IONIZER USER MANUAL

Model 2100

AirStat® Digital Pulsed DC Bar Ionizer

Version 1.1

CORE INSIGHT
코어인사이트(주)

IONIZER USER MANUAL

Model 2100

AirStat® Digital Pulsed DC Bar Ionizer

Version 1.1

CORE INSIGHT
코어인사이트(주)

Contents

1 Introduction

Core Insight, Inc. is an ionization system manufacturer and supplier to ESD and contamination control application. Core Insight, Inc. also provides ESD Test and Measurement equipment, Professional Static Auditing Kits, EMI Noise Filters and EOS/ESD Technical Services such as ESD Training, Process Assessment, ESD Control Program Development and Product Qualification Testing per ANSI/ESD Standards.

Core Insight, Inc. is a leading company for ESD and contamination control in the fields of semiconductors, flat panel displays, automotive, and general electronic manufacturing industries. Core Insight, Inc. was founded in 2003 and business partnership with ProStat Corporation, ON Filter, Monroe Electronics, Electro-Tech Systems, and Dangelmayer Associates etc.

2 Ionization and Application

A. Ionization Theory

Ionization solution has been used many years in electronic industry. Electrical ionization technology is most common design for many applications. Some ionizers designed for ESD application and some of them are contamination control in high technology manufacturing environment. Both are different purpose and may not work in both applications. Follows are the brief summary of differernces and user guide for each applications.

B . Cleanroom Contamination Application

Electric field is one of strong force to attract particles on wafer, glass panel, printed circuit board and other insulator materials. To minimize this force, room ionization is the best solution in high technology and other cleanroom environment.

Pulsed DC ionization technology is the well known solution over many years to minimized air borne particle attraction in cleanroom environment. Using with laminar flow, generated ions can move long distance and wide coverage areas. This will significantly reduce the force between particles and sensitive devices such as wafer, flat panel display and medical items. In results, room ionization improves product yields and less losses.

C. ESD Control Application

Voltage (or Potential) difference is the reason why ESD event occurs and lead to device damage. Ionizer makes this voltage difference to the same or minimize the level between objects to avoid ESD damage or make it happen at the safe level.

Steady-State DC ionizer is provide high ion current to objects and maintain low peak (or offset) voltage on it. This makes minimize ESD risk in production and suitable for CDM ESD control in control program.

2 Ionization and Application

CoreStat® Self-Balanced Ionizers developed based on steady-state DC technology and upgraded the ground isolated power circuit design. It can maintain low peak (or offset) voltage performance by intrinsic balancing circuit design with longer maintenance cycle time. It does not require calibration or adjust to maintain low offset voltage and it needs to cleaning emitter points for decay performance.

D. AC Ionizations and Application

Core Insight, Inc. provides several AC ionization systems. Conventional AC ionizer for industrial applications such as roll to roll or winding & unwinding of paper, film and non-ESD sensitive areas. Bipolar Pulsed AC ionizer is output parameter adjustable technology to meet each application requirements. High Frequency AC has adopt piezo crystal power supply for neutralize charge on insulative materials in small package. AC ionizer generates more Ozone than DC in the environment and may cause of side effects in senstive device handling areas.

All ionizers peformed and tested per ANSI/ESD STM3.1 and other documents such as ANSI/ESD SP3.3, ANSI/ESD SP3.4 and ANSI/ESD SP3.5.

For more detail information about ionizer solution and technical support needed, please feel free to contact our sales representative at sales@coreinsight.co.kr or your local contacts.

3 Application Guide

A. Basic ESD Control

Basic ESD control is mendatory required to electronic industry. It follows simple principle to make equipotential between ESD sensitive items. Personal grounding, ESD safe worksurfaces and ESD safe packaging materials are the key control items in ESD protected area.

B. Ionization for CDM/CBE Controls

Due to automated process in high techonology manufacturing environment, Charged Device Model (CDM) or CDM-like ESD damage becoming a major portion of device failures. Industry Council agreed to reduction of CDM protection target level down to 125V level and will impact basic level of ESD control program and organization. Not only CDM, but also Charge Board Event (CBE) like ESD issues are increasing due to device complexity and stored large amount of charge on printed circuit board.

Strategic guidance has been proposed by the EOS/ESD Association. Lowering device charged voltage level and increasing resistance of contact materials are the key strategic elements to prevent or minimize ESD damage.

ANSI/ESD S20.20 standard requires maximum allowable field strength is 125 V/inch for 200 V CDM device. Low peak (or offset) voltage of ionizer performance is important for ESD sensitive device control and control program per S20.20 based.

Core Insight, Inc. provides intrinsic low peak balancing Steady-State DC Ionizers for CDM ESD control with less maintenance.

For more detail information about ionizer solution and technical support needed, please feel free to contact our sales representative at sales@coreinsight.co.kr or your local contacts.

Cautions and Personal Safety 4

A. Cautions

Use of proper input voltage to avoid damaging the system.

Verify the cabling and its connection between DC power adapter.

To prevent fire or shock hazard, do not expose the pulsed DC bar ionizer to excessive moisture. Do not use the equipment in an explosive environment. There is a possibility that small spark produced by poorly maintained ionizers could cause detonation.

Do not clean emiter point while the system is powered. This may result of additional contamination issue and possible electrical shock.

Do not open the system by un-authorized personnel while the system is powered. This will void the warranty and may result in addtional cost.

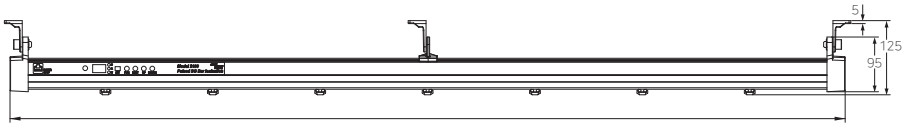
B. Personal Safety

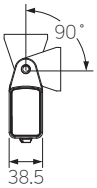
Before performing any maintenance on emitter points, it is highly recommended turn-off the system. Allow few minutes for high voltage power supplies to discharge.

5 Technical Specification

Input Voltage	24 VDC
Ion Emission	Pulsed DC Technology
Ion Balance	User Defined
Emitter Point	Single Crystal Silicon / Titanium
Display	3 Digit LED Display / 2 Color LED
Control	Output Voltage and On Time Adjustment for each polarity by Remote Controller
Alarm	Visual & Audio alarm operates for power failure and cleaning cycle schedule
Output Monitoring	Normal Open Relay based Output Signal
Material	Enclosure: ABS, Emitter Nozzle: ABS
Operating Environment	Temperature: 15~35℃ Humidity: 30~60% RH
Dimensions (mm)	95H x 39D x 600, 700, 900, 1200, 1600 and 2000L
Option	IR Remote Controller
Warranty	2 years

Drawing 6





Setup and Operation 7

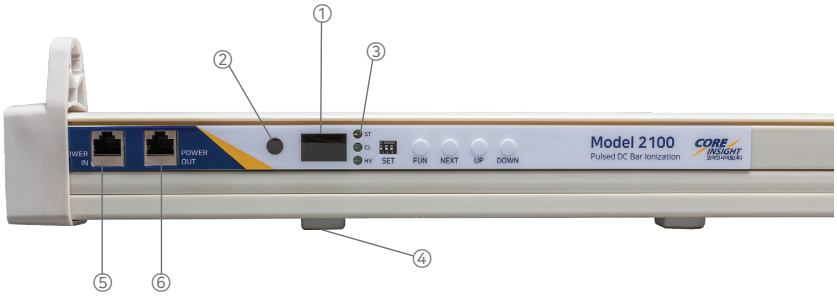
A. Introduction

Model 2100 AirStat® digital pulsed DC bar Ionizer is designed to control electrostatic fields in semiconductor automated equipment, mini-environments, laminar flow hoods and workstations without laminar flow disruption. Model 2100 digital bar ionizer using pulsed DC technology and double dense of ion generation at the same voltage output.

All output parameters can adjustable through Model 5711R IR Remote controller and provide relay bsaed output monitoring to FMS interface.

7 Setup and Operation

B. Description of Model 2100 Pulsed DC Bar Ionizer



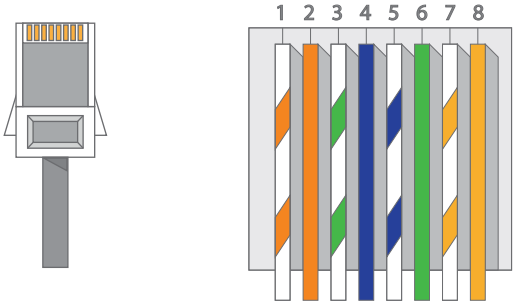
① LED: 3 digit display. Setting output parameter values and alarm level.
② IR Receiver: Communicate with Model 5711R remote controller.
③ LED: Indication for normal operation (Green) at ST, cleaning cycle (Yellow) at CL and high voltage power failure (Red) at HV for alarm status.
④ Emitter Nozzle: Nozzles are replaceable
⑤ RJ-45 Terminal: Connect to DC power adapter Model 5120D.
⑥ Daisy-chained connection is possible up to 2 units by single power adapter.

Model 5120D Power Adapter

Model 5711R Remote Controller

C. Installation

Determine the mounting locations of pulsed DC bar ionizer at the workstation or laminar flow hoods within 2 meters distance from Model 5120D DC power adapter. Install the bar appropriate height at the location with polycarbonate brackets and other methods. Standard ethernet cable CAT-5 or better is recommended for daisy-chain connection. Do not use cross cable or other combination could result of failure or damage to the ionizer. The maximum daisy-chained cable length are 5 meters from the first bar with CAT-5 or better.



Link IN - Wiring Cable					
No.	Color Code	Description	No.	Color Code	Description
1	Orange/White	DC Return	5	Blue/White	N/A
2	Orange	Alarm Common	6	Green	N/A
3	Green/White	24V DC	7	Brown/White	N/A
4	Blue	Alarm Relay	8	Brown	N/A

Communication cable must be tested and verified during installation at each desired locations. All cables are test for open, short and color matching. For daisy-chained wiring should be all straight connection from the first unit to the next.

7 Setup and Operation

D. Powering the System

Connect the pulsed DC bar ionizer and adapter at determined location, then the system will turning on by Model 5120D plugging a properly grounded AC power receptacle.

When pulsed DC bar ionizers are powered, LED display start and available to communication. Model 5711R remote controller can adjust appropriate output parameters for each application.

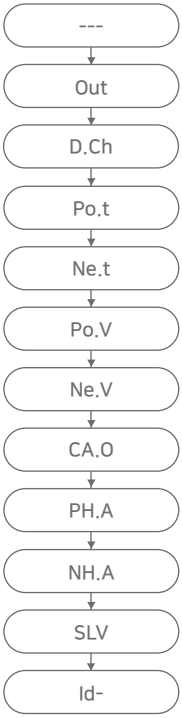
Cautions

Do not connect or disconnect emitter nozzle while the unit is powered!

E. Output Settings

Once pulsed DC bar ionizers are powered, it will operate at the factory default mode. All output parameters can be set differently to satisfy different operating environments or needs within the area.

Following sections described functions and features of pulsed DC bar ionizer on LED display. User can select operation on/off, high voltage on time for both polarity, high voltage output levels by 0.1kV resolution, cleaning alarm settings, power alarm setting and ID address.



7 Setup and Operation

To start communicating at each plused DC bar ionizer, press START on Model 5711R remote controller. Press FUN button for select output parameters. LED will display as below and all parameters can be adjustable by UP/DOWN. Once user changed any parameter, press FUN to store value in memory and make changed value operational.

Model 5711R
Remote Controller

1) Remote Controller

User can adjust parameters from remote controller.

START	Press START to adjust parameters
FUN	Press FUN to parameter modes and save value
NEXT	Press NEXT to move next parameter mode
UP	Press UP to increase selected parameter value
DOWN	Press DOWN to decrease selected parameter value
0-9	User selectable value input from 0 to 9 for voltage and time
END	Parameter adjustment finished, press END for exit.

*If user did not press FUN, adjusted value will not store and back to previous set value.

2) Output On/Off

Press FUN and NEXT, output On/Off parameter will display.
On is factory default set for initial enable mode. Press UP/DOWN to change individual pulsed DC bar ionizer on or off. Press FUN to store this set.

3) Output On Time Adjustment

Press FUN and NEXT (2 times). PO.t will display.

3.5 sec is factory default set value. Press UP/Down or type numeric value up to 99.9 seconds maximum. Press FUN to store this set value.

Press FUN and NEXT (3 times). Ne.t will display.

3.5 sec is factory default set value. Press UP/Down or type numeric value up to 99.9 seconds maximum. Press FUN to store this set value.

4) Output Voltage Adjustment

Press FUN and NEXT (4 times). Po.V will display.

4.5 kV is factory default set value. Press UP/Down or type numeric value up to 7.0 kV maximum. Press FUN to store this set value.

Press FUN and NEXT (5 times). Ne.V will display.

3.9 kV is factory default set value. Press UP/DOWN or type numeric value up to 7.0 kV maximum. Press FUN to store this set value.

5) Cleaning Cycle Alarm

Press FUN and NEXT (6 times). CA.O will display.

Disabled is factory default set value. Press UP/Down to change enable or disable cleaning cycle alarm activation. Press FUN to store this set value.

7 Setup and Operation

6) High Voltage Power Alarm

Press FUN and NEXT (7 times). PH.A will display and immediately change PH.L. PH.L mode is positive high voltage low level alarm adjustment. User can adjust low level. Factory default set value is 25.

Press next and PH.O will display. PH.O mode is positive high voltage high level alarm adjustment in case of short damage. Factory default set value is 75.

When positive high voltage alarm activated, green LED will turn-on at top-right corner and red LED will blink with audio alarm at the alarm status as below.

Press FUN and NEXT (8 times). NH.A will display and immediately change NH.L. NH.L mode is negative high voltage low level alarm adjustment. User can adjust low level. Factory default set value is 25.

Press next and NH.O will display. NH.O mode is negative high voltage high level alarm adjustment in case of short damage. Factory default set value is 75.

When negative high voltage alarm activated, green LED will turn-on at top-right corner and red LED will blink with audio alarm at the alarm status as below.

7) SLV - Syncronization

Press FUN and NEXT (9 times). SLV will display. Non is factory default set as disable mode. Press UP/DOWN to adjust set from non to InV mode for syncronize pulse timing for same polarity operation. Press FUN to store.

8) ID Set and Change

If user wants to set ID address or change, press FUN and NEXT (10 times). Id- will display and immediately change to 0. Press UP/DOWN to adjust appropriate ID number. Press FUN to store.

8 Maintenance

Warning

There are no user-serviceable parts inside the pulsed DC bar ionizer. Any unauthorized service will void the warranty and may result in additional repair charge.

General Maintenance Information

Emitter point maintenance ensures continued performance of pulsed DC bar ionizer. Dirt of erosion to emitter points can be caused by a number of environmental factors, including airborne molecular contamination issue.

Before cleaning or removing emitter points, the pulsed DC bar ionizer must be powered down by unplug RJ-45 connector or change to off status.

Step 1. Recommended Cleaning Materials:

1) Cleanroom-compatible cloth or wipe
2) Cleanroom approved swabs (foam is not recommended)
3) Cleaning solution of 50% isoproply alcohol (IPA) and 50% deionized water mixture

Caution

Do not clean emitter points while the unit is powered. Doing so may result in additional contamination and possible shock. After removing power from the ionizer, allow few minutes for high voltage power supplies to discharge.

Step 2. Cleaning the Emitter Points

Turn off the ionizer. Clean the emitter points and areas around the emitter points, moisten a cleanroom-compatible swab or cleaning cloth in the IPA solution, or use cleaning solution from Core Insight. Gently rotate the swab or cleaning cloth around the emitter point. After cleaning allow the emitter points for dry out about 20 minutes. Turn on the system.

Warranty and Service 9

Core Insight, Inc. provides a limited warranty for all ionizers. New products manufactured or sold by Core Insight, Inc. are guaranteed to be free from defects in material or workmanship for a period of defined schedules from the date of initial shipment. Core Insight, Inc.'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 Insight, Inc. 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.

CORE
INSIGHT
코어인사이트(주)

Suite 503, 186, Galmachi-ro, Jungwon-gu, Seongnam-si, Gyeonggi-do, 13230, KOREA
Tel: 82-31-750-9200 / Fax: 82-31-750-9205 / sales@coreinsight.co.kr / www.coreinsight.co.kr