



Modulated Pulse AeroBar[®] for Extended ISO Class 1

MODEL 5635

The Model 5635 AeroBar MP ionizing bar is specifically designed to eliminate static charge in ultraclean semiconductor and other clean manufacturing processes where fast discharge time, low swing voltages, and precision balance are required. The Model 5635 utilizes MP technology, combining a high-frequency sine wave with modulated pulses (MP) for high ion output and delivery. This breakthrough technology enables AeroBar mounting within 150 mm of the wafer. MP technology, combined with ultraclean emitter points and precision adjustment, provides “Extended ISO Class 1*” cleanliness, critical for smaller technology nodes. For processes that do not require extreme cleanliness, the optional air-assist accelerates ion delivery, providing faster discharge times and performance over longer distances.

MP technology is easy to adjust and features the ability to fine-tune voltage, frequency and balance to meet differing environmental and product sensitivity requirements. The 5635 AeroBars come with 50 mm spacing for emitters for lengths ≤600 mm for the most dense, uniform ionization coverage.

Features

- Extended ISO Class I cleanliness (using the optimized default settings and without air-assist)
- Modulated pulse technology
- Excellent lateral uniformity
- Low field voltages
- Air-assist capability
- Quarter-turn nozzles
- Optional software with easy-to-use interface with wide adjustability
- Alarm output signal



Benefits

- Compatible with all wafer technology nodes, including 22 nm and below
- Precision balance, high ion output with long-term stability
- Uniform balance across the AeroBar
- Safe placement as close as 150 mm of the wafer or reticle
- Enhanced static charge neutralization at fast automation speeds
- Fast emitter point replacement for less downtime
- Fast setup and easy optimization in any environment
- Communicate to tool or facility monitoring system

* Extended ISO Class 1 is defined on the back side of this datasheet.



Specifications

Input Voltage	24 VDC ±10%
Output Voltage	13.5 kV p-p (max), adjustable
Distance	150-1000 mm distance to surface; application & customer specification dependent
Frequency	Default setting at 5 Hz; adjustable from 1-33 Hz
Balance	Auto balancing system <±20V over time and across the bar length (measured in a controlled environment at 24" distance)
Ion Emission	Modulated pulse (MP) technology
Emitter Points	Single Crystal Silicon emitter points
Emitter Pitch	50 mm or 75 mm spacing between nozzles; 50 mm spacing only on the 450 mm and 600 mm lengths
Air Supply	Clean dry air (CDA) or nitrogen
Airflow	45 psi max gas pressure; 1-3.5 lpm/nozzle thru 8 mm OD one-touch fitting (optional)
Ozone	<0.05 ppm
EMI	Below background level
Operating Env.	Temperature 15-35°C (59-95°F); humidity 30-60% RH, non-condensing
Bar Settings	DIP switches for general power settings; trim pots for fine tuning balance, frequency, and power output or use the serial output to the MP 5635 Bar Control software for fine adjustments
Enclosure	ABS chassis, stainless steel rails on the outside of the bar
Dimensions	3.1H x 1.3W x 18/24/34/39/45/51/57/63/69/75/81/87/93L in. (78H x 34W x 450/600/850/1000/1150/1300/1450/1600/1750/1900/2050/2200/2350L mm)
Certifications	RoHS 2 Compliant 
Model 5601 Power Distribution Box	
Input Voltage	24 VDC for each bank of 4 bars; 5.6A total (0.7A max/port)
Communication	USB Serial Adapter to/from PC; individual bar standby inputs
Alarm Output	Relay closure to ground
Output	8 RJ-45 ports (1 for each 5635 bar)
LED Indicators	Green PWR, Yellow COM, Red ALM, Blue USB
Weight	15 oz (420g)
Dimensions	1.2H x 6.3L x 3.6W in (3.1H x 16.0L x 9.2W cm)
Certifications	RoHS 2 Compliant 

Simple Installation

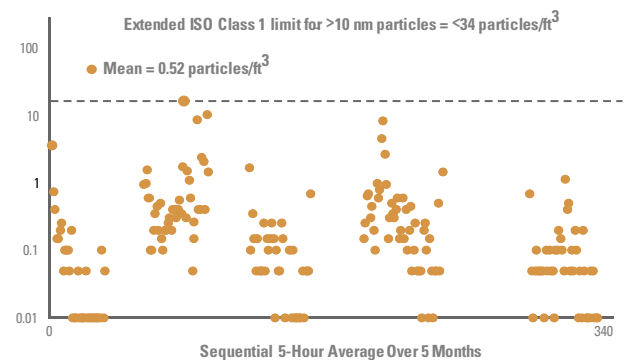
The Model 5635 ionizing bar is quickly installed by simply plugging into a 24 VDC source and connecting an air line, (if air-assist is desired). Set the DIP switches for general power levels as defined in the user's manual to activate factory settings for a base discharge performance. Users can then fine-tune the control parameters from the bar or through the easy to use software GUI for installations where optimized balance, swing voltage and discharge times are desired. An alarm connection in the Signal and Power Junction Box enables a signal output to the tool or central computer for FMS monitoring.

Power Distribution Box (optional)

The Model 5601 Power Distribution Box can be used to centralize power and software control for up to 8 MP AeroBars.

Defining Extended ISO Class 1 Cleanliness

To meet current technology node cleanliness requirements, Simco-Ion utilizes an in-house standard that extrapolates ISO 14644-1 down to >0.01 micron (>10 nm) particles. Greater than 10 nm particle size is typically measured using a condensation nucleus counter (CNC). The result is defined as "Extended ISO Class 1". The basis of the extrapolation employs the formula which was used to define the existing ISO 14644-1 class limit lines. The formula is provided in ISO Standard 14644-1, and when extrapolated the permitted number of particles sized 0.01 micron and larger = 1200 particles/m³ (or 34 particles/ft³). The Simco-Ion in-house standard makes no changes to ISO 14644-1. It only extrapolates ISO 14644-1 to smaller particle sizes. Additional information regarding the ISO 14644-1 standard can be found at www.iso.org. Long-term testing over 5 months shows that the Model 5635 AeroBar MP meets Extended ISO Class 1 cleanliness, making it the cleanest corona ionizing bar on the market.



Ordering Information

91-5635U-xxxx	xxxx (bar lengths): -450*/600*/850/1000/1150/1300/1450/1600/1750/1900/2050/2200/2350 mm
91-5635U-xxxx-yy	yy (nozzle spacing): -50 for 50 mm; -75 for 75 mm
33-5601-01	Model 5601 Power Distribution Box, 24 VDC; powers up to 8 MP AeroBars
14-21241	24 VDC Power Supply for Model 5601 Power Distribution Box (power cord ordered separately)
33-21491	Signal and Power Junction Box
92-5635-001	AeroBar MP Remote Serial Adapter Kit
33-25625	24 VDC Power Converter with Power/Signal Junction Box Kit
25-0540-xx	CAT-5 with RJ-45 Ethernet Cable in 6, 10, 15 ft lengths, white
28-6370	Flat mounting clips. Recommended usage: 450-1150 mm, 2 clips; 1300-2050 mm, 3 clips; 2200 mm and above, 4 clips
32-22210	Horizontal rotatable mounting bracket. Recommended usage: 450-1150 mm, 2 clips; 1300-2050 mm, 3 clips; 2200 mm and above, 4 clips
32-22220	Vertical rotatable mounting bracket. Requires 2 brackets for each ionizer bar to hold one at the top and one at the bottom
33-5353	Flat Mounting Clip with Active/Screw Fasteners (2) for AeroBar. Recommended usage: 450-1150 mm, 2 clips; 1300-2050 mm, 3 clips; 2200 mm and above, 4 clips

*The 450 mm and 600 mm are only available with 50 mm nozzle spacing.

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