



An ITW Company

IONIZATION SOLUTIONS



Point of Use Ionizing Blower

Model 6422e/6422e-AC

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 and ANSI ESD S20.20 certified.

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Description

- 1.1 Point of Use Ionizing Blower
- 1.2 IsoStat® Technology
- 1.3 Performance
- 1.4 Power Requirements

1.1 Point of Use Ionizing Blower

The Point of Use Ionizing Blower Model 6422e is a compact ionizing Blower that controls static discharge in areas where static build-up can cause contamination, ESD, material-handling problems, or microprocessor lock-up. The internal emitter points are electrostatically shielded to eliminate field-induced charging. Steady-state DC ion emission provides fast discharge with low airflow, allowing less disturbance of delicate product.

The Model 6422e has a red alarm indicator LED on the front of the chassis. The eight-pin terminal strip on the back of the unit provides a 4-20 mA current loop and relay output connection to your facility monitoring system (FMS) in addition to the 24 VDC input connection.



Figure 1. Front of the Model 6422e

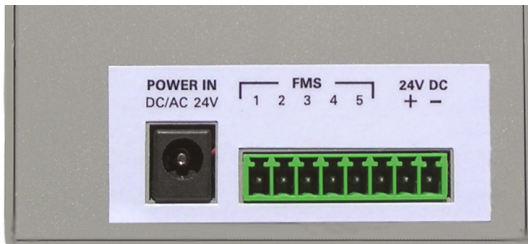


Figure 2. Back of Model 6422e

The Model 6422e-AC is the same as the Model 6422e with the addition of our Auto-Clean System as described in **Section 3.4** on page 23.

1.2 IsoStat® Technology

IsoStat technology makes Simco-Ion blowers the most reliable ionizers available. IsoStat enables operation without grounding wires or cables while still maintaining ionizer balance. The 6422e Blower's internal emitter points are electrostatically shielded to eliminate field-induced charging. Steady-state DC ion emission provides fast discharge with low airflow for less disturbance of delicate product.

Ionizers incorporating IsoStat technology never need calibration and require very little maintenance. IsoStat is based on a law of physics, Conservation of Charge, which states that charge cannot be created or destroyed in an isolated system. By isolating the ionizer's emitter points from ground, IsoStat ensures equal numbers of positive and negative ions.

1.3 Performance

The 6422e Blower will reduce a static charge of $\pm 1,000V$ down to $100V$ in approximately four seconds at a distance of 1 ft. (30.48 cm)¹. See Table 1 for typical discharge times as determined by distance. Distance is measured from the front center of the Blower. Ionization balance is better than $\pm 20V$ at 1 ft. (30.48 cm).

Distance	Discharge Time
1 ft (30.48 cm)	4 seconds [*]
2 ft (61 cm)	10 seconds
3 ft (91.44 cm)	19 seconds

Table 1. Performance

* Testing was performed with a charge plate monitor in accordance with ionization standard ANSI/ESD STM3.1-2006 of the ESD Association.

1. Four-second discharge at one foot distance is when operating Blower with AC power. Discharge time at one foot when operating Blower with DC power is five seconds.

1.4 Power Requirements

The maximum power requirement for the Model 6422e is 6W. Three different power supplies are available as options for the Blower, providing 24 VDC or 24 VAC. The fourth power source is 24 VDC from your process equipment using the terminal block and eight pin connector on the rear of the Blower.

Simco-Ion offers three power supplies for use with this product:

- Transformer (p/n 14-1320-01) for use with 120 VAC/60 Hz systems
- Transformer (p/n 14-1330) for use with 230 VAC/50 Hz systems
- Both 14-1320-01 and 14-1330 transformers provide the Blower with appropriate 24 VAC
- AC/DC universal power supply (p/n 14-1322) for use with 120/240 VAC 50/60 Hz provides the Blower with 24 VDC power.

The use of improper input voltage may result in poor performance or damage to the unit.

Caution: Damage caused to the power supply from operation in an environment that exceeds the specified limits will void the warranty.

Achtung: Die Verwendung unzulässiger Eingangsspannung kann zu schlechter Leistung und Beschädigung des Gerätes führen. Schäden an der Stromversorgung, verursacht durch Betrieb unter Bedingungen außerhalb der spezifizierten Grenzwerte, fallen nicht unter die Garantiebestimmungen.

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Setup & Operation

- 2.1 Box Contents
- 2.2 Blower Placement
- 2.3 Power Connections
- 2.4 FMS Connection
- 2.5 Turning on the Blower
- 2.6 Alarms

2.1 Box Contents

The Model 6422e Blower is supplied with:

- U-shaped mounting bracket (already installed on the blower)
- Three truss-head screws for securing the bracket (Simco-Ion p/n 28-3369), see item 1 below.
- One 8-pin terminal block plug for connecting to tool power (Simco-Ion p/n 18-2308), see item 2 below.
- Certificate of Compliance
- This manual
- Power transformer, depending on order:
 - 120 VAC transformer (#14-1320-01)
 - 230 VAC transformer (#14-1330)
 - AC/DC universal power supply (#14-1322)

If you ordered an AC/DC universal power supply (#14-1322), you will have one of the following plug adapters:

- US wall outlet adapter (p/n 18-0285)
- UK wall outlet adapter (p/n 18-0286)
- Europe wall outlet adapter (p/n 18-0287)
- Australia/China wall outlet adapter (p/n 18-0288)

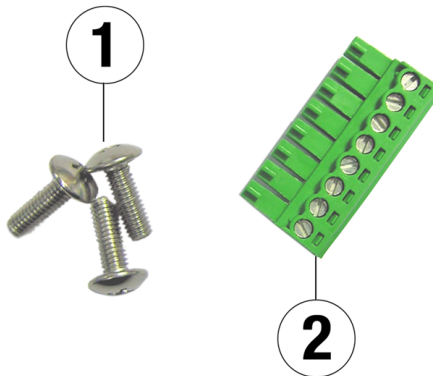


Figure 3. Mounting Screws and 8-pin Terminal Block

2.2 Blower Placement

Caution: Do not use this Blower in an explosive environment. Poorly maintained ionizers could produce electric arcs at the emitter points and lead to detonation in an explosive environment.

Achtung: Verwenden Sie dieses Gebläse nicht in explosionsgefährdeten Bereichen. Schlecht gewartete Ionisatoren können an den Emitter-Punkten Lichtbögen erzeugen und in explosiver Umgebung eine Explosion auslösen.

The following points should be considered when positioning the Model 6422e Blower:

- Keep at least 2 in. (5.1 cm) of free space at the rear of the unit for unimpeded air intake.
- For fastest decay times, position the Blower close to the target area where static removal is desired.
- Aim the Blower so that its airflow travels directly to your target. See **Table 1 Performance** on page 4 for approximate decay times versus distance.
- Keep grounded objects away from the ionized airstream to avoid the possibility of increased offset voltages.



Figure 4. Model 6422e with U-bracket

The Model 6422e Blower can be securely mounted using the supplied U-bracket. It is recommended that the Blower be mounted using the supplied truss-head screws through the 1/4 in. (6.3 mm) diameter mounting holes on the bottom of the bracket. The mounting holes are spaced 1 ft. (25.4 mm) apart on the centerline of the bracket.



Figure 5. U-bracket Holes for Mounting

The tilt angle of the Blower can be adjusted using the T-knobs on the sides of the unit. To securely lock the Blower at a desired angle, replace the T-knobs with the supplied M4x12 mm stainless steel truss head screws (p/n 28-3369) using a Phillips head screwdriver.



Figure 6. U-bracket Side T-knob for Tilt Adjustment

Caution: Do not use screws longer than 12mm to attach brackets to the threaded inserts in the sides of the Blower.

Achtung: Verwenden Sie zum Anschrauben von Halterungen an den seitlich am Gebläse (Blower) befindlichen Gewindeeinsätzen keine Schrauben, die länger als 12mm sind.

2.3 Power Connections

The Blower may be powered by an optional 24 VAC 120V or 230V transformer or a 24 VDC universal AC adapter, sold separately by Simco-Ion. Plug the transformer or AC adapter into a properly grounded VAC receptacle with the correct voltage for your power supply.

Power Supply Connection

Insert the power cable from the transformer or power supply into the Power In receptacle on the back of the Blower. See the **1.3 Performance** and **1.4 Power Requirements** sections for additional information.

AC/DC Adapter Connection

The AC/DC adapter (Simco-Ion p/n 14-1322) output is 24 VDC at 400 mA, maximum.

The AC/DC adapter is shipped with its plug adapter uninstalled. To install the plug adapter, slide it into the bay on the AC/DC adapter. Push it in until it clicks into place (see **Figure 6. U-bracket Side T-knob for Tilt Adjustment**).



Figure 7. Push the Adapter into the AC/DC Power Supply

Connection to Process Equipment Power

Two active pins on the eight-pin terminal strip on the rear of the Blower can receive 24 VDC power from your process equipment. An included terminal block (Simco-Ion p/n 18-2308) is used to connect 24 VDC power to the Blower from your process equipment. The connectors are designed to accept wiring between 22 AWG and 16 AWG.

When wiring the Blower directly to a 24 VDC source, observe the maximum voltage and power requirements for the unit (24 VDC [$\pm 10\%$], 400 mA DC maximum) and polarity.

Use a small flatblade screwdriver to secure cables stripped 1/4 in. (6.3 mm) into the terminal block. See **Figure 8. Flatblade Screwdriver Securing Connecting Cables** below.

Pins	State
8	24 VDC return
7	+24V
6-1	Not used on Model 6422

Table 2. Model 6422e DC Power on Pins 7,8

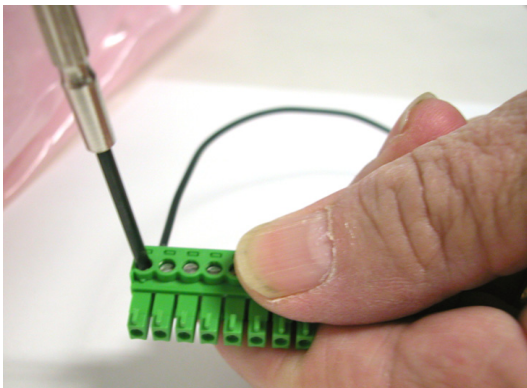


Figure 8. Flatblade Screwdriver Securing Connecting Cables

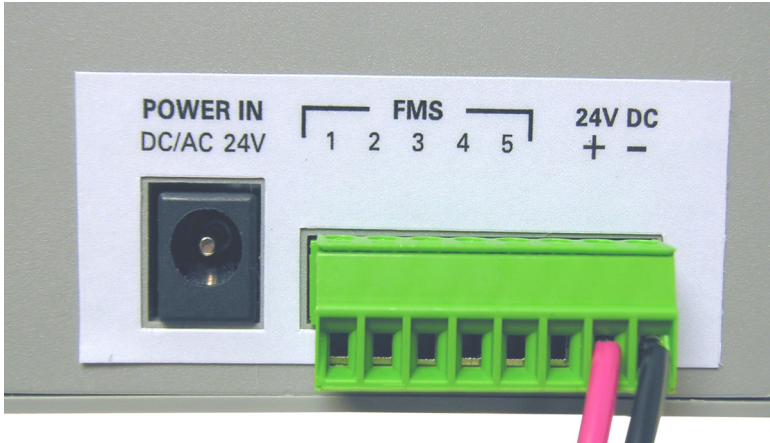


Figure 9. Terminal Block

Caution: 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.

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

2.4 FMS Connection

The Model 6422e Blower provides a non-isolated 4-20 mA current loop and relay closure output for indicating alarm status to your process equipment's facility monitoring system (FMS). In addition to connecting 24 VDC power into the Blower, the included terminal block (Simco-Ion p/n 18-2308) connects the Blower to the FMS using pins 1-5.

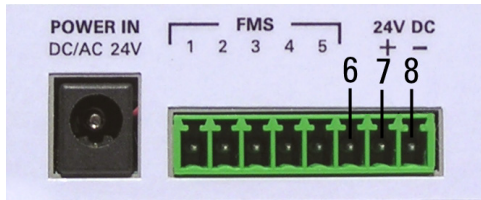


Figure 10. FMS and 24 VDC

Pin Function(s)	Pin	Description
24 VDC process equipment power	8	24 VDC return (Ground)
	7	+24V
	6	Do not use
4-20 mA current loop	5	- Current loop (Ground)
	4	+ Current loop
Relay connections	3	Open for active alarm
	2	Relay common
	1	Closed for active alarm

Table 3. Descriptions of all 8 Terminal Block Pins

Pins	Normal State	Alarm State	No Power
1-2 (relay)	Contact open	Contact closed	Contact closed
2-3 (relay)	Contact closed	Contact open	Contact open
4-5 (Current Loop)	4 mA (OK)	20 mA (Alarm)	0 mA (brownout)

Table 4. FMS Output States

2.5 Turning on the Blower

The Model 6422e Blower is on as soon as power is applied to the unit.

2.6 Alarms

In the event of an alarm, the red LED on the front of the Blower will light. An alarm indicates that the Blower's internal high voltage power circuitry that drives the emitter points is not functioning correctly. Causes may include low or incorrect input voltage, or a compromised internal part.

The Blower's alarm is not a maintenance alert. In most cases, factory service will be required.

Before contacting Simco-Ion for service, make sure that the Blower is receiving proper input voltage per specifications.

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

Achtung: Es gibt keine vom Anwender zu wartenden Teile in diesem Blower. Nicht autorisierter Service führt zum Erlöschen der Garantie und kann zu zusätzlichen Reparaturkosten führen.

3

Maintenance

- 3.1 Maintenance Requirements
- 3.2 Cleaning the Chassis
- 3.3 Cleaning the Emitter Points
- 3.4 Auto-Clean System

3.1 Maintenance Requirements

The performance of the Model 6422e Blower 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.

The Blower can be easily removed from the U-bracket by unscrewing the side knobs.

Recommended Cleaning Materials:

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

3.2 Cleaning the Chassis

Moisten a cloth with the IPA solution. Wipe off any dirt that may have accumulated on the unit.

3.3 Cleaning the Emitter Points

Caution: Before performing any maintenance on emitter points, remove power from the ionizer. Allow a minute for the high voltage power supply to discharge.

Achtung: Ziehen Sie vor der Durchführung von Wartungsarbeiten an Emitter-Punkten den Netzstecker aus dem Ionisator. Lassen Sie die Hochspannungs-Stromversorgung eine Minute entladen.

Remove power from the Blower. Normally, the emitter points can be cleaned by using a jet of compressed air to blow off any dirt that may have accumulated on them. A swab moistened with the IPA solution may be used if required. If using a swab, gently wipe the tips of the emitter points until all the dirt is removed.

Wire emitter points should not be bent or moved during cleaning. After cleaning, make sure that the emitter wires point to the center of the fan and are on the same horizontal plane.

The Blower uses internally-shielded emitter points that will not normally require replacement during the normal service life of this product. If you believe that the emitter points need to be replaced, contact Simco-Ion Technical Support (techsupport@ion.com) for information.

3.4 Auto-Clean System

The Model 6422e-AC incorporates our Auto-Clean System, a mechanical device that physically removes particles from emitter points. Users should consider carefully the appropriateness of using this device in an ultraclean environment.

The Auto-Clean System features a brush mechanism that sweeps the emitter points when the blower is turned off and on. During full operation of the fan, the brush retracts to prevent emitter point wear.

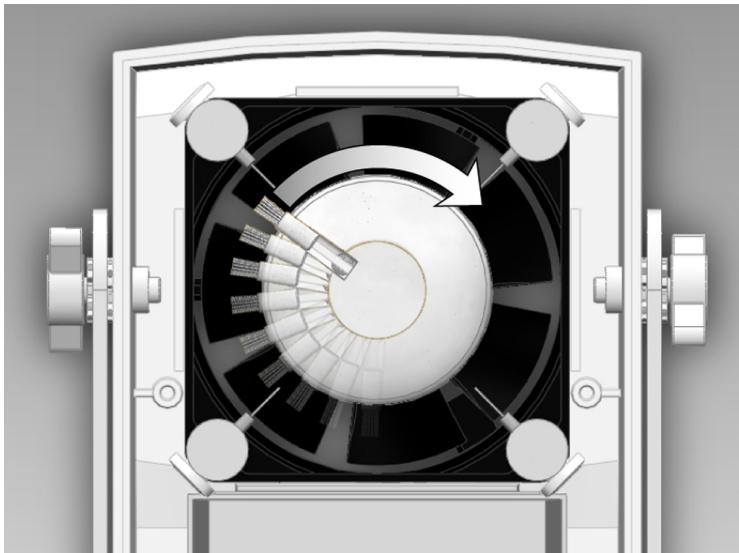


Figure 11. Auto-Clean System


Remove any contamination-sensitive objects below the blower before activating the Auto-Clean System. To operate the Auto-Clean System turn off the blower. The automatic Emitter Point Cleaner brush will extend as the fan slows to a stop. Allow the fan to come to a complete stop and then turn the blower back on. Wait three minutes for any loose particles to be dispersed.

Activate the Auto-Clean System regularly to prevent excessive build up of debris. Ion recommends activating the Auto-Clean System at least once a week. Cleaning schedules will vary depending on environmental conditions.


The automatic Emitter Point Cleaner can not be temporarily or permanently removed or de-activated; it is an integral part of the blower.

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Specifications

Model 6422 Blower	
Input Voltage	24 VDC \pm 10%, 6W (max) or 24 VAC \pm 10%; 50/60 Hz, 6W (max)
Output Voltage	5-6 kV at emitter points
Discharge	\pm 1000-100V <4 sec @ 1', 24 VAC (<5 sec @ 1', 24 VDC)
Balance	\pm 20V @ 1' away
Ion Emission	Steady-state DC
Emitter Points	Tungsten wire; internally shielded
Airflow	23 cfm (typ)
Ozone	<0.004 ppm (typ), 24-hour accumulation
LED Indicators	Green POWER; red ALARM
Connectors	24 VAC/VDC power input, 8-pin terminal block with 24 VDC input from process equipment; 4-20 mA current loop FMS output/relay interface
Operating Env.	Temperature 10-35°C (50-95°F); humidity 20-60% RH, non-condensing
Mounting	U-bracket, factory-installed
Dimensions	With bracket 4.98H x 4.10W x 2.48D in. (126H x 104W x 63D mm); without bracket 4.37H x 3.26W x 2.48D in. (111H x 83W x 63D mm)
Weight	With bracket 12.8 oz (362.9g); without bracket 11.2 oz (317.5g)
Certifications	 RoHS Compliant



14-1320-01 Transformer

Input Voltage	120 VAC, 60 Hz
Output Voltage	24 VAC, 60 Hz @ 450 mA, $\pm 5\%$
Short Circuit Protection	The power supply is provided with protection against short circuit by means of a primary thermal fuse.
Dimensions	3.4H x 2.3W x 1.9D (87 x 58.5 x 48 mm)
Weight	1 lb (0.45 kg)
Certifications	 RoHS Compliant

14-1330 Transformer

Input Voltage	230 VAC $\pm 10\%$, 50 Hz
Output Voltage	24 VAC @ 750 mA, $\pm 5\%$
Short Circuit Protection	The power supply is provided with protection against short circuit by means of a primary thermal fuse.
Dimensions	2.8H x 2.5W x 1.9D in. (72H x 63W x 49D mm)
Weight	0.8 oz (0.36 kg)
Certifications	 RoHS Compliant

14-1322 AC/DC Adapter

Input Voltage	100-240 VAC $\pm 10\%$, 50/60 Hz
Output Voltage	24 VDC @ 400 mA
Short Circuit Protection	The power supply is provided with protection against short circuit by means of a primary thermal fuse.
Dimensions	1.4H x 2.1W x 3.4L in. (36H x 53W x 86L mm)
Weight	0.25 lb (0.11 kg)
Certifications	  RoHS Compliant

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Warranty & Service

Simco-Ion provides a limited warranty for the Point of Use Ionizing Blower Model 6422e. 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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