

IONIZATION SOLUTIONS



Benchtop Ionizing Blower

Aerostat[®] PC2

User's Manual

About Simco-Ion

Simco-lon develops, manufactures, and markets system solutions to manage electrostatic charge. As the world's largest provider of electrostatics management products and services, Simco-lon improves its customers' business results by providing a total solution to their electrostatic discharge challenges. Simco-lon Technology Group is a division of Illinois Tool Works (ITW), located in Alameda, California. For more information about Simco-lon visit www.simco-ion.com or call +1 800-367-2452. Simco-lon is ISO 9001-2008 certified.

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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.

- The use of improper input voltage may result in poor performance or damage to the ionizer. This will also void the warranty.
- This product is supplied with a 3-prong grounding plug, which must be inserted in an appropriate, properly wired and grounded receptacle. Do not defeat the electrical ground. For safety, the use of extension cords is not recommended.
- ✓ Do not use this Blower in an explosive environment. Poorly maintained lonizers could produce miniscule electric arcs along the emitter. This may cause detonation in an explosive environment. Read Section 1.4 Power Requirements and Section 3.1 Operating Environment before applying power to the unit.
- To avoid personal injury or damage to the equipment, do not perform any maintenance other than that contained in these instructions. Do not insert anything within the intake or outlet grills.
- There are no user-replaceable parts for this blower other than the power fuse. Any unauthorized service will void the warranty and may result in additional repair charges. Contact your local Simco-Ion representative if the blower requires service or repair.
- For in-door use only in a non-condensing environment. This product is not intended for use in tropical climate regions or for use at altitudes above 2000m.
- Before performing any recommended maintenance, be sure the unit is powered off and unplugged.

Informations de Sécurité Importantes



Lisez attentivement les consignes de sécurité suivantes avant d'installer ou d'utiliser l'équipement. Le non-respect de ces avertissements peut entraîner des dommages à votre système d'ionisation et/ou d'annuler la garantie du produit.

- L'utilisation d'une mauvaise tension d'entrée peut entraîner de mauvais résultats ou de détérioration de l'ioniseur. Ce sera également annuler la garantie.
- Ce produit est fourni avec un 3-broches fiche de mise à la terre, qui doit être insérée dans un accès approprié et correctement câblé et mis à la terre prise. Ne pas défaire la mise à la terre électrique. Pour des raisons de sécurité, l'utilisation de cordons d'extension n'est pas recommandée.
- Ne pas utiliser ce ventilateur dans un environnement explosif. Mal entretenu ioniseurs pourrait produire infime arcs électriques le long de l'émetteur. Cela peut provoquer de la détonation dans un environnement explosif. Lisez la Section 1.4 Exigences en matière d'alimentation et Section 3.1 Environnement d'exploitation avant d'appliquer la tension de l'unité.
- Pour éviter tout risque de blessure ou de détérioration du matériel, n'effectuez aucune opération d'entretien autres que celles contenues dans ces instructions. N'introduisez rien dans le collecteur d'admission ou de sortie des barbecues.
- ✓ Il n'y a aucune pièce remplaçable par l'utilisateur pour ce ventilateur autre que le fusible de puissance. Toute réparation non autorisée annulera la garantie et peut entraîner des frais de réparation supplémentaires. Contactez votre représentant de Simco-Ion si le ventilateur exige l'entretien ou la réparation.
- Pour une utilisation sur porte uniquement dans une noncondensation environnement. Ce produit n'est pas destiné à être utilisé dans les régions au climat tropical ou pour l'utilisation à des altitudes au-dessus de 2000m.
- Avant d'effectuer tout entretien recommandé, assurezvous que l'appareil est hors tension et débranchée.

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Description

- 1.1 Product Description
- **1.2 Product Features**
- 1.3 Performance
- 1.4 Power Requirements

1.1 Product Description

Simco-lon's Aerostat PC2 is a lightweight, high performance benchtop ionizer featuring a three-speed fan for varying applications. The Aerostat PC2 small footprint design occupies much less workspace than traditional blowers. With its universal mounting stand, the Aerostat PC2 can be used at virtually any location to control static charge where contamination, ESD, material-handling problems or microprocessor lock-up occurs. The Aerostat PC2 is also light enough to be easily mounted above workstations for space constrained benchtop areas.

The Aerostat PC2 uses the Simco-Ion patented "Micropulse" Technology to meet the performance, particle cleanliness and low maintenance requirements that are necessary to maximize production yield in many applications.

This manual covers the installation, operation and maintenance of the Aerostat PC2 Ionizing Blower.



Figure 1. Benchtop Ionizing Blower Aerostat PC2

1.2 Product Features

The Aerostat PC2 has the following unique features and benefits:

- Patented "Micropulse" Technology with high efficiency output that provides for long periods between maintenance cycles.
- Internal closed-loop feedback control maintains balance at +/-10V or better
- LEDs and audible alarm (if ordered) for both high voltage fault and fan status
- Employs a high efficiency, multispeed fan to produce a strong ionized air flow
- Built in brush cleaner for easy, periodic cleaning of emitters
- Universal AC input accepts all IEC power cords
- A relay contact is provided for monitoring of ionizer's operational status via the end user's facility monitoring system (FMS)



Figure 2. Aerostat PC2 Front-panel



Figure 3. Aerostat PC2 Rear Panel

1.3 Performance

The Model Aerostat PC2 is factory adjusted to meet the specifications described below:

- 2.0 seconds or less @ 12" (30 cm)
- 3.0 seconds or less @ 24" (60 cm)
- 5.0 seconds or less @ 36" (91 cm)
- 8.0 seconds or less @ 48" (122 cm)

These decay times are for directly in-line with the center of the fan, $\pm 1000V$ to 100V. Measurements were taken at the stated distance at high fan speed using a charged plate monitor in accordance with ESD Association Ionization Standard ANSI/ESD STM3.1-2015. Discharge times may be different when tested within your operating environment.

In a humidity-controlled environment, the PC2 will maintain a balance around zero of $\pm 10V$ or less. Performance in extreme environments may vary. When using the optional fan filter, the performance of the unit will be reduced between 10-40% depending upon speed of the blower and the distance to the target.

1.4 Power Requirements

The Aerostat PC2 requires an input voltage of 100 to 230 VAC 50/ 60 Hz, 10W. (max).

Caution:	The use of improper input voltage may result in poor performance or damage to the unit. Damage caused to the power supply from operation at levels outside of the specified limits will void the warranty.		
Attention:	L'utilisation d'une mauvaise tension d'entrée peut entraîner de mauvais résultats ou endommager l'appareil. Les dommages causés à l'alimentation de fonctionnement à des niveaux en dehors des limites spécifiées entraînera l'annulation de la garantie.		

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Installation & Setup

- 2.1 Box Contents
- 2.2 Mounting & Placement
- 2.3 Power Connections

2.1 Box Contents

The Aerostat PC2 is packaged with the following items:

- Mounting Stand (installed on Blower)
- User Manual
- Certificate of Compliance
- Power cord
- Rubber feet for use on mounting stand (4 pieces)
- Cord clamp with nut installed on blower

2.2 Mounting & Placement

Initial Operation

The PC2 should be positioned to cover as much of the target area as possible with the ionized air stream. Keep at least a 6 inches clearance between walls or any objects and the rear of the PC2 to allow for adequate air intake.

The Aerostat PC2 should be placed approximately 1 to 4 feet (0.3 to 1.3m) from objects to be neutralized or from the critical work area. Discharge times are longer the further away the PC2 is placed from the target area. Testing by Simco-Ion has shown that the PC2 can ionize a target area further than 4 feet from the blower.

Operate the Aerostat PC2 ionizer for an initial 24 hours in the area of application before any performance measurements are conducted.

Mounting

The Aerostat PC2 comes with a mounting stand pre-assembled to the blower. The mounting stand is designed for a free or fixed position on a tabletop or workbench and also for mounting to a fixed surface. Self-adhesive skid-resistant rubber feet are supplied with the blower and can be installed on the bottom of the stand by the end-user. Holes in the base of the stand are provided for securing the PC2 to a fixed location using 1/4" (or M6) threaded hardware (not provided).

Once the Aerostat PC2 is secured to a surface, the mounting stand can to adjusted and locked to a desired position. Loosen, but do not completely remove, the knobs on each side of the blower. Tilt the PC2 to the desired position so the PC2 ionized airstream is aimed directly at the target with no intervening grounded objects. Retighten the knobs to lock the PC2 into place.



Front View

Left Side View



Figure 4. Aerostat PC2 Mounting (Dimensions shown are in mm)

2.3 Power Connections

The PC2 accepts universal AC input (100-230 VAC 50/60 Hz single phase). The PC2 is available with different line cords to meet the main power connection plug requirements in many areas of the world. The PC2 must be grounded for safe and proper operation.

Connect the supplied power cord to an appropriate 3-terminal grounded AC power receptacle.

If the PC2 Blower will be installed in an environment that is electrically noisy, an additional ground connection can be made to the blower using the convenience ground terminal located on the rear panel of the blower.

A cord clamp is supplied with the blower. Use this cord clamp to prevent unwanted disconnection of the power cord or for protection against accidental loosening of the power cord due to vibration. After connecting the power cord to the power inlet connector, fit the power cord through the cord clamp and secure the clamp to the chassis rear panel with the supplied #6 nut.



Figure 5. Chassis Ground Stud and Power Cord Clamp



Operation

- 3.1 Operating Environment
- 3.2 Controls & LED Indicators
- 3.3 Balance
- 3.4 Alarms
- 3.5 FMS Relay Contact
- 3.6 Optional Air Filter

3.1 Operating Environment

Warning: Do not insert anything within the intake or outlet grills. Electric shock may result.

Operate the Model Aerostat PC2 in an environment where relative humidity is 30-60% (non-condensing). The operating temperature range for the Blower is $50-95^{\circ}F$ ($10-35^{\circ}C$).

The Model Aerostat PC2 will conform to stated performance specifications when used in an environment that meets the cleanliness limits defined by ISO 14644-1 Class 6 (Fed Std. 209E Class 1000) and if it is serviced according to an appropriate maintenance schedule.

- For in-door use only in a non-condensing environment
- · Do not use this Blower in an explosive environment
- The PC2 Blower is not intended for Tropical Climate regions
- The PC2 Blower is not intended for use at altitudes above 2000m

3.2 Controls & LED Indicators

Power

Turn on the PC2 by setting the "POWER" switch on the front panel to the ON position ("I"). The green LED "Power" indicator light on the front panel will light and the fan will start up.



Figure 6. Power on LED and Power on Switch

The fan speed may be adjusted using the Fan Speed slide switch on the back of the Aerostat PC2. The PC2 fan can be set to Low, Medium or High air flow.



Figure 7. Fan Speed Adjustment Switch

3.3 Balance

The AeroStat PC2 has a balance adjust control for setting the initial balance of the blower. The internal feedback control system will then maintain the balance of the PC2 to +/-10V around the initial balance set point.

The AeroStat PC2 leaves the factory with the Balance adjust control set to meet performance specifications during final factory test. For optimal performance, it is recommended that the PC2 balance setting be checked and adjusted (if required) by the end user prior to using the blower. A Charged Plate Monitor (CPM) with a standard 6'x6" plate, such as the Simco-Ion Model 280A, is required to monitor the balance of the ionizer during the balance adjustment procedure.

It is recommended that the PC2 should be allowed to run and acclimatize for an initial 12-24 hours in an environment comparable to the area of application before any performance measurements are conducted.

- 1. Set the PC2 fan to the desired speed.
- Place a Charged Plate Monitor at a distance of about 12" (300 mm) directly in front of the blower with the CPM plate positioned in the ionized air stream. Turn on the CPM and set it for balance monitoring. Observe the balance reading displayed by the CPM.
- Use a trimpot tool or small flat blade screw driver to adjust the "Balance" control on the rear panel of the PC2. Turning the balance adjust control clockwise will make the balance voltage more positive. Turning the control counterclockwise will make the balance more negative.

The PC2 should be adjusted so that the CPM displays a balance of about 0V + -5V.

For optimum balance performance, Simco-lon recommends using the built in brush emitter point cleaner on a daily basis. This will insure that the Aerostat PC2 is providing the best decay and balance performance to your target area.

The Aerostat PC2 blower should be OFF when using the emitter point cleaner. Do not clean the emitter points while the blower is operating.

3.4 Alarms

An alarm condition may be caused by any of the following:

- No power to the Fan Unit
- Fan in locked-rotor condition or fan failed
- Failed high voltage power supply
- Extremely dirty emitter points (possible)

If you have ordered the Aerostat PC2 with audible alarm, the audible alarm will sound upon any alarm condition.

There are 2 red LED indicators located on the front panel:

- 1. **FAN**: When constantly lit, the fan is not rotating properly (stalled fan). This alarm will clear itself if the fan is able to resume normal operation.
- 2. **FAULT**:
 - Constantly lit: No high voltage on the emitters. A constant FAULT indicator can be cleared by correcting the fault condition and cycling the power to the blower OFF and ON again.
 - Blinking: High voltage is ON but ± ionization is not controlled. A blinking FAULT indicator will clear itself if the ionization control condition is corrected. (Suggestion: clean the emitter points using the built-in brush).

When either the FAN stalls or FAULT-HV FAILS conditions occurs, the blower will try to recover. The blower will wait about 5 sec then clear all the alarms (clearing the LEDs and the FMS relay) and turn on the high voltage again. If the fault condition still exists, the retry cycle will repeat up to two more times. If the blower fails to recover after 3 attempts, the high voltage will remain off and the Blower will remain in an alarm state until the +24 VDC power to the Blower is cycled off/on.

	LED Status Indicators				Ionization
Condition	POWER (Green)	FAN (Red)	FAULT (Red)	FMS Relay Output	Voltage State
Power OFF	OFF	OFF	OFF	Open	OFF
Power ON All Ok	ON	OFF	OFF	Closed	ON
HV Fault	ON	OFF	ON	Open	OFF
FAN Fault	ON	ON	OFF	Open	OFF
Low 24VDC	Blinking	OFF	OFF	Closed	ON
HV Drive Error	ON	OFF	Blinking	Open	ON

Table 1. Alarms and LED Status Indicators

The alarm of the Aerostat PC2 is not designed or calibrated to function as a maintenance alarm. If the emitter points are allowed to become extremely dirty, there is the possibility that the lonization fault alarm will start to intermittently turn on. If this happens, clean the emitter points following the procedures described in Section 4.2 Emitter Cleaning.

3.5 FMS Relay Contact

The Aerostat PC2 provides an opto-isolated relay contact for indicating alarm status to your process equipment or facility monitoring system (FMS). The relay contact is rated for a maximum of +/-24 VDC, 0.20A

- Relay Open Blower is in alarm or Power is Off
- Relay Closed Normal Blower operation



<u>Pin</u>	Function
1	Ground
2	Relay Contact 2
3	Relay Contact 1
4	No Connection

Table 2. FMS Output Connection RJ-9

3.6 Optional Air Filter

For extremely dirty or dusty environments, an optional air filter kit is available. The air filter kit includes a 30 ppi polyurethane open cell foam air filter that mounts over the rear fan guard using a stamped metal frame and a separate set of sheet metal screws. No disassembly of the original rear fan guard is required. The foam air filter can be cleaned and reused. Simco-Ion also offers a replacement filter pack (see **Section 5.3 Parts and Accessories**).

When using the optional fan filter, the performance of the unit will be reduced between 10-40% depending upon speed of the blower and the distance to the target.

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Maintenance

- 4.1 Maintenance Scheduling
- 4.2 Cleaning the PC2
- 4.3 Troubleshooting

4.1 Maintenance Scheduling

The balance of the Model Aerostat PC2 is designed to be maintained by internal circuitry and, after initial setup, should not need further adjustment by the end-user.

The PC2 requires little or no user maintenance other than regular cleaning of the emitter points with the built-in brush emitter cleaner or more extensive cleaning of the emitter points, case and fan.

Simco-lon recommends using the built in brush emitter point cleaner daily. This will insure that the Aerostat PC2 is providing the best decay and balance voltage performance to your target area.

The Aerostat PC2 blower should be OFF when using the emitter point cleaner. Do not clean the emitter points while the blower is operating.

Maintenance schedules will vary depending on environmental conditions. Therefore, determine a schedule which meets the requirements of your application and environment.

Before performing any of the following cleaning, be sure the Aerostat PC2 is powered off and unplugged.

Caution: To avoid personal injury or damage to the equipment, do not perform any maintenance other than that contained in these instructions.

There are no user servicable parts inside this Blower other than the input power fuse. Any unauthorized service will void the warranty and may result in additional repair charges. Avant d'effectuer l'une des opérations suivantes le nettoyage, assurez-vous que le Aerostat PC2 est hors tension et débranchée.

Attention: Pour éviter tout risque de blessure ou de détérioration du matériel, n'effectuez aucune opération d'entretien autres que celles contenues dans ces instructions.

Il n'y a aucune pièce réparable par l'utilisateur à l'intérieur de ce ventilateur autre le fusible de puissance d'entrée. Toute réparation non autorisée annulera la garantie et peut entraîner des réparations supplémentaires

4.2 Cleaning the PC2

Built-in Emitter Point Cleaning Brush

Use the built-in emitter point cleaning brush for routine daily cleaning of the emitter points.

To avoid personal injury or damage to the equipment, do not perform any maintenance other than that contained in these instructions.

Caution: Before performing any of the following cleaning, be sure the Model Aerostat PC2 is powered off and unplugged.

DO NOT ATTEMPT ANY MAINTENANCE OPERATIONS TO THE BLOWER UNLESS THE UNIT IS SWITCHED OFF AND DISCONNECTED FROM AC POWER.

Turn off the PC2 and disconnect the power cord from the rear of the unit.

With the PC2 turned OFF, routine emitter cleaning can be accomplished by manually rotating the knob on the front of the fan grill in a clockwise direction (about one full rotation) to sweep the internal brush over the tips of the emitter points. At the end of the clockwise rotation, release the knob and allow the brush to spring back to its resting position. Repeat this brushing operation 3 to 5 times to insure maximum cleaning of the emitter point tips.



Figure 9. Manual Emitter Point Cleaning

Comprehensive Cleaning

Recommended cleaning materials for comprehensive cleaning:

- Cleanroom-compatible cleaning cloths
- Cleanroom-compatible cloth swabs (polyester cloth is recommended)
- Cleaning solution of 50% IPA (electronic-grade isopropanol alcohol)/50% de-ionized water
- Clean dry air (CDA)

The fan guards on the front and rear of the PC2 should be kept clean to prevent any restriction of air flow. They can be cleaned with a soft brush, vacuum cleaner, or blown off with compressed clean dry air.

Use clean, dry compressed air to clean dust or dirt from the inside of the unit.

After cleaning, reconnect power cord to unit and turn the PC2 on. Allow the PC2 to run for at least five minutes before using it to ionize your target area.

Chassis Cleaning

Moisten a cleanroom cloth with a 50% diluted IPA solution. Thoroughly wipe down the PC2 chassis to remove any accumulated dirt. Change the cloth frequently to make sure the dirt is completely lifted.

4.3 Troubleshooting

The table below provides a quick troubleshooting reference for the Aerostat PC2. If the solutions listed do not remedy the problem, contact Simco-Ion Technical Support (techsupport@simco-ion.com).

Problem	Possible Cause	Solution
Fan Unit is noisy or slow	Fan is obstructed	Check fan guards for any obstructions
Fan Unit does not operate	Poor power connection or fan is obstructed	Check power cords and connections Check fan guards for obstructions Check inlet fuse, see below
Offset balance is >10V	Emitter points are dirty	Clean the emitter points
Decay times are too long	Emitter points are dirty	Clean the emitter points
Fault Alarm Blinks intermittently	Emitter points are dirty	Clean the emitter points
FAN Alarm is on continuously	Fan has stopped	Check fan guards for any obstructions
Fault Alarm is on continuously	Possible HV failure or fan has stopped	Contact Simco-Ion for service

The Model PC2 is provided with a 0.63A 250V, Time-lag, 5 x 20 mm fuse located in a fuse drawer on the power inlet module.

Caution:	Turn OFF the Model PC2 and disconnect it from power before attempting to access the fuse drawer.		
Attention:	Désactiver le modèle PC2 et débranchez-le de la source d'alimentation avant de tenter d'accéder à le tiroir à fusibles.		

Replace the fuse only with an identically rated part. If replacing the fuse does not restore the unit to operation, leave the unit turned OFF and disconnected from power. Contact Simco-Ion technical support for additional information.

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Specifications

5.1 Specifications

- 5.2 Dimensional Drawing
- 5.3 Parts & Accessories

19-PC2-M-01 Rev 3

5.1 Specifications

Input Voltage	100-230 VAC, 50/60 Hz, 0.5A, 55W max		
Discharge	2.0 sec @ 1' (1000-100V high fan speed) ¹		
Balance	0 ±10V (typ)		
Effective Coverage	1'W x 4'L area		
Ion Emission	Micropulse AC Ionization		
Emitter Points	Stainless Steel		
Controls	POWER ON/OFF, FAN SPEED control LOW/MEDIUM/HIGH		
Indicator Lights	Green POWER on, red FAN alarm, red FAULT alarm		
FMS Connector	RJ-9 4P/4C receptacle, relay contact rated +/-24 VDC @ 0.2A max		
Air Volume	129 cfm (high fan speed)		
Air Velocity ²	370 fpm @ 12",240 fpm @ 24", 164 fpm @ 36", 120 fpm @ 48" (high fan)		
Audible Noise	61 dB (low fan speed), 64 dB (high fan speed) measured at 2' in front of blower		
Ozone	<0.05 ppm measured at 1' (305 mm) in front of blower		
Operating Env.	Temperature 50-95°F (10-35°C); humidity 30-60% RH, non-condensing		
Fuse	0.63A, 250 VAC; time-lag 5 x 20 mm		
Mounting Stand	Powder Coated Steel Stand with skid resistant rubber feet		
Enclosure	Powder-coated aluminum chassis		
Air Filter (option)	30 ppi open cell foam filter with bracket		
Dimensions	9.1H x 6.8W x 3.3D in. (23.1H x 17.3W x 8.4D cm) with stand		
Weight	2.8 lbs (1.25 kg) with stand		
Warranty	2 year limited warranty		
Certifications			

1. Tested in accordance with ANSI/ESD STM3.1-2015.

2. High fan speed; Velocity in fpm measured at center line of air stream.

5.2 Dimensional Drawing

(Dimensions shown are in mm)









5.3 Parts & Accessories

Contact your Simco-Ion representative or Simco-Ion Sales Services department at salesservices@simco-ion.com or +1 510.217.0460 for more information about these replacement parts and accessories.

33-6501-01	Aerostat PC2 Air Filter Kit
33-6004-01	Aerostat PC2 Replacement Air Filters (6 pack)

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Warranty & Service

Simco-lon provides a limited warranty for the Aerostat PC2 Extended Coverage Ionizing Blower. New products manufactured or sold by Simco-lon are guaranteed to be free from defects in material or workmanship for a period of two (2) years from date of initial shipment. Simco-lon liability under its new product warranty is limited to servicing (evaluating, repairing, or replacing) any unit returned to Simco-lon that has not been subjected to misuse, neglect, lack of routine maintenance, repair, alteration, or accident. In no event will Simco-lon 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.

Notes





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