



Made in America

Iris Room Ionization System Operation and Maintenance



Figure 1. EMIT [50800](#) IRIS Room Ionization System

Features

- Bi-polar ionization from a single emitter tip - yields unsurpassed ion production and reduced maintenance.
- Lightweight, modular emitter system - no heavy power supplies mounted overhead, easy to maintain emitters, easy to change room layout
- Precision sensing and cycle timing - offers superior balance
- White ABS construction - superior cleanroom performance
- Powered by a digital, high-accuracy, laboratory-grade power supply - only one power supply needed per room, substantially decreasing calibration time
- Remotely controlled by personal computer management software - triple zone event and fault monitoring with alarms and logging
- Uninterrupted 24x7 operation - no operator interaction required

Benefits

- Excellent performance in charge decay and particulate control - fully adjustable and biased ion output
- Industry leading total cost of ownership (TCO) - Single power supply architecture substantially reduces up front investment and subsequent maintenance costs compared to other systems on the market
- Reduced oversight by QA and production control - built for unattended operation; lowest maintenance cost in the industry
- Flexible, modular design - installation can be modified, added to, or moved without special tools or skill sets

Absolute protection for your critical processes

The EMIT [50800](#) IRIS Room Ionization System creates a static-safe environment for your sensitive devices by reducing static charges on surfaces and particles. Controlling the potential difference in voltage controls the attraction or discharge that could result. Without mutual attraction, a particle will remain suspended in the airflow, moving harmlessly by the process and exiting through the air handler. Controlling surface charge and static

contamination is a key component of optimal product handling procedure in a high yield environment. The EMIT IRIS system controls the threat of electro-static attraction of particles and device ESD damage.

Maintains a Safe Process Environment

Produces a large volume of ionized air, allowing an electron exchange to ensure that objects and sensitive products stay within process specifications.

Optimal Control

Meet the specific demands of your industry. Control peak-to-peak voltages for photo mask, hard drive, sensitive device or tools.

Flexible Installation

The modular design allows future expansions and changes with no special tools.

Uptime and Ease of Maintenance

Built in software calibration, system monitoring and periodic cleaning ensure peak process efficiency with minimal personnel involvement.

Potential ESD damage is controlled within process specifications of the end user. Photo mask and other product protection demand controlled peak-to-peak voltages to maintain the proper level of safety. These are basic set up criteria that can be determined based on your needs and the discharge rate required.

You can be confident a process sensitive to static charge is in an optimal environment to operate smoothly providing the maximum uptime and process efficiency.

The modular installation of the IRIS Room Ionization System allows future expansions to be added as needed. The system is simple to maintain with periodic cleaning and built-in software calibration.

IRIS Room Ionization System Benefits

Single Emitter Point Delivery System

Because there is no opposite residual charge at a second emitter point in close proximity, there is almost no recombination between ions of opposite charge and the emitter point. This produces a very minimal instance of the charged ion striking the electrode surface during the ionization process and attracting trace molecules that build up on the electrode surface and compromise the performance. This benefit causes the emitter to last much longer than on other types of ionization and maintenance is dramatically reduced. The Single Emitter Point Delivery System benefit reduces maintenance dramatically and emitter points last much longer compared to paired emitter ionization systems.

Alarm Feedback System

The IRIS Room Ionization System incorporates 3 external sensors to monitor the balance and signals an alarm when needed. Many other ionization systems rely on an internal voltage monitor to

set alarm windows. The result of an internal alarm is that the system alarm has no real environment data to use in the alarm set up, only suggested data that could be present. The benefit of tying the system feedback to real environment data is that any environment change can be alerted to the system software for reporting. This could include changes in airflow or disconnected ion bars.

Adjustable Delay between Pulses

This feature is a necessity in room systems to allow the added adjustment to set up for all types of laminar airflow and still control the maximum peak to peak voltage. This benefit places a layer of neutral air between the production of positive and negative ions, allowing each to expand and fill the voids more evenly without recombination of ions. This also provides an air insulator between the pulses of the Single Emitter Point Delivery System of the IRIS Room Ionization System.

Ease of Installation and Re-Configuration

The IRIS Room Ionization System uses components that can be easily snapped together for set-up or un-clipped to make simple changes. We use a minimum of permanent adhesives or fasteners to install the system so that the customer has the ability to make future moves or additions with little difficulty. The benefit to the customer is greater control over their own facility and less dependence on outside contractors.

System Reports to a Central Monitor

The IRIS Room Ionization System keeps a searchable log of all actions made by the system. This log is an invaluable tool for troubleshooting and maintaining the system.

Example: Search the report log for System Adjust. Using the time saved with each entry it is found that the system has been auto correcting in the past three weeks and had only one auto adjust in the previous two months.

Meaning: The system needs to be cleaned and the software re-calibrated to the current environment. The benefit of this feature is that maintenance can be planned based on system needs and the underlying cause can be determined for any given system alarm.

Reduced Maintenance Time

This feature has been a key feature for companies that maintain their own systems. Our customers estimate that the maintenance time they spend has been cut by 60-75% in the areas they have installed the IRIS Room Ionization System. This benefit gives maintenance cost savings that can be anticipated for years to come.

System Expandability

Each IRIS Smart Power Supply can control up to 9,600 sf with 400 emitter points. This is 4 or 5 times the size of most ionization systems and ensures that the entire area will have uniform coverage. The benefit of this system size potential is that it allows for additions to be made within the framework of the system capabilities for most applications.

System Description

General: The IRIS Room Ionization System is capable of providing free positive and negative ions through switching high voltage to groups of emitters located throughout the area of coverage needed. Total free ion concentration is controlled by changing the voltage levels and length of pulse. Higher voltage and longer overall pulse duration will produce a greater number of free air ions. Ion offset voltage balance is set to an optional point by controlling the "ON" time ratio between positive and negative pulses to the emitter point.

Computer and Software: Computer consists of a desktop PC meeting the minimum IRIS Room Ionization System requirements. Complete with IRIS Room Ionization software license. Software is capable of logging all significant events to a database so the owner may analyze system operations and assure compliance with ISO-9000 requirements.

Power Supplies: IRIS Room Ionization SPS (Smart Power Supply). Network up to 16 power supplies through communication interface to provided computer for all control command functions. Networked systems can support up to 153,600 sf depending on layout.

System Performance: See specifications. Offset voltage balance and discharge times are tested using a charged plate analyzer per ANSI/ESD STM3.1.

Installation: Ionization system consists of conduit bars, attached to the ceiling of the room utilizing stainless steel brackets. These brackets will attach to standard 2'x4" drop ceiling, with or without HEPA filters. The brackets and hangers will be mounted to allow changing lights and filters with a minimum of interference.

Specifications

Description: Single-wire, bipolar, corona ionization system meeting the required limits of ANSI/ESD S20.20 tested per ANSI/ESD STM3.1

Discharge Times: ± 1000 V to ± 100 V in 300 seconds or less (45-60 seconds typical) tested per ANSI/ESD STM3.1

Note: Discharge times required limit per ANSI/ESD S20.20 is "user defined".

Input Voltage: 120/240VAC $\pm 10\%$, 47 to 63Hz, 75 W

Power Outlet: NEMA 5-15, Type B

Open Circuit Output Voltage: 0 KVDC to 10 KVDC $\pm 5\%$

Voltage Resolution: 0.1 KVDC

Short Circuit Output Current: 0.2mA MAX digitally controlled, additional current control limit via 100 megohm eliminates shock hazard

Emitter Capacity: 400 per power supply, 6400 - 9600sf depending on layout.

Emitter Control: Fully programmable, 0-99.9 second ionization ON cycle for each polarity with selectable quiescent periods between cycles

Power Supply Indicators: Power ON, alarm, positive and negative voltage output and neutral delay

Zone Sensors: Independent, cylindrical detectors with BNC connectors, RG58 or equivalent cabling (provided)

Power Supply Dimensions: 8.17" W x 19.5" H x 6" D (20.75cm W x 49.5cm H x 15.24cm D)

Power Supply Weight: 30 lbs. (11.2 kg)

Power Supply Communications Port: Proprietary, optoisolated, bi-directional, 2-wire bus

Calibration: Semi-annual calibration recommended

Personal Computer Requirements: Windows 2000-Vista, 30GB HD, 1GB RAM, 700 MHz processor

Iris Ionization System meets ANSI/ESD S20.20 Table 3 Ionization (room systems) suggested limit of $< \pm 150$ volts offset voltage balance tested per ANSI/ESD STM3.1 and ESD TR53. *Note:* Discharge times are user defined.

Per ESD Handbook ESD S20.20 section 5.3.6.5.2.1 "Room ionization devices are used when static problems occur over a wide production area and it is difficult to localize the problem to a particular workstation. Room ionization devices include AC powered grid systems, spaced pairs of steady DC emitters, steady DC bar systems, pulsed DC bar systems, and individual pulsed DC emitters. ... Regardless of the type of room ionizer chosen, a number of environmental and equipment issues must be addressed when large areas are to be ionized. Consideration must be given to the ceiling height and airflow present in the area. Any large objects in the area will change both the airflow and the operation of the ionizers. Methods of power distribution to the ionizers as well as other installation requirements need to be considered. After installation, these large systems will require periodic maintenance to assure the desired performance."

Limited Warranty

EMIT expressly warrants that for a period of five (5) years from the date of purchase, EMIT Ionizers will be free of defects in material (parts) and workmanship (labor). Within the warranty period, a credit for purchase of replacement EMIT products, or, at EMIT's option, the product will be repaired or replaced free of charge. If product credit is issued, the amount will be calculated by multiplying the unused portion of the expected five year life times the original unit purchase price. Call our Customer Service Department at 909-664-9980 for a Return Material Authorization (RMA) and proper shipping instructions and address. Please include a copy of your original packing slip, invoice, or other proof of date of purchase. Any unit under warranty should be shipped prepaid to the EMIT factory. Warranty replacements will take approximately two weeks.

If your unit is out of warranty, call our Customer Service Department at 909-664-9980 (Chino, CA) or 01892 665313 (Crowborough, U.K.) for a Return Material Authorization (RMA) and proper shipping instructions and address. EMIT will quote repair charges necessary to bring your unit up to factory standards.

Warranty Exclusions

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

Limit of Liability

In no event will EMIT or any seller be responsible or liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.