



High Performance Ionizing Air Blower

Aerostat® FPD

User's Manual

About Simco-Ion

Simco-Ion develops, manufactures, and markets system solutions to manage electrostatic charge. As the world's largest provider of electrostatics management products and services, Simco-Ion improves its customers' business results by providing a total solution to their electrostatic discharge and electromagnetic interference challenges. Simco-Ion Technology Group is a division of Illinois Tool Works (ITW), located in Alameda, California. For more information about Simco-Ion visit www.simco-ion.com or call 800-367-2452. Simco-Ion is ISO 9001.

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Important Safety Information



Carefully read the following safety information before installing or operating the equipment. Failure to follow these safety warnings could result in damage to your ionization system and/or voiding the product warranty.

- ☑ This unit is equipped with a 3-prong grounding plug and must be plugged into a 3-terminal grounded receptacle. Do not defeat the electrical ground by modifying plug or using an ungrounded 3-prong adapter. If an extension cord is necessary, use only a 3-wire extension cord that provides grounding.
- ☑ Units with an input voltage selector switch are shipped from the factory set to "230V" by default. If you plan to operate the blower from 120 VAC, please be sure to change the voltage selection to the "120V" setting before connecting a power cord to the unit.
- ☑ **WARNING:** Do not attempt to operate the FPD blower at 230 VAC with the voltage selector switch set for "120 VAC". Doing so will shut down the HV ionization and cause the FPD blower to require factory service.
- ☑ Keep the unit dry. Moisture can affect the ion balance. Excessive moisture may damage the ionizer.
- ☑ Do not operate the ionizer in a flammable, volatile or explosive atmosphere.
- ☑ Do not insert objects through the unit's intake or outlet grilles. Damage to the ionizer and/or personal injury may result.
- ☑ Internal repairs or servicing must be done by a factory-qualified service technician. Please contact SIMCO-ION Customer Service for information.

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Description

1.1 Aerostat® FPD Ionizing Air Blower

1.2 Aerostat FPD Identification

1.1 Aerostat® FPD Ionizing Air Blower

Simco-Ion's Aerostat FPD Ionizing Air Blower is designed for use in applications where rapid neutralization of large static charges is necessary to prevent particle contamination. Typical applications include the neutralization of static charges where protective films must be removed. In such an application, the Aerostat FPD rapidly reduces static fields that would otherwise attract and trap debris to surfaces that must be critically clean.

Simco-Ion's Aerostat FPD ionizing air blower provides superior static neutralization over an extended surface area. Available in two, three and four fan models, it provides coverage over narrow to wide areas. It utilizes AC ionization technology and high flow fans to provide this enhanced performance. The airflow from the unit contains both positive and negative ions, enabling the neutralization of static charges wherever the airflow is directed.

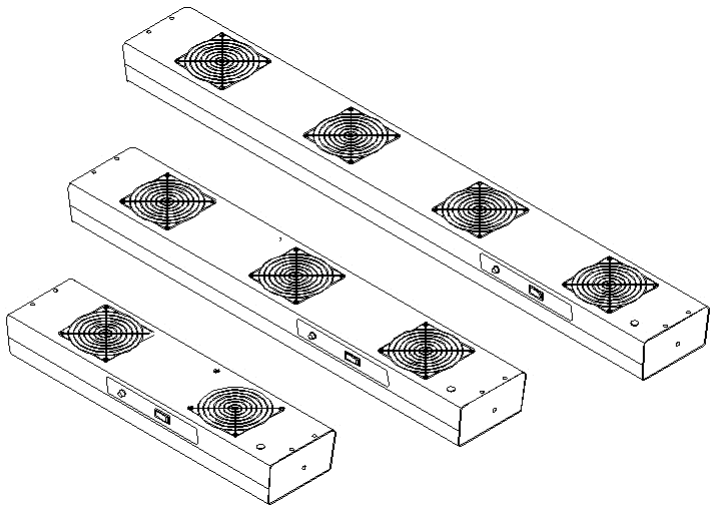


Figure 1. Aerostat FPD Models

Features

- Rapidly neutralizes static charges
- Covers an extended area with ionized air
- Inherently balanced ionization
- Ionization indicator light
- AC technology for stable performance
- Built-in emitter cleaner for easy maintenance
- Stainless steel mounting brackets & hardware

1.2 Aerostat FPD Identification

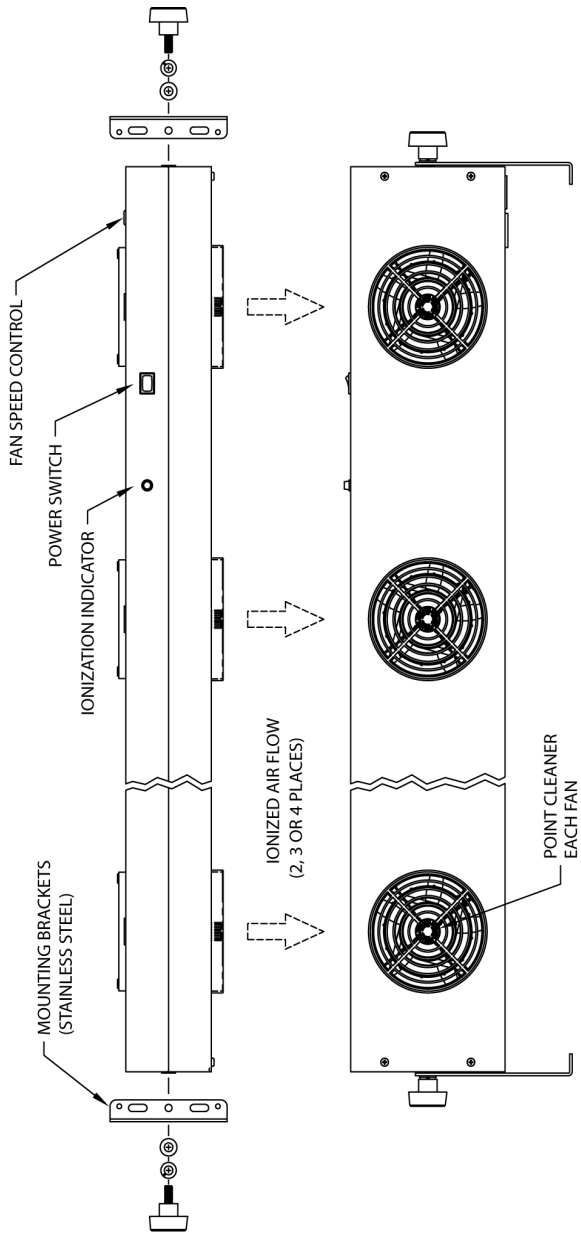


Figure 1. Aerostat FPD Identification

1. **Inherent balance and Built-in Emitter Point Cleaners:** The Aerostat FPD is a low maintenance ionizer. Like Simco-Ion's other Aerostat series ionizing air blowers, the FPD operates on AC technology to provide stable performance over long periods of use.
2. **Recessed Fan Speed Control.** The fan speed control allows adjustment of the unit's airflow to suit the user's need. Recessing the speed control discourages tampering once the desired airflow is set.
3. **Mounting Brackets and Hardware:** Included with the Aerostat FPD are stainless steel brackets and hardware, featuring a variety of holes and slots to facilitate mounting. The standard brackets also allow full rotation of the Aerostat FPD for aiming ease.
4. **Ionized Airflow:** The Aerostat FPD produces an airflow that is capable of rapidly neutralizing static charges. Directing the ionized airflow at static generating processes reduces static charge levels. Maintaining the ionized airflow on product neutralizes static charges, greatly reducing the tendency to attract airborne dirt and debris. This control of static electricity in production increases product yield and improves product quality.

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Installation

- 2.1 Unpacking
- 2.2 Location
- 2.3 Mounting
- 2.4 Electrical
- 2.5 Optional Air Filter
- 2.6 Fan Speed

2.1 Unpacking

Carefully remove the equipment from the carton and inspect contents. Empty the carton to insure that small parts are not discarded. If any damage has occurred during shipment, notify the local carrier at once. A report should also be forwarded to Simco-Ion Technology Group, sallesservices@simco-ion.com. See Warranty for Return Shipment information.

2.2 Location

The Aerostat FPD should be located approximately 12 to 24 inches (0.3m to 0.6m) from the critical work area or objects to be neutralized. It should be positioned to cover as much of the area as possible with the ionized air stream.

2.3 Mounting

The Aerostat FPD is supplied with stainless steel brackets that allow the unit to pivot. To install them, place a lock washer, then a flat washer on the threaded shaft of the lock knobs. Hold the mounting bracket in place over the threaded insert on the end of the unit and secure the bracket with the lock knob.

The mounting bracket has a variety of holes and slots to enable mounting on a variety of surfaces. Mounting hardware to secure the bracket (not supplied) must have a minimum safe working load rating of 20 lbs (10 kg).

Optional hanger brackets are available that allow suspending the Aerostat FPD by chains. When using the optional hanger brackets, mounting hardware must have a minimum safe working load rating of 20 lbs (10 kg). If "S" hooks are used to suspend the Aerostat FPD, close them after installation to secure unit.

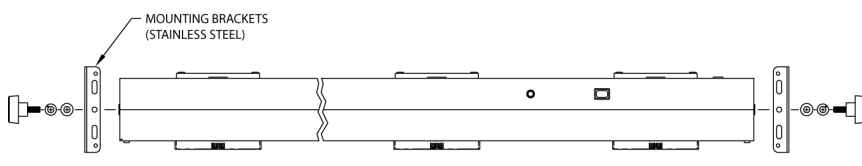


Figure 2. Aerostat FPD Mounting Options

2.4 Electrical

The nominal line voltage for the Aerostat FPD is listed on the serial label near the power-input connector. Units that operate on multiple line voltages have a voltage selection switch adjacent to the power-input connector that is set to the "230V" setting before shipping. The voltage selection switch must be set for the correct applied line voltage before connecting the blower to line power.

Once the voltage selection is correct, remove the "230V DEFAULT" label from the AC inlet and connect the power cord to the AC inlet of the blower.

The unit must be grounded for safe operation. If an extension cord is necessary, use only a 3-wire extension cord that provides grounding.

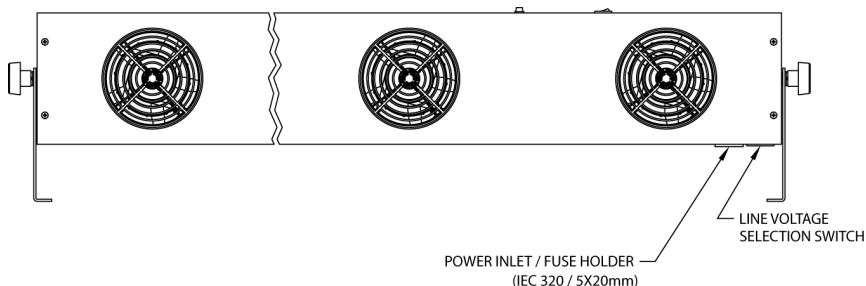


Figure 3. Aerostat FPD Electrical

2.5 Optional Air Filter

If desired, optional air filters may be installed. The air filter consists of a filter retainer (part number 4710017) and an air filter element (part number 4100810, pack of 6).

2.6 Fan Speed

The Aerostat FPD has a recessed fan speed control on the top of the unit, located beneath a white plastic pop-out plug. The fan speed is controlled by a recessed potentiometer that can be adjusted with a flat blade screwdriver. Access to the adjustment requires removal of the plastic hole plug.

3

Operation

3.1 Controls & Indicators

3.1 Controls & Indicators

Activate the Aerostat FPD ionizing air blower by setting the "Power" switch ON ("I"). The "Ionization" indicator will illuminate to indicate the presence of ionized air. For efficient neutralization of static charges, the ionized airflow must be aimed at the source of static charges. The time required to neutralize a static charge on an item in the air stream depends on fan speed and distance to the target item. Setting a higher fan speed reduces time required to neutralize a static charge.

The ionized air stream of the Aerostat FPD should cover as much of the work area as possible. The constant flow of ionized air will prevent items such as tools, materials and fixtures from developing a static charge. Charged items introduced into a work area will be neutralized and will remain neutral while in the ionized air stream.

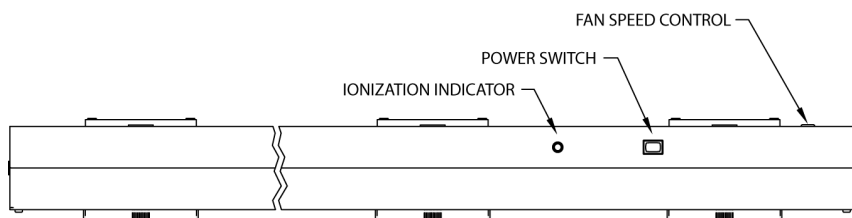


Figure 4. Aerostat FPD Controls and Indicators

If the "Ionization" indicator light is not lit, please perform an ion output check as described in Section 4.5 of this manual. If the unit is not ionizing, contact Simco-Ion Technical Support at 510-217-0470 or email techsupport@simco-ion.com.

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Maintenance

- 4.1 Cleaning & Adjustments
- 4.2 Emitter Cleaning
- 4.3 Air Inlet & Outlet Cleaning
- 4.4 Optional Air Filter Cleaning
- 4.5 Ion Output Check
- 4.6 Calibration

4.1 Cleaning & Adjustments

The Aerostat FPD has been designed with low maintenance in mind. The only regular maintenance suggested is emitter point cleaning, ion balance checking and ion output checking. Emitter point cleaning takes only seconds with the built-in point cleaners. The Aerostat FPD contains a balancing circuit that is inherently self-balancing. This circuit compensates for dirt build-up on emitters, emitter point wear, line voltage fluctuations and variations in air velocity. Scheduled checking of the ion output and balance should be considered to assure quality audit requirements.

4.2 Emitter Cleaning

To clean the ion emitters, simply rotate the point cleaner knob located at center of each outlet clockwise to the stop (approximately one turn) and release. The spring-loaded point cleaning brush will return to its parking spot. Recommended frequency of emitter point cleaning is every 160 hours of operation. (weekly for 24 hr/day operation, monthly for 8 hr/day operation).

4.3 Air Inlet & Outlet Cleaning

The air inlet grille on the top of the unit and the ionized air outlets should remain clean to prevent restriction of airflow. They can be cleaned with a soft brush or vacuum. While cleaning the air inlet grille and ionized air outlet is not regularly required in cleanroom installations, units installed in general assembly areas may require regular cleaning. Clean the air inlet grille and ionized air outlets once every three months or more often if needed.

4.4 Optional Air Filter Cleaning

Remove the air filter element from the top of the unit by unsnapping the filter retainer. Rinse the filter in plain water while gently squeezing. If the dirt is stubborn, wash the filter in mild soap and water then rinse. Blot excess water off the filter with paper towels and allow to dry. Reinstall filter on air inlet and secure by snapping the filter retainer in place.

Important: If air filters are used, clean the air filters once every three months or more frequently if needed.

4.5 Ion Output Check

A charged plate monitor (CPM) is required to test the unit for ion balance. Proper electrical grounding of the charged plate monitor and ionized air blower is essential for accurate offset voltage measurement. Allow the Aerostat FPD to warm up for one hour to ensure the most accurate offset voltage measurement. Offset voltage should be measured and checked against the Ion Balance in Specifications.

Do not try to determine ion balance by holding a static meter in the ionized air stream, this will result in a meaningless reading.

If a CPM is not available, a periodic verification instrument may be used to verify ion output. Periodic verification equipment may not correlate with the Ion Output tables in Specifications. Refer to manufacturer of periodic verification equipment for more information.

Caution: **ELECTRICAL SHOCK HAZARD!** Do not insert objects through intake or outlet grille.

Do not try to verify operation of the unit by drawing a spark from an ion emitter point. The design of the balancing circuit makes the "spark test" inconclusive. Sustained grounding of the ion emitters may damage the balancing circuit.

If the "Ionization" indicator light is not lit, please perform an ion output check. If the unit is not ionizing, contact Simco-Ion Technical Support at 510-217-0470 or email techsupport@simco-ion.com.

4.6 Calibration

The Aerostat FPD ion output is inherently balanced by design, so there are no calibration adjustments. If, after checking ion balance as outlined above, an unbalance or offset voltage exists in excess of the specification, clean the emitters. If the problem persists, contact Simco-Ion Technical Support at 510-217-0470 or email techsupport@simco-ion.com.

5

Specifications

5.1 Specifications

5.2 Parts & Accessories

5.3 Dimensional Drawing

5.1 Specifications

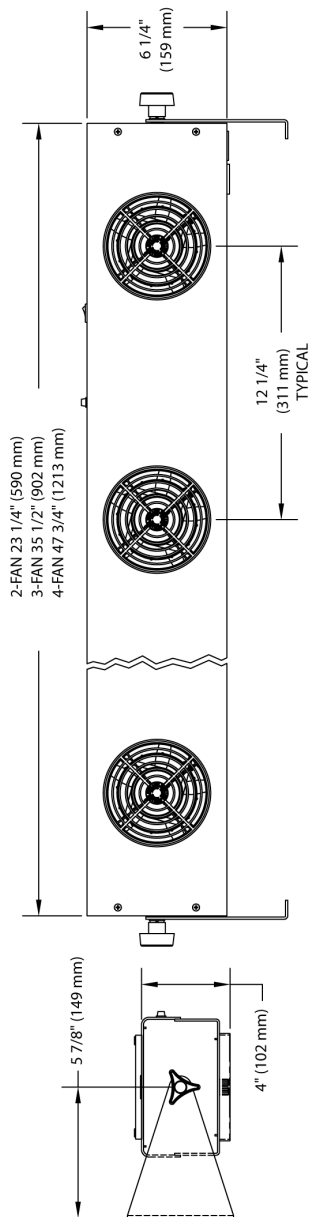
Input Voltage	120 VAC, 60 Hz, 0.3A (2-fan); 0.4A (3-fan); 0.5A (4-fan) 230 VAC, 50 Hz, 0.2A (2-fan); 0.2A (3-fan); 0.3A (4-fan) Input fuse: 2.5A 250V 5x20 mm Time lag				
Balance	0 ±10V				
Discharge*	<u>1 ft</u>	<u>2 ft</u>	<u>3 ft</u>	<u>4 ft</u>	<u>5 ft</u>
Fan Low	2.0	4.0	6.0	8.0	10
Fan High	1.0	2.0	3.0	4.5	6.0
	Discharge time across face of unit in seconds.				
Air Volume	2-fan 150 cfm (4.3 m³/min), 300 cfm (8.5 m³/min) 3-fan 230 cfm (6.4 m³/min), 450 cfm (12.8 m³/min) 4-fan 300 cfm (8.5 m³/min), 600 cfm (17.0 m³/min) Flow amount equal to sum of all fans.				
Air Velocity	<u>1 ft (0.3m)</u>	<u>2 ft (0.6m)</u>	<u>3 ft (0.9m)</u>	<u>4 ft (1.2m)</u>	<u>5 ft (1.5m)</u>
Fan Low	500 (2.5)	350 (1.8)	250 (1.3)	200 (1.0)	150 (0.8)
Fan High	1000 (5.0)	700 (3.5)	500 (2.5)	400 (2.0)	300 (1.5)
	Velocity in fpm and (m/s) measured at center of air stream				
Coverage Area	<u>Blower</u>	<u>Overhead Applications</u>		<u>Benchtop Applications</u>	
	2-fan	2' W x 2' L (0.6m x 0.6m)		2' W x 5' L (0.6m x 1.5m)	
	3-fan	2' W x 3' L (0.6m x 0.9m)		3' W x 5' L (0.9m x 1.5m)	
	4-fan	2' W x 4' L (0.6m x 1.2m)		4' W x 5' L (1.2m x 1.5m)	
Operating Env.	Temperature 50-95°F (10-35°C); humidity 30-60% RH, non-condensing				
Ozone	Equilibrium concentration <0.02 ppm				
Audible Noise	Fan low 59 dBA; fan high 69 dBA measured @ 2 ft (0.6m) from unit				
Mounting	Stainless Steel brackets				
Air Filter	30 ppi Open Cell Polyurethane Foam				
Enclosure	Aluminum, White Enamel/Powder Coat				
Weight	2-fan 10 lb (4.5 kg); 3-fan 13 lb (5.9 kg); 4-fan 16 lb (7.3 kg)				
Dimensions	2-fan 23-1/4W x 4H x 6-1/4D in. (590 x 102 x 159 mm)				
	3-fan 35-1/2W x 4H x 6-1/4D in. (902 x 102 x 159 mm)				
	4-fan 7-3/4W x 4H x 6-1/4D in. (1213 x 102 x 159 mm)				
Warranty	Two year limited warranty				

* Tested in accordance with ANSI/ESD STM3.1-2006.

5.2 Parts & Accessories

Part Number	Description
4630226	HV Transformer, 100 VAC
4630229	HV Transformer, 120/230 VAC
4630201	LV Power Supply (2-fan / 4-fan)
4630230	LV Power Supply (3-fan)
4104515	Outlet Grille (includes point cleaner)
4530384	Ion Shield (clear ring at ionized air outlet)
4108491	Fan-Ionizer Assembly, 6" Lead
4108492	Fan-Ionizer Assembly, 24" Lead
4108493	Fan-Ionizer Assembly, 36" Lead
4108494	Fan-Ionizer Assembly, 48" Lead
4610926	Ionization Indicator Lamp Lens
4710018	Inlet Grille (accepts air filter)
4641087	Push-in Rivet (4 required per fan)
5051202	Lock Knob Kit (includes 2 knobs & hardware)
5051203	Mounting Bracket Kit (includes 2 brackets)
5050774	Optional Hanger Bracket Kit (includes 2 brackets & hardware)
25-20660	US Plug, 8' (2.4m) power cord
25-20710	UK Plug, 8' (2.4m) power cord
25-20735	German Schuko Plug, 8' (2.4m) power cord
25-20750	China Plug, 8' (2.4m) power cord
4710017	Optional Air Filter Retainer
4100810*	Air Filter Element (package of 6)

5.3 Dimensional Drawing



Warranty & Service

Simco-Ion provides a limited warranty for the Aerostat FPD Ionizing Blower. New products manufactured or sold by Simco-Ion are guaranteed to be free from defects in material or workmanship for a period of two (2) years from date of initial shipment. Simco-Ion liability under its new product warranty is limited to servicing (evaluating, repairing, or replacing) any unit returned to Simco-Ion that has not been subjected to misuse, neglect, lack of routine maintenance, repair, alteration, or accident. In no event shall Simco-Ion be liable for collateral or consequential damages. Consumable items such as, but not exclusive to, emitter points, emitter wires, batteries, filters, fuses or light bulbs are only covered under this warranty if found defective as received with the new product.

To obtain service under this warranty, please contact Simco-Ion Technical Support at techsupport@simco-ion.com or (510) 217-0470.

Notes

Notes



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