



An ITW Company

IONIZATION SOLUTIONS



AeroBar® Ionizer

Model 5685

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 +1 800-367-2452. Simco-Ion is ISO 9001-2008 Certified.

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Important Safety Information



Failure to follow these important safety cautions could result in damage to Digital AeroBar System components and voiding of your system warranty.

- ☑ Use proper input voltage to avoid damaging the unit
- ☑ Verify that power to the AeroBar is turned off before connecting or removing emitters or cables. Failure to do so may result in damage to the equipment.
- ☑ Never power-down an AeroBar by removing the cables, as this can result in damage to the ionizer.
- ☑ Do not clean emitter points while unit is powered. Doing so may result in additional contamination and possible shock.
- ☑ To avoid personal injury or damage to the equipment, perform only the installation and maintenance procedures contained in this manual.

Wichtige Sicherheits-und Gebrauchshinweise



Nichtbeachtung dieser wichtigen Sicherheitshinweise können zu Schäden an Systemkomponenten vom Digital AeroBar und zum Verlust von Garantieansprüchen führen.

- Achten Sie auf die korrekte Versorgungsspannung, damit das Gerät nicht beschädigt wird.
- Stellen Sie sicher, dass die Stromversorgung zum AeroBar (Sender) vor dem Anschließen oder Entfernen von Emittlern oder Kabeln abgeschaltet wird. Nichtbeachtung kann zu Schäden am Gerät führen.
- Niemals einen AeroBar durch Entfernen der Kabel abschalten. Dadurch kann der Ionisator beschädigt werden.
- Reinigen Sie keinesfalls Emitter-Punkte bei eingeschaltetem Gerät. Andernfalls kann es zu zusätzlicher Verunreinigung oder zu Stromschlag kommen.
- Führen Sie zur Vermeidung von Verletzungen von Personen oder Schäden am Gerät, nur die Installation und Wartung durch, wie sie in diesem Handbuch beschrieben sind.

Informations de Sécurité Importantes



Le non-respect de ces importantes consignes de sécurité pourrait entraîner des dommages au numérique système d'ionisation composants et l'annulation de votre garantie du système.

- ☑ Utilisez une bonne tension d'entrée afin d'éviter d'endommager l'appareil.
- ☑ Vérifiez que l'alimentation du AeroBar est hors tension avant de connecter ou de retirer les émetteurs ou les câbles. Le défaut de le faire peut entraîner des dommages à l'équipement.
- ☑ Ne jamais éteindre l'émetteur en retirant les câbles, comme cela peut entraîner des dommages sur l'ioniseur.
- ☑ Ne nettoyez pas points émetteurs lorsque l'appareil est alimenté. Cela peut entraîner une contamination supplémentaire et choc éventuel.
- ☑ Pour éviter les blessures ou l'endommagement de l'équipement, effectuer uniquement les procédures d'installation et de maintenance contenues dans ce manuel.

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Description

- 1.1 AeroBar Model 5685
- 1.2 AeroBar Features
- 1.3 Power Requirements
- 1.4 Performance

1.1 AeroBar Model 5685

The AeroBar ionizer Model 5685 is a self-contained, intrinsically balanced air ionizer used to neutralize static charge on surfaces. IsoStat technology delivers dependable static neutralization for a quick, effective solution to static problems in laminar flow hoods, benches, and mini-environments.



Figure 1. AeroBar Model 5685

1.2 AeroBar Features

The AeroBar Model 5685 features low voltage power distribution, easy installation, and low maintenance.

The AeroBar is available in four standard lengths: 11.4, 22.4, 44.4, and 64.4 inches (28.9, 56.9, 112.8, and 163.6 cm).

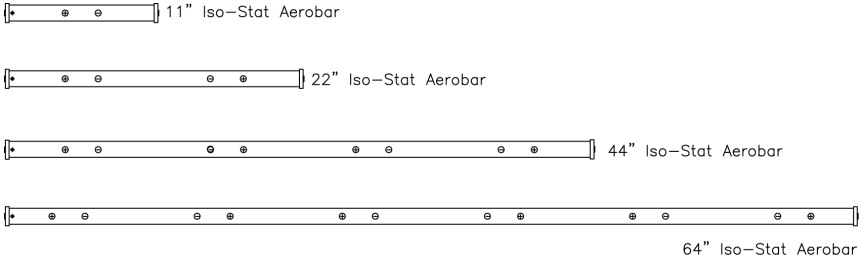


Figure 2. Model 5685 AeroBar Lengths

1.3 Power Requirements

The AeroBar requires a 24 VAC power source. This can be provided from a transformer, from a 5024/5084 controller, or by wiring the unit directly to a 24 VAC source.

The maximum voltage requirement for the AeroBar is 24 VAC ($\pm 10\%$), 50/60 Hz, 3.5W.

Simco-Ion offers three transformers for use with this product:

- 33-1420-01 (120 VAC input), US plug
- 33-1430-01 (230 VAC input), EU plug
- 33-1433-01 (230 VAC input), UK plug

To ensure correct usage and continued performance of the wall transformers, please note the following:

- The transformer should not be operated beyond the specified electrical limit as described in **Chapter 4 Specifications** in this manual.
- Damage caused to the transformer from operation in an environment that exceeds the specified limits will void the warranty.
- The transformer plugs into any 120 or 230 VAC, 50/60 Hz power receptacle. If no such receptacle exists, one must be installed following the applicable building and National Electrical Code requirements. The transformer connects to the AeroBars using the 4-conductor modular cable terminated with standard RJ-11 connectors.

1.4 Performance

When mounted in a vertical laminar flow hood, the typical static discharge time at 24 inches directly below the AeroBar is <20 seconds. (Measurements were taken with an airflow rate of 60 fpm, using a charged plate monitor model CPM 280A, tested in accordance with ANSI/ESD STM3.1-2006.)

In a constant temperature environment, the AeroBars typically maintain a balance of better than $\pm 50V$ at a distance of 24 inches, measured directly beneath two opposite polarity emitter points. The Model 5685 AeroBar must be mounted at least 6 inches from grounded surfaces for optimum balance performance. Note that performance may vary with air flow and the surrounding environment.

When installing the Model 5685 11 inch AeroBar, because it has only two emitter points of opposing polarity, it is recommended to install two 11 inch AeroBars in each location, spaced 6 inches apart. By placing the emitter points opposite each other as shown below, optimal balance will be achieved.



Figure 3. Recommended Installation for 11 inch AeroBar

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Installation

- 2.1 Installation Considerations
- 2.2 Mounting Clips
- 2.3 Placement
- 2.4 Wiring

2.1 Installation Considerations

AeroBars were designed to be mounted in a laminar flow hood between the HEPA filter and the work surface. Because all installation environments are different, follow the general guidelines below to ensure proper operation.

- Ensure there are no obstructions between the AeroBar and the work area.
- IsoStat technology requires maximum isolation of AeroBar emitter points from any grounded surfaces. This spacing is particularly important at the ends of the AeroBar. Grounded surfaces in close proximity to the AeroBars will cause degraded balance performance.
- Operate AeroBars with a minimum air flow of 60 fpm at the emitter holders at the bottom of the bars. Static discharge and balance performance will be adversely affected at a lower air flow.
- Locate the unit according to the cable or power limits described in **Table 1. Daisy-chain Wiring.**

The wall transformers used with the AeroBar have an eight foot (2.4m) modular cable. A modular cable is also used to daisy-chain AeroBars to a power source within the limits described in the table below.

Connecting cables of various lengths are available from Simco-Ion.

AeroBar Length	Max No. of Units/ Transformer
11 inches	16
22 inches	8
44 inches	5
64 inches	4

Table 1. Daisy-chain Wiring

2.2 Mounting Clips

Normal AeroBar mounting involves the use of wire clips or hangers attached to the AeroBar and the clips and hangers attached to the flow hood. Flat mounting clips are provided and a variety of other mounting clips are available from Simco-Ion (see the **Replacement Part Numbers** table in **Chapter 4 Specifications** for a list of available mounting clips).

Clips should be attached to the AeroBar approximately two inches from any emitter point. Self-locking nylon straps may be used to attach the AeroBar clip or hanger to any suitable support.

AeroBar Length	Recommended Number of Clips
11 inches	2
22 inches	2
44 inches	2
64 inches	3

Table 2. Recommended Number of Mounting Clips Per AeroBar Length

2.3 Placement

In **vertical laminar flow hoods**, mount the AeroBar 8 to 12 inches from the back of the flow hood. For vertical laminar flow hoods with greater than 30 inch depth, a second bar located 12 to 16 inches from the first bar is recommended.

In **horizontal flow hoods**, install the AeroBar 12 to 16 inches above the work surface. Similarly, with horizontal flow hoods greater than 30 inch in height, install a second bar 12 to 16 inches above the first bar.

2.4 Wiring

Insert the power cable into the RJ-11 modular receptacle at either end of the AeroBar. Dress the power cable so that it is not in the path of the ionizer air flow. Attach the cable to the laminar air flow hood using self-adhesive wire mounts and locking nylon straps as required.

Connection to a Controller

A 5024/5084 controller can provide power for the AeroBar, but due to the AeroBar's use of steady-state DC technology, the controller's adjustment and alarm features do not apply to the AeroBar.

A custom-wired junction box (j-box) must be installed to reorder the different wiring sequences. The following instructions describe how to install and wire a j-box, and connect the AeroBar to the controller.

Tools and Equipment:

- Junction box (j-box), 33-1825, 1 per Bar or Bar circuit
 - Controller cable, 33-1700 or 33-1770, 1 per j-box
 - Spade lug, 18-0030, 2 per j-box
 - Small Phillips screwdriver
 - Wire stripper/cutter
 - Controlled cycle crimper, or equivalent
1. Ensure power is disconnected from the AeroBar(s) and the controller before attempting any installation.
 2. Use either #26 AWG modular cable, terminated with a modular plug, or #22 AWG round cable, terminated with a AMP Industries CPC connector for connection between the controller and the j-box. See the **Replacement Part Numbers** section in **Chapter 4 Specifications** for a list of Simco-Ion part numbers for these items.
 3. Strip the outer insulation of the controller connection cable about 1 inch. Strip each colored wire about 3/8 inch and crimp

a spade lug on each wire. Remove the cover from the junction box. Connect the cable wire colors to the j-box as shown in the table below.

Converter Box	#26 AWG Cable	#22 AWG Cable
Black	Green	Green
Yellow	Yellow	White
Blue	Red	Red
White	Black	Black

Table 3. Wire Colors and Junction Box Wiring

4. Connect a #26 AWG modular cable from the j-box to the AeroBar. Connect the controller cable to the appropriate port on the controller.
5. Power the controller and verify that the LED on each AeroBar lights (indicating power is being supplied).

No adjustment is necessary. If power is not supplied, remove power to the controller and contact Simco-Ion Technical Support.

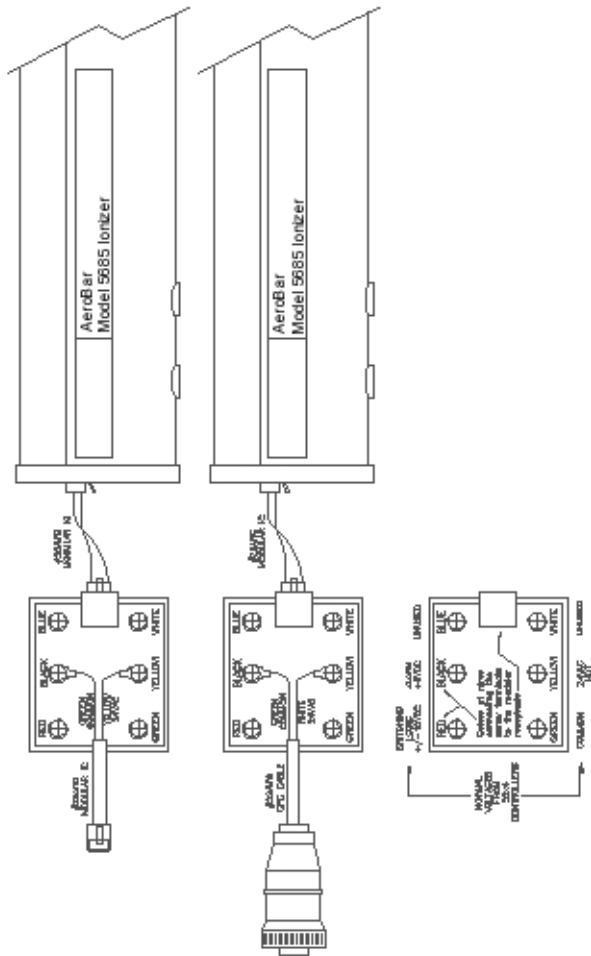


Figure 4. Junction Box Wiring

Connection to a 24 VAC Source

When wiring the AeroBar directly to a 24 VAC source, observe the maximum voltage and power requirements for the unit (24 VAC ($\pm 10\%$), 50/60 Hz, 3.5W).

See the figure below for 24 VAC source wiring information.



Damage to the product as a result of improper wiring connections or failure to heed maximum voltage limits will not be covered by the warranty.



Schäden am Produkt infolge unsachgemäßer Verdrahtung oder wegen unterlassener Beachtung von maximal zulässigen Spannungen werden nicht durch die Garantie abgedeckt.



Afin d'éviter d'endommager le produit à la suite d'un mauvais câblage ou connexions tout manquement aux tension maximale limites ne seront pas couverts par la garantie.

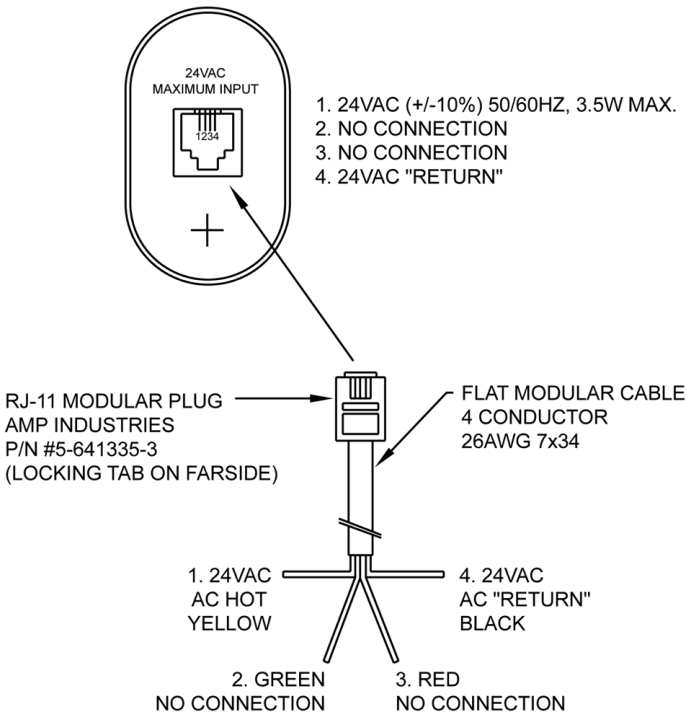


Figure 5. Wiring Scheme for Connection to a 24 VAC Source

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Operation & Maintenance

- 3.1 Important Operating & Maintenance Information
- 3.2 Operation
- 3.3 Maintenance Frequency
- 3.4 Emitter Point Cleaning
- 3.5 Emitter Point Replacement
- 3.6 Chassis Cleaning

3.1 Important Operating & Maintenance Information

Observe the following cautions and warnings to ensure safe operation and performance.

- Do not operate this AeroBar in an explosive environment. Poorly maintained ionizers may cause detonation in an explosive environment.
- Do not power AeroBars **without** emitter points installed. Damage to the product not covered under warranty may result.
- Do not perform unauthorized service on this unit. There are no user serviceable parts inside this AeroBar. Unauthorized service will void the warranty and may result in additional repair charges.
- Before cleaning or removing emitter points, disconnect the power plug from the ionizer. Allow a minute for the high voltage power supply to discharge.

3.2 Operation

AeroBars do not have an “on” switch. They will be powered on as soon as they are connected to a live 24 VAC source. If connecting to a controller, turn on the controller. The green LED on the bottom of the AeroBars will light to indicate power on.

The AeroBar uses steady-state DC technology and IsoStat balanced circuitry. No adjustments are required.

3.3 Maintenance Frequency

The performance of the Models 5685 AeroBars is designed to be maintained primarily by the internal auto-balance circuitry. Occasional cleaning of the case and emitter points is the only routine maintenance required. No readjustment of the ionizer is required after cleaning.

Regularly scheduled ionizer maintenance extends the life of the unit and allows continued, efficient delivery of ionization. It is important to develop a schedule that meets the requirements for your environment and installation. In general, emitter points should be checked on a monthly basis.

For maintenance services performed by Simco-Ion, contact Simco-Ion Field Service department (service@ion.com).



There are no user serviceable parts inside this AeroBar. Any unauthorized service will void the warranty and may result in additional repair charges.



Es gibt keine vom Anwender zu wartenden Teile im AeroBar. Nicht autorisierter Service führt zum Erlöschen der Garantie und kann zu zusätzlichen Reparaturkosten führen.



Il n'y a aucune pièce réparable par l'utilisateur à l'intérieur du l'AeroBar. Tout service non autorisé annulera la garantie et peut entraîner des charges de réparation.

3.4 Emitter Point Cleaning



Before cleaning or removing emitter points, disconnect the power plug from the ionizer. Allow a minute for the high voltage power supply to discharge.



Ziehen Sie vor dem Reinigen oder Entfernen von Emitter-Punkten den Netzstecker aus dem Ionisator. Lassen Sie die Hochspannungs-Stromversorgung eine Minute entladen.



Avant de nettoyer ou de points émetteurs, débrancher la fiche d'alimentation de l'ioniseur. Attendez une minute pour que le bloc d'alimentation haute tension de décharge.

Recommended cleaning materials:

- Cleanroom-compatible cleaning cloths
- Cleanroom-compatible cloth swabs (polyester cloth is recommended)
- Cleaning solution of 50% IPA (electronic-grade isopropyl alcohol)/50% de-ionized water or Simco-Ion Emitter Point Cleaner (#22-1000)

The emitter points will need to be cleaned periodically for proper performance. Cleaning is recommended every two to three months.

Turn off the unit by disconnecting the cable from the 24 VAC source. Emitter points may be cleaned without removing them from the AeroBar. Use a swab moistened in the recommended cleaning solution and gently wipe the points.

3.5 Emitter Point Replacement

Emitter points should be replaced every two to three years, or when damage or erosion is evident. To replace the emitter points:

1. Remove power from the unit.
2. Grasp each emitter point with small needle-nose pliers and pull it out of its socket. If removing silicon emitter points, make sure you grasp the point **by the protective sleeve only**. Silicon points are brittle and may break if handled carelessly.
3. Install the replacement point using a soft-jawed tool or gloved fingers.

3.6 Chassis Cleaning




Moisten a cloth with the 50% IPA solution. Wipe off any dirt that may have accumulated on the unit, especially in the areas surrounding emitter points.



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Specifications

- 4.1 Specifications
- 4.2 Dimensional Drawings
- 4.3 Parts & Accessories

4.1 Specifications

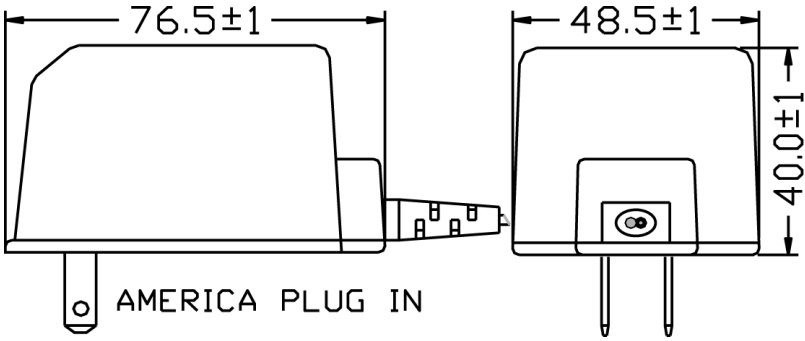
AeroBar Model 5685	
Input Voltage	24 VAC ($\pm 10\%$), 50/60 Hz, 3.5W (max)
Discharge	5 sec (typ) @ 12", 25 sec (typ) @ 24" $\pm 1000V$ to $>100V$ discharge @ 24" with minimum 60 fpm airflow
Balance	$<\pm 50V$, 60 sec average; measured at 12" or 24" below an emitter point pair
Emitter Points	Machined titanium or single-crystal silicon; emitter points are replaceable and have 2-3 year estimated life, depending on environment conditions
Ion Emission	Steady-state DC
Airflow	60 fpm min required at bar for proper operation
Input Connector	RJ-11 modular connector, one at each end of bar
LED Indicators	Green POWER ON
Mounting	2 mounting clips provided; various clips and hangers available
Operating Env.	15-35°C (59-95°F) nominal operating temperature; humidity 35-60% RH, non-condensing
Dimensions	2.1H x 1.13W x bar length (5.3 x 2.9 x L cm); standard bar lengths 11.4, 22.4, 44.4, 64.4 in. (28.9, 56.9, 112.8, 163.6 cm)
Weight	9.0 oz per foot of bar length (255g per 0.3m)
Certifications	  

Transformer 33-1420-01	
Input Voltage	120 VAC $\pm 10\%$, 60 Hz
Output Voltage	24 VAC $\pm 5\%$ @ 500 mA
Dimensions	3.0H x 1.9W x 1.6D in. (76.5 x 48.5 x 40 mm)
Weight	0.9 lb (0.4 kg)
Certifications	 

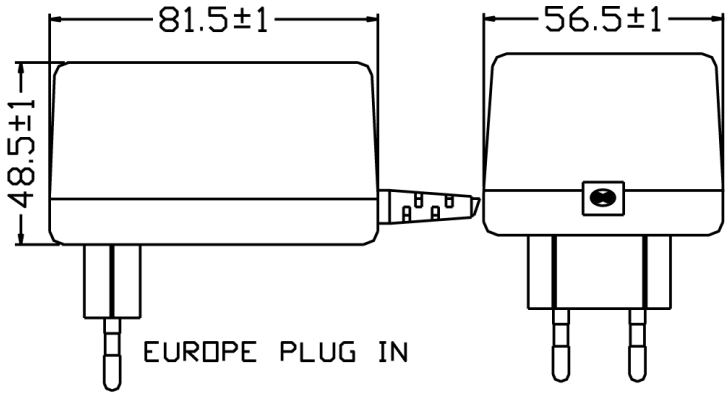
Transformers 33-1430-01 & 33-1433-01	
Input Voltage	230 VAC $\pm 10\%$, 50 Hz
Output Voltage	24 VAC $\pm 5\%$ @ 500 mA
Dimensions	3.2H x 2.2W x 1.9D in. (81.5 x 56.5 x 48.5 mm)
Weight	0.9 lb (0.4 kg)
Certifications	  

4.2 Dimensional Drawings

Wall Transformer P/N 33-1420-01 (dimensions in mm)



**Desktop Transformer P/N 33-1430-01 & 33-1433-01
(dimensions in mm)**



4.3 Parts & Accessories

Contact your Simco-Ion representative or Simco-Ion Sales Services department for more information about these replacement parts.

Simco-Ion P/N	Description
33-1700	#26 AWG modular cable
33-1770	#22 AWG round cable
33-1825	Junction box (j-box)
22-0365	Silicon emitter points
22-0350	Titanium emitter points
91-5024-CER	Model 5024(e) Controller
91-5084-CE	Model 5084(e) Controller
33-1420-01	Power Supply Kit, 120V/24 VAC 500 mA, interconnect cable with RJ-11 6P/4C plug, US
33-1430-01	Power Supply Kit, 230V/24 VAC 500 mA, interconnect cable with RJ-11 6P/4C plug, EU
33-1433-01	Power Supply Kit, 230V/24 VAC 500 mA, interconnect cable with RJ-11 6P/4C plug, UK
22-1000	Emitter Point Cleaner
28-6230	Mid clip (for "egg crate" installations)
28-6255	Flat clip (horizontal mounting)

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Warranty & Service

Simco-Ion provides a limited warranty for the Model 5685 AeroBar. 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 +1 (510) 217-0470.

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