



Modulated Pulse AeroBar[®]

MODEL 5635

The Model 5635 AeroBar MP ionizing bar is specifically designed to eliminate static charge in semiconductor and other ultra-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 Model 5635 mounting within 150 mm of the wafer.

MP Technology, combined with ultra-clean silicon emitter points and precision adjustment, the 5635 MP bar exceeds ISO 14644-1 Class 1 cleanliness to meet the Extended ISO Class 1* level for particles down to 10 nm 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.

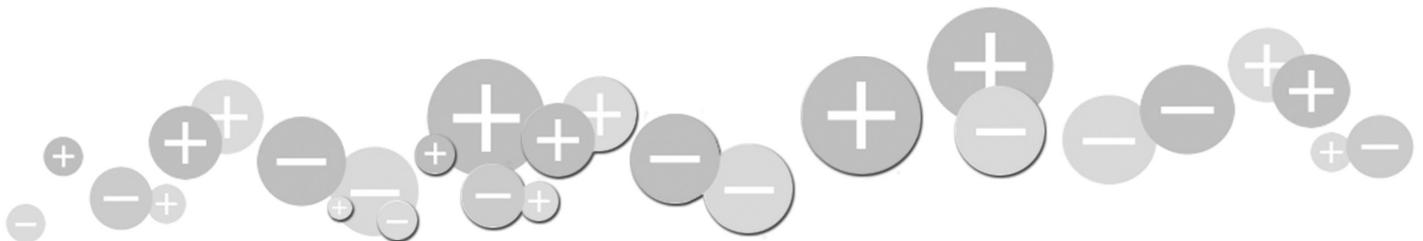
MP Technology is easy to adjust and features the ability to fine-tune voltage, frequency and balance to meet differing environmental and product sensitivity requirements. The 5635 AeroBars come with 50 mm spacing for emitters for lengths ≤ 600 mm for the densest, uniform ionization coverage.

Features

- Extended ISO Class 1* (10 nm) particles cleanliness
- Modulated Pulse Technology
- Excellent lateral uniformity
- Low field voltages
- Air-assist capability
- Optional software with an easy-to-use interface with wide adjustability
- Alarm output signal

Benefits

- Compatible with all wafer technology nodes including 14 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 setup and easy optimization in any environment
- Communicate to tool or facility monitoring system



Model 5635	
Voltage	Input: 24 VDC ±10% power input RJ-45; 0.7A (max) Output: 13.5 kV p-p (max), adjustable
Discharge	±1000-100V in 15 sec (typ) with no air-assist, Vp-p Swing of 80 at 24" below an emitter center group of points
Balance	<±35V measured in a controlled environment at 18" distance
Range	150-1000 mm distance to surface; application & customer specification dependent
Ion Emission	Modulated Pulse (MP) Technology
Emitter	Points: ISO 14644-1 Class 1 Single-crystal Silicon Pitch: 50 mm spacing for bars shorter than or equal to 600 mm, 75 mm spacing between nozzles on all other lengths Frequency: Low 0.3-1.5 Hz; high 1-33 Hz
Cleanroom Class	ISO 14644-1 (0.1 µm particles) and Extended ISO Class 1* cleanliness (10 nm particles or nanoparticles) using 45-50% output voltage setting and OpenJet nozzles with Single-crystal Silicon emitters
Air Supply	Input: Clean Dry Air (CDA) or Nitrogen Pressure: 45 psi max Flow: 1-3.5 lpm/nozzle Connection: 8 mm OD one-touch fitting
Bar Setting	DIP switches for general power settings; trim pots for fine tuning balance, frequency, & power output; or use the serial output to the 5635 Bar MP Control software for fine adjustments
Ozone	<0.05 ppm (24-hour accumulation)
EMI	Below background level
Operating Env	15-35°C (59-95°F); 30-60% RH, non-condensing
Enclosure	ABS chassis; stainless steel ground plate
Dimension	3.1"H x 1.3"W x 17.7 / 23.6 / 33.5 / 39.3 / 45.3 / 51.2 / 57.1 / 63.0 / 69.0 / 74.8 / 80.7 / 86.6 / 92.5"L (7.8 x 3.4 x 45 / 60 / 85 / 100 / 115 / 130 / 145 / 160 / 175 / 190 / 205 / 220 / 235 cm)
Certification	
Model 5601 Power Distribution Box	
Input Voltage	24 VDC for each bank of 4 bars; 5.6A total (0.7A max/port)
Communication	Ethernet (RJ-45) to/from PC; individual bar standby inputs
Output	8 RJ-45 ports (1 for each MP bar)
LED Indicator	Green POWER, Yellow COMMUNICATION, Red ALARM, Blue USB
Alarm Output	Relay closure to ground
Dimension	1.27"H x 6.95"L x 3.64"W (3.22 x 17.65 x 9.23 cm) with flange
Weight	0.94 lb (0.43 kg)
Certification	

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

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

Cleanliness—Extended ISO Class 1*

Model 5635 is designed to operate in and maintain ISO 14644-1 cleanliness (10 particles or less per m³ for particles of 0.1 micron and larger). Model 5635 will also perform to Extended ISO Class 1 cleanliness (1200 particles or less per m³ (34 particles per ft³) for particles of 10 nm and larger) when operated at 45-50% output voltage setting and OpenJet nozzles with Single-crystal Silicon emitters.

ISO Class 1 for 0.1 and 0.01 Micron Particles

ISO 14644-1 (1999) establishes 9 particulate class limits. A class is met when airborne particles-per-cubic-meter (or particles-per-cubic-foot) do not exceed the class limit. The following graph summarizes the class limit lines for particles between 0.1 micron and 5 microns.

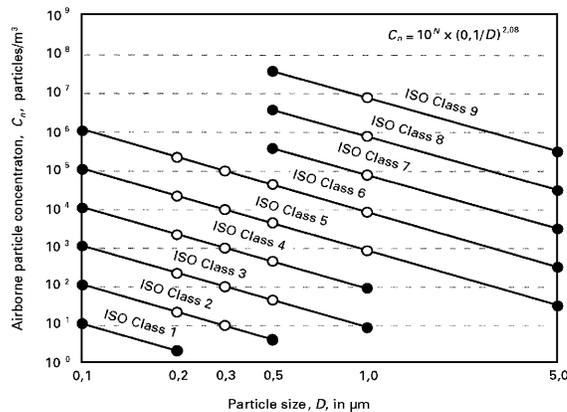


Chart from ISO 14644-1: Annex A - Informative

Ordering Information

91-5635-xxxx-yy-zzzzz	xxxx: 450/600/850/1000/1150/1300/1450/1600/1750/1900/2050/2200/2350 mm bar lengths yy: -50 for 50 mm nozzle spacing, -75 for 75 mm nozzle spacing zzzzz: -QOU30 OpenJet nozzle with Single-crystal Silicon emitter
33-5601-03	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 (IEC power cord required, contact Sales Services for detail)
33-21491	Signal and Power Junction Box for 1 AeroBar
92-5635-001	AeroBar MP Remote Serial Adapter Kit (includes RJ-45 splitter, USB to serial adapter, RJ-45 to DB9 adapter)
33-25625	24 VDC Power Converter with Power/Signal Junction Box Kit for 1 AeroBar (IEC power cord required, contact Sales Services for detail)
25-0540-xx	CAT-5 with RJ-45 Ethernet Cable in 6, 10, 15 ft lengths, white
28-6370²	Flat mounting clips
32-22210²	Horizontal rotatable mounting bracket
32-22220	Vertical rotatable mounting bracket (requires 2 brackets for each ionizer bar to hold one at the top and one at the bottom)
33-5353²	Flat Mounting Clip with Active/Screw Fasteners (2) for AeroBar

* Extended ISO Class 1: An extrapolation of ISO 14644-1 down to 0.01 micro (10 nm) particles, measured with a condensation nucleus counter (CPC). For more information, visit www.simco-ion.com/technology/resources for our technical notes on Extended ISO Class 1.

1. The 450 mm and 600 mm are only available with 50 mm nozzle spacing.
2. Recommended usage: 450-1150 mm, 2 clips; 1300-2050 mm, 3 clips; 2200 mm and above, 4 clips.

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