



## Modulated Pulse AeroBar<sup>®</sup> with Feedback Control

### MODEL 5645

Simco-Ion's latest Modulated Pulse (MP) Technology ionization bar is now available with active monitoring and feedback control through the Novx System and Novx Inside versions. The 5645 MP bar is designed to provide industry-leading balanced ionization performance for semiconductor back-end advanced packaging and test applications and front-end demanding ultra-clean applications for fast discharge time, low swing voltages, and precision balance. This advanced technology enables AeroBar mounting within 150 mm of the wafer. Precision adjustment combined with ultra-clean silicon emitter points, the 5645 MP bar exceeds ISO 14644-1 Class 1 cleanliness and meets the Extended ISO Class 1\* level for particles down to 10 nm.

When installed with Novx System or Novx Inside, monitoring and feedback control, the 5645 can maintain precise balance better than  $\pm 5V$ . The bar can easily adjust and fine-tune voltage, frequency, and balance to meet environmental and product sensitivity requirements. Model 5645 MP bar is available in 14 lengths, from 350-2350 mm.

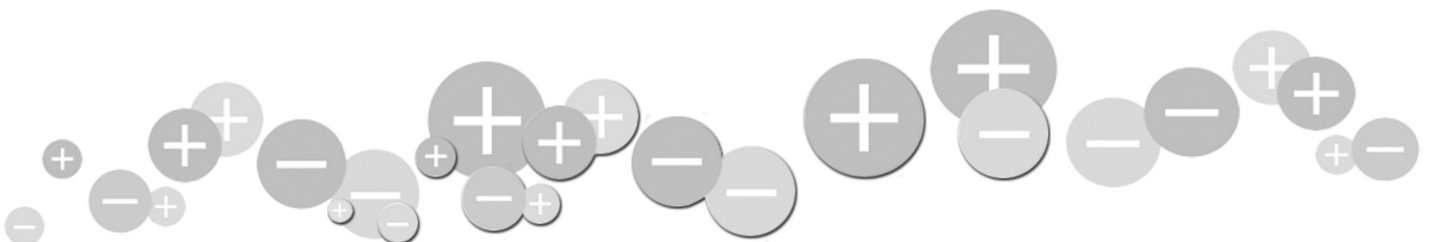
#### Features

- $\pm 5V$  with Novx System or Novx Inside version
- ISO 14644-1 Class 1 and Extended ISO Class 1 with SCSi emitter; ISO 14644-1 Class 3 with Ti emitter
- Centralize power and control with widely adjustable MP Control software
- Sensor input, FMS connection, alarms, power, and communications are located on the same end of the bar

#### Benefits

- Provides active monitoring and feedback control on ESD protection with precise and stable balance
- Compatible with all device technology nodes
- Eliminating manual adjustment at the installed location
- Designed for overall ease of use and long maintenance cycles

\* 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](http://www.simco-ion.com/technology/resources) for our technical notes on Extended ISO Class 1.



Model 5645	
<b>Voltage</b>	Input: 24 VDC $\pm 10\%$ , 0.7A (max) Output: 13.5 kV peak-to-peak (max)
<b>Discharge</b>	15 sec (typ) with no air-assist measured @ 24" (61.0 cm) below AeroBar center
<b>Balance</b>	$< \pm 5V$ , Novx System or Novx Inside; $< \pm 20V$ , Standalone
<b>Ion Emission</b>	Modulated Pulse (MP) Technology
<b>Emitter</b>	Point: Single-crystal Silicon and Titanium Voltage: 13.5 kV peak-to-peak (max) Frequency: 0.3-60 Hz Pitch: 50 mm spacing (350/450/600 mm lengths only); 75 mm spacing between nozzles on all other lengths
<b>Cleanroom Class</b>	Single-crystal Silicon Emitter: ISO 14644-1 Class 1 & Extended ISO Class 1 Titanium Emitter: ISO 14644-1 Class 3
<b>LED Indicator</b>	Green steady NORMAL operation, green flashing STANDBY, red ALARM
<b>Bar Setting</b>	Adjustment made remotely via software controlled with Model 5601 Power Distribution Box; no manual adjustment on the bar
<b>Air Supply</b>	Input: Optional Clean Dry Air (CDA) or Nitrogen Flow: OpenJet 45 psi max gas pressure, 1-3.5 lpm/nozzle thru 8 mm OD one-touch fitting Connection: 8 mm tubing (OD) bulkhead, one-touch fitting; no daisy-chain capability
<b>Ozone</b>	$< 0.05$ ppm
<b>EMI</b>	Below background level
<b>Operating Env</b>	15-35°C (59-95°F); 30-60% RH, non-condensing
<b>Enclosure</b>	ABS chassis, stainless steel rail on the outside of the bar
<b>Dimension</b>	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)
<b>Certification</b>	CE cULus RoHS2 UKCA
Model 5601 Power Distribution Box	
<b>Input Voltage</b>	24 VDC for each bank of 4 bars; 5.6A total (0.7A max/port)
<b>LED Indicator</b>	Green POWER, yellow COMMUNICATION, red ALARM, blue USB
<b>Communication</b>	Ethernet (RJ-45) to/from PC; individual bar standby inputs
<b>Alarm Output</b>	Relay closure to ground, max 24 VDC @ 100 mA, normal OpenCoded
<b>Output</b>	8 RJ-45 ports (1 for each 5635 bar)
<b>Dimension</b>	1.27"H x 6.95"L x 3.64"W (3.22 x 17.65 x 9.23 cm) with flange
<b>Weight</b>	0.94 lb (0.43 kg)
<b>Certification</b>	CE RoHS2 UKCA

## Ordering Information

91-5645-xxx-yy-Q0C30-01	Model 5645 Bar, Titanium OpenJet Nozzle, Standalone Version
91-5645A-xxx-yy-Q0C30-01	Model 5645 Bar, Titanium OpenJet Nozzle, Novx Inside w/SMA connector
91-5645N-xxx-yy-Q0C30-01	Model 5645 Bar, Titanium OpenJet Nozzle, Novx System w/RJ-11 connector
91-5645NA-xxx-yy-Q0U30-01	Model 5645 Bar, Silicon No Air Jet Nozzle, Standalone Version
91-5645ANA-xxx-yy-Q0U30-01	Model 5645 Bar, Silicon No Air Jet Nozzle, Novx Inside w/SMA connector
91-5645NNA-xxx-yy-Q0U30-01	Model 5645 Bar, Silicon No Air Jet Nozzle, Novx System w/RJ-11 connector
33-5601-03	Model 5601 Power Distribution Box with Ethernet Port for 8 bars max, 24 VDC
14-21241	24 VDC Power Supply for Model 5601 Power Distribution Box (4 per AeroBar) <sup>1</sup>
92-5635-001	AeroBar MP Remote Serial Adapter Kit (includes RJ-45 splitter, USB to serial adapter, RJ-45 to DB9 adapter)
33-0504	Passive Sensor, 1.75" x 4" Tall w/SMA-to-SMA Cable 5 ft/1.5m for Novx Inside
33-0521-5	Passive Sensor, 1.75" x 1" Tall w/SMA-to-SMA Cable 5 ft/1.5m for Novx Inside
33-1620-xx	RJ-11 cable connecting to Novx 3352/3362 (xx = 6', 10', 20' length) for Novx System
33-25625	24 VDC Power Converter w/Power/Signal Junction Box Kit <sup>1</sup>
25-0540-xx	CAT-5 with RJ-45 Ethernet Cable in xx = 6, 10, 15 ft lengths, white (from 5645 bar to Model 5601 p/n 33-25625)
91-5635-SW-Vx.x	MP Control Software Version x.x

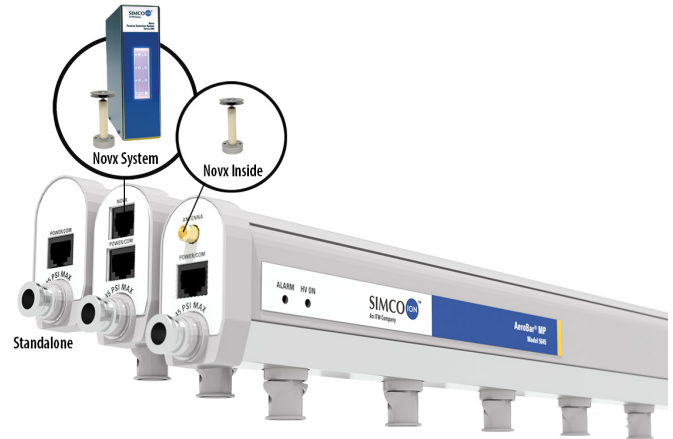
xxx = bar length (350/450/600/850/1000/1150/1300/1450/1600/1750/1900/2050/ 2200/2350 mm).

yy = nozzle spacing (50 mm for 350/450/600 mm bar length, all other are 75 mm).

1. IEC power cord required, contact Sales Services for detail

## $\pm 5V$ Balance Performance

For  $\pm 5V$  balance performance, Model 5645 is available with Novx System or with Novx Inside. Both options operate with the Novx to detect and automatically correct the balance. With the sensor placed at the target area, feedback is sent to the Model 5645 AeroBar internal control system, ensuring that your target maintains a  $\pm 5V$  or better balance at all times.



## Design Features

**Simplified Interface:** 100% remote controlled allows ease of adjustments via centralized MP Control software.

**Enhanced Cable Management:** Locating the power/communication, 24 VDC, and Novx connection all on the same side allows for better control of the cables and planning.

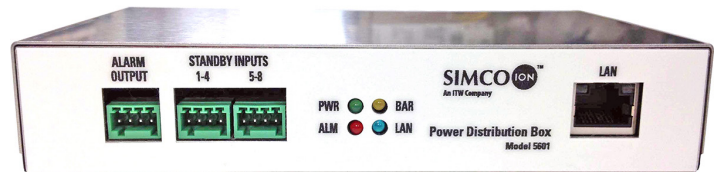
**Air-Assist Option:** For processes under weak laminar flow, the optional air-assist can help to accelerate ion delivery, providing faster discharge times and performance over longer distances.

## Simple Installation with MP Control Software

Model 5645 AeroBar is quickly installed by simply plugging into a 24 VDC source. MP Control Software accommodates one bar or multiple bars (8 max). Users can fine-tune the control parameters through the easy-to-use MP Control software 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 for FMS monitoring.

## Power Distribution Box

The optional Power Distribution Box Model 5601 with MP Control Software can communicate with and centralize power up to eight 5645 AeroBars.



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