

GEMINI™ PROFILE™

room ionization system

Gemini Profile is a high performance area ionization system designed to control electrostatic charge. It exceeds the most demanding application requirements of the semiconductor industry. Profile emitter modules are ceiling mounted and arrayed to provide uninterrupted coverage of the space below. These bi-polar emitter modules are then linked to one or more Gemini controllers via RS-485 communications. Operating parameters of each emitter module can be universally or independently set from the systems Gemini controller, or adjusted via hand-held transmitter from the floor below the emitter.

Features:

- ▶ **Full digital platform** (US patent #6,252,756; International patents & pending)
Provides consistent performance and control.
- ▶ **Intelligent communication & control**
Integrated RS-485 communication.
- ▶ **Individual emitter setup using remote transmitter**
Fast, accurate calibration of critical operating parameters.
- ▶ **Ethernet capable**
Remote monitoring and system management.
- ▶ **Available with SiC emitters (US and International patents pending)**
Exceeds Class 1 performance.

Active Ion Monitor and Control

Each emitter module in the Gemini Profile system is assigned a unique digital address upon installation. With this unique identity, communication is established that allows control and monitoring of each system emitter module.

Profile emitter modules store, control and maintain operating parameters independently. Using a closed-loop control scheme, each bipolar emitter's microcontroller compares operating values to the output current values stored in its non-volatile memory and then adjusts independent positive and negative power supplies to maintain selected output current values as necessary.

Gemini System Controller

Gemini system functions are maintained by use of an RS-485 multi-drop, microcontroller communications network. The controller maintains contact between each

Gemini™ Emitter Module



Gemini™ Controller with Remote



Profile emitter module and itself to verify and report system status. If a fault occurs, the controller reports both the module address and the type of fault.

Profile emitter modules in the system can be set to operate in either steady state or pulse DC operating mode. Operating mode and pulse frequency is selected for the system at the controller. All system operating parameters can be adjusted from the Gemini Controller including adjustments to ion output and ion balance. Settings can be made to each emitter module address individually or set system wide.

Remote Control Transmitter

All Gemini systems offer an optional remote IR transmitter that allows you to set operating parameters of independent emitter modules. Enter the modules two-digit code into the transmitter, and then adjust ion output and balance to the desired level. Save time by simplifying periodic system maintenance and calibration.

Sensible Control and Communications

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

Optional monitor and data log software can be installed and run on an Ethernet connected facility PC to provide a graphic user interface and system history. The software provides real time, remote system monitoring, and generates a log of alert conditions for reference. 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 models.

CVD Silicon Carbide Emitter Electrodes

The next generation of silicon emitters is available only in ionizers for electrostatic charge control from Simco. CVD SiC is a material engineered to provide 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 Class 1.

SPECIFICATIONS:

Profile System Specs

Input Power:	<28VDC, 2.0 W nominal.
Connectors:	6-pin RJ-11 modular jack receptacles provide power and RS-485 communications.
Communications:	RS-485 buss
Address Control:	User set to one of 100 available addresses.
Output Control:	Performance stability is maintained using real time feedback, comparison to a value stored in the module and adjusting via a microcontroller located in the module.
Operating Modes:	User selectable steady state, pulsed DC or standby. Pulsed DC mode adjustable in 0.25 second increments (0.5 to 12 seconds).
Regulation:	Output and balance current stability monitored and maintained by an integrated microcontroller. Controlled for each polarity at each emitter module.
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 communication with remote transmitter.
Output Current:	<5 μ A, each polarity.
Emitter Electrodes:	Replaceable, CVD Silicon Carbide or Tungsten.
Emitter Rods:	Available in 102, 152, 254, 356, 610, or 915 mm (4", 6", 10", 14", 24", 36")
Clean Class:	ISO Class 1
EMI:	< background level.
Ozone:	<0.005 ppm (24 hr. accumulation)
Dimensions:	449 x 38 x 32 mm (17.5"L x 1.5"W x 1.25"D)
Weight:	544g (20 oz.)
Enclosure:	Aluminum
Color:	Gloss White; Powder coated polyester

Gemini Controller

Input:	Universal 100 to 240 VAC, 50/60Hz, 15 Amp max.
Output Signal:	28 VDC and ground; 240W Max.
Capacity:	30 or 100 emitter modules
Display:	2 x 20 character LCD, 20 x 84 mm (0.75" x 3.25"), message language English
Connectors:	6-pin RJ-11 modular jack receptacles provide power and RS-485 communications to emitter modules.
Controls:	Lockout key switch has STANDBY-SETUP-RUN modes. Two-button menu scroll; two-button function select/adjust; two rotary switches select module address.
Communications:	RS-485 buss; data serial output port.
Wiring Run Length:	max. to last emitter module 244 meters (800 feet)
Dimensions:	417 x 224 x 115 mm (16.25"L x 8.75"W x 4.5"D)
Weight:	11.3 kg (25 Lbs.)
Enclosure:	Steel
Finish:	Gloss White; powder coated polyester.

Remote Control Transmitter

Communication:	Infrared signal; 36KHz carrier.
Controls:	Two decimal rotary switches set to address one emitter module. Ion current output adjusted with one recessed positive polarity push button and one recessed negative polarity push button. Balance adjusted with one positive polarity push button and one negative polarity push button.
Power on/off:	Automatic
Indicators:	Green LED indicates signal transmission.
Power:	9 VDC Alkaline Battery, Type 1604
Dimensions:	84 x 139 x 24mm (3.3" x 5.5" x 1.0")
Weight:	159 gms (5.6ozs) w/bat.
Color:	Bone

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Ionization for Electronics Manufacture