

Ionizer User Manual

Model 4110/4120

High Frequency AC Piezo Technology



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1. CORE INSIGHT INTRODUCTION

Core Insight is an ionization system manufacturer and supplier to ESD and contamination control areas. Core also provide general ESD Test & Measurement, Professional Audit Kits, EMI Noise Filter and Device Testing Equipment for HBM, TLP, VF TLP and CDM. Technical services are ESD Training, Process Assessment, ESD Control Program, Product Qualification Testing per ANSI/ESD Standards, Device Testing and System Level ESD Testing per IEC 61000-4-2.

Core Insight is major ESD distribution supplier in the field of semiconductor, flat panel display, automotive and electronic manufacturing working environment. Core founded in 2003 and represent for Prostat, On-Filter, Monroe Electronics, Electro-Tech Systems, Grund Technical Solutions, Lucas Signatone, SH&A, Dangelmayer Associate etc.

2. Ionization Technology

Core Insight's CoreStat® ionization technology is exact same technology of SIMCO-ION (previously as known Ion Systems) which is their exclusive patents has been expired since 2009 and it has open for everybody. CoreStat® is a steady-state DC technology for ionization and guaranteed its performance. CoreStat® has isolate from ground reference and maintain it's balance steady. All of Model 300 series and Model 3000 series ionizers are all CoreStat® steady-state DC technology which also doesn't need adjust ion output for balance performance. It just need regular cleaning emitter points for maintain decay performance.

Core Insight also offer traditional AC ionization technology for industrial applications such as roll to roll, winding & unwinding of films for static related contamination issues.

Core offer bipolar Pulsed AC ionizers which is lower frequency than conventional AC and output parameter adjustable for each application such as FPD's manufacturing environment and others.

High Frequency AC is alternative solution for replacement of AC and possible small package ionization product which introduced as relatively new ionization technology. This technology applied lower high voltage level than conventional AC ionizers, but much faster switching time from 16kHz to 70kHz. This can achieve low offset voltage from ionizers and can be use ESD control areas.

Core Insight's strength of ionizer is Pulsed DC ionization technology for cleanroom particle contamination controls. There are many forms and configuration in this type of products which improves particle contamination issues in many places such as semiconductor front-end, back-end, flat panel display fab and many other industrial applications.

Core Insight offer several types of CPM or Kits for ionizer performance testing of qualification and compliance verification. Monroe Electronics' Model 288 is the latest version of CPM and highly accurate measurement equipment based on voltage following technology. Model 300 is cost effective ionizer measurement CPM equipment. Both two CPM can remotely control and measurement by software for detail analysis and test result reporting. These two equipment are

perfectly compliance to ANSI/ESD STM3.1 document.

Also, there are hand-held fieldmeter based kit for compliance verification measurement per ANSI/ESD SP3.3 document.

For more detail information about ionization and its test equipment, please feel free to contact our sales representative at sales@coreinsight.co.kr or local contacts.

3. Application Guide

A. Basic ESD Control

It is mandatory requirements such as personal grounding, ESD safe worksurfaces and use ESD safe packaging material for all electronics industry. These are well known and easy to establish in ESD protected area (EPA) compare with following issues.

B. Ionization for CDM/CBE Controls

Every device has their own ESD sensitivities and they can damage by ESD. According to IC manufacturing suppliers, over 99% of device ESD failures are CDM and not HBM or pretty low possibility. Due to automation and device sensitivity continue to lowering, vulnerability of device CDM are increasing. Not only CDM, but also Charge Board Event like ESD issues are increasing due to their complexity and large amount of charge on printed circuit board.

There are two strategy proposed by ESD Association in the training classes. Lowering device charge level and increase resistance of contact materials are the key strategical elements. As per ANSI/ESD S20.20-

2014 latest version described, maximum allowing field strength is 125V/inch for 200V CDM withstand threshold voltage devices. To achieve this, using proper ionization is important solution to meet these requirements and less CDM/CBE ESD failures in production or field return from customer side.

Core Insight provides the best solution for CDM/CBE like ESD damage with several types of ionization technologies such as steady-state DC, AC, pulsed AC, high frequency AC and pulsed DC ionizations.

For more detail information about ionization and ESD control in production, please feel free to contact our sales representative at sales@coreinsight.co.kr or local contacts.

4. Cautions and Personal Safety

A. Cautions

The use of improper input voltage may result in poor performance or damage of the unit.

The transformer should not be operated beyond the specified electrical limits as described in the Specification section of this document.

Damage caused to the transformer from operation in an environment that exceeds the specified limits will void the warranty.

Do not use this blower in an explosive environment. Poorly maintained ionizers could produce minuscule electric arcs at the emitter points. This may cause detonation in an explosive environment.

Damage to the product because of improper wiring connections at rear FMS terminal or failure to heed maximum voltage limits will not be covered by the warranty.

There are no user serviceable parts inside this blower. Any unauthorized service will void the warranty and may result in additional repair charge.

Before performing any maintenance on emitter points, remove the power plug from the ionizer. Allow a minute for high voltage power supply to discharge.

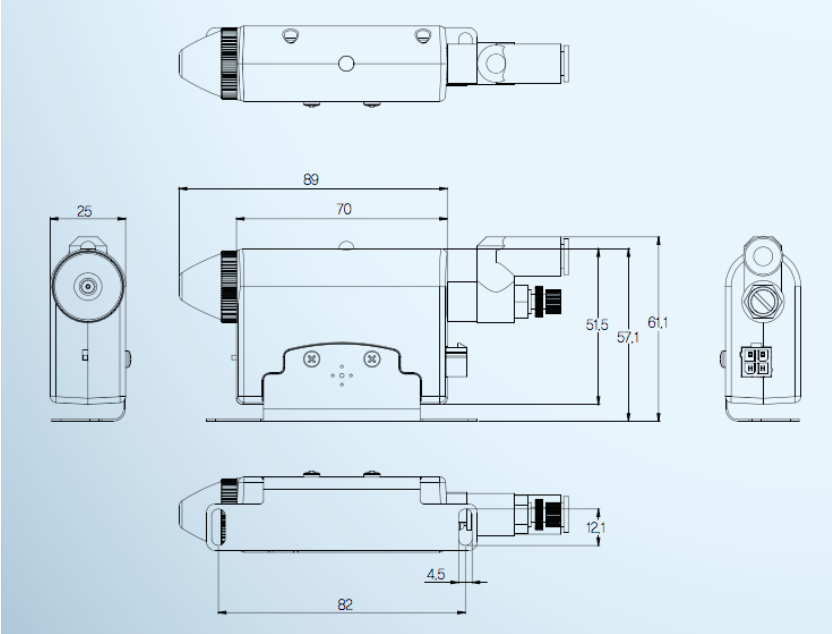
B. Personal Safety

Do not wear wrist straps when access this units for maintenance reason as regular ESD control method and remove power connection from AC line source. Be sure that no wrist strap requires when service access to high voltage operational system.

5. Specification

Input Voltage	24V DC, 2.2Watt Maximum
Ion Emission	High Frequency AC, 70kHz Maximum
Offset Voltage	Average less than 10V, Less than 30V Maximum
Discharge Time	Less than 1 sec per ANSI/ESD STM3.1
Emitter Points	Tungsten 99.99%
Alarm	Audio/LED Alarm at HV Power Failure
Output	Alarm Relay at HV Power Failure
Air Pressure	0.1 to 0.5 MPa. 0.3MPa recommend
Air Inlet	6mm diameter
Material	ABS for Ionizer Enclosure
Operating Environment	Temperature: 15 ~ 35 °C Relative Humidity: 35 ~ 75%
Dimensions	134 W x 55.5 H x 25 D mm With stand 134 W x 61.1 H x 25 D mm
Weight	90gram with stand
Warranty	Limited 1 Year

6. Drawings



7. Setup and Operation

A. Contents in the box

Model 4110



Model 4120



24V DC Adapter



Interface Cable Assembly



B. Descriptions for Model 4110

Model 4110



- 1) Nozzle Cap: Air ion output hole
- 2) Color changeable LED: Green – Normal, Red – Abnormal alarm status at HV power failure
- 3) Audio Alarm: Activate at HV power failure

- 4) Input / Output Terminal: 24V DC input, alarm signal out
- 5) Air Inlet: 6mm diameter

C. Descriptions for Model 4120



- 1) Nozzle Cap: Air ion output hole
- 2) Color changeable LED: Green – Normal, Red – Abnormal alarm status at HV power failure
- 3) Audio Alarm: Activate at HV power failure
- 4) Input / Output Terminal: 24V DC input, alarm signal out
- 5) Air Inlet: 6mm diameter
- 6) IR Sensor: Air flow control sensor
- 7) IR Sensor LED: Activation indicator
- 8) IR Sensor Mode: Dark on (Default), Light On selectable
- 9) IR Sensor Adjustment: Distance adjustment knob
- 10) Solenoid Valve Enclosure

D. Installation

Place the ionizer in the desired location. (See the discharge time performance data on specification for proper reference distance selection). Ionizer is powered by 24V DC and plug adapter into a properly grounded AC receptacle with the correct voltage for your power supply.

Connect alarm cable to user monitoring terminal for indicating alarm status monitoring.

E. Turning on the ionizer

Use the on/off switch on the front of the unit to turn on the ionizer. The green LED will light.

Once the ionizer is powered on, its position may be readjusted to achieve optimum discharge time within the air pattern of the ionizer. To adjust the position of the ionizer, move mounting stand to the desired position and re-tighten the mounting stand.

F. Alarm

In the event of an alarm status, the red LED on top of the ionizer will change light from green LED and activate audio alarm too. An alarm indicates that the ionizer's internal high voltage power circuitry that drives the emitter points is not functioning correctly.

The ionizer's alarm is not a maintenance alarm. In most cases, service will be required by manufacturer. Before contacting manufacturer for service, make sure that the ionizer is receiving proper input voltage per specifications.

8. Maintenance

The performance of the ionizer is designed to be maintained primarily by the internal circuitry. Occasional cleaning of the case and emitter points is the only routine maintenance required. No adjustment of the ionizer is required after cleaning.

- A. Recommended Cleaning Materials:
 - 1) Cleanroom-compatible cleaning cloths (polyester cloth is recommended)
 - 2) Cleanroom-compatible swabs
 - 3) Cleanroom solution of 50% IPA (electronic-grade isopropanol) / 50% de-ionized water
- B. Cleaning the Nozzle Cap
Moisten a cloth with the IPA solution. Wipe off any dirt that may have accumulated on the unit
- C. Cleaning the Emitter Points
Turn off the unit. Normally, the emitter points can be cleaned by using a jet of compressed air to blow off any dirt that may have accumulated on them. A swab moistened with the IPA solution may be used if required. If using a swab, gently wipe the tips of the emitter points until the dirt is removed. After

cleaning make sure that the emitter point need to dry out about 10 minute or 20 minute maximum.

9. Warranty and Service

Core Insight, Inc. provides a limited warranty for all ionizers. New products manufactured or sold by Core are guaranteed to be free from defects in material or workmanship for a period of one year from the date of initial shipment. Core's liability under its new product warranty is limited servicing (evaluating, repairing or replacement) any unit returned from customers that has not been subjected to misuse, neglect, lack of routine maintenance, repair, alteration or accident. In no event shall Core be liable for collateral or consequential damages.

To obtain service under this warranty, please contact sales representative at sales@coreinsight.co.kr or local contacts.