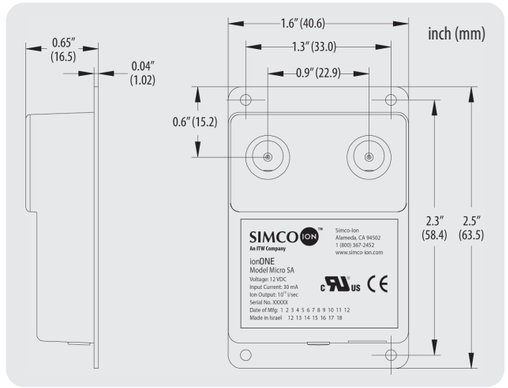


ionONE Micro S/SA Specifications

Input Voltage	Isolated 12 VDC, 0.03A
Discharge	Micro S: <10 sec @ 3" (7.62 cm) Micro SA: <8 sec @ 6" (15.2 cm), 20 lpm airflow (min)
Balance	Micro S: <±30V; Micro SA: <±20V
Coverage	Micro S: 6" x 6" (15.2 x 15.2 cm) @ 3" (7.62 cm) Micro SA: 6" x 6" (15.2 x 15.2 cm) @ 6" (15.2 cm)
Emitter	Stainless Steel
Cleanroom Class	ISO 14644-1 Class 5
LED Indicator	Blue "on" POWER; blue "off" NO POWER
Air Supply	Input: Clean Dry Air (CDA) Consumption: Micro SA: 10-30 lpm Flow: 200 fpm (1.0m/sec) minimum recommended Air Fitting: 0.16" (0.40 cm) OD, barbed
Audible Noise	Micro S: 47 dB @ 12" (30.5 cm) distance Micro SA: 67 dB @ 12" (30.5 cm) distance using 20 lpm air
Connector	3 pin modular
Status Output	Facility Monitoring System (FMS) capable
Ozone	<0.05 ppm
EMI	Below background levels; recommended 2" (5.08 cm) minimum distance
Operating Env	40-122°F (5-50°C); 30-70% RH, non-condensing
Mounting	0.24" (0.61 cm) flange on top and bottom with 0.25 cm mounting holes spaced 1.3" (3.30 cm) apart; hook and loop adhesive fastener also provided
Enclosure	Polycarbonate-ABS plastic blend
Dimension	2.5"L x 1.6"W x 0.65"H (6.35 x 4.06 x 1.65 cm) with flange; air fitting connection on Micro SA adds 0.40" (1.02 cm) to length of chassis
Weight	Micro S: 0.035 lb (0.016 kg); Micro SA: 0.042 lb (0.019 kg)
Certification	CE cULus

AC Adaptor Kit

Includes interchangeable US, UK, Europe, and China electrical connectors (P/N 14-21244)



ULTRA-CLEAN CRITICAL ENVIRONMENT IONIZING BLOWER SOLUTIONS

CE Blower	5802i	5810i	5822i	5832	5842	5941
Feature	Options -F: Novx System/FMS -E: Auto-clean System -A: Audible Alarms -M: Collimator	Options -F: Novx System/FMS -E: Auto-clean System -A: Audible Alarms -M: Collimator	Novx System/FMS Audible Alarms Collimator Separate Controller	FMS Connection Auto-clean System Novx Inside or Novx System Optional ±3V Balance with Warning/Alarm Signals in FMS Output (Standalone only) Optional Angled Collimator	2-3-4 Fans Versions FMS Connection Auto-clean System Novx Inside or Novx System	Compact Size Auto-clean System ±3V Balance with Warning/Alarm Signals in FMS Output
Discharge	Without Collimator: <2 sec @ 12" (30.5 cm) With Collimator: <1 sec @ 12" (30.5 cm)	<3 sec @ 18" (45.7 cm)	<2-2.5 sec @ 12" (30.5 cm)	With/Without Collimator: <1 sec @ 12" (30.5 cm), typ Without Collimator: <2 sec @ 24" (61 cm), typ With Collimator: <1.5 sec @ 24" (61 cm), typ	<2 sec @ 18" (45.7 cm)	Without Collimator: <4 sec @ 12" (30.5 cm), typ With Collimator: <3 sec @ 12" (30.5 cm), typ
Balance	±3V or better ±1V with Novx System	±3V or better ±1V with Novx System	±3V or better ±1V with Novx System	±3V or better balance ±1V with Novx Inside or Novx System	±3V or better balance ±1V with Novx Inside or Novx System	±3V or better
Ion Emission	Steady-state DC Technology	Steady-state DC Technology	Steady-state DC Technology	Steady-state DC Technology	Steady-state DC Technology	Steady-state DC Technology
Cleanroom Class	ISO 14644-1 Class 4	ISO 14644-1 Class 4	ISO 14644-1 Class 4	ISO 14644-1 Class 3	ISO 14644-1 Class 3	ISO 14644-1 Class 3
Airflow	108 cfm	108 cfm per fan	20.5 cfm	125 cfm	High: 129 cfm Med-hi: 117 cfm Med-low: 76 cfm Low: 41 cfm	High: 17 cfm Low: 7 cfm (Model 5941S only)
Dimension	10.4"H x 7.6"W x 5.0"D (26.4 x 19.3 x 12.7 cm)	2-fan: 4.5"H x 6.1"D x 32"L (9.65 x 15.5 x 81.3 cm) 3-fan: 4.5"H x 6.1"D x 40"L (9.65 x 15.5 x 101.6 cm) 3-fan: 4.5"H x 6.1"D x 44"L (9.65 x 15.5 x 111.8 cm)	Blower: 4.57"H x 3.27"W x 3.47"D (11.6 x 8.31 x 8.81 cm) Controller: 1.0"H x 5.2"W x 2.35"D (2.54 x 13.2 x 5.97 cm)	With Stand: 7.27"H x 6.95"W x 2.97"D (18.47 x 17.65 x 7.54 cm) With Angled Collimator: 7.27"H x 6.95"W x 6.11"D (18.47 x 17.65 x 15.5 cm)	2-fan: 32"L x 2.75"H x 5.44"W (81.3 x 6.99 x 13.82 cm) 3-fan: 42"L x 2.75"H x 5.44"W (106.68 x 6.99 x 13.82 cm) 4-fan: 52"L x 2.75"H x 5.44"W (132.08 x 6.99 x 13.82 cm)	Without Collimator: 4.33"H x 3.15"W x 1.60"D (11.0 x 8.00 x 4.06 cm) w/o bracket With Collimator: 4.33"H x 3.15"W x 2.93"D (11.0 x 8.00 x 7.45 cm) w/o bracket
Weight	3 lb (1.36 kg)	Aluminum 44" unit 10.3 lb (4.68 kg)	Blower 1.14 lb (0.52 kg) Controller: 0.56 lb (0.25 kg)	Without Collimator 2.20 lb (1.00 kg) With Angled Collimator 2.42 lb (1.10 kg)	2-fan: 5.5 lb (2.49 kg) 3-fan: 7.8 lb (3.55 kg) 4-fan: 10 lb (4.55 kg)	Without Collimator: 0.70 lb (0.32 kg) With Collimator: 0.72 lb (0.33 kg)

GENERAL ELECTRONICS & ASSEMBLY IONIZING BLOWER SOLUTIONS








	OVERHEAD			BENCHTOP				
GE Blower	**Aerostat FPD**	**Model 5810i**	**Aerostat Guardian**	**6432**	**MinION2**	**6832**	**PC2**	**XC2**
Feature	High output, high velocity fans Inherently balanced to ±10V Ionization indicator light Built-in emitter point cleaner Optional fan air filter	±3V or better balance Optional sensor input, alarms, FMS connection, management control Optional Auto-Clean System	Inherently balanced to 0 ±10V Integrated heater, diffuser, task lights Ionization indicator Built-in manual emitter point cleaner	24 VDC or 24 VAC Small footprint Fault alarm LED, FMS connection In-tool or benchtop stand	Compact design Fault alarm LED, FMS connection ±10V self-balancing Modular wiring system (up to 3 units daisy-chained)	Small footprint Fault/fan alarm LEDs, FMS connection, optional audible alarm <±10V or better balance Built-in manual emitter point cleaner	Lightweight/compact Fault/fan alarm LEDs, FMS connection, optional audible alarm ±10V self-balancing Built-in manual emitter point cleaner Integrated heater	Large area coverage Fault/fan alarm LEDs, FMS connection, optional audible alarm ±10V self-balancing Built-in emitter cleaner Integrated heater
Discharge	1.0 sec @ 12" (30.5 cm)	<3.0 sec @ 18" (45.7 cm)	3.0 sec @ 18" (45.7 cm)	24 VAC: <4 sec @ 12" (30.5 cm) 24 VDC: <5 sec @ 12" (30.5 cm)	2 sec @ 12" (30.5 cm)	<2 sec @ 12" (30.5 cm)	<2.0 sec @ 12" (30.5 cm)	1.0 sec @ 12" (30.5 cm)
Balance	0 ±10V	±3V	0 ±10V	±20V	±10V	<±10V	0 ±10V	0 ±10V
Ion Emission	AC Technology	Steady-state DC Technology	AC Technology	IsoStat Technology	Steady-state DC Technology	Steady-state DC Technology	Micropulse Technology	Micropulse Technology
Cleanroom Class	ISO 14644-1 Class 5	Meets ISO 14644 Class 4	ISO 14644-1 Class 5 (heater off)	ISO 14644-1 Class 5	ISO 14644-1 Class 5	ISO 14644 Class 4	ISO 14644-1 Class 6 (heater off)	ISO 14644-1 Class 6 (heater off)
Airflow	Variable Fan Speed 2-Fan: 150 cfm low, 300 cfm high 3-Fan: 230 cfm low, 450 cfm high 4-Fan: 300 cfm low, 600 cfm high	108 cfm per fan	Variable Fan Speed 150-300 cfm low to high	Fixed Fan Speed 49 cfm	Variable Fan Speed 21-42 cfm	4 Fan Speeds 129 cfm high	3 Fan Speeds 129 cfm high	3 fan speeds 95 cfm (fan low) 150 cfm (fan high)
Operating Environment	50-90°F (10-32°C) 30-70% RH, non-condensing	50-90°F (10-32°C) 30-70% RH, non-condensing	32-122°F (0-50°C) 30-70% RH, non-condensing	50-90°F (10-32°C) 30-70% RH, non-condensing	32-122°F (0-50°C) 30-70% RH, non-condensing	50-90°F (10-32°C) 30-70% RH, non-condensing	50-95°F (10-35°C) 30-60% RH, non-condensing	50-95°F (10-35°C) 30-60% RH, non-condensing
Dimension/ Weight	2-fan: 23.25"L x 4.0"H x 6.25"D (59.1 x 10.2 x 15.9 cm) 3-fan: 35.5"L x 4.0"H x 6.25"D (90.2 x 10.2 x 15.9 cm) 4-fan: 47.75"L x 4.0"H x 6.25"D (121.3 x 10.2 x 15.9 cm) 2-fan: 10 lb (4.54 kg) 3-fan: 13 lb (5.90 kg) 4-fan: 16 lb (7.26 kg)	2-fan: 4.5"H x 6.1"D x 32"L (9.65 x 15.5 x 81.3 cm) w/bracket. 3-fan: 4.5"H x 6.1"D x 40"L (9.65 x 15.5 x 101.6 cm) w/bracket 3-fan: 4.5"H x 6.1"D x 44"L (9.65 x 15.5 x 111.8 cm) w/bracket 44" unit 10.3 lb (4.68 kg)	42.75"W x 4.44"H x 6.78"D (108.6 x 11.3 x 17.2 cm) 16 lb (7.26 kg)	5.28"H x 5.19"W x 2.49"D (13.4 x 13.1 x 6.32 cm) 1.31 lb (0.59 kg)	3.81" x 5.37" x 2.05" (9.68 x 13.6 x 5.21 cm) 1.10 lb (0.50 kg)	7.33"H x 6.95"W x 2.75"D (18.6 x 17.6 x 6.99 cm) w/bracket 1.98 lb (0.90 kg) w/bracket	9.09"H x 6.81"W x 3.29"D (23.1 x 17.3 x 8.35 cm) 2.8 lb (1.25 kg)	14.13"W x 7.19"H x 7.53"D (35.9 x 18.3 x 19.1 cm) 7.0 lb (3.18 kg)

Critical Environment Benchtop Blower

Model 5802i

The Simco-Ion Critical Environment Benchtop Ionizing Blower Model 5802i provides reliable, fast static charge control for benchtop work areas and small spaces, allowing optimal electrostatics management that minimizes cost and maximizes protection for ESD-sensitive areas. An internal automatic balance correction system ensures ionization continues to reach the target with complete accuracy presenting a significant time and cost savings.

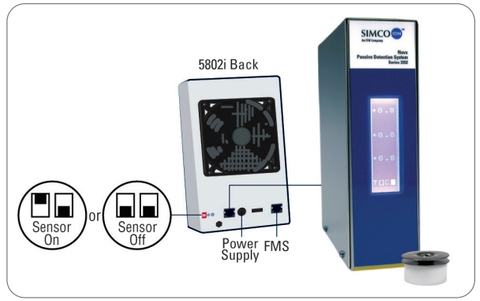
Model 5802i can operate with Novx sensors to maintain better than ±1V balance by altering ion output and adapting to environmental changes. With the optional sensor and collimator, it delivers precisely balanced and directed ionized air to the target without taking up valuable room in the environment.

Features

- ±3V or better balance (±1V with the Novx System)
- Cleanliness rated at ISO 14644-1 Class 4
- Sensor input, FMS connection, alarms, and management control
- Optional unique airflow directing collimator
- Optional Auto-Clean System

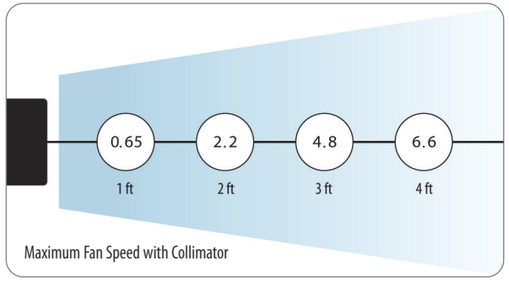
Benefits

- Provides the best corona-based ESD protection for maximizing yields
- Designed for use in an environment with a controlled level of contamination
- Increased control with immediate alarm notifications; prevention of unauthorized adjustment to power/fan speed
- Significantly improves airflow delivery with faster discharge times from greater distances
- Automates emitter point cleaning, reducing maintenance costs and time



5802i can operate with Novx 3352, 3362, or 7000 to control its offset voltage at ±1V or better performance.

Typical Discharge Time



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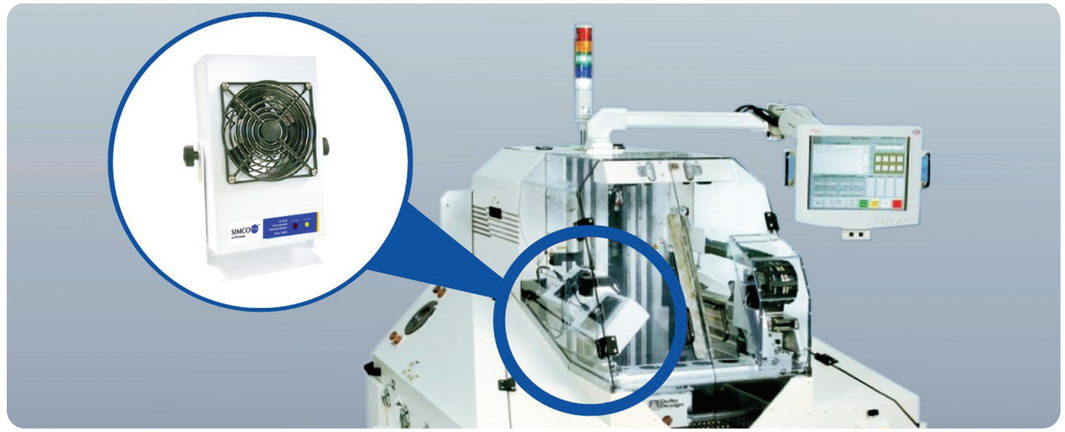


±1V Balance Performance with Novx System

The Model 5802i ionizer's Novx System version using a Novx sensor operates with the Novx 7000 Process Monitor and the Novx 3352 Passive or Novx 3362 Active Closed-loop Ionizer Controllers to detect and automatically correct the balance. With the sensor placed at the target area, feedback is sent to the Model 5802i Blower's internal control system, ensuring that your target maintains a ±1V or better balance at all times.

5802i Specifications

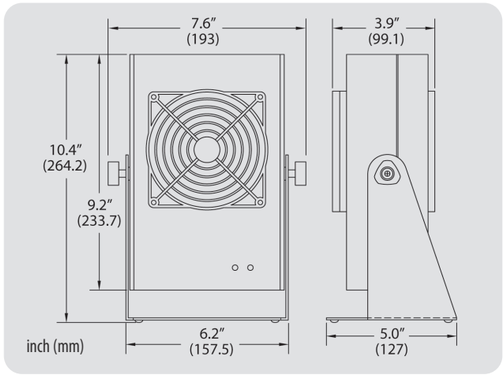
Input Voltage	24 VDC when using Simco-Ion Power Supply (P/N 14-21116)
Discharge	With collimator (±1000-100V): <1 sec @ 12" (30.5 cm) Without collimator (±1000-100V): <2 sec @ 12" (30.5 cm)
Balance	±3V or better; ±1V with the Novx System
Ion Emission	Steady-state DC Technology
Emitter	Titanium, 8 per fan
Cleanroom Class	ISO 14644-1 Class 4
LED Indicator	Green POWER on, red FAULT alarm with optional AUDIBLE ALARM
Control	Power/fan speed slide switch with off/low/high settings (preset fixed high speed available as an option), balance adjustment, optional sensor gain adjustment, sensor type selection and FMS connections
Airflow	108 cfm (typ)
Audible Noise	High fan speed 61 dB, (typ); low fan speed 52 dB, (typ) Measurements taken 12" (30.5 cm) from fan
Ozone	0.008 ppm (typ)
Operating Env	50-90°F (10-32°C); 30-70% RH, non-condensing
Mounting	Tilt Lock Mounting Stand, optional wall mount bracket
Option	Novx sensor inputs with FMS connection, audible alarm, collimator, internal preset fan speed on high, power cord bracket, Auto-Clean System
Enclosure	Aluminum chassis with epoxy-polyester powder coat
Dimension	10.4"H x 7.6"W x 5.0"D (26.4 x 19.3 x 12.7 cm) with stand
Weight	3 lb (1.36 kg)
Certification	CE UK CA

Adaptable Options

- An internally preset fan speed on high, ensuring uninterrupted delivery of ionization in critical work areas
- An audible alarm that operates in addition to the visible red LED on the Blower to indicate operational failures including a stopped fan or loss of ionization
- The Auto-Clean System, which reduces maintenance periods by sweeping the emitter points when the Blower is turned off and on, allowing the Blower to continually perform at optimum ion output and balance

Directed Airflow

The optional collimator fits over the fanstack of the Blower and directs ionized air straight to the target. This means that the Blower can be placed further away from the target with continued excellent discharge times and reach. This faster, directed airflow method significantly improves discharge times by removing common ion disbursement and recombination problems.



Critical Environment In-tool Blower

Model 5822i

The compact design of the Critical Environment In-tool Ionizing Blower, Model 5822i, is designed to meet small-footprint ionizer requirements in automated process tools, offering exceptional performance in hard disk drive manufacturing and back-end semiconductor environments. The ionizer maintains a ±3V or better balance standard and exceptional ±1V Novx System by external feedback. An internal, automatic balance correction system ensures your target is ionized accurately, significantly reducing calibration and maintenance time and resulting in cost savings. A collimator installed over the fan directs precisely balanced ionized air to the target without taking up valuable room in your environment.

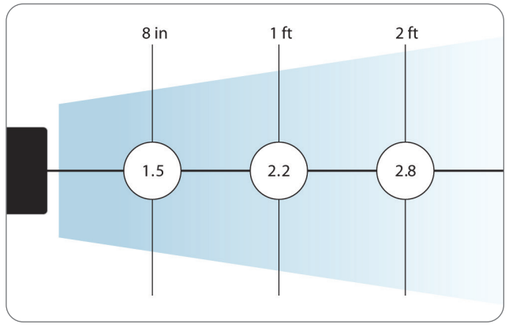
Features

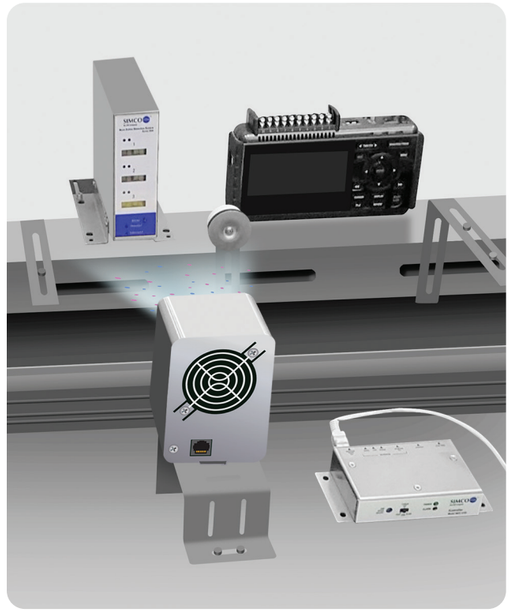
- ±3V or better balance (±1V with the Novx System)
- Facility Monitoring System (FMS) connection and audible alarm
- Separate control box
- Cleanliness rated at ISO 14644-1 Class 4

Benefits

- Provides the best corona-based ESD critical environment protection available for maximizing yields
- Faster response to ionization failure with notification through tool or FMS
- Allows the blower to be situated close to the target area for fast electrostatic discharge
- Designed for use in an environment with a controlled level of contamination

Typical Discharge Time





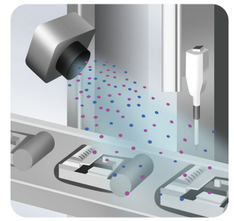
5822i Specifications

Input Voltage	24 VDC @ 1A from external power supply (100-240 VAC 50/60 Hz) or from tool power
Discharge	Between 2-2.5 sec @ 12" (30.5 cm) (typ); measured in-line from the center of the fan (±1000V-100V)
Balance	±3V or better; ±1V with the Novx System
Ion Emission	Steady-state DC Technology
Emitter	Tungsten, 8 per blower; Titanium optional
Cleanroom Class	ISO 14644-1 Class 4
LED Indicator	Control Box: green POWER ON, red ALARM
Control	Balance adjust, sensor gain adjust, fan "slow/off/fast" switch, variable "slow" fan speed
Airflow	20.5 cfm (typ)
Audible Noise	<56 dB, typical measurements taken at 12" (30.5 cm) from fan
Operating Env	50-95°F (10-35°C); 30-65% RH, non-condensing
Mounting	2 mounting screw holes on bottom of blower, 1.20" (3.05 cm) apart
Enclosure	Stainless Steel
Dimension	Fan Unit: 4.57"H x 3.27"W x 3.47"D (11.6 x 8.31 x 8.81 cm) Control Box: 1.00"H x 5.20"W x 2.35"D (2.54 x 13.2 x 5.97 cm)
Weight	Fan Unit 1.14 lb (0.52 kg); Control Box 0.56 lb (0.25 kg)
Certification	CE UKCA

±1V Balance Performance with Novx System

The Model 5822i blower's Novx System feature using a Novx sensor operates with the Novx 7000 Process Monitor and the Novx 3352 Passive or Novx 3362 Active Closed-loop Ionizer Controllers to detect and automatically correct the balance. With the sensor placed at the target area, feedback is sent to the Model 5822i blower's internal control system, ensuring that your target maintains a ±1V or better balance at all times, no matter what environmental variables exist.

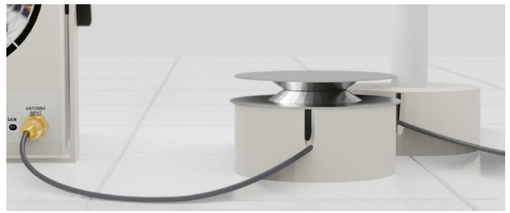
Directed Airflow

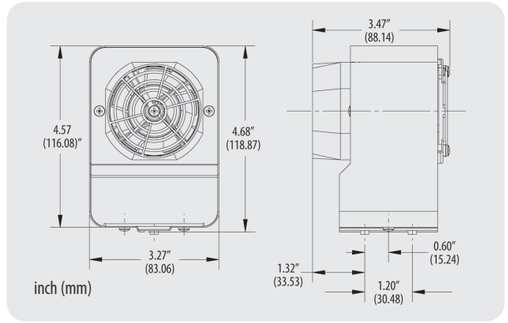


The collimator fits over the air outlet of the blower and directs ionized air straight to the target. This means that the blower can be placed further away from the target with continued excellent discharge times and good performance at extended distances. This faster, directed airflow method improves ion and static elimination, significantly minimizing ion recombination.

Control Box

The modular remote control box was developed to accommodate limited tool footprints. The control box connects to the optional Novx 7000 Process Monitor and with the Novx 3352 Passive or Novx 3362 Active Closed-loop Ionizer Controllers and common FMS (Facility Monitoring System) interfaces. This allows the ionizer to be installed into tight, hard-to-reach spaces.





Ionizing Blowers

Critical Environment Enhanced Benchtop Blower

Model 5832

The Simco-Ion Critical Environment Benchtop Blower Model 5832 provides reliable, fast static charge control for benchtop work areas and small spaces, allowing optimal electrostatics management that minimizes cost and maximizes protection for ESD-sensitive areas. An internal automatic balance correction system ensures ionization continues to reach your target with complete accuracy presenting significant time and cost savings.

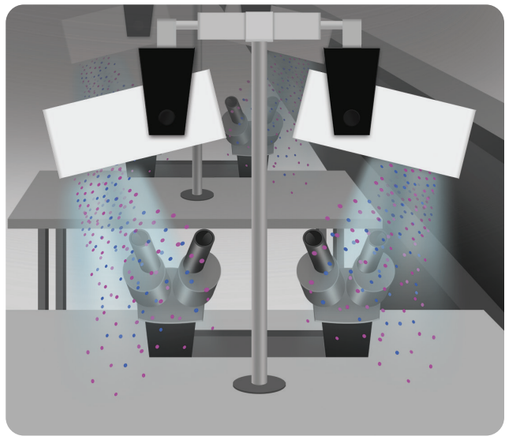
The ionizer has two versions, Novx Inside and Novx System, that operate with a Novx sensor at the target location to maintain precise balance (better than ±1V) by altering ion output and adapting to environmental changes. These versions deliver precisely balanced and directed ionized air to your target without taking up valuable room in your environment. A greater concentration of emitter points and internal circuitry suited for environments that need quality ESD protection with solid design.

Features

- ±3V or better balance (±1V with the Novx Inside or Novx System versions)
- Cleanliness rated at ISO 14644-1 Class 3
- Options for warning/alarm 2 level notification, sensor input, FMS connection, alarms, and management control
- Auto-Clean System
- Angled Collimator

Benefits

- Provides the best corona-based ESD protection for maximizing yields
- Designed for use in critical environments with a controlled level of contamination
- Increased control with immediate notification of alarms and the prevention of unauthorized adjustment to power or fan speed
- Automates emitter point cleaning, reducing maintenance costs and time
- Customer "settable" 360 degree output direction



Sales Service +1 (510) 217-0460 or +1 (800) 367-2452

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±1V Balance Performance

Novx Inside: The Model 5832A can be ordered and operated with the remote antenna option which allows any of the standard Novx Passive Antenna assemblies to be connected directly to the 5832A (SMA Connector).

Novx System: The Model 5832N blower using an external feedback sensor, operates with the Novx 7000 Process Monitor and the Novx 3352 Passive or Novx 3362 Active Closed-loop Ionizer Controllers to detect and automatically correct the balance. With the antenna placed at the target area, feedback is sent to the 5832N blower's internal control system (RJ Connector), ensuring that your target maintains a ±1V or better balance at all times.

Audible Alarm Option

An audible alarm that operates in addition to the visible array of 3 each LED's on the front of the blower indicate operational failures including a stalled fan or loss of ionization.

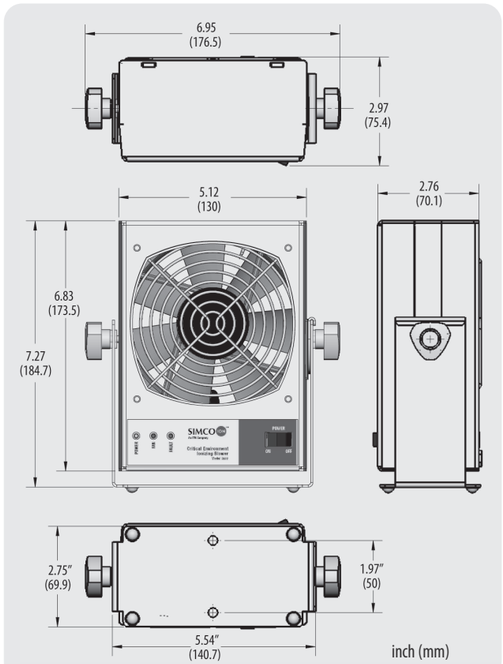
5832 Specifications

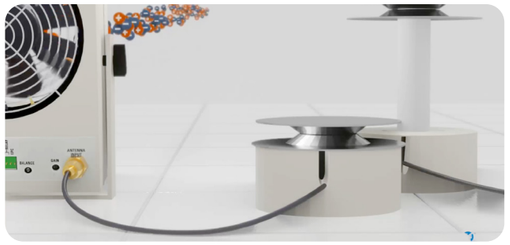
Input Voltage	24 VDC, 0.47A max
Discharge	With/Without Collimator: <1 sec @ 12" (30.5 cm), typ Without Collimator: <2 sec @ 24" (61 cm), typ With Collimator: <1.5 sec @ 24" (61 cm), typ
Balance	±3V or better; ±1V with the Novx Inside or Novx System versions
Ion Emission	Steady-state DC Technology
Emitter	Titanium, 8 per fan
Cleanroom Class	ISO 14644-1 Class 3
LED Indicator	Green POWER on, red FAN stall, red FAULT with optional AUDIBLE ALARM (two-stage blinking red FAULT LED to indicate WARNING & ALARM conditions)
Control	Power/fan speed DIP switch with 4 speed/velocity settings, balance adjustment, sensor type selection, FMS connections
Airflow	125 cfm (typ)
Audible Noise	High fan speed 61 dB (typ), low fan speed 52 dB (typ); measurements taken 12" (30.5 cm) from fan
Ozone	0.005 ppm (typ)
Option	External sensor inputs with FMS connection, audible alarm, angled collimator Warning: ±3V; Alarm: ±5V on standalone version
Operating Env	50-90°F (10-32°C); 30-70% RH, non-condensing
Mounting	Tilt Lock Mounting Stand
Enclosure	Aluminum chassis with epoxy-polyester powder coat
Dimension	7.27"H x 6.95"W x 2.97"D (18.47 x 17.65 x 7.54 cm) with stand 7.27"H x 6.95"W x 6.11"D (18.47 x 17.65 x 15.5 cm) with angled collimator
Weight	2.20 lb (1.00 kg) without collimator; 2.35 lb (1.07 kg) with angled collimator
Certification	CE cULus KC EAC UKCA

Novx System by using Novx 3352/3362

Auto-Clean System

The Auto-clean System reduces maintenance periods by sweeping the emitter points in both directions when the blower is turned on and off or on a preset time interval or user activated through the Facility Monitoring System (FMS).





Novx Inside by Directly Connecting to Novx Passive Sensor

salesservices@simco-ion.com

Ionizing Blowers

Critical Environment In-tool Micro Blower

Model 5941

Simco-Ion's Micro Series Blowers are designed for advanced critical environment in-tool applications where space is a constraint. Model 5941 Micro Blower is compactly designed but exceptionally effective to meet current requirements for advanced automated process tools. Only 4.33" (110 mm) tall and 3.15" (80 mm) wide, this amazing compact in-tool blower offers outstanding performance in back-end semiconductor environments.

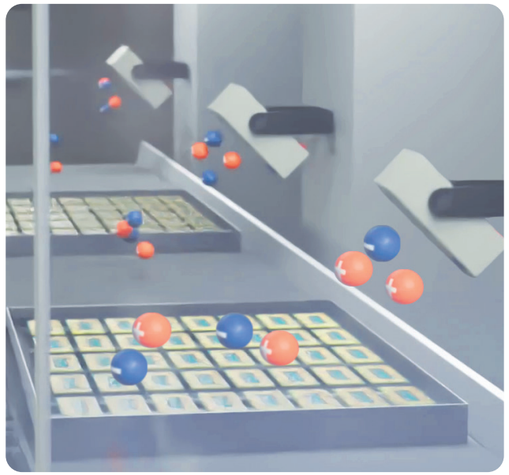
Model 5941 maintains a ±3V or better balance standard, safeguarded by an exclusive two-level notification feature allowing preventative adjustment time for continuous operations. An internal, automatic balance correction system ensures target devices are ionized accurately, presenting a significant reduction in calibration and maintenance time resulting in cost savings.

Features

- ±3V or better balance
- Compact size
- Cleanliness rated at ISO 14644-1 Class 3
- Facility Monitoring System (FMS) connection
- Auto-clean System

Benefits

- Provides the best corona-based ESD critical environment protection available for maximizing yields
- Exceptional for the limited-space in-tool applications
- Designed for use in an environment with a controlled level of contamination
- Faster response to ionization failure with notification through tool or FMS
- Automates emitter point cleaning reducing maintenance costs and time



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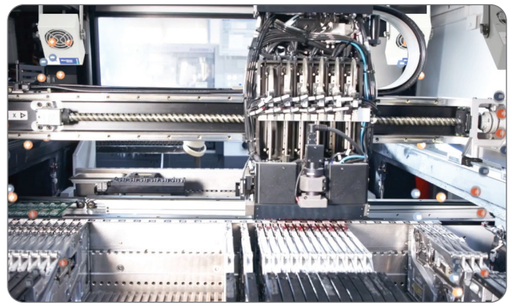
5941 Specifications

Input Voltage	24 VDC (±10%), 6W max
Discharge[1]	Without Collimator: <4 sec @ 12" (30.5 cm), typ With Collimator: <3 sec @ 12" (30.5 cm), typ
Balance	±3V or better @ 12" (30.5 cm) away Warning Setpoint: +3.5V (±0.5V), -3.5V (±0.5V) Alarm Setpoint: +5.0V (±0.5V), -5.0V (±0.5V)
Ion Emission	Steady-state DC Technology
Emitter	Tungsten wire, 4 per blower
Cleanroom Class	ISO 14644-1 Class 3
LED Indicator	Green NORMAL; blink Orange/Green BALANCE WARNING; blink Red BALANCE ALARM; blink Alt Green/Red FAN STALL; blink Orange EPC ACTIVE
Control	Trimpot balance control; Model 5941S: 3 position switch (up = hi-fan, center = off, down = low fan)
Airflow	High Fan Speed: 17 cfm Low Fan Speed: 7 cfm (Model 5941S only)
Audible Noise	<36 dBA
Connector	2.0 mm barrel connector (24 VDC), RJ-9 for FMS
FMS	RJ-9 for fan fault and out of balance alarms
Ozone	<0.004 ppm (typ)
Operating Env	50-95°F (10-35°C); 30-70% RH, non-condensing
Mounting	U-bracket, factory installed
Option	Collimator
Enclosure	ABS
Dimension	Without Collimator: 4.33"H x 3.15"W x 1.60"D (11.0 x 8.00 x 4.06 cm) without bracket With Collimator: 4.33"H x 3.15"W x 2.93"D (11.0 x 8.00 x 7.45 cm) without bracket
Weight	0.70 lb (0.32 kg) without Collimator; 0.72 lb (0.33 kg) with Collimator
Certification	



±3V Balance Performance

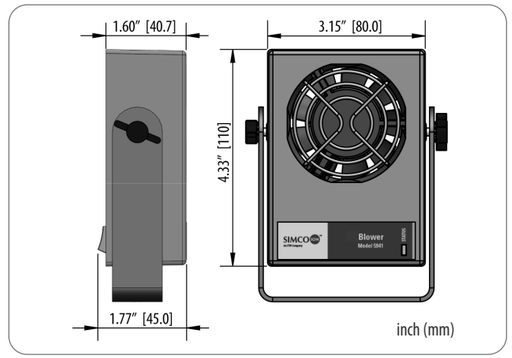
Model 5941 Micro Blower offers a ±3V superior balance performance. The front grill acts as feedback for internal automatic balance correction, ensuring a ±3V or better balance at all times, regardless of the environmental variables.

Compact Size

Only 4.33" (110 mm) tall and 3.15" (80 mm) wide, the Micro Blower's compact size is designed to fit into the latest advanced processing tools where space is limited but still requires superior electrostatic control to perform the process.

Auto-Emitter Point Cleaning

The default 5-day cleaning cycle will activate once the unit is power ON. Particulates typically accumulate on the emitter tip, up to a visible size in 3 to 6 months, depending on the operating environment. The cleaner sweeps through the emitter tips to remove the particulates from accumulating and contaminate the surroundings to protect the target.



Ionizing Blowers

Point-of-Use, In-tool Ionizing Blower

Model 6422e (AC)

The Simco-Ion Point-of-Use Ionizing Blower Model 6422e is the most efficient small blower of its kind for controlling static discharge in hard-to-reach areas. In the tight confines of process tools, ionization must be easy and cost-effective but carry the same level of sophistication found in larger ionizers. The Model 6422e features our self-balancing IsoStat® Technology and alarm output that notifies the user immediately. Model 6422e-AC incorporates our patented Auto-Clean System that cleans the emitter points each time the unit powers down. Automated cleaning reduces maintenance time, extends emitter point life, and assures balanced performance.

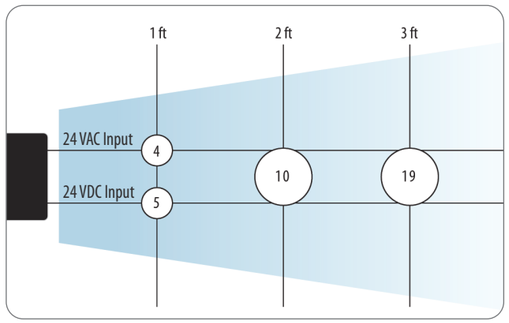
Features

- IsoStat Technology
- Small form factor available in Steady-state DC ion emission
- 24 VDC or 24 VAC input
- Facility Monitoring System (FMS) interface
- Auto Emitter Point Clean (Model 6422e-AC)
- U-bracket mounting

Benefits

- Intrinsically balanced; no calibration needed
- Offers fast discharge times in confined areas
- Can connect directly to either equipment's power source or wall power
- Faster response to failure with notification
- Reduced maintenance time, longer emitter point life, and assured balanced performance
- Flush or angled mounting means the blower will reach constrained spaces

Typical Discharge Time



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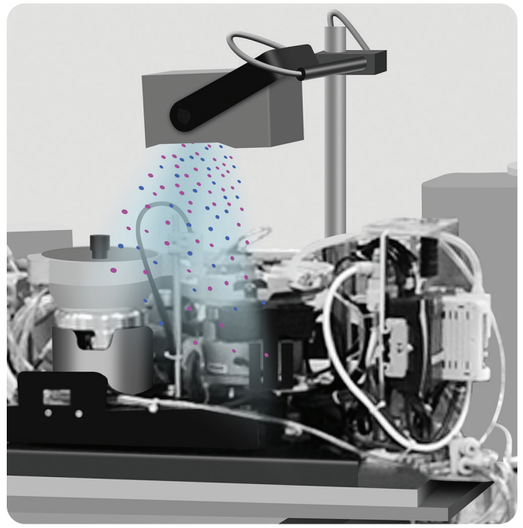


Power Options

The Blower may be powered by 24 VAC or 24 VDC, from power supplies or directly from 24 VDC process equipment to fit your application.

6422e (AC) Specifications

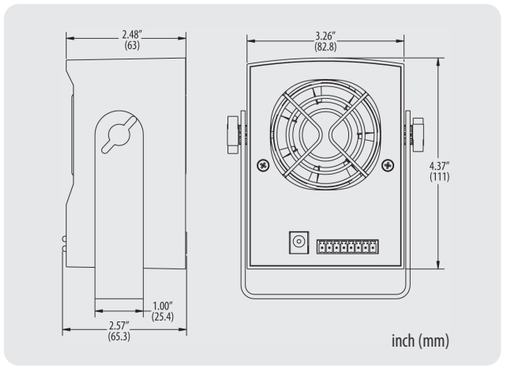
Input Voltage	24 VDC (±10%) or 24 VAC (±10%), 50-60 Hz, 6W max
Discharge	24 VAC Input: <4 sec @ 12" (30.5 cm); ±1000-100V 24 VDC Input: <5 sec @ 12" (30.5 cm); ±1000-100V
Balance	±10V @ 12" (30.5 cm) away
Ion Emission	IsoStat Technology
Emitter	Tungsten wire; internally shielded
Cleanroom Class	ISO 14644-1 Class 5
LED Indicator	Green POWER and red ALARM
Airflow	23 cfm (typ)
Ozone	<0.004 ppm (typ)
Operating Env	50-95°F (10-35°C); 20-60% RH, non-condensing
Mounting	U-bracket, factory installed
Dimension	With bracket: 4.95"H x 4.10"W x 2.48"D (12.6 x 10.4 x 6.30 cm) Without bracket: 4.36"H x 3.26"W x 2.48"D (11.1 x 8.28 x 6.53 cm)
Weight	With bracket 0.79 lb (0.36 kg); without bracket 0.7 lb (0.32 kg)
Certification	CE UKCA

Auto-Clean System

The Auto-Clean System in Model 6422e-AC features a brush mechanism that sweeps the emitter points when the blower is turned off and on, which significantly reduces the need for manual cleaning. Simco-Ion recommends activating the Auto-Clean System at least once a week. Cleaning schedules will vary depending on environmental conditions.

Enhanced Capabilities

An alarm LED on the front indicates a high voltage circuitry failure and a five-pin facility monitoring system (FMS) interface is on the rear of the blower, which provides a 4-20 mA current loop and relay output connection. With a 24 VDC input connection, the FMS output is situated on a convenient terminal block, designed for easy integration.



Ionizing Blowers

Point-of-Use, Focused Coverage Blower

Model 6432e

Simco-Ion's Point-of-Use Ionizing Blower Model 6432e controls static discharge in assembly, inspection and packaging areas. The Model 6432e can also be used in-tool to control static build-up problems such as product contamination, material mishandling or microprocessor lock-up.

While Steady-state DC operation provides fast discharge with low airflow for greater operator comfort, IsoStat® Technology provides several useful benefits for the 6432e Blower. It's small size and ability to operate in balance without grounding wires or cables allows easy and quick installation and setup. The Blower's internal emitter points are electrostatically shielded to eliminate field-induced charging.

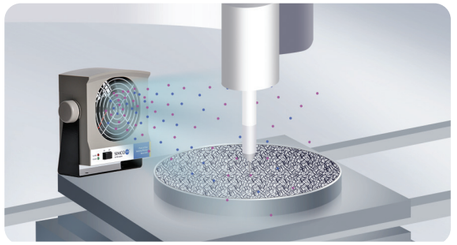
24V AC/DC · Cleanroom 5 · ±20V · Fixed Fan · In-Tool · IsoStat Technology · FMS · Advanced ESD Protection

Features

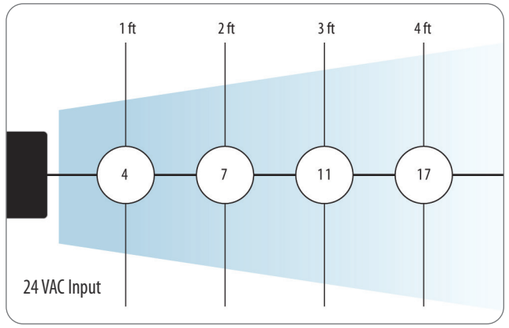
- IsoStat Technology
- 24 VDC or 24 VAC input power
- Small footprint design with benchtop or in-tool mounting stand
- Facility Monitoring System (FMS) interface
- Operational failure alarm

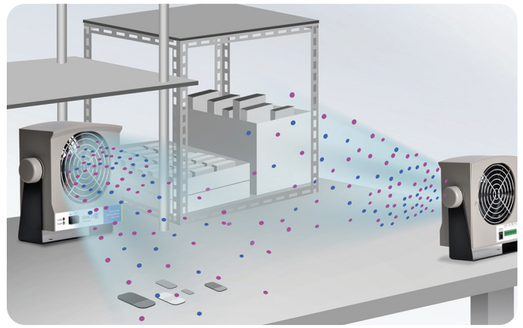
Benefits

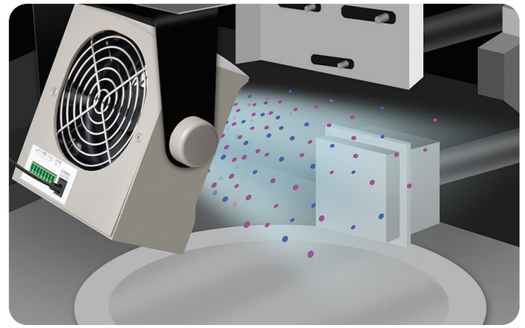
- Intrinsically balanced; no calibration needed
- Convenient power options, well-provided AC or tool-provided DC
- Occupies little work or tool space, cleanroom-compatible (minimizes disruption of laminar flow)
- Faster response to ionization failure with notification through tool or facility monitoring system
- Provides visual notification of any operational failures



Typical Discharge Time

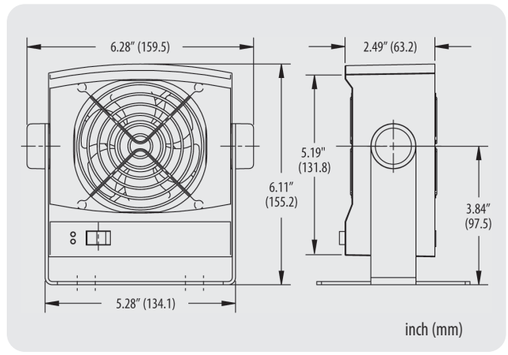


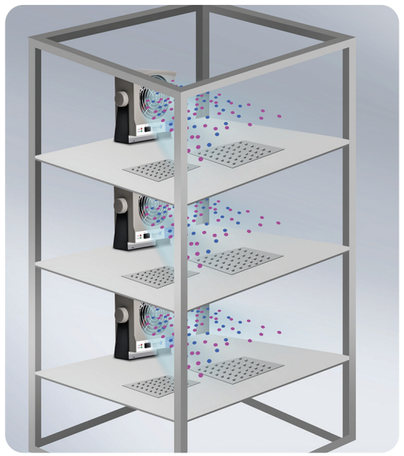




6432e Specifications

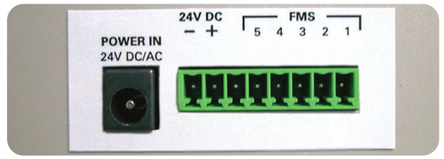
Input Voltage	24 VDC (±10%) or 24 VAC (±10%), 50-60 Hz, 6W max
Discharge	24 VAC Input: <4 sec @ 12" (30.5 cm); ±1000-100V 24 VDC Input: <5 sec @ 12" (30.5 cm); ±1000-100V
Balance	±20V @ 12" (30.5 cm) away
Ion Emission	IsoStat Technology
Emitter	Tungsten wire; internally shielded
Cleanroom Class	ISO 14644-1 Class 5
LED Indicator	Green POWER and red ALARM
Airflow	49 cfm (typ)
Ozone	<0.005 ppm (typ)
Mounting	Small In-tool Stand: 1.8" x 5.1" (4.57 x 12.9 cm) Large Benchtop Stand: 4.1" x 5.1" (10.8 x 12.9 cm) (both with 1/4" mounting hole and 10-32 truss head screws)
Dimension	5.28"H x 5.19"W x 2.49"D (13.4 x 13.1 x 6.32 cm) without stand
Weight	1.31 lb (0.59 kg) with benchtop stand
Certification	CE · UKCA





Enhanced Features

An alarm LED on the front indicates a high voltage circuitry failure and a five-pin facility monitoring system (FMS) interface is on the rear of the blower, which provides a 4-20 mA current loop and relay output connection. With 24 VDC input connection, the FMS output is situated on a convenient terminal block, designed for easy integration.



Power Options

For increased flexibility, the Model 6432e Blower can be directly powered by process equipment or 24 VDC/VAC power to fit the needs of your environment.

General Electronics Benchtop Blower

Model 6832

The Simco-Ion General Electronic Blower Model 6832 provides reliable, fast static charge control for benchtop work areas or mounted in confined spaces, allowing optimal electrostatics management that minimizes cost and maximizes protection for ESD-sensitive areas. An internal automatic balance control system ensures ionization continues to reach your target with complete accuracy presenting a significant time and cost savings.

Model 6832 delivers precisely balanced and directed ionization to your target without taking up valuable room in your environment. A greater concentration of emitter points and internal circuitry suited for high humidity applications makes the Model 6832 the standard choice for environments that need quality ESD protection with a proven design.

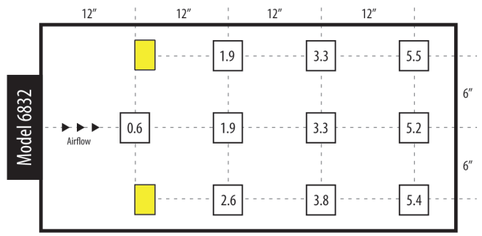
Features

- Steady-state DC ion emission
- Cleanliness rated at ISO 14644-1 Class 4
- FMS connection and alarms for management control
- Fan-stall indication and alarm output
- Manual emitter point cleaning system
- Small footprint @ 60 mm depth

Benefits

- Provides the best corona-based ESD protection for maximizing yields
- Designed for use in an environment with a controlled level of contamination
- Immediate notification if the fan stops rather than continue operations without ionization
- Increased control with immediate notification of alarms
- Reducing maintenance costs and improved performance
- Designed for confined space applications

Typical Discharge Time



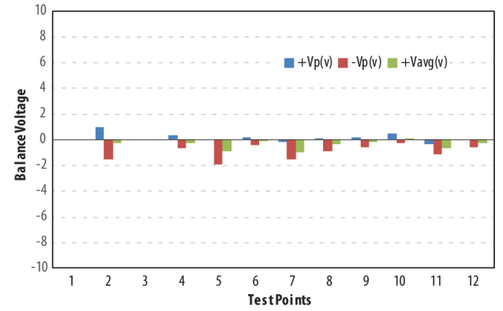
(1000-100V) fan speed set to high, blower 12″ from charge plate monitor (CPM).
CPM test plate 7.2″ from table.
Discharge times slightly longer for 230 VAC, 50 Hz unit.
Yellow cell without value = decay time over 30 seconds.

6832 Specifications

Input Voltage	24 VDC (0.47A max)
Discharge	<2 sec @ 12" (30.5 cm); ±1000-100V
Balance	<±10V (typ)
Ion Emission	Steady-state DC Technology
Emitter	Titanium, 8 per fan
Cleanroom Class	ISO 14644-1 Class 4
LED Indicator	Green POWER on, red FAN stall, red FAULT with optional AUDIBLE ALARM
Control	Power/fan speed DIP switch with 4 speed/velocity settings, balance adjustment, FMS connections
Airflow	129 cfm (typ) @ high speed
Audible Noise	High fan 61 dB (typ), low fan 52 dB (typ); measured @ 12″ (30.5 cm) from fan
Ozone	0.005 ppm (typ)
Operating Env	50-90°F (10-32°C), 30-70% RH, non-condensing
Option	Audible alarm
Enclosure	Powder-coated aluminum
Dimension	7.33"H x 6.95"W x 2.75"D (18.6 x 17.6 x 6.99 cm) with bracket
Weight	1.98 lb (0.90 kg) with bracket
Certification	CE cULus KC UKCA

Balance Performance

Performance test results for high fan speed per ANSI/ESD STM3.1-2015 standard are shown below. High fan speed is one of four fan speeds (high, medium-high, medium-low, and low).



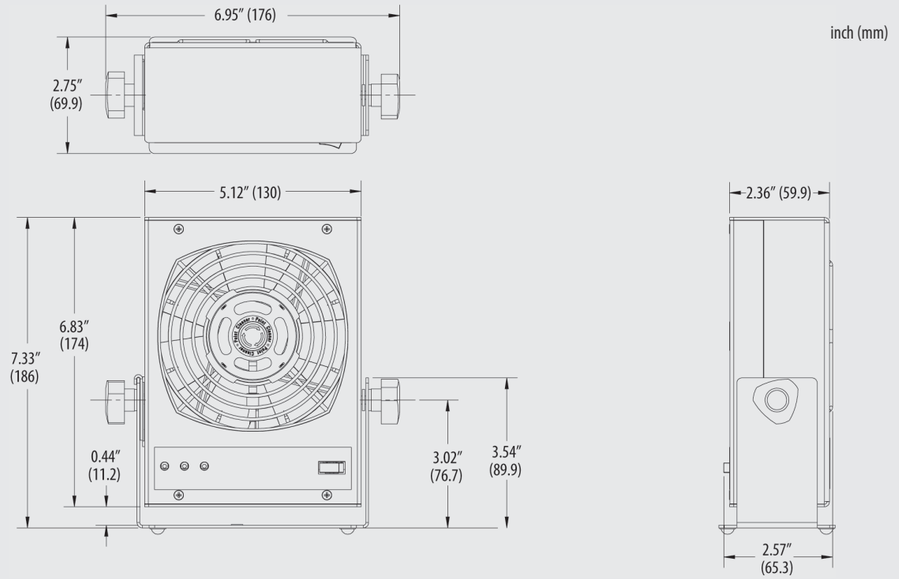
Fan Speed DIP Switch Settings

The 2 dip switches control the fan speed (4 speeds are available). The switch settings for each fan speed are shown in the table on the right.

Fan Speed Selection	
Switch Setting	**Fan Speed**
■□	Low
□■	Medium-Low
■□	Medium-High
□□	High

Options

An audible alarm that operates in addition to the visible array of 3 each LEDs on the front of the blower indicate operational failures including a stalled fan or loss of ionization.



Compact Ionizing Blower

minION™2

Simco-Ion's minION2 Ionizing Blower is designed to control electrostatic charges in sensitive electronics assembly and automated tool applications requiring stable operation with fast discharge time performance. The minION2 is built to deliver big performance and reliability in a compact package with a practical feature set.

A combination of unique, patented features incorporated in this product makes it possible for the minION2 to deliver industry-leading performance. Simco-Ion technology provides a patented control circuitry to deliver consistent performance. Performance is enhanced by the use of patented radial ion emitter design.

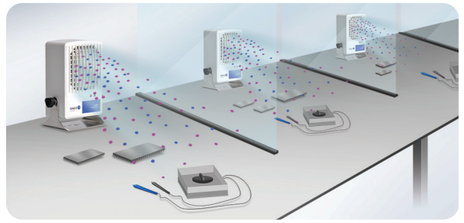
minION2 uses a modular wiring system that allows power delivery by "daisy-chaining" up to 3 units on one standard, modular power supply. Hardwiring of power can be accommodated by the use of a terminal block located on the back of the unit. The terminal block also features a relay contact output of the fault signal to enable remote monitoring.

Features

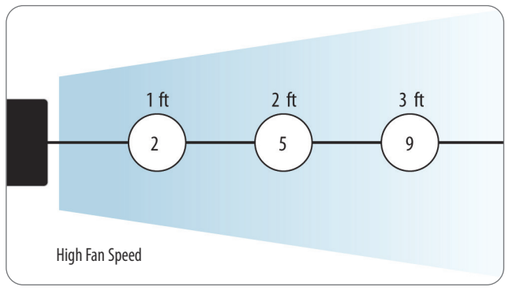
- Compact design
- Self-balancing control circuit technology
- Modular wiring system
- Local LED and relay contact alarm signal

Benefits

- Portable enough for field service applications; large enough for permanent benchtop or in-tool operation
- Self-monitoring to ensure controlled and consistent ion output
- 24 VDC input power supplied by wall AC adapter or by local tool power; up to 3 units daisy-chained from one power source
- Convenient indication of fault ionization operation



Typical Discharge Time



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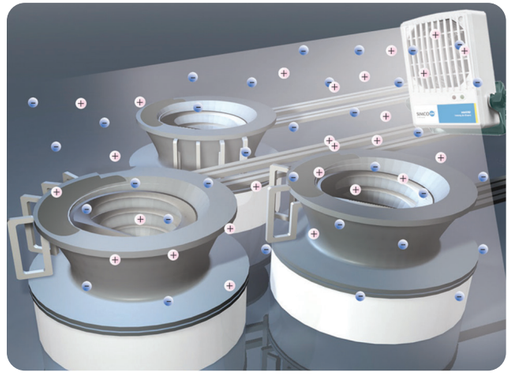
Ionizing Blowers

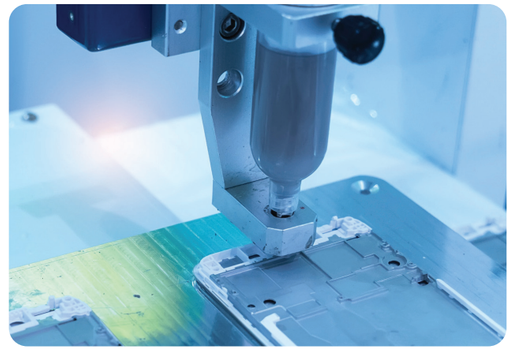


minION2 Specifications

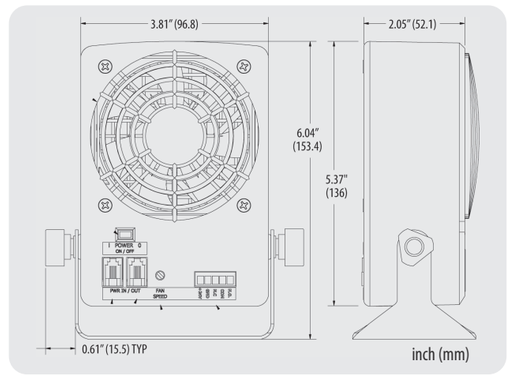
Input Voltage	24 VDC, 0.25A, 6W; available with Simco-Ion power adapter; 100-240 VAC input/24 VDC, 1.66A output; suitable to power up to 3 units
Discharge	2 sec @ 12" (30.5 cm); 1000-100V fan high
Balance	±10V
Coverage	12" x 36" (30.5 x 91.4 cm) area
Ion Emission	Steady-state DC Technology
Emitter	Stainless Steel
Cleanroom Class	ISO 14644-1 Class 5
LED Indicator	Green POWER; Red FAULT
Control	Power ON/OFF; fan speed, variable by recessed potentiometer
Airflow	21-42 cfm
Audible Noise	52 dBA (max), high fan; measured 24" (61.0 cm) in front of blower
Connector	Two 4P4C "handset" modular/power; plug-type terminal block/power and fault signal
Mounting	Stainless steel; optional articulating arm
Operating Env	32-122°F (0-50°C); 30-70% RH, non-condensing
Enclosure	White reinforced polycarbonate
Dimension	3.81" x 5.37" x 2.05" (9.68 x 13.6 x 5.21 cm) without bracket
Weight	1.10 lb (0.50 kg)
Certificate	CE cULus UK CA

Optional Articulating Arm for Convenient Mounting

The minION2 ionizer is designed for portable or permanent operation. The stand provided can be used in a permanent operation by bolting it to a sturdy flat surface such as a wall or shelf. The optional Articulating Arm offers flexibility for directed ionization into hard to reach target areas.



Blower is designed to control electrostatic charges in sensitive electronics assembly and automated tool applications requiring stable operation with fast discharge time performance.



Benchtop Ionizing Blower

AEROSTAT® PC2

Simco-Ion's Aerostat PC2 is designed and built for reliable, long-term static control for a variety of electronic, semiconductor, flat-panel display and life science assembly applications. It offers outstanding charge neutralization for targeted mini-environments and provides static control up to 4 feet (1.2m) across a benchtop work surface. The combination of size and its lightweight design allows easy mounting inside process tools.

Aerostat PC2 offers inherent balance to 0 ±10V, loaded with usability features including an adjustable locking stand, fan speed control, separate balance and fan stall alarm LED with an optional audible alarm. These features make the Aerostat PC2 the ideal mini-environment ionization blower for assembly, test, and packaging area.

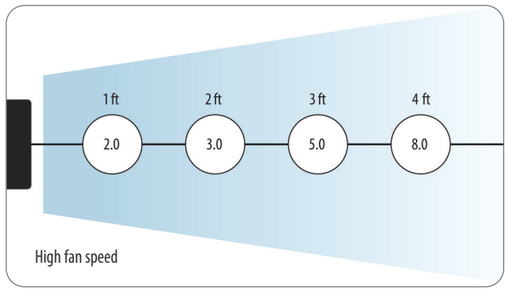
Features

- Discharge time of <2 seconds at 1 foot (30.5 cm)
- Lightweight, compact, and quiet for unobtrusive use
- ±10V self-balancing Micropulse Technology
- Local alarm LEDs, Facility Monitoring System (FMS) connection and optional audible alarm
- Built-in manual emitter point cleaner
- Integrated heater for warm airflow

Benefits

- Fast, targeted neutralization of static charges
- Directed ionization designed for workbench or in-tool areas
- High precision balance ensures controlled and consistent ion output
- Worry-free ionization status can easily be locally monitored and at a remote location
- Minimizes the time required to perform normal maintenance
- Ensure a user-comfort environment

Typical Discharge Time



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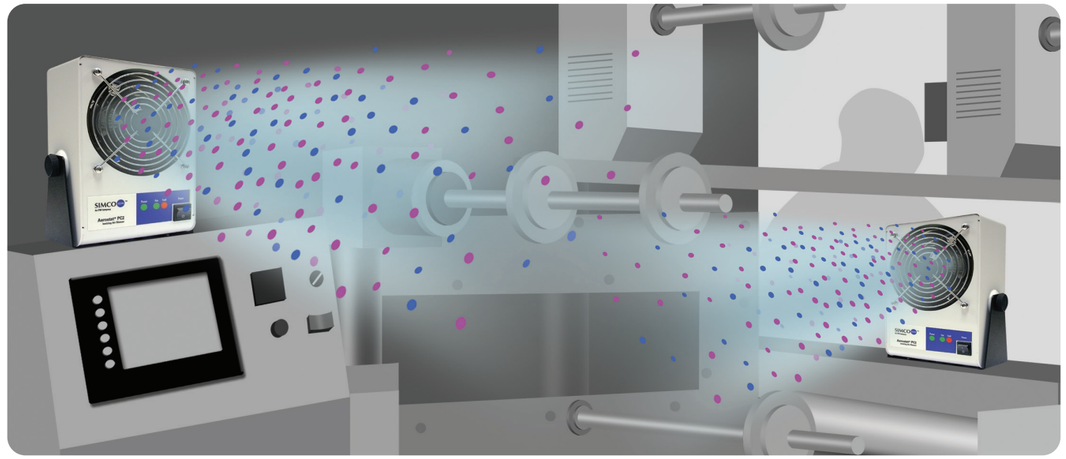
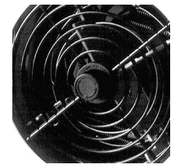


PC2 Specifications

Input Voltage	100-230 VAC, 50/60 Hz, 0.2A, 10W max, fuse 0.63A 250V Slo-Blo 120V w/Heater: 100-120 VAC, 50/60 Hz, 2.0A, 250W, fuse 2.5A 250V Slo-Blo 220V w/Heater: 220-230 VAC, 50/60 Hz, 1.0A, 250W, fuse 1.6A 250V Slo-Blo
Discharge	<2.0 sec @ 12" (30.5 cm); 1000-100V fan high
Balance	0 ±10V (typ)
Coverage	12"W x 48"L (30.5 x 121.9 cm) area
Ion Emission	Micropulse (µPulse) Technology
Emitter	Stainless Steel
Cleanroom Class	ISO 14644-1 Class 6 (heater off)
LED Indicator	Green POWER on, Red FAN alarm, Red FAULT alarm
Control	Power ON/OFF, fan speed LOW/MEDIUM/HIGH, optional Heater ON/OFF
Air Supply	Flow: 129 cfm (fan high) Speed: 370 fpm @ 12", 240 fpm @ 24", 164 fpm @ 36", 120 fpm @ 48" (fan high) Filter: 30 ppi open cell foam filter with bracket (optional)
Audible Alarm	Fault and Fan stall (optional)
Audible Noise	61 dB (fan low), 64 dB (fan high); measured 24" (61.0 cm) in front of blower
Connector	RJ-9 4P/4C receptacle, relay contact rated ±24 VDC @ 0.2A max
Ozone	<0.05 ppm; measured 12" (30.5 cm) in front of blower
Operating Env	50-95°F (10-35°C); 30-60% RH, non-condensing
Mounting	Powder-coated aluminum stand with skid resistant rubber feet
Enclosure	Powder-coated aluminum
Dimension	9.09"H x 6.81"W x 3.29"D (23.1 x 17.3 x 8.35 cm)
Weight	2.8 lb (1.25 kg) with stand & skid resistant rubber feet
Certification	CE cULus KC UKCA

Emitter Point Cleaner

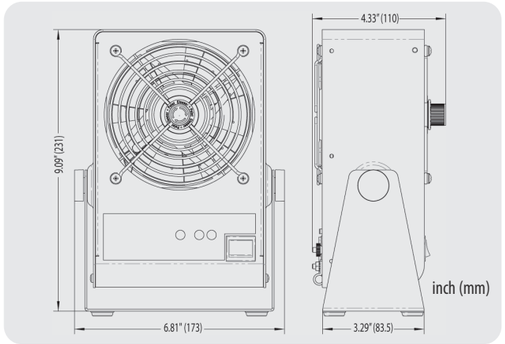


The Aerostat PC2 features a built-in emitter point cleaner which takes only seconds to clean the emitter points. This prevents the build-up of airborne debris and the PC2 keeps working in top form for the life of the unit.

Alarm Capabilities

Separate alarm LEDs on the front of the blower for ionization balance fault and fan stall plus a facility monitoring system (FMS) interface for remote alarm status (accessible on the rear of the blower) offers worry-free static control for the production area.

Heater Version



Extended Coverage Ionizing Blower

AEROSTAT® XC2

Simco-Ion's Aerostat XC2 provides complete wide area ionization protection. As with its predecessor, the Aerostat XC Ionizing Blower, the Aerostat XC2 is designed and built for reliable, long-term static control for a variety of electronic, semiconductor, flat-panel display and medical assembly applications. The XC2 offers outstanding coverage for larger areas with <12 second discharge times at 6 feet (1.8m) distance from the face of the blower. The lightweight design allows the Aerostat XC2 to be mounted above the work surface, which is especially effective for flat panel display module assembly.

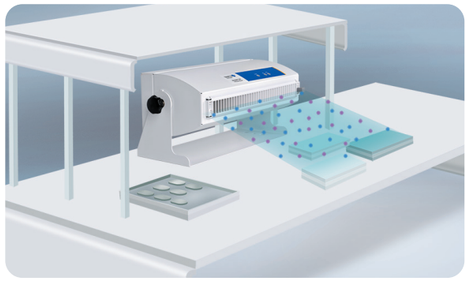
The Aerostat XC2 offers inherent balance to 0 ±10V (with manual adjustment capability) for protection of sensitive electronic components. The XC2 is loaded with usability features including a built-in emitter point cleaner, adjustable locking stand, fan speed control, optional airflow heater, separate balance and fan-stall alarm LEDs with an optional audible alarm.

Features

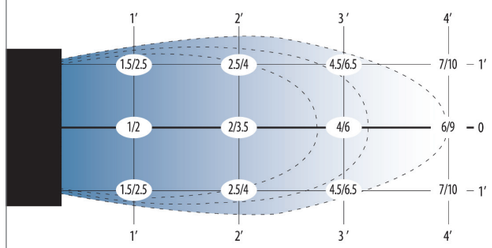
- Large, near symmetric Ionization area coverage
- Weight saving design
- Easy to use, built-in emitter cleaner
- ±10V self-balancing Micropulse Technology
- Local alarm LEDs, Facility Monitoring System (FMS) connection and optional audible alarm
- Integrated heater for warm airflow

Benefits

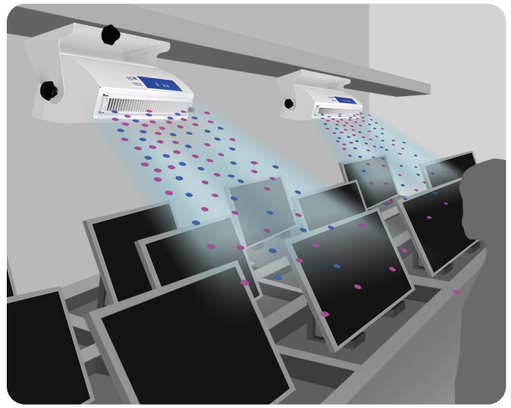
- Designed for complete static neutralization across the entire work surface area
- Light enough to be easily mounted on or above the work surface
- Ensures consistent, balanced performance over a long time
- Long-term balance stability
- Ionization status can easily be monitored locally and at a remote location
- Ensure a user-comfort environment



Typical Discharge Time



High/low fan speed



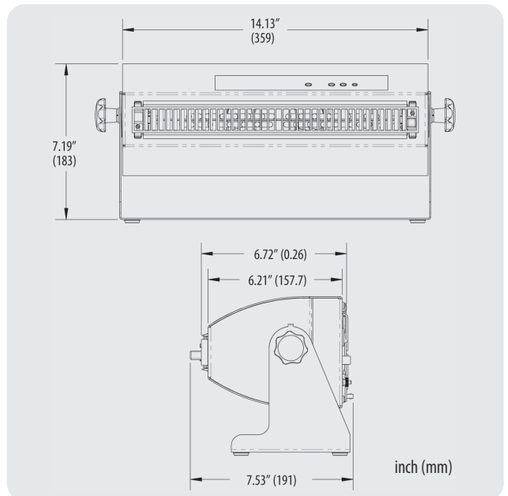
XC2 Specifications

Input Voltage	100-240 VAC, 50/60 Hz, 0.5A, 55W max (without heater) 120V with Heater: 100-120 VAC, 3.5A, 420W 220V with Heater: 220-240 VAC, 1.9A, 460W
Discharge	1.0 sec @ 12″ (30.5 cm); 1000-100V fan high
Balance	0 ±10V
Coverage	36″W x 72″L (91.4 x 182.9 cm); effective coverage area is up to 72″ from blower face
Ion Emission	Micropulse (µPulse) Technology
Emitter	Stainless Steel
Cleanroom Class	ISO 14644-1 Class 6 (heater off)
LED Indicator	Green POWER on, Red FAULT alarm, Red FAN STALL alarm
Control	Power ON/OFF, fan speed LOW/MEDIUM/HIGH, EMITTER POINT CLEANER push-button, balance adjust TRIMPOT, heater ON/OFF (optional)
Connector	FMS fault alarm output connector
Air Supply	Flow: 95 cfm (fan low), 150 cfm (fan high) Speed: 620 fpm @ 12″, 435 fpm @ 24″, 325 fpm @ 36″, 265 fpm @ 48″ (fan high) Heated Temp: 4-5°F (2-3°C) above ambient; measured 12″ (30.5 cm) in front of blower (optional)
Audible Noise	58 dB (fan low), 70 dB (fan high); measured 24″ (61.0 cm) in front of blower
Audible Alarm	Fault and fan stall (optional)
Ozone	<0.05 ppm; measured 12″ (30.5 cm) in front of blower
Operating Env	50-95°F (10-35°C), 30-60% RH, non-condensing
Mounting	Powder-coated steel stand with skid resistant rubber feet
Enclosure	Powder-coated aluminum chassis
Dimension	14.13″W x 7.19″H x 7.53″D (35.9 x 18.3 x 19.1 cm) with stand
Weight	7.0 lb (3.18 kg) with stand
Certification	CE cULus KC UKCA

Low Maintenance

The Aerostat XC2 utilizes Micropulse Technology which reduces ion recombination at the emitter, thus increasing production efficiency and performance. Using this breakthrough technology, the Aerostat XC2 maintains long-term peak-performance and balance stability for extended periods between cleanings.

The only maintenance required for the Aerostat XC2 is periodic cleaning of the emitter points using the easy, built-in push-button to remove any debris and ensuring balanced, continuous ion output.



Ionizing Blowers

Critical Environment Overhead Blower

Model 5810i

The Simco-Ion Critical Environment Overhead Ionizing Blower Model 5810i is designed to provide industry-leading balanced ionization performance in cleanroom environments. The Model 5810i is certified for use in ISO 14644-1 Class 4 cleanrooms. The Blower can operate with the Novx System that can maintain precise balance (better than ±1V) with the Novx sensor to provide feedback and alter ion output while adapting to environmental changes. With the reliability of Steady-state DC, the established method for eliminating the effects of ESD and ESD-induced electromagnetic interference (EMI) in high-tech facilities, the Model 5810i delivers maximum ion output where and when you need it.

Complete compatibility with the operating conditions in today's cleanrooms is ensured with silicone-free air bearing fans. Each fan is engineered for cleanliness and sealed off from the rest of the chassis to meet critical cleanroom requirements. Ionizers that don't match these quality standards risk contaminating manufacturing processes and possibly reducing product yields.

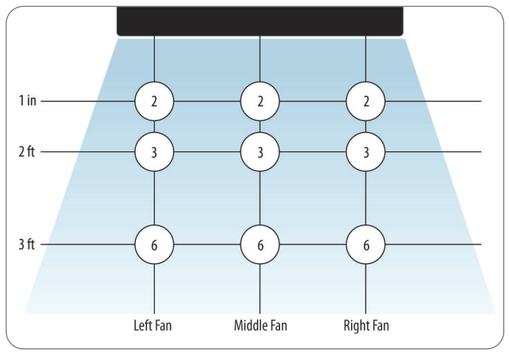
Features

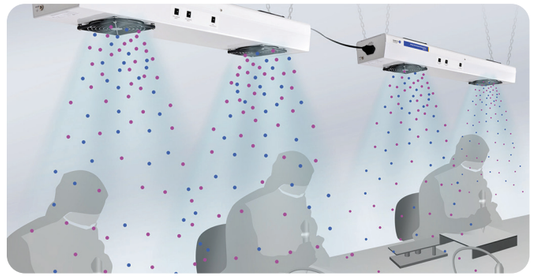
- ±3V or better balance (±1V with the Novx System)
- Cleanliness rated at ISO 14644-1 Class 4
- Optional sensor input, FMS connection, alarms, and management control
- Optional Auto-Clean System

Benefits

- Provides the best ESD protection for maximizing yields
- Designed for use in an environment with a controlled level of contamination
- Increased control with immediate notification of alarms and the prevention of unauthorized adjustment to power or fan speed
- Automated emitter point cleaning for reduced maintenance cost and time

Typical Discharge Time





5810i Specifications

Voltage	Input: 100-240 VAC (±10%), 50/60 Hz Output: 100-240 VAC, 50-60 Hz unfused, 5A max
Discharge	<3 sec @ 18" (45.7 cm) away (±1000-100V)
Balance	±3V or better; ±1V with the Novx System
Ion Emission	Steady-state DC Technology
Emitter	Titanium, 8 per fan
Cleanroom Class	ISO 14644-1 Class 4
LED Indicator	Green POWER on; red FAULT alarm with optional AUDIBLE ALARM
Control	Balance adjust trimpot (1 per fan), 3-position fan switch (high/low/off) or fixed high speed, sensor gain trimpot (optional 1 per fan), sensor type or no sensor slide switch
Airflow	108 cfm per fan (typ)
Audible Noise	High fan speed 61 dB (typ), low fan speed 52 dB (typ); measurements taken 12" (30.5 cm) below fan
Operating Env	50-90°F (10-32°C); 30-70% RH, non-condensing
Ozone	0.02 ppm or less
Daisy-chain	10 units max; power cord (18 AWG) between units not to exceed 12" (30.5 cm) in length
Mounting	Eye-bolts and S-hooks provided; U-shape bracket available
Enclosure	Aluminum chassis with white epoxy-polyester powder coat
Dimension	2 Fan: 4.5"H x 6.1"D x 32"L (9.65 x 15.5 x 81.3 cm) w/U-bracket, alum. 3 Fan: 4.5"H x 6.1"D x 40"L (9.65 x 15.5 x 101.6 cm) w/U-bracket, alum. 3 Fan: 4.5"H x 6.1"D x 44"L (9.65 x 15.5 x 111.8 cm) w/U-bracket, alum. or SST
Weight	Aluminum 44" unit 10.3 lb (4.68 kg)
Certification	CE UK CA

±1V Balance Performance with Novx System

The Model 5810i ionizer's Novx System version using a Novx sensor operates with the Novx 7000 Process Monitor and the Novx 3352 Passive or Novx 3362 Active Closed-loop Ionizer Controllers to detect and automatically correct the balance. With the sensor placed at the target area, feedback is sent to the Blower's internal control system, ensuring that your target maintains a ±1V or better balance at all times.

Factory Monitoring System

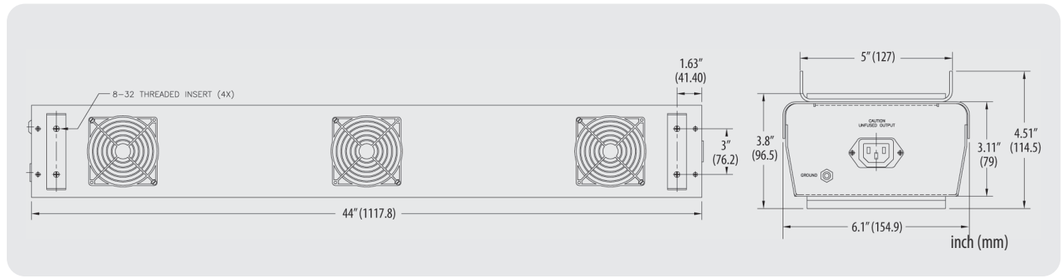
The Blower includes an LED alarm light that indicates a range of possible conditions, including the absence of ionization at the emitter points, or a stopped fan. An optional Audible Alarm is available. The optional Facility Monitoring System (FMS) feature provides an industry-standard 4-20 mA signal to your work cell controller for remotely monitoring error detection.

Auto-clean System

The optional, Auto-clean System is an automated feature that provides reduced operating costs due to lower maintenance. The Auto-clean System features a brush mechanism that sweeps the emitter points when the Blower is turned off and on, allowing the Model 5810i to continually perform at optimum ion output and balance.

Daisy-Chain Connection

The Model 5810i Blower may connect with other Model 5810i Blowers (daisy-chain) in series using the female AC outlet provided on one end of the Blower. Up to 10 Blowers may be connected together.



Critical Environment Enhanced Overhead Blower

Model 5842

Simco-Ion's latest Critical Environment Overhead Blower Model 5842 is designed to provide industry-leading balanced ionization performance in cleanroom environments. The 5842 can operate with Novx sensors to maintain precise balance (better than ±1V) by altering ion output and adapting to environmental changes. With the reliability of Steady-state DC Technology, the established method for eliminating the effects of ESD and ESD-induced electromagnetic interference (EMI) in high-tech facilities, the Model 5842, delivers maximum ion output where and when you need it.

Features

- ±3V or better balance (±1V with the Novx Inside or Novx System versions)
- Cleanliness rated at ISO 14644-1 Class 3
- Sensor input, FMS connection, alarms, and management control
- Built-in Auto-clean System with each fan
- Available in 2-3-4 fan; each with four fan speeds (high, med-high, med-low, low)

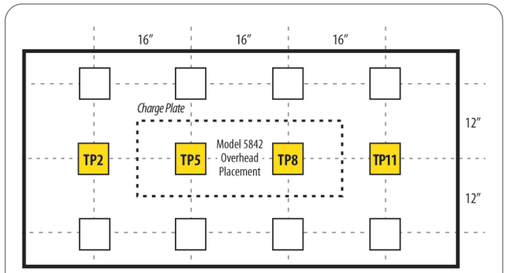
Benefits

- Provides the best ESD protection for maximizing yields
- Designed for use in an environment with a controlled level of contamination
- Increased control with immediate notification of alarms and the prevention of unauthorized adjustment to power or fan speed
- Automated emitter point cleaning for reduced maintenance cost and time
- Numerous options for flexibility and ease of use

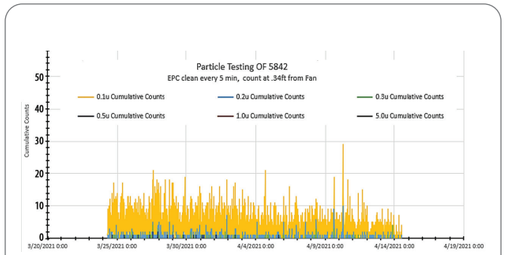
Novx Inside (Model 5842A)

Novx System (Model 5842N)

Performance



Particle Test



5842 Specifications

Input Voltage	2 fan: 24 VDC, 1.0A max; 3 fan: 24 VDC, 1.5A max; 4 fan: 24 VDC, 2A max
Discharge	<2 sec @ 18" (45.7 cm) overhead (±1000-100V)
Balance	±3V or better; ±1V with the Novx Inside or Novx System versions
Ion Emission	Steady-state DC Technology
Emitter	Titanium, 8 per fan
Cleanroom Class	ISO 14644-1 Class 3
LED Indicator	Green POWER on, red FAN stall, red FAULT with optional AUDIBLE ALARM
Control	Power/fan speed DIP switch with 4 speed/velocity settings, balance adjustment, FMS connections
Audible Noise	High fan speed 61 dB (typ), low fan speed 52 dB (typ); measurements taken 12" (30.5 cm) from fan
Airflow	High: 129 cfm (typ/fan); Med-hi: 117 cfm; Med-low: 76 cfm; Low: 41 cfm
Ozone	0.005 ppm (typ)
Operating Env	50-90°F (10-32°C); 30-70% RH, non-condensing
Option	Audible alarm
Enclosure	Aluminum chassis with epoxy-polyester powder coat
Dimension	2-fan: 32"L x 2.75"H x 5.44"W (81.3 x 6.99 x 13.82 cm) 3-fan: 42"L x 2.75"H x 5.44"W (106.68 x 6.99 x 13.82 cm) 4-fan: 52"L x 2.75"H x 5.44"W (132.08 x 6.99 x 13.82 cm)
Weight	2-fan: 5.5 lb (2.49 kg), 3-fan: 7.8 lb (3.55 kg), 4-fan: 10 lb (4.55 kg)
Certification	CE cULus KC EAC UKCA

±1V Balance Performance with Novx

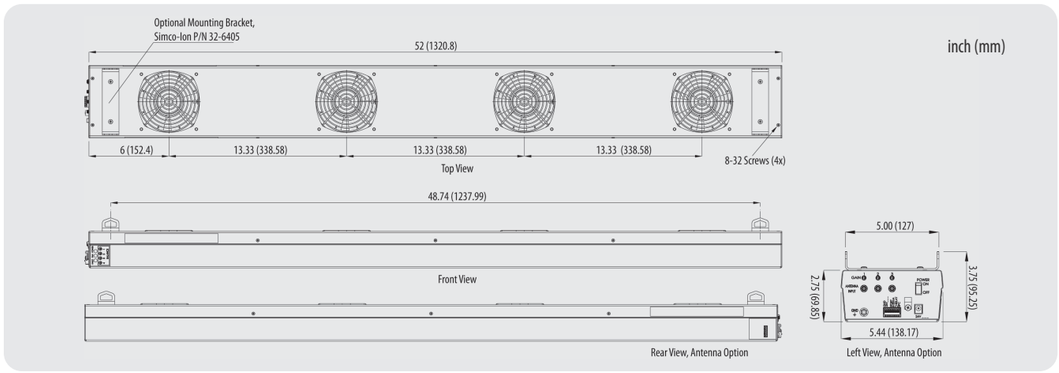
For ±1V balance performance, Model 5842 is available with Novx System or Novx Inside. Both versions operate with the Novx sensor to detect and automatically correct the balance. With the sensor placed at the target area, feedback is sent to the Model 5842 Blower's internal control system, ensuring that your target maintains a ±1V or better balance at all times.

Factory Monitoring System

The blower includes an LED alarm light that indicates a range of possible conditions, including the absence of ionization at the emitter points or a stopped fan. An optional Audible Alarm is available. The Facility Monitoring System (FMS) feature provides an industry-standard 4-20 mA signal to your work cell controller for remotely monitoring error detection.

Auto-clean System

The built-in Auto-clean System features a brush mechanism that sweeps the emitter points when the blower is turned OFF and ON, allowing the Model 5842 to perform at optimum ion output and balance continuously, reducing maintenance time and cost.



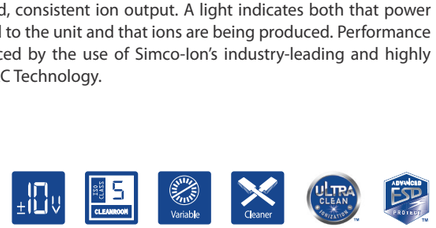
Wide Coverage Overhead/Benchtop Blower

AEROSTAT® FPD

The Aerostat FPD series of products has been designed to control electrostatic charges in flat panel assembly and electronics manufacturing applications requiring stable operation with exceptionally fast discharge time performance. The FPD ionizing blowers are built for reliability and simplicity.

Aerostat FPD utilizes reliable, low maintenance AC Technology with high flow rate fans to provide fast static discharge performance. The inherent stability of the Aerostat FPD reduces maintenance frequency, and a built-in emitter cleaner reduces maintenance time. Our unique geometry and airflow control provides consistent performance, meeting the demands of product assembly operations.

The Aerostat FPD's self-monitoring feature assures the user of controlled, consistent ion output. A light indicates both that power is applied to the unit and that ions are being produced. Performance is enhanced by the use of Simco-Ion's industry-leading and highly reliable AC Technology.

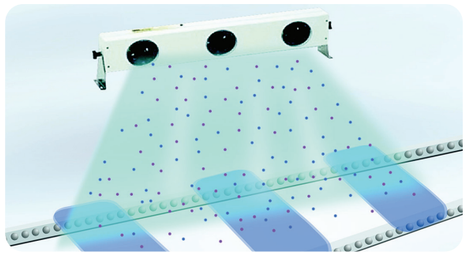


Features

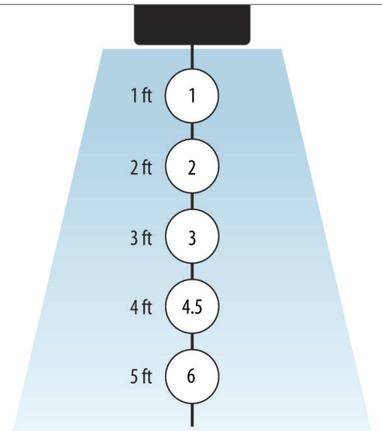
- High output, high-velocity fans
- Inherently balanced ionization
- Ionization indicator light
- Built-in emitter point cleaner
- Optional fan air filter

Benefits

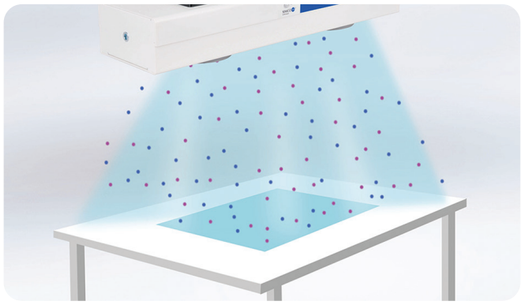
- Extremely fast static charge neutralization over a wide horizontal or vertical application area
- Offers consistent performance with low maintenance frequency
- Visual indication that the target product is being neutralized
- Continued blower operation will require little maintenance
- Protection for internal components from environmental contamination



Typical Discharge Time



Direct Downward, Maximum Fan Speed



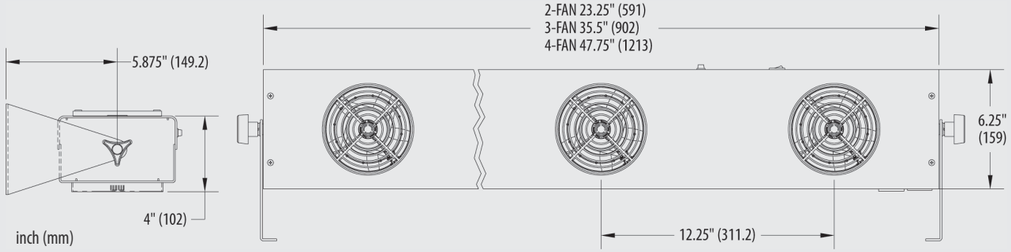
FPD Specifications

Input Voltage	120 VAC, 60 Hz: 0.3A (2-fan); 0.4A (3-fan); 0.5A (4-fan) 230 VAC, 50 Hz: 0.2A (2-fan); 0.2A (3-fan); 0.3A (4-fan)
Discharge	1.0 sec @ 12" (30.5 cm); 1000-100V fan high
Balance	0 ±10V
Ion Emission	AC Technology
Emitter	Stainless Steel
Cleanroom Class	ISO 14644-1 Class 5
LED Indicator	Ionization ON
Control	Recessed fan speed and ON/OFF switch
Air Supply	Speed 1 ft 2 ft 3 ft 4 ft 5 ft Low (fpm): 500 350 250 200 150 High (fpm): 1000 700 500 400 300 Filter: 30 ppi open cell polyurethane foam (optional)
Audible Noise	59-69 dBA (max), measured @ 24" (61.0 cm) from blower
Ozone	Equilibrium concentration <0.02 ppm
Operating Env	50-90°F (10-32°C); 30-70% RH, non-condensing
Mounting	Stainless steel bracket
Enclosure	Powder-coated white enamel Aluminum
Dimension	2-fan: 23.25"L x 4.0"H x 6.25"D (59.1 x 10.2 x 15.9 cm) 3-fan: 35.5"L x 4.0"H x 6.25"D (90.2 x 10.2 x 15.9 cm) 4-fan: 47.75"L x 4.0"H x 6.25"D (121.3 x 10.2 x 15.9 cm)
Weight	2-fan: 10 lb (4.54 kg); 3-fan: 13 lb (5.90 kg); 4-fan: 16 lb (7.26 kg)
Certification	

FPD Coverage Area

The Aerostat FPD ionization blower comes in either 2-fan, 3-fan, or 4-fan chassis lengths. Each length is designed for optimal coverage area and a variety of applications:

Blower	Overhead Applications	Benchtop Applications
2-fan	2'W x 2'L (0.6m x 0.6m)	2'W x 5'L (0.6m x 1.5m)
3-fan	2'W x 3'L (0.6m x 0.9m)	3'W x 5'L (0.9m x 1.5m)
4-fan	2'W x 4'L (0.6m x 1.2m)	4'W x 5'L (1.2m x 1.5m)



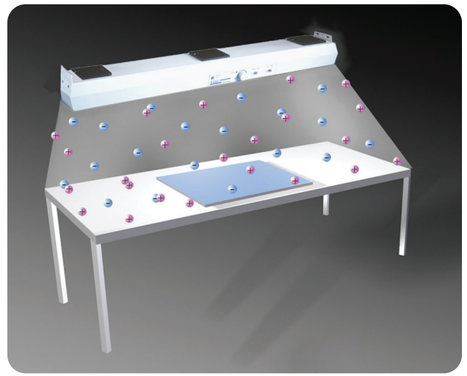
Ionizing Blowers

Overhead Ionizing Blower

AEROSTAT® GUARDIAN

Simco-Ion's Aerostat Guardian Overhead Ionizing Blower provides superior static charge decay over an entire work surface area. Equipped with task lighting and an integrated heater, the Guardian offers user-friendly operation while effectively protecting sensitive components from ESD damage.

The Guardian operates on Inherent Balanced AC Technology to provide stable balance performance over long periods of use. It is available with airflow diffusers for superior static charge decay efficiency over a large work surface area. Without diffusers, the Guardian provides fast charge decay directly under the unit for targeted work surface coverage.



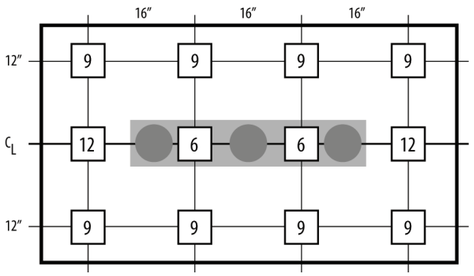
Features

- Inherently balanced to 0 ±10V
- Integrated heater and task lights
- Inherent Balanced AC Technology
- Ionization light
- Integrated manual emitter point cleaner

Benefits

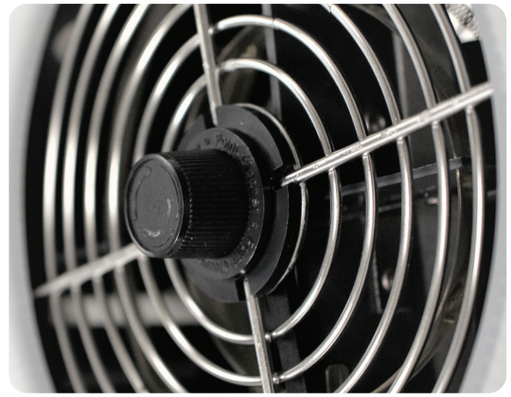
- Protects even the most sensitive electronic components
- User-friendly–enhances operator comfort and efficiency
- Stable balance over extended periods of use
- Verifies that the unit is ionizing
- Easy to maintain

Typical Discharge Time



(1000-100V), high fan 18″ from charge plate monitor (CPM).
CPM test plate 1″ from table.
Discharge times slightly longer for 230 VAC, 50 Hz unit.

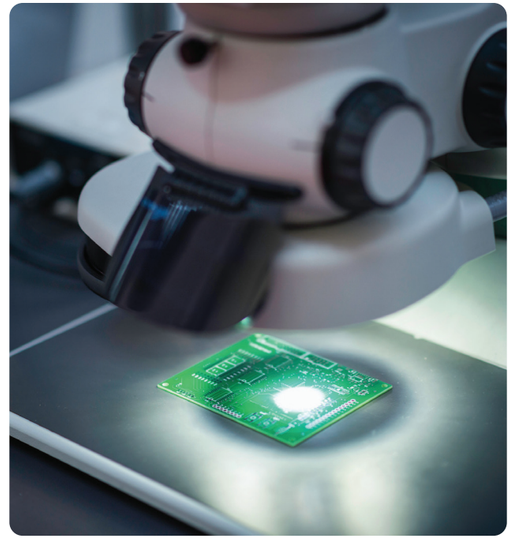
Robust grill with diffuser



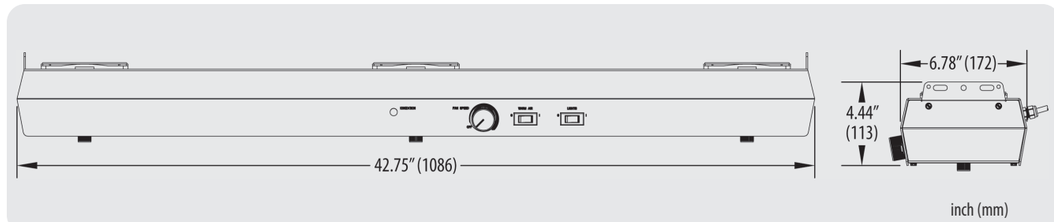
Build-in manual emitter point cleaner with each fan

Guardian Specifications

Input Voltage	120 VAC, 60 Hz, 0.5A (fan low, heater/light off); 2.5A (fan high, heater/light on) 230 VAC, 50 Hz, 0.2A (fan low, heater/light off); 1.5A (fan high, heater/light on)
Discharge	3.0 sec @ 18″ (45.7 cm) center of blower; 1000-100V fan high, no diffuser
Balance	0 ±10V @ 18″ (45.7 cm) from blower face
Coverage	24″W x 48″L (61.0 cm x 121.9 cm) area
Ion Emission	Inherent Balanced AC Technology
Emitter	Stainless Steel
Cleanroom Class	ISO 14644-1 Class 5 (heater off)
LED Indicator	Orange IONIZATION STATUS, Orange within On/Off switches HEATER & TASK LIGHT
LED Lamp	2 ea x 5W, 508 Lumen
Control	Fan speed control knob BLOWER ON; On/Off switch HEATER & TASK LIGHT
Air Supply	Flow: 150-300 cfm (low to high); combined 3-fan output Filter: 30 ppi open cell polyurethane foam (optional) Heated Temp: 25°F (14°C) fan low, 11°F (6°C) fan high; measured 6″ (15.2 cm) in front of center fan above ambient
Audible Noise	50 dBA (fan low), 60 dBA (fan high)
Ozone	0.02 ppm; measured 12″ (30.5 cm) in front of blower
Operating Env	32-122°F (0-50°C); 30-70% RH, non-condensing
Mounting	Adjustable brackets and S-hooks provided
Enclosure	Powder-coated white enamel aluminum
Dimension	42.75″W x 4.44″H x 6.78″D (108.6 x 11.3 x 17.2 cm) with bracket
Weight	16 lb (7.26 kg)
Certification	



Designed for use with sensitive electronic components; provides fast static charge decay efficiency over an entire work surface area.



Cleanroom-rated Overhead Ionizing Blower

GUARDIAN CR2000

Simco-Ion's Guardian CR2000 Cleanroom-rated Overhead Ionizing Blower is designed specifically for use in cleanroom applications. The Guardian CR2000 features a circuit that results in a balanced delivery of positive and negative ions, which ensures that the unit will maintain an ion balance of 0 ±10V. Balance stability is further enhanced by the use of Simco-Ion's unique "ion shields" at the fan outputs to reduce parasitic ion loss.

The Guardian CR2000 ensures cleanroom compatibility with all fan and air bearing silicone-free surfaces. Fan assemblies are particle-tested to ISO 14644-1 Class 4 particle limits.

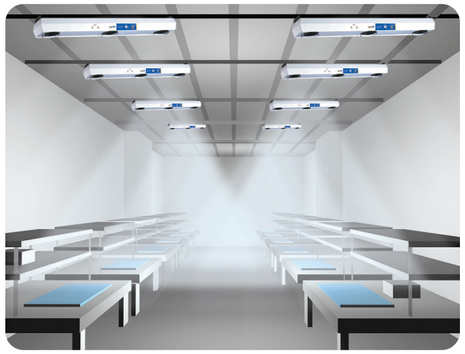
The Guardian CR2000 is also equipped with Simco-Ion's built-in emitter point cleaner. A lockout switch prevents tampering with the desired performance level. Built-in balance and ion output monitors verify the presence of balanced, ionized air. A standard power outlet on each Guardian CR2000 blower allows for daisy-chaining up to 10 units.

Features

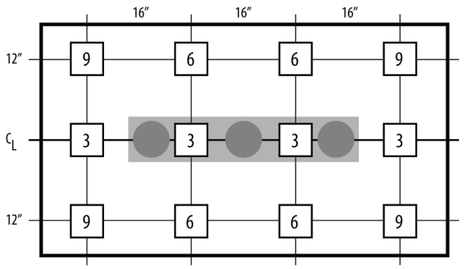
- Inherently balanced to 0 ±10V
- Ion balance and ion output monitors
- Lockout key switch
- Silicone-free component surfaces
- Integrated emitter point cleaner

Benefits

- Protects even the most sensitive electronic components
- Verifies that the unit is ionizing and balanced
- Helps maintain desired ionization performance level
- ISO 14644-1 Class 4 cleanroom compatibility
- Provides fast, easy maintenance



Typical Discharge Time



(1000-100V) fan speed set to high 18″ from charge plate monitor (CPM).
CPM test plate 6″ from table.
Discharge times slightly longer for 230 VAC, 50 Hz unit.

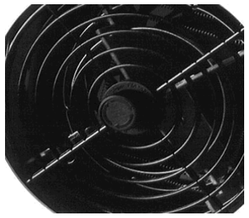
Guardian CR2000 Specifications

Input Voltage	2-fan: 120 VAC, 50/60 Hz, 0.2A; 230 VAC, 50/60 Hz, 0.1A 3-fan: 120 VAC, 50/60 Hz, 0.5A; 230 VAC, 50/60 Hz, 0.25A
Discharge	3.0 sec @ 18″ (45.7 cm); 1000-100V fan high
Balance	0 ±10V
Coverage	2-fan: 2′ x 3′ (61.0 x 91.0 cm) area; 3-fan: 2′ x 4′ (61.0 x 122 cm)
Ion Emission	AC Technology
Emitter	Stainless Steel
Cleanroom Class	ISO 14644-1 Class 4
LED Indicator	Ionization Status: green NORMAL, red MAINTENANCE
Control	3-position key switch OFF, ADJUSTABLE, HIGH; recessed fan speed control
Air Supply	Flow: 2-fan: 90 cfm fan low, 180 cfm high fan; 3-fan: 135 cfm fan low, 270 cfm high fan Speed: 200 fpm (1.0 m/s) fan low; 400 fpm (2.0 m/s) fan high measured @ 18″ (45.7 cm)
Audible Noise	48 dBA fan low; 58 dBA fan high measured @ 24" (61.0 cm)
Ozone	0.02 ppm measured @ 18″ (45.7 cm) above test plate
Operating Env	32-122°F (0-50°C); 30-70% RH, non-condensing
Mounting	Adjustable brackets and S hooks provided
Enclosure	Aluminum with glossy white polyurethane finish
Dimension	2-fan: 31.75″W x 4.75″H x 6.75″D (80.6 x 12.1 x 17.1 cm) with bracket 3-fan: 42.75″W x 4.75″H x 6.75″D (108.6 x 12.1 x 17.1 cm) with bracket
Weight	2-fan: 12 lb (5.44 kg); 3-fan: 15 lb (6.80 kg)
Certification	c UL us

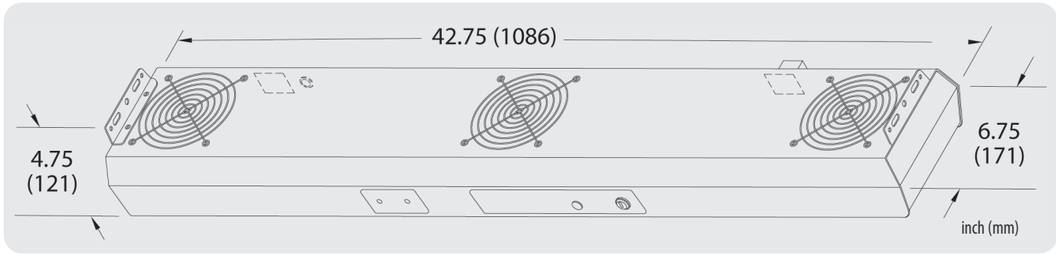
Outstanding Balance Stability

The Guardian CR2000's balance stability is enhanced by the use of Simco-Ion's unique "ion shields" at the fan outputs to reduce parasitic ion loss, which is a transparent duct extends from each fan output. These "ion shields" prevent ion loss to the unit's chassis and preserve ion output and balance.

Emitter Point Cleaner



The Guardian CR2000 features a built-in emitter point cleaner for each fan. Using the emitter point cleaner takes only seconds. Cleaning the emitter points prevents the build-up of airborne debris. This keeps your Guardian CR2000 working in top form for the life of the unit.



Charge Plate Monitor

Model 280A

Simco-Ion's Model 280A incorporates enhanced circuitry that enables it to more accurately measure the performance of high-frequency AC ionizers, as well as Pulse DC ionizers and Steady-state DC ionizers. The architecture of the Model 280A simplifies testing in open or enclosed environments. The detachable plate and programmable automated test sequencing offer remote testing capability, allowing multiple tests without opening an enclosure to reset the instrument.

The Model 280A can be used as a portable CPM and is capable for of up to 6 hours of operation on the internal battery before recharge. It has enough memory for storage of over 1000 tests and more than 100 individual test locations.

Features

- Enhanced circuitry bandwidth to measure high frequency AC ionizers
- Improved plate capacitance accuracy
- User programmable test protocol
- Delayed start
- AC line input or battery operation
- Comes with 6″ detachable plate
- Built-in temperature and humidity sensors
- Onboard data archiving memory
- Digital LCD display

Benefits

- Increased dynamic range to capture AC ionization performance
- Provides more accurate decay times
- Manual mode or automated test sequencing
- Portability for easy movement in a variety of test locations
- Ideal for mini-environments and inside process tools
- Accurately documents environmental test conditions
- Onboard memory holds test data with ability to download data for records or analysis
- Easy to read and interpret data screen

280A Specifications

Power	90-250 VAC, 50/60 Hz, <12W operating (6 hrs internal battery life for portable use; charge time <8 hrs to >90% capacity)
Charge Plate	Detachable: 6" x 6" (15.2 x 15.2 cm) Capacitance: 20 pF, ±5% (not including strays) Zero Drift: <100 mV/sec (no incident ion flow) Self Discharge: <200 mV/sec
LCD Display	240 x 64 character/graphic
Display Time (4 digit)	Accuracy: 0.1% of reading ±1 lsd Resolution: 0.1 sec for readings <1000 sec; 1 sec for reading >999 sec
Display Voltage	240 x 64 character/graphic; 3.5 digit display (Decay and Peak reading) Accuracy: ±0.1% of reading ±3 lsd (least significant digit) Resolution: 1V for readings >99V; 0.1V for reading <100V
Voltage Peak Detector	Balance Test Bandwidth: <10 Hz (pulse width >50 msec less 10% error typical) Average Voltage Overflow: When averaging overflows, the last calculated value for the average voltage will be displayed, and the Avg line of the display will flash, indicating an overflow; the instrument continues to correctly indicate changes to the positive and negative peak voltages, +Vp and -Vp, respectively
Charge Voltage	Range: 10V to 100V above the start voltage Resolution: Settable to 1V increments; Accuracy: 0.3% of setting ±2.5V
Start Voltage	Range: ±10 to ±1000V (1000V, standard) Resolution: Settable to 1V; Accuracy: 0.3% of setting ±2.5V
Stop Voltage	Range: 0 to ±995V (1000V, standard) Resolution: Settable to 1V; Accuracy: 0.3% of setting ±2.5V
Electrometer	Dynamic Range: ±1200V Follower Error: <10 mV Speed of Response: <10 msec for 1 kV to 0V (90-10%) Bandwidth: -3 db @ 1 Khz 20 Vp-p; 3 db @ 10 Hz 2000 Vp-p Noise: <12 mVrms
Sensors	Temperature: Range 0-122°F (0-50°C), Accuracy ±37°F (±2°C), typ Humidity: Range 10-80% RH @ 25°C, Accuracy ±5%, typ
Monitor Output	Interface: USB Accuracy: Output: 0.1% of reading ±12 mV; Impedance: 1 kOhms
Operating Env	41-95°F (5-35°C); ±5% typ from 10-80% RH @ 77°F (25°C)
CPM	11 x 9 x 6" (27.9 x 22.9 x 15.2 cm); 12.5 lb (5.67 kg)
Certification	CE UK CA

Handheld Electrostatic Fieldmeter

Model FMX-004

Simco-Ion's Model FMX-004 Fieldmeter is a compact handheld electrostatic fieldmeter used for locating and measuring static charges. Its pocket size makes it handy to use, and four-button operation makes it easy to operate.

The FMX-004 measures static voltages within ±30 kV (30,000V) at a distance of 1 inch. Results are simultaneously displayed numerically and in bar graph format. POWER on/off, ZERO adjustments, MODE, and HOLD are all push-button operation. The HOLD button allows the display to retain the static charge reading. This is especially useful where the display is difficult to see during measurement.

Two LED guide lights help position the fieldmeter at the right distance from a charged test object. The conductive case and ground snap facilitate grounding for accurate measurement. The circuitry of the FMX-004 has been designed to make measurements in areas using air ionization.

Features

- Digital display with color coded bar graphs
- Lightweight, compact design
- Distance ranging lights
- Audible alarm feature
- Battery powered with auto shut-off feature
- Analog output

Benefits

- Easy to read especially in low light environments
- Convenient to use in hard to reach areas
- Ensures accurate distancing and measurements
- User convenience feature to insure proper operation
- Extends battery life; energy efficient
- Signals to a chart recorder or other device for hard copy documentation of static charge levels

Analog Output

The FMX-004 has an optional cable and bracket kit available. The bracket enables the fieldmeter to be mounted for continuous reading collection. The analog output cable allows you to feed an output signal to a PLC, data acquisition card, data logger, chart reader or other devices.

FMX-004 Specifications

Battery	9V alkaline battery, approximately 30 hours Power turns off automatically after 5 min
Balance	0 to ±300V with Ion Balance Plate
Range	0 to ±1.49 kV (low), ±1.0 kV to ±30 kV (high) Bar Graph: (Auto) ±0.1 kV (low), ±3 kV (high), ±300V ion balance
Distance	1" ±0.2" (2.54 cm ±0.5 mm), LED guide for correct distance (between charged object and Fieldmeter)
Accuracy	±10%
Response	<1 sec
Display	Red positive polarity, blue negative polarity **Auto-ranging**: 3 digits x.xx = 0 to ±1.49 kV xx.x = ±1.0 kV to ±30.0 kV (Hi); xxx = 0 to ±300 (Ion Balance); [HOLD]: Retains display after a measurement; [A.OFF]: auto power-off function deactivated; [Err]: error sign if sensor is damaged; battery condition display (4 stages) **Renewal Rate**: 5 times per second
Alarm	1 beep POWER ON; depress power button >3s 3 beeps POWER ON W/AUTO OFF disabled; short beeps @ 1s interval 5s before power off AUTO POWER-OFF; continuous beep sound OVER RANGE
Operating Env	50-100ºF (10-40ºC); 0-60% RH, non-condensing
Enclosure	Conductive resin (ABS)
Dimension	4.8"L x 2.9"W x 1.0"D (12.3 x 7.3 x 2.5 cm) with Ion Balance Plate
Weight	0.38 lb (0.17 kg) with Battery and Ion Balance Plate
Certification	CE

Handheld Electrostatic Fieldmeter

Model 775

The pocket-sized Simco-Ion Model 775 Fieldmeter is designed to locate and measure static charge potentials on products, people, equipment and packaging. The 775 uses a non-contacting, chopper stabilized field sensor and a ranging light mechanism to ensure correct measurements of electrostatic fields in all areas—even those using air ionization. The fieldmeter is easily zeroed with the turn of a small knob and does not require re-zeroing between measurements. Powered by a 9V battery, the 775 features a conductive, impact-resistant case and a convenient snap-on ground lead to facilitate grounding and increase accuracy.

Features

- Digital display
- Distance ranging lights
- Chopper-stabilized circuit
- SAMPLE and HOLD functions
- Battery powered, pocket-sized meter
- Analog output

Benefits

- Easy to read
- Ensures accurate distancing and measurements
- Operates in ionized environments
- Useful in hard-to-reach places
- Portable, for use in facility static audits
- Signals to a chart recorder or other device for hard copy documentation of static charge levels

775 Specifications

Battery	9V alkaline battery included, battery life is excess of 40 hours
Output	Analog output through miniature jack, 1V corresponds to 10 kV
Range	±0.00 to 19.99 kV @ 1" (2.54 cm), higher voltages may be measured at distances >1"
Accuracy	±5%, chopper stabilized (accuracy unaffected by air ionization), least significant digit of display indicates tens of volts
Response	5 Hz at analog output, digital display updates 3 times per second
Display	3-1/2 digits, 0.4" (1.02 cm) digit height
LCD Indicator	HOLD, BAT (low battery), automatic polarity
Control	ON/OFF side-switch, SAMPLE/HOLD push-button, ZERO control
Ground	Grounded through conductive case, snap-fastened ground strap provided
Operating Env	0-104ºF (0-40ºC)
Enclosure	Conductive case
Dimension	4.15"L x 2.40"W x 0.86"D (10.5 x 6.10 x 2.18 cm)
Weight	0.31 lb (0.142 kg) with battery
Certification	CE UK CA

Handheld Periodic Verification System

Model 775PVS

The Simco-Ion Periodic Verification System Model 775PVS is a handheld alternative to a charged plate monitor. It consists of **three components—**a **fieldmeter**, a **detachable plate,** and a **charger** for measuring the static charge and verifying ionizer performance. Used alone, the fieldmeter measures electrostatic fields on any surface.

Ranging lights ensure accurate and repeatable measurements by enabling users to determine the exact distance at which the voltage reading is correct. A SAMPLE and HOLD function allows measurements in places difficult to reach with other instruments. Attach the plate and use the charger, and the Model 775PVS can be used to verify ionizer operation and check ion balance and discharge times. The unit is designed to take measurements that correspond to those made by a charged plate monitor following Ionization Standard ANSI EOS/ESD S3.1-2015 of the ESD Association (see graph below). For increased accuracy, the included flexible ground cord should be used to connect to a solid ground during operation.

Features

- Digital display
- Distance ranging lights
- Chopper circuit
- NIST-traceable calibration

Benefits

- Easy to read
- Ensures accurate distancing and measurements
- Operates in an ionized environment
- Correlatable to a charged plate monitor

775PVS Specifications

775	
Please see previous page under 775 Fieldmeter	
775 Plate Assembly	
Plate Capacity	15 picofarads ±2 picofarads
Range	0-2 kV for either polarity, higher voltages may be measured
Ground	Ground plate attaches to conductive case of 775 Fieldmeter
Calibration	Adjusting screw provided
Dimension	1.0"H x 3.0"W x 1.3"D (2.54 x 7.62 x 3.30 cm) Teflon™ standoffs supports
Weight	0.16 lb (0.073 kg)
Certification	
775C Charger	
Battery	9V Alkaline battery
Output	Each polarity: 1300 VDC ±20%. limited to <1 µA Two SST contact plates: Output polarity depends on which plate is grounded
LED Indicator	Red
Dimension	4.28"L x 2.41"W x 0.86"D (10.9 x 6.12 x 2.18 cm)
Weight	0.25 lb (0.114 kg) with battery
Certification	CE UK CA

WARRANTY & SERVICE

Simco-Ion provides a limited warranty. New products manufactured or sold by Simco-Ion are guaranteed to be free from defects in material or workmanship for a period of two (2) years* from date of initial shipment. Simco-Ion liability under its new product warranty is limited to servicing (evaluating, repairing or replacing) any unit returned to Simco-Ion that has not been subjected to misuse, neglect, lack of routine maintenance, repair, alteration, or accident.

In no event is Simco-Ion be liable for collateral or consequential damages. Consumable items such as, but not exclusive to, emitter points, emitter wires, batteries, filters, fuses, or light bulbs are only covered under this warranty if found defective as received with the new product.

* Exception is the ionONE Micro S/SA and Photon Ionizers (Models 4901 and 4903), which are warranted for one (1) year.

Application Evaluation Capabilities

Exclusive in the industry, Simco-Ion offers a full applications evaluation service to see whether your facility is operating at its peak efficiency.

We approach each customer's situation—whether it's a large facility, or in a limited/confine space or in a critical manufacturing environment—with earnest diagnostic evaluation supported by technical expertise to develop innovative solutions to improve operations, increase product quality and control cost. This approach has continued to earn high recognition globally throughout the OEM and end-user customers.

To obtain service under this warranty or an evaluation, please contact Simco-Ion, Technology at salesservices@simco-ion.com, +1 (510) 217-0460, +1 (800) 367-2452 or techsupport@simco-ion.com.

CERTIFICATE DEFINITION

Registered trademarks of Underwriters Laboratories, Inc.

Registered trademarks of TUV Rheinland, a Nationally Registered Testing Lab (NRTL).

Products are determined compliant with applicable directives for Europe and United Kingdom through self-declaration.

KCC Certification, a mandatory certification scheme which ensures that only products certified by accepted certification bodies can enter the Korean market.

Compliant with European Union restriction of hazardous substances directive (EU) 2015/863 regarding "the restriction of the use of certain hazardous substances in electrical and electronic equipment".

SIMCO ION™
An ITW Company

UNVEILING A DECADE OF CONFIDENCE

Groundbreaking 10-YEAR WARRANTY on Ionization Room Systems for Semiconductor and Life Sciences Applications

In a bold move that redefines Industry 4.0 Standards, Simco-Ion, Technology Group, a pioneering leader in innovative technology solutions, proudly announces an unprecedented 10-year warranty for its cutting-edge ionization room systems. Explicitly designed for semiconductor and life sciences applications, this remarkable warranty underscores Simco-Ion, Technology Group's unshakable commitment to quality, longevity, and unmatched reliability.

The Ionization Room System by Simco-Ion, Technology Group is a testament to precision engineering and uncompromising excellence. With this breakthrough 10-year warranty, customers can enjoy unparalleled peace of mind, knowing their investment is fortified by a decade of coverage that sets an industry benchmark. While competitors might falter, Simco-Ion, Technology Group's dedication to crafting superior solutions guarantees customers a performance-driven experience that endures the test of time.

"At Simco-Ion, Technology Group, we believe in pushing boundaries and setting new standards. Our 10-year warranty reflects our confidence in our ionization room systems and our unwavering commitment to our customer's success," says Jim Birt, Business Unit Manager. "In an industry where reliability is paramount, our warranty is a testament to our steadfast belief in the quality and dependability of our products."

The Simco-Ion, Technology Group advantage extends beyond remarkable warranty coverage. With a team of dedicated customer service and application engineers, customers have a direct line to unparalleled support. From technical inquiries to system operation assistance, Simco-Ion, Technology Group ensures that customers' needs are met promptly and efficiently. This personalized approach reflects Simco-Ion, Technology Group's ethos of nurturing lasting partnerships that transcend the transactional.

Our comprehensive 10-year warranty covers an array of products, notably including Model 5515 and Model 5511, along with the versatile controller Models 5520, 5522, 5580, and 5582, ensuring long-term peace of mind and satisfaction for your investment.

Warranty & Certification

PRODUCT INDEX

MODEL	DESCRIPTION	PRODUCT GROUPS												PRODUCT APPLICATIONS							
		BARS	BLOWERS	ROOM SYSTEMS	SPECIAL APPLICATION	ESD MONITORS	INSTRUMENTATION	GUN/NOZZLE/CARTRIDGE	SOFTWARE	CONTROLLERS	ACCESSORIES	MICRO SERIES	LOW VOLTAGE	BENCHTOP	OVERHEAD	IN-TOOL	GENERAL PURPOSE	CRITICAL ENVIRONMENT	ROOM IONIZATION	EXTREME TEMPERATURE	CONFINED SPACE
280A	Charge Plate Monitor						●							●	●	●	●	●	●		●
550	Remote Sensor used with 4612										●									●	
775	Handheld Electrostatic Fieldmeter						●							●	●	●	●		●		●
775 PVS	Periodic Verification System						●							●	●	●	●				●
3352/3362	Novx Voltage Detection System with CLFB					●				●				●	●	●		●			●
3352/3362MP	Novx Voltage Detection System with MiniPulse & CLFB					●				●				●	●	●		●			●
4030	Used with 4630, 4635 QuadBars									●						●					●
4062e	Used with 4612, 4612 Mini Ionizers									●										●	
4210	In-line Nitrogen Ionizer (Tungsten Points)				●							●				●					●
4210u	In-line Clean Dry Air Ionizer (Silicon Points)				●							●				●					●
4210un	In-line Nitrogen Ionizer (Silicon Points)				●							●				●					●
4214	In-line Nitrogen Ionizer				●							●				●					
4612	Hi-Temp System used with Controller 4062e, Sensor 550				●											●		●		●	
4612 Mini	Mini Hi-Temp System used with Controller 4062e, Sensor 550				●							●				●		●		●	●
4630	QuadBar used with Controller 4030, FMS Module 5090				●							●				●					●
4635	QuadBar with Air-assist used with 4030, FMS Module 5090				●							●				●					●
4901	Soft X-ray Photon Pin Ionizer				●							●	●			●					●
4903	Soft X-ray Photon Bar Ionizer	●			●							●	●			●					
5200-IM6T	Interface Module used with AeroBar 5225									●	●					●	●				
5090	FMS Interface Module used with QuadBar 4630, 4635, 5515										●					●			●		●
5225	Software-controlled AeroBar used with 5200-IM6T/IonMonitor	●														●	●				
5225S	Standalone AeroBar	●														●	●		●		
5515	Ceiling Emitter used with Controllers 5522, 5582			●															●		
5522	Controller for Ceiling Emitter 5515 (up to 20 emitters)			●						●									●		
5571	Handheld Terminal used with 5515 Room System			●						●	●								●		
5572	Handheld Remote used with 5515 Room System			●						●	●								●		
5582	Controller for Ceiling Emitter 5515 (up to 80 emitters)			●					●	●									●		
5601	Power Distribution Box used with 5635, 5635M, 5645, 5645 LP									●	●					●					
5635	Modulated Pulse (MP) AeroBar	●														●					
5635M	Metal-free Modulated Pulse (MP) AeroBar	●														●					
5645	MP AeroBar (standalone, Novx System, Novx Inside)	●											●			●		●			
5645 LP	MP AeroBar Low Profile (standalone, Novx System, Novx Inside)	●											●			●		●			
5685	IsoStat Technology AeroBar	●															●				
5700	Power Distributor Box used with µWire AeroBar's 5710, 5711										●					●	●				●
5700 HHT	Handheld Terminal used with µWire AeroBar's 5710, 5711									●	●					●	●				●
5711	µWire AeroBar (150 or 250 mm) Powered by 5711-CTRL	●														●	●				●
5711-CTRL	Used with µWire AeroBar 5711									●						●	●				●

SIMCO ION™
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PRODUCT INDEX

MODEL	DESCRIPTION	PRODUCT GROUPS												PRODUCT APPLICATIONS							
		BARS	BLOWERS	ROOM SYSTEMS	SPECIAL APPLICATION	ESD MONITORS	INSTRUMENTATION	GUN/NOZZLE/CARTRIDGE	SOFTWARE	CONTROLLERS	ACCESSORIES	MICRO SERIES	LOW VOLTAGE	BENCHTOP	OVERHEAD	IN-TOOL	GENERAL PURPOSE	CRITICAL ENVIRONMENT	ROOM IONIZATION	EXTREME TEMPERATURE	CONFINED SPACE
5802i	Optional External CLFB Sensor with Novx		●											●				●			
5810i	Optional External CLFB Sensor with Novx		●												●			●			
5822i	Optional External CLFB Sensor with Novx		●									●				●		●			
5832	Versions with External CLFB Sensor with Novx, Titanium		●										●	●		●		●			
5832T	Versions with External CLFB Sensor with Novx, Tungsten		●										●	●		●		●			
5842	2 ,3, 4 Fan, Versions with External CLFB Sensor with Novx		●										●		●			●			
5941	1V Balance, Self-cleaning		●									●	●			●		●			
6110/6110A	Ionizing Air Cartridge							●								●	●				●
6115	AirForce Blow-Off Gun							●									●		●		
6422e	Self-balancing with FMS		●									●		●		●					●
6422e-AC	Self-balancing and Auto-Clean with FMS		●									●		●		●					●
6432e	Focused Coverage with FMS		●													●					●
6832	Manual Emitter Cleaning with FMS		●													●	●				●
7000	Novx Process Monitor					●								●	●	●		●			●
Aerostat FPD	Wide Coverage with 2, 3, 4 Fans		●												●						
Aerostat Guardian	3 Fans with Heater, Task Lights		●												●						
Aerostat PC2	Built-In Emitter Point Cleaner with FMS		●														●				
Aerostat XC2	Extended Coverage and Built-in Emitter Point Cleaner with FMS		●														●				
Antennas	Active/Passive/Monopole Proximity Measurement with Novx											●		●	●				●		●
Cal Reader	Novx Instruments Calibrator Reader Software									●				●	●			●			●
CDMES	Charge Device Model Event Simulator with Novx MiniPulse						●					●		●	●	●	●	●			●
FMX-004	Handheld Electrostatic Fieldmeter						●							●	●	●	●		●		●
fusION	Local Area with Optional Fan				●							●					●				●
fusION AA	Local Area with Air-Assist				●							●					●				●
Guardian CR2000	With 2, 3 Fans, Low Balance, Fast Discharge		●												●						
In-line fusION	Local Area with Optional Air Knife, Air Ring, Nitrogen				●							●					●				●
IONManager Pro	Used with 5515 Room Ionization System									●									●		
IonMonitor	Used with AeroBar 5225, 5200-IM6T									●						●	●				
ionONE	Micro S, and Micro SA with Air-Assist				●							●				●					●
minION2	Local Area, Daisy-chainable		●													●					●
MiniPulse	ESD Event Monitor					●								●	●	●	●	●			●
MP Control	Software Used with MP AeroBar's 5635, 5635M, 5645, 5645 LP									●						●		●			
MPA-02	Used with Micro ESD Antenna, Restricted Areas for MiniPulse											●		●	●	●	●	●			●
orION	Blow-off Nozzle						●										●				
Top Gun3	Blow-off Gun						●										●				

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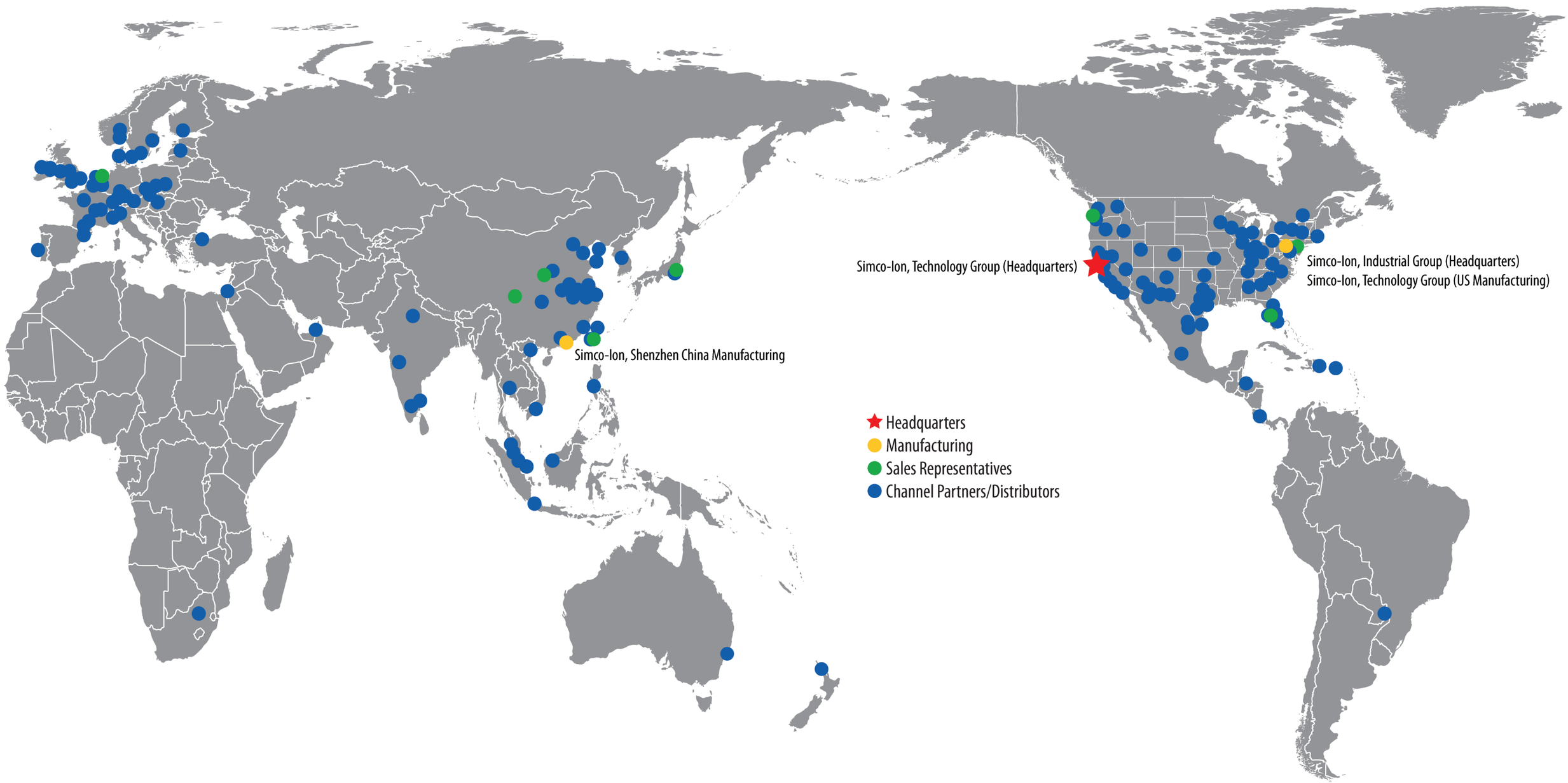

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