IONIZER USER MANUAL

Model 5820

Ionizer Monitoring System - ECO

CORE INSIGHT
코어인사이트(주)

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Contents

Core Insight Introduction 1

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 Technology

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.

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 controller, junction box and individual ceiling emitters before turn on the system.

Disconnection cable from ceiling emiiters will damage the system.

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.

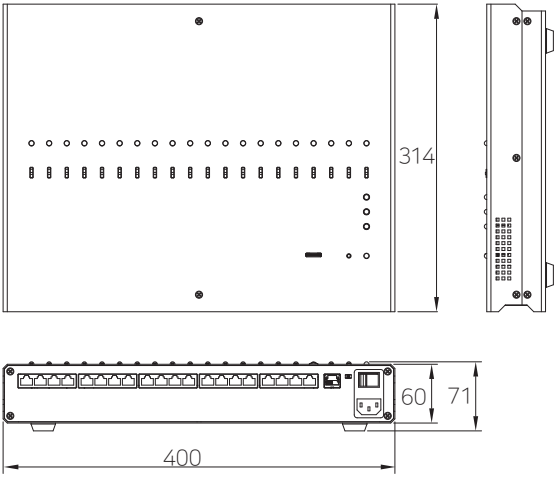
B. Personal Safety

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 General Specification

Input Voltage	100~240 VAC
Output Votage	24 VDC
Capacity	Up to 20 units of CoreStat® Ionizing blowers
Compatibility	Model 3810, 310, 360 Series
Display	LED
Alarm	Visual & Audio alarm operates high voltage failure, out of balance, power off status and port detection
Cleaning	Auto-Cleaning Up to 20 units of CoreStat® Ionizing Blowers
Control	DIP switch for Enables or Disable Auto-Cleaning Sequence Switch
Monitoring	RJ-45 terminal
Operating Environment	Temperature: 15 ~ 35℃ Humidity: 35 ~ 85% RH
Material	Powder coated aluminum enclosure
Dimensions	400W x 80H x 314D mm
Weight	2.4kg
Warranty	2 years limited warranty
Selection	1) Model 5820 2) Model 5808: Capacity – Up to 8 units Dimensions – 200W x 40H x 120D mm Weight – 470g Accessories – Model 5100D (DC Adapter)

Drawing 6



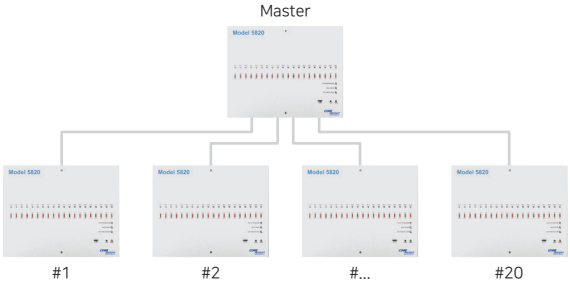
Setup and Operation 7

A. Introduction

Core Insight's Innovative Ionizer Monitoring system Model 5820 is designed to provide alarm status of ionizer balance, high voltage failure, communication cable port disconnection, power off status, auto-cleaning sequece and 24 VDC supplies up to 20 units from single monitoring system.

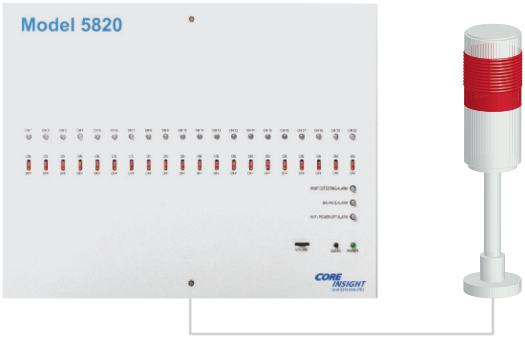
Model 5820 can be daisy-chained connection though master and slave mode selection. User can enable or disable each port of ionizer monitoring channels. With LED display and audio alarm, user can identify for various alarm status on the front panel.

7 Setup and Operation



Daisy-chain connection of Model 5820
can up to 400 units of CoreStat® Ionizers.

Model 5820 can be also available to use other supplier's ionizer which provide relay base or 4-20mA signals.



The Model 5820 can monitor Alarm Conditions
by connecting devices such as a Signal Tower.

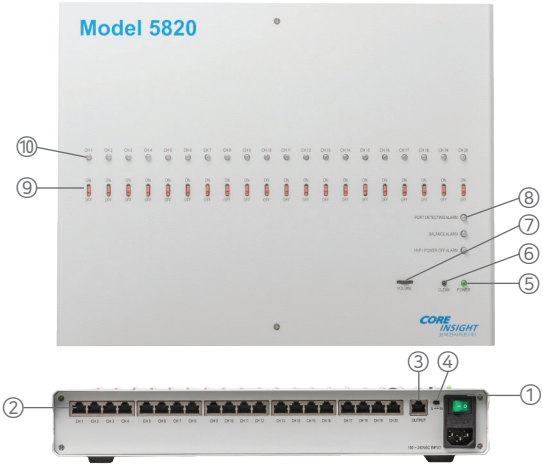
B. Contents in the box

Model 5820 Ionizer Monitoring System (Example)

AC Power Cable (1m, 5m)

7 Setup and Operation

C. Descriptions for Model 5820



1) Power Switch: 100~240 VAC 50/60 Hz input
2) Input port: RJ-45 input port to connect CoreStat® ionizers
3) Output port: Alarm output (Master mode: DC 12V, Slave mode: Relay)
4) Master / Slave mode switch
5) Power LED: Green LED on
6) Cleaning Switch: Press this button to clean for all ionizing blowers. It will re-start automatically after about 10 seconds cleaning sequence.
7) Volume Switch: Audio alarm volume up/down
8) LED Alarm: Indicattion for normal operation and failures such as HV power fail, balance alarm, power off and communication connection
9) DIP Switches: Selectable switch for enable or disable
Default setting is enabled status and need to disable when not used.
10) LED Display: Indicate the status of each channels.

D. Installation

Install Model 5820 ionizer monitoring system appropriate location use with brackets and other methods. Standard ethernet cable CAT-5 or better is recommended for daisy-chain and ionizer connection. Do not use cross cable or other combination could result of failure or damage to the ionizer. The maximum cable length are 10 meters from monitoring system to ionizers.

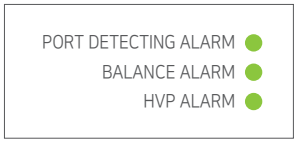
Communication cable must be tested and verified during installation at each desired locations. All cables are test for open, short and color matching. For daisy-chained wiring should be all straight connection from the first unit to the next.

Once all ionizer cable connected to monitoring system, it is ready to start and turn on the system.

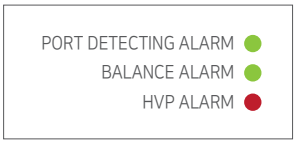
1) Connect between Model 5820 and CoreStat® ionizers
2) Power switch on position at each CoreStat® ionizers
3) Turn on Model 5820 ionizer monitoring system
3) DIP switch on positon for enable or disable
5) Check monitoring status of all connected ionizers

7 Setup and Operation

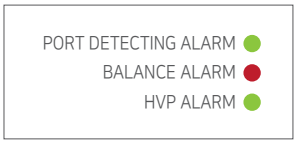
* Ionizer Status Indications



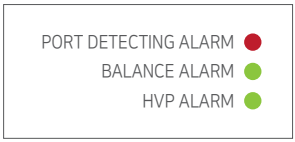
Normal



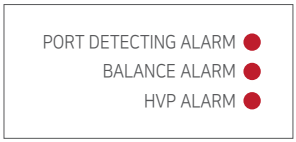
HV Power Alarm



Balance Alarm



Port Detecting
Model 5820 only



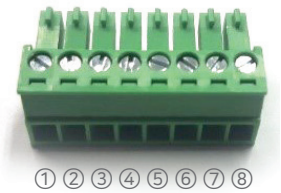
Power Off Status

* Ethernet Cable Wiring Methods

1) Ethernet Port or RJ-45 Power switch on position CoreStat® ionizers
   : User should use straight type of Ethernet cable.

2) Connection with 8 Pin Terminal Block
   : User should use the straight type of Ethernet cable at monitoring system and needs core cable wiring to ionizer terminal block.

* Recommended CAT-5 ethernet cable or other maximum cable lengths are 10 meters between monitoring system and ionizers.



No.	Color of Ethernet Cable	Description
1	WHITE / GREEN	GND for DC
2	WHITE / ORANGE	+24V DC Output
3	BLUE	Balance Alarm Common
4	WHITE / BLUE	GND for Port Detection
5	WHITE / BROWN	Port Detection
6	ORANGE	Balance Alarm
7	GREEN	HV Power Alarm Common
8	BROWN	HV Power Alarm

* Pin combination 8 Channel Terminal

No.	Color of Ethernet Cable	Description
1	WHITE / ORANGE	+24V DC Output
2	ORANGE	Balance Alarm
3	WHITE / GREEN	GND for DC
4	BLUE	Balance Alarm Common
5	WHITE / BLUE	GND for Port Detection
6	GREEN	HV Power Alarm Common
7	WHITE / BROWN	Port Detection
8	BROWN	HV Power Alarm

* Straight RJ-45 Pin Combination

No.	Color of Ethernet Cable	Description
1	WHITE / ORANGE	+12V DC Output
2	ORANGE	
3	WHITE / GREEN	Alarm Relay Output
4	BLUE	Alarm Relay Common
5	WHITE / BLUE	
6	GREEN	
7	WHITE / BROWN	
8	BROWN	GND for DC

* Output Monitoring from Model 5820

E. Turn-on the Model 5820

When powered monitoring sytem, ionizer will automatically turn-on in few seconds when individual power switches on position. Model 5820 has some time delay to turn on ionizers due to internal timer circuit.

After few seconds later, main power LED will lights on of ionizer monitoring system. Model 5820 will indicate all status of ionizers.

8 Maintenance

Warning

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

General Maintenance Information of Ionizers

Emitter point maintenance ensures continued performance of 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, all ionizers must be powered down by switch off, unplug RJ-45 cable or DC adapter.

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.

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