

# scorpION<sup>TM</sup> 3

Bar Ionizer

*ScorpION3 is a high performance ion bar specifically designed to exceed the most demanding application requirements in the semiconductor industry. Our new ScorpION3 product is designed to meet the unique requirements of Equipment Front End Modules (EFEM) for 200mm and 300mm wafer process tools while seamlessly integrating ionizer functionality through the tool's user interface.*

## Features:

- ▶ **"Peak Reduction" technology\***  
*Provides superior offset voltage performance over competing systems.*
- ▶ **Total tool integration capability**  
*Seamlessly integrate operations with process tool.*
- ▶ **Bi-directional, dual access IR controller.**  
*Local calibration and management of operating parameters.*
- ▶ **Available with CVD SiC emitters\***  
*Exceeds ISO Class 1 performance.*

## Peak Reduction™ Technology

Traditional pulse DC ionizers intermittently cycle positive and negative ions into the surrounding environment. Simco's patented Peak Reduction technology allows a user to select a percentage of overlap (supply "on" time) during the bi-polar pulse cycle. Peak Reduction effectively eliminates off time between bi-polar cycles resulting in faster discharge times at reduced levels of offset voltage. The resulting waveform exhibits flattened peaks of the alternating voltage cycles. The result is a more ion-saturated environment with improved performance. Use of Peak Reduction technology provides the ability to achieve even more stringent ESD specifications.

## Continuous Communication, Control and Monitoring

Software provided by Simco can be installed and run on the process tool's PC based user interface to provide complete graphic access to ionization parameters. The software allows modification of ionization performance in real time and provides the capability to monitor and log alert conditions. And it delivers self-diagnostic information to the system interface.

Preset operating values can be saved for use in repetitive applications. Once a set of operating values has been established for an operating environment, the set of values can be stored as a named setup value in either the PC interface program or in the dual access, bi-directional remote controller. After that, simply upload your setup preference to one or multiple bars and calibration is complete.

## scorpION3™ Air Ionization Bar



## scorpION3™ MMI (Man Machine Interface)

\*Manufactured under US patents number 6,252,233; 6,252,756; 6,826,030; 7,161,788 and patents pending, and International patents and patents pending

## System Monitoring and Data Logging

Simco provides the expertise and delivers all the performance, control and communications capability necessary, so you don't have to be an expert.

Optional system monitor and data logging software can be installed and run on an existing Ethernet connected facility PC. The software provides a graphic user interface with real time remote system monitoring, graphic display of all metered system values, and system event logging. In addition the user can use the software to provide scheduling and notification of maintenance and calibration requirements. Monitor, reporting and self-diagnostic functions provide data that can be used for the development of predictive maintenance (PM) models.

## Bi-directional MMI Remote Controller

Scorpion3 systems offer an optional bi-directional MMI transmitter that allows you to set all operating parameters of independent bars. Simply enter the bars identification code into the transmitter, and then adjust all operating parameters to the desired level. The MMI can display real time monitored emitter values for system diagnostics. Save time by simplifying periodic system maintenance and calibration.

## CVD Silicon Carbide Emitter Electrodes

CVD silicon carbide emitters are available only in ionizers for electrostatic charge control from Simco. CVD SiC is an engineered material with properties superior to silicon in plasma applications. Electrodes in ionizers create a region of highly active plasma and plasma is a major contributor to the deterioration of emitter electrode materials. SiC resists plasma etch better than any other emitter electrode material. Silicon Carbide emitters are qualified <ISO Class 1.



*Ionization for Electronics Manufacture*

### Continuous Ion Monitoring and Control

Each bar stores, controls, and maintains all operating parameters independently. Using a closed-loop control scheme, each bar's micro controller compares operating values to the output current values stored in its non-volatile memory and then controls independent positive and negative power supplies to maintain the selected output current values.

The offset voltage and corresponding Peak Reduction values are stored in memory. The duty cycle and overlap

of the bi-polar power supplies are controlled to achieve the stored offset voltage based upon the stored offset voltage values.

### 24VDC and nothing else

Scorpion3 simply requires a 24VDC power input source wired directly into the first bar using a 24VDC buss connection or appropriate converter plugged into an electrical wall outlet. Multiple bars can be wired in series (daisy chained) providing both power and communication.

#### Specifications:

- Input Power:** 24VDC, 200mA (per bar).
- Connectors:** 6-pin RJ-11 modular jack receptacles provide power and RS-485 communications.
- Communications:** RS-485 buss
- Address Control:** Independently digitally set to unique addresses.
- Output Control:** Performance stability is maintained using real time feedback, comparison to a value stored in the bar and adjusting via a microcontroller located in the bar.
- Operating Modes:** Steady state DC, Pulsed DC and Peak Reduction. Peak Reduction overlap adjustable 0 to 90%.
- Mode Control:** Each bar in a series can be set to operate independently or under control of a Master (Slave mode). Independent bars can be set to any operating mode.
- Alt. Fault Interface:** 1/8" (3.5mm) phone jack, opto-isolated transistor can be set to normally off or normally on.
- Discharge Time:** < 10 sec. typ. (24" w/90fpm unidirectional airflow) per ESD Assoc STM3.1
- Offset Voltage:** < 30V typ. (24" w/90fpm unidirectional airflow) per ESD Assoc STM3.1
- Indicators:** 2 bicolor LEDs: flash on with positive and negative power supplies. Green indicates normal function and pulse duration. Red indicates a fault condition; communicated through RS-485 interface. Rapid simultaneous flashing identifies bar address.

- Output Current:** <15µA, each polarity.
- Emitter Electrodes:** Replaceable CVD Silicon Carbide or Tungsten
- Clean Class:** < ISO Class1
- EMI:** < background level.
- Dimensions:** 75H x 48W mm (2.95H x 1.89W in.)
- Enclosure:** Reinforced Polycarbonate; UL 94V-0 rated
- Length/Weight:**

Lengths	Emitters	Part Number	
		Standard	Weight
457 mm (18")	7	4402313	0.8 kg (1.8 lb.)
610 mm (24")	7	4402314	1 kg (2.1 lb.)
914 mm (36")	11	4402315	1.3 kg (2.8 lb.)
1118 mm (44")	15	4402316	1.5 kg (3.2 lb.)
1626 mm (64")	19	4402317	2.0 kg (4.3 lb.)
1880 mm (74")	19	4402318	2.2 kg (4.9 lb.)
2134 mm (84")	19	4402319	2.5 kg (5.5 lb.)

- Color:** Bone
- Mounting Brackets:** Stainless steel, adjustable mounting centers.
- AC Adapter:** Universal 100-240VAC 50/60Hz input, (IEC320). Provides power to a maximum of 3 bars, any length.
- Option:** Air Assist model available. Computer interface RS-485 or Ethernet capable.

#### MMI

- Communication:** IR (infrared) and wired RS-485
- Connections:** RJ-11 modular jack receptacles provide power and RS-485 communications
- Display:** 4-line LCD; menu driven interface.
- Controls:** Up/Down Arrow, Left/Right Arrow, Enter
- Power on/off:** Slide Switch
- Indicators:** 2 LEDs green transmit/red receive
- Power:** 9 VDC Alkaline Battery, Type 1604
- Dimensions:** (110mmx196mm x32mm) 4.40"x7.70"x1.25"
- Weight:** 0.34kg (0.75lbs.) w/bat.

*In Ionization technology, SIMCO® clearly has the leadership role. Our research and manufacturing facilities are worldwide... our technical expertise is second to none...and our products simply inspire the competition. For a no-hassle assessment and quote call 800-538-0750 (in USA) or log on to [www.simcolION.biz](http://www.simcolION.biz).*



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