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An ITW Company

Ionization Solutions

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Modulated Pulse AeroBar®

MODEL 5635M

Simco-Ion's Model 5635M 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, but exposed metallic surfaces are not permitted. The Model 5635M utilizes MP Technology, combining a high-frequency sine wave with Modulated Pulse (MP) for high ion output and delivery. This breakthrough technology enables Model 5635M mounting within 150 mm from the wafer.

MP Technology, combined with ultra-clean silicon emitter points and precision adjustment, the 5635M MP bar exceeds ISO 14644-1 Class 1 cleanliness to meet the Extended ISO Class 1* level for particles down to 10 nm. For processes that do not require extreme cleanliness, the optional air-assist accelerates ion delivery, providing faster discharge times and performance over longer distances.

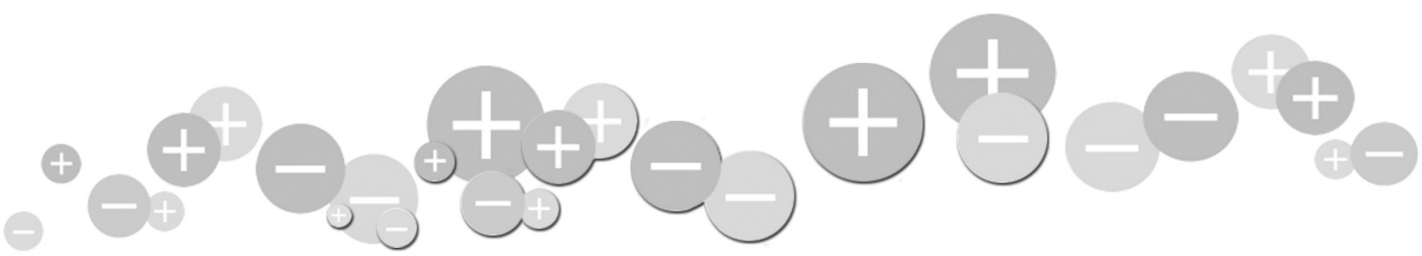
MP Technology is easy to adjust and features the ability to fine-tune voltage, frequency and balance to meet differing environmental and product sensitivity requirements. Shorter bars (≤600 mm) feature 50 mm spacing between nozzles, to improve ion distribution in close applications.

Features

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

Benefits

- Compatible with all wafer technology nodes including 14 nm and below, where "No Metal" applications required
- Precision balance, high ion output, long-term stability
- Uniform balance across the AeroBar
- Safe placement as close as 150 mm from 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 5635M	
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; trimpots 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 (ground plate – carbon filled ABS)
Dimension	3.1"H x 1.3"W x 13.8 / 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 35 / 45 / 60 / 85 / 100 / 115 / 130 / 145 / 160 / 175 / 190 / 205 / 220 / 235 cm)
Certification	CE c UL us RoHS2 UK CA
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 5635 bar)
LED Indicator	Green PWR, Yellow COM, Red ALM, 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	CE RoHS2 UK CA

Simple Installation

The Model 5635M ionizing bar is quickly installed by simply plugging into a 24 VDC source and connecting an airline (if with air assist). Set the DIP switches for general power levels defined in the user's manual to activate factory settings. The control parameters may be fine-tuned from the bar or through the easy-to-use MP Control software for desired installations with optimized balance, swing voltage, and discharge times. 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 5635M is designed to operate in and maintain ISO 14644-1 cleanliness (10 particles or less per m^3 for particles of 0.1 micron and larger). Model 5635M will also perform to Extended ISO Class 1* level for particles down to 10 nm 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.

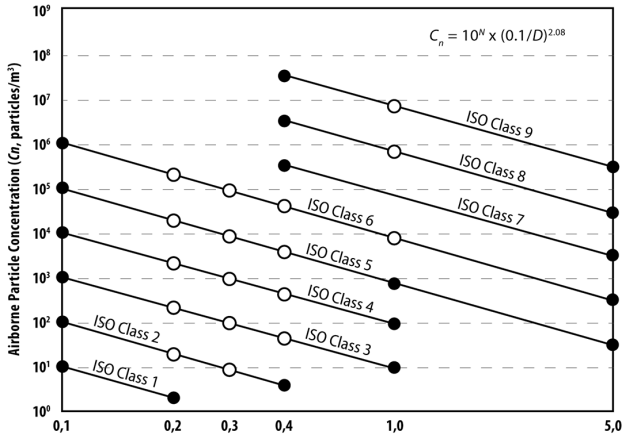


Chart from ISO 14644-1: Annex A - Informative

Ordering Information

91-5635M-xxxx-yy-zzzzz	xxxx: -350[1]/450[1]/600[1]/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
91-5635MNA-xxxx-yy-zzzzz	xxxx: -350[1]/450[1]/600[1]/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: No Air Jet nozzle type
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 FMS for 1 AeroBar
92-5635-001	24 VDC Power Converter with Power/Signal Junction Box Kit
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' lengths, white
33-2215-01[2]	Bracket Assembly (Delrin) includes P/N 32-2212-01 & P/N 32-2214-01

* 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 350 mm, 450 mm, and 600 mm are only available with 50 mm nozzle spacing.
2. Recommended usage: 350-1000 mm, 2 clips; 1150-1600 mm, 3 clips; 1750 mm and above, 4 clips.

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