Ionizer User Manual

Model 7110

AirStat® Pulsed AC Ionization System

CORE INSIGHT
코어인사이트(주)

Contents

9. Warranty and Services

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® Auto-Balanced Ionization System 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 ionization technology with isolated high voltage section of power supply and maintain intrinsically balanced its offset voltage performance in specification ranges. All of Model 300 series and Model 3000 series ionizers are CoreStat® steady-state DC technology which aren't need adjust ion output for balance performance. It just needs periodic 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 Insight's AirStat® Bipolar Pulsed AC ionizers which is lower frequency than conventional AC and output parameters are adjustable for each application such as FPD's manufacturing environment and others.

High Frequency AC is alternative solution for replacement of conventional AC for ESD control application and very small package ionization products. 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 application areas.

Pulsed DC ionization technology is the strength of Core Insight's ionization products 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 Charge Plate Monitor (CPM) or Test 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 the original voltage following technology. Model 300 is cost effective ionizer measurement CPM equipment. Both two CPMs can remotely control and make measurement by software for detail analysis and test result reporting. This two equipment is perfectly compliance to ANSI/ESD STM3.1 standard requirement test.

Also, there are hand-held fieldmeter based test kit which is smaller plater, external charging source and integrated decay timer for compliance verification measurement per ANSI/ESD SP3.3 test requirement.

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 beyond this sensitivity limits. According to many IC manufacturing suppliers, over 99% of device ESD failures are CDM or CDM like and not HBM or very low possibility. Due to automation and device sensitivity continue to be 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 stored on printed circuit board.

There are two strategical guidance has proposed by ESD Association. Lowering device charge level and increase resistance of contact materials are the key strategical elements to prevent ESD damage. As per ANSI/ESD S20.20-2014 latest version described, maximum allowing

field strength is 125V/inch for 200V CDM withstand threshold 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 static related issues with several types of ionization products and systems such as steady-state DC, AC, pulsed AC, high frequency AC and pulsed DC ionizations.

For more detail information about ionization and ESD controls 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 ionizer 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 RJ-45 terminal or failure to heed maximum voltage limits will not be covered by the warranty.

There are no user serviceable parts inside this ionizer. Any unauthorized service will void the warranty and may result

in additional repair charge.

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

B. **Personal Safety**

Do not wear wrist straps when access this ionizer 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. General Specification

Input Voltage	24V DC, 7.2Watt Maximum
Output Voltage	±7kV AC
Ion Emission	Pulsed AC Technology
Offset Voltage	Less than 30V by User Application Adjustment
Emitter Points	Tungsten 99.99%
Frequency	1 ~ 50Hz
Operation Mode	Pulsed AC
Display	3 digit LED Display
Control	Output Voltage, Frequency, Duty Cycle Adjustment for Each Polarity
Alarm	LED Alarms for Cleaning, Power Fail FND: Interlock Alarm Audio: Power Fail, Cleaning and Interlock Relay Output (Normal close type)
Air Inlet	8mm Diameter Air Fitting
Output Monitoring	FMS Monitoring Interface
Material	Enclosure: ABS Chassis, Nozzle: Polycarbonate Bracket: Polycarbonate
Operating Environment	Temperature: 15 ~ 35℃ Humidity: 35 ~ 75% RH
Dimensions	124 H x 50 D x L (300, 400, 600, 800, 1000, 1200, 1400, 1600, 1800, 2000, 2200, 2400, 2600, 2800, 3000)
Option	IR Remote Controller
Warranty	1 year

6. Drawings

Model 7110 Dimensions
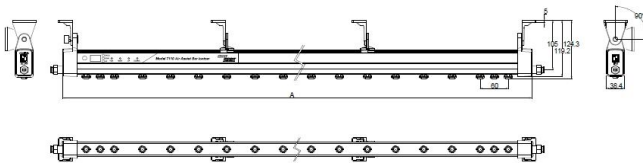
Variable length is available from 300 to 3000mm for each 200mm steps.

7. Setup and Operation

A. Introduction

AirStat® Model 7110 Pulsed AC Ionizing Bar is designed to control electrostatics in process equipment, worktable and mini-environment conditions. AirStat® Model 7110 Ionizing Bar using pulsed AC ionization technology and emitting ions with air assist to fast discharge can be achieved to avoid ESD issues in work environment.

AirStat® Model 7110 Pulsed AC Ionizing Bar widely used in FPD manufacturing areas. For fine-tuning, output and

balance adjustment can be achieve with FND display which shows you the output parameters for better Intuitional recognition.

AirStat® Model 7110 Pulsed AC Ionizing Bar come in a variety of lengths from 300mm to more than 3000mm. AirStat® Model 7110 Pulsed AC Ionizing Bar is designed enhanced self-power and controlled by itself without external.

B.   Contents in the box

AirStat® Model 7110 Pulsed AC Ionizing Bar
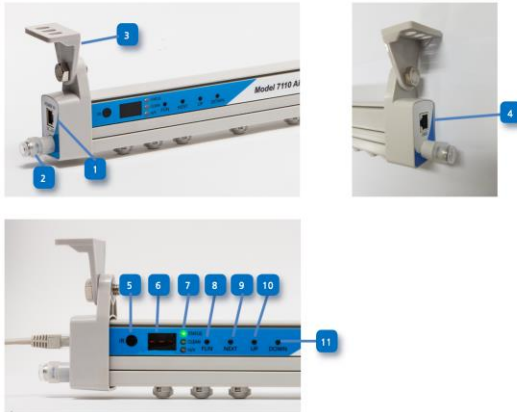

RJ45 Cable

Remote Controller

DC Adapter

C.   Descriptions for Model 7110 Pulsed AC Ionizing Bar

1) Power In: Connect RJ-45 terminal into RJ-45 Receiver from DC adapter or connect RJ-45 cable from process equipment.

2) Air Inlet: Air fitting 8mm hose connect from air line

3) Side Bracket: Free angle bracket

4) FMS (Facility Monitoring System): Output monitoring terminal

5) IR Receiver: Remote control signal receiver

6) FND: 3 digit FND display for adjust of output and alarm parameters

7) LEDs: Operation indication and Alarm

8) Function Button: Allow user to change parameters

9) Next Button: Move next menu

10) UP: Change upper value

11) DOWN: Change lower value

D. Installation

It is highly recommended to choose DC adapter for using AirStat® Model 7110 Pulsed AC Ionizing Bar unless in-tool ionization and remote control application.

The wiring installation must be tested and qualified before the power is applied to the ionizing bar. See the following wiring instruction for Model 7110 Pulsed AC Ionizing Bar. Prior to connecting ionizing bar to power supply, test each cable for opens, short and polarity. Do not connect the cable until the voltage and cable combinations are verified.

FMS - Wiring Cable			
No.	Color	Item	Description
1	Orange/White	DC 24V +	DC Power Daisy Chain
2	Orange	DC 24V +	DC Power Daisy Chain
3	Green/White	Run/Stop	Monitoring System
4	Blue	Clean	Monitoring System
5	Blue/White	HV Fail	Monitoring System
6	Green	Alarm COM	Monitoring System Ground
7	Brown/White	GND	Power Supply Ground
8	Brown	GND	Power Supply Ground

After the wiring has been tested, connect the cable and apply power to the ionizer. Performed the adjustment procedure to determine the final settings and if necessary, adjust individual parameters.

Place the ionizer in the desired location from the target. 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.
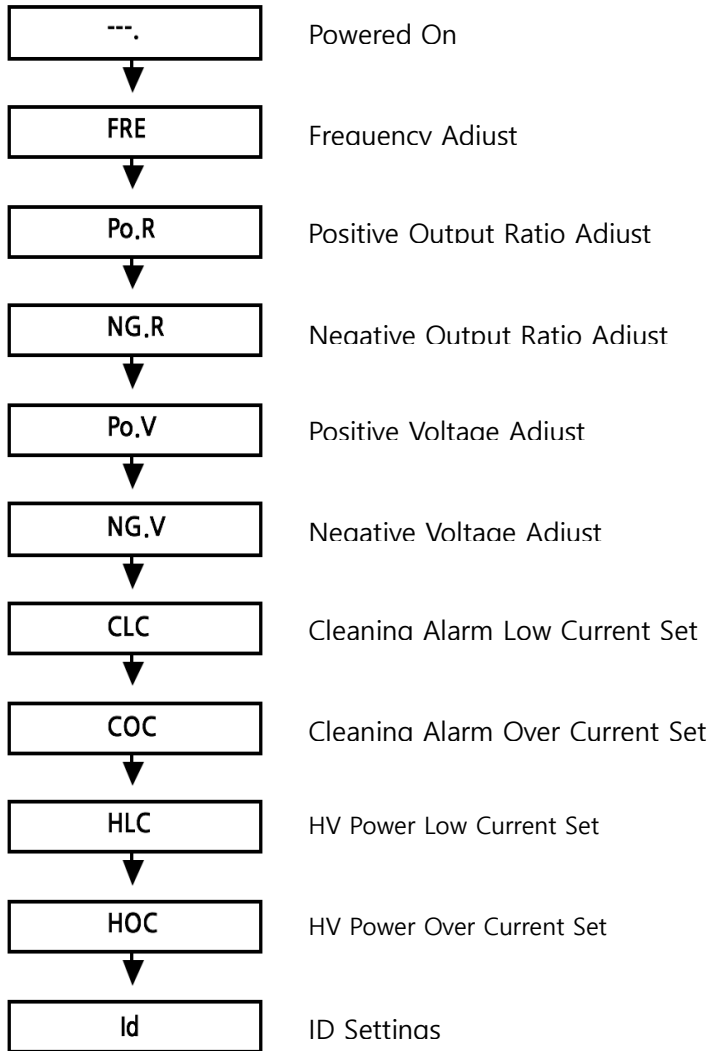
E. Turning on the ionizer

Once the ionizer is powered on, the green LED and FND will light. To adjust the position of the ionizer, move mounting bracket to the desired position and re-tighten the mounting bracket.

If RJ-45 cable is not properly connected Model 7110 will not work properly.

F. Parameter Settings

Once the ionizer is powered on, ionizer will activate and operation at factory set. All of ionizers required test and initial setup with charge plate monitor (CPM).

Follows are the functions and features of AirStat® Model 7110 Pulsed AC Ionizing Bar through FND display. User can select operation on/off, frequency, high voltage output levels by 0.1kV resolution, cleaning alarm settings, power alarm setting, synchronizing output and ID settings.

---.	Powered On
FRE	Frequency Adjust
Po.R	Positive Output Ratio Adjust
NG.R	Negative Output Ratio Adjust
Po.V	Positive Voltage Adjust
NG.V	Negative Voltage Adjust
CLC	Cleaning Alarm Low Current Set
COC	Cleaning Alarm Over Current Set
HLC	HV Power Low Current Set
HOC	HV Power Over Current Set
Id	ID Settings

Press FUN switch and click NEXT switch. Then FND will display as follows and all parameters can change press UP/DOWN switches. Once you change parameters, press FUN again and setting stored.

1) **Power ON/OFF**

   Press FUN and UP/DOWN, FND will display as below.

2) **Frequency**

   Press FUN and press NEXT, FRE will display. 30Hz is default factory set. Press UP/DOWN to change value.

3) **Positive Output Ratio Adjust (Duty Cycle)**

   Press FUN and press NEXT(3rd), Po.R will display. 99% is default factory set. Press UP/DOWN to change value.

   Press NEXT(4th), Ne.R will display. 99% sec is default factory set. Press UP/DOWN to change value.

4) **High Voltage Positive Output Adjust (Duty Cycle)**

   Press FUN and press NEXT(5th), Po.V will display. Press UP/DOWN to change value.

Press NEXT(6th), Ne.V will display. Press UP/DOWN to change value.

5) Cleaning Setting

Default set is fixed one month and requires emitter point cleaning every month. If user disagree with this period and user can make disable this default setting. Press FUN and NEXT seven times, then menu will display CA.O. Press UP/DOWN to change On/OFF.

6) High Voltage Power Alarm

Press FUN and press NEXT(8th), H.LC will display. PH.L can adjust positive high voltage low level alarm setting.

Press NEXT(9th) H.OC will display and this is for high level alarm setting.

7) ID Addressing

Press FUN and press NEXT(10th), Id.- will display. User can define ID address from 001 to 999.

8) Remote Controller

User can change parameters from remote controller.

START   Press START to change parameters

FUN   Press FUN to get each parameter mode and save value

NEXT   Press NEXT to move next mode

UP   Press UP to get higher value setting

DOWN   Press DOWN to get lower value setting

0 ~ 9   Type-in user want parameters from 0 to 9

END   Once all change parameters done, press END to exit from program mode

G. Output Monitoring Setting

Connect RJ-45 cable from ionizer unit to process tool alarm port or Model 521 alarm multiport.

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. When user perform cleaning emitter points, CPM test required to make sure output of ionizers are fine.

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 inside of Enclosures
Moisten a cloth with the IPA solution. Wipe off any dirt that may have accumulated inside of 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 20 minute.

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 defined schedules 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.