



An ITW Company

IONIZATION SOLUTIONS



# **Air Ionizing Cartridge**

## **Model 6110/6110A**

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](http://www.simco-ion.com) or call 800-367-2452. Simco-Ion is ISO 9001 and ANSI ESD S20.20 certified.

© 2013 Simco-Ion

# Contents

<b>1 Description .....</b>	<b>1</b>
1.1 Air Ionization Cartridge Model 6110/6110A .....	2
1.2 Performance .....	3
1.3 Power Requirements .....	4
<b>2 Setup &amp; Operation.....</b>	<b>5</b>
2.1 Box Contents .....	6
2.2 Setup.....	7
2.3 Gas Inlet Attachment .....	8
2.4 Ionized Gas Output Connection.....	9
2.5 Blow-off Gun Attachment.....	10
2.6 Connection to Optional Airgun/Hose Kit .....	11
2.7 Connection to 24 VAC Source.....	13
2.8 Operation .....	14
<b>3 Maintenance .....</b>	<b>15</b>
3.1 Cleaning.....	16
<b>4 Specifications .....</b>	<b>18</b>
<b>5 Warranty &amp; Service .....</b>	<b>25</b>

# 1

## Description

---

- 1.1 Air Ionization Cartridge Model 6110/6110A
- 1.2 Performance
- 1.3 Power Requirements

# 1.1 Air Ionization Cartridge Model 6110/6110A

The Air Ionization Cartridge Model 6110/6110A is a self-contained compressed air ionizing cartridge. It controls static charge in production, packaging, laboratory and other environments where static build up can cause contamination, ESD, material handling problems or microprocessor lock up. Compact and rugged, the cartridge can be used either for in-line ionization or as an ionizing blow-off gun.

For in-line use, the Model 6110(A) connects to a compressed air source and it is ready to ionize any type of production equipment. The Model 6110A may be attached to an ordinary air gun and the airstream is ionized for effective particle removal. An internal sensor on the Model 6110A initiates ionization only when the gun is triggered, ensuring on-demand control of static charge.

IsoStat Technology guarantees intrinsically balanced ionization and eliminates complicated feedback circuits. Ionizers incorporating this technology never need calibration and require very little maintenance.

---

This manual covers both Model 6110 and 6110A Air Cartridges. They share the same design and operate in the same way, but the Model 6110A features an internal airflow sensor. In this manual, models are referred to as follows:

Note:

- Model 6110A refers to the version with airflow sensor.
  - Model 6110(A) refers to both versions.
-

# 1.2 Performance

Electrical performance is measured using the test methods of the EOS/ESD Association standard EOS/ESD STM 3.1 using a Charged Plate Monitor (CPM). Simco-Ion offers the CPM Model 280A.

Contact Simco-Ion for more information.

<b>In-line Ionizing Cartridge</b>	
<b>Discharge Time</b>	<4 seconds, 1000V to 100V for either polarity. Measured with 6110(A) air output connector 6 inches from the plate of a charged plate monitor (CPM) and an inlet air flow rate of at least 2 SCFM. The minimum flow rate for operation of the 6110(A) is 2 SCFM.
<b>Offset Voltage Balance</b>	Better than 25V with the air on or off, measured at 6 inches from the CPM. Shall not exceed 50V at 1 inch from the CPM under any operating conditions.

# 1.3 Power Requirements

The 6110(A) ionizer is typically used in conjunction with a 24 VAC desktop transformer. The transformer connects to line power and provides 24 VAC to the ionizer unit using cables made with modular cable and telephone-style connectors. Simco-Ion offers the following transformers for use with the 6110(A) ionizer:

- 100 VAC input power transformer (p/n 14-1306)
- 120 VAC input power transformer (p/n 14-21527)
- 230 VAC input power transformer (p/n 14-21570)

To ensure correct performance of the transformer, please note the following:

- The transformer should not be operated beyond the specified electrical limit as described in the Specifications section of this manual.
- Damage caused to the transformer from operation in an environment that exceeds the specified limits will void the warranty.

# 2

## Setup & Operation

---

- 2.1 Box Contents
- 2.2 Setup
- 2.3 Gas Inlet Attachment
- 2.4 Ionized Gas Output Connection
- 2.5 Blow-off Gun Attachment
- 2.6 Connection to Optional Airgun/Hose Kit
- 2.7 Connection to 24 VAC Source
- 2.8 Operation



## 2.1 Box Contents

The **Model 6110** is supplied with the following:

- Interconnect cable (10 feet / 3m)
- Certificate of Compliance
- This manual.

The **Model 6110A** is supplied with the following:

- Interconnect cable (10 feet / 3m)
- Certificate of Compliance
- This manual
- Nozzle and adapter (see the figure below).



Figure 1. Nozzle and Adapter Pieces included with the Model 6110A

## 2.2 Setup

Remove and discard the two red protective plugs from each end of the ionizer.

No equipment or tools are required for setting up the 6110(A), except as needed for the air line fittings.

---

Note: The 6110(A) is designed to be used with clean dry air (CDA). Appropriate filtering must be used to remove moisture, oil, and particles from the compressed gas supply. Consult manufacturers of air compressor equipment for recommendations.

---

## 2.3 Gas Inlet Attachment

Attach the 6110(A) to your air line using the appropriate fittings. The Teflon center tube of 6110(A) is threaded for 1/4" NPT fittings. Appropriate adapters for 1/4" NPT or 1/8" NPT may be used. Use of the 6110(A) is not recommended with fittings smaller than 1/8" NPT.

The end user must provide a means to control and monitor the input pressure and gas flowrate.

---

Caution: Fittings must be slowly and carefully installed to avoid cross-threading the Teflon tube. Teflon tape and cleanroom compatible components should be used as necessary.

---

---

Caution: Only Teflon is used in the 6110(A) internal air flow path. While this is a cleanroom compatible material, the unit should be purged with clean dry air for at least one hour before connecting it to any cleanroom production equipment. If possible, monitor the purge air output for particles.

---

---

Caution: The 6110(A) cartridge is not designed to withstand high air pressures. It should be installed downstream from any system valves or shutoffs with the output side open to atmospheric pressure.

---

## 2.4 Ionized Gas Output Connection

The Model 6110(A) should be installed as close as possible to the area to be ionized. Short lengths of straight, non-conductive tubing can be installed on the output side of the 6110(A). Please observe the following guidelines:

- The outlet of the 6110(A) should be open to atmosphere with a maximum pressure drop across the cartridge of about 3 PSI
- Gas flow rate through the ionizer should be 2 SCFM, minimum
- PFA Teflon tubing is recommended to maintain cleanliness
- A minimum inside diameter of 3/16" is recommended for the outlet tubing
- Limit the outlet tubing to a maximum length of about 3' (914 mm)

Static discharge performance will diminish as the output tubing length increases or if the ionized air is forced around bends. For best results, keep the tubing straight, short (36" max) and use a minimum number of fittings to make connections. A single 90° bend in the tubing can increase the static neutralizing time by a factor of two or more.

Example: Using a 3/16" ID x 36" long outlet tube will require an inlet pressure of between 2 to 3 PSI to generate about 2 SCFM (57 LPM) minimum flow through the 6110(A) cartridge. An inlet pressure of between 6 to 7 PSI will generate about 4 SCFM (113 LPM) flow through the cartridge.

The end user will need to test any tubing or fittings installed on the ionized outlet of the 6110(A) to determine suitability and performance levels in their own installation.

## 2.5 Blow-off Gun Attachment

The 6110A may be installed on the output of any air blow-off gun using the appropriate adapter fittings. Use care in the choice and installation of these fittings as described above.

Install an appropriate fitting and/or nozzle in the output side of the 6110A. For best operation, the orifice in the nozzle should be at least 0.125" ID. OSHA approved nozzles are recommended.

---

Caution: In order to comply with OSHA regulations limiting hand-held air blow-off devices to a maximum pressure of 30PSI, it is recommended that the input pressure to the 6110(A) be limited to a maximum of 30PSI when it is used as an attachment to a blow-off gun.

---

## 2.6 Connection to Optional Airgun/Hose Kit

The Model 6110A may be used as an air gun using Simco-Ion air gun/hose kit, part number 91-6150. (The Model 6110 does not operate with this kit.) The Model 6110A is supplied with a nozzle and adapter, which are used to connect the ionizer to the air gun/hose kit.

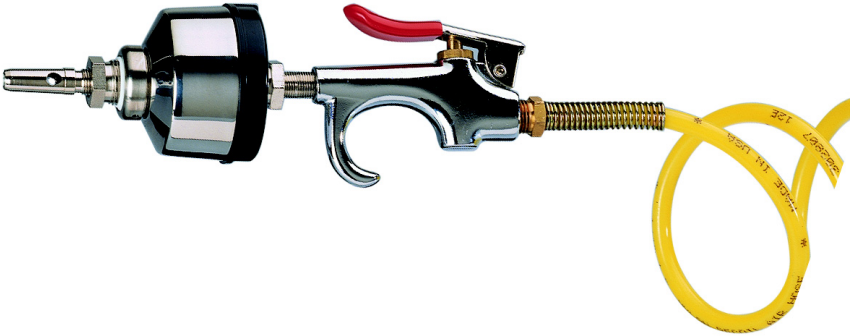


Figure 2. The Optional Air Gun/Hose Kit

To connect the airgun/hose kit:

1. Screw the reducing fitting into the air input (label side) of the ionizer.
2. Screw in the nozzle piece to the air output side of the ionizer.

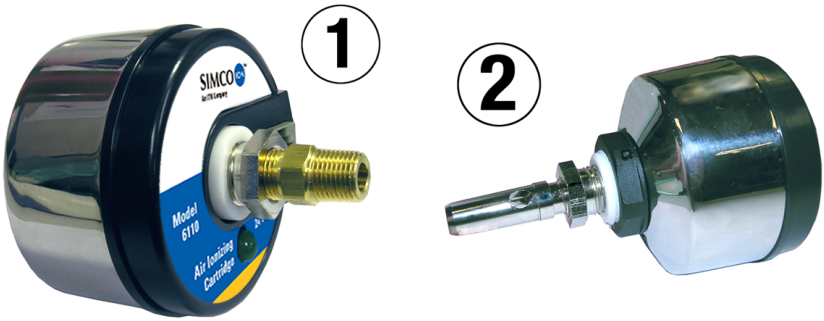


Figure 3. Connecting the Adapter and Nozzle Pieces

3. Screw the gun handle onto the brass adapter piece.



Figure 4. Connecting the Gun Handle to Adapter Piece

4. Connect the hose to appropriate gas lines.

## 2.7 Connection to 24 VAC Source

The 6110(A) Air Ionizing Cartridge may be connected to a 24 VAC source; use the included 10 foot interconnect cable. See the figure below for wiring information on connecting the Model 6110(a) to a 24 VAC source.

---

**Note:** The separate interconnect cable supplied with the Model 6110 is not needed with the 120 VAC transformer, P/N 14-21527 or the 230 VAC transformer, P/N 14-21570. These transformers include a hardwired interconnect cable.

---

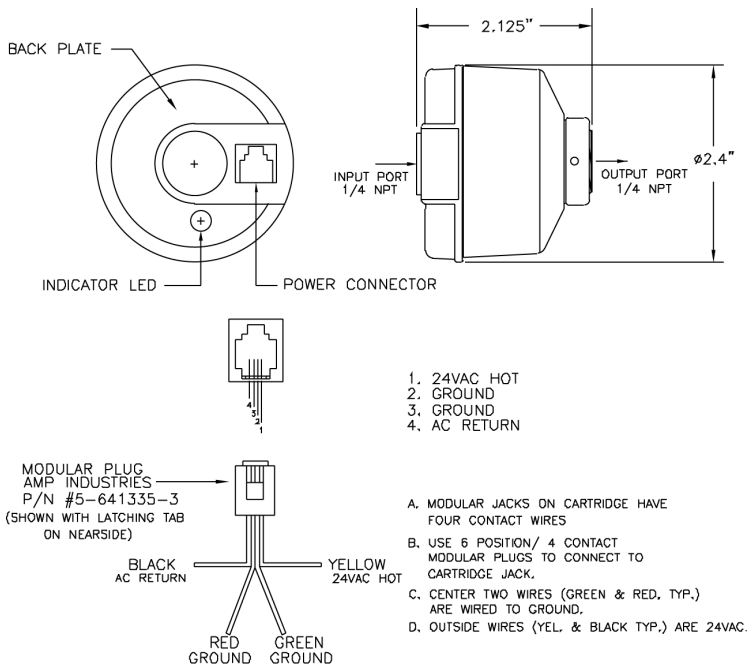


Figure 5. Wiring Connections for 6110(A) to 24 VAC Source



## 2.8 Operation

If you are using a wall transformer to provide 24V, connect its input to the appropriate line power. Connect the modular phone cable from the wall transformer to the 6110(A) ionizer.

The 6110(A) does not have a “power on” switch. It will be powered on as soon as it is connected to a 24 VAC source.. An LED on the air input side of the unit will indicate power as follows:

### **6110 Power Indication**

The LED will be energized continuously indicating that air ions are being produced.

### **6110A Power Indication**

The LED will blink intermittently when no air is flowing. This indicates that power is applied, but no air ions are being produced. When air flows through the cartridge, the LED will turn on continuously indicating that air ions are being produced.

# 3

## Maintenance

---

### 3.1 Cleaning

## 3.1 Cleaning

The performance of the 6110(A) is designed to be maintained primarily by the internal auto-balance circuitry. Occasional cleaning of the emitter points is the only routine maintenance required. No readjustment of the ionizer is required after cleaning.

Recommended cleaning materials:

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

---

Caution: There are no user-serviceable parts inside the 6110(A). Any unauthorized service will void the warranty. The warranty does not cover breakage of the emitter points or cross-threading of the input and output connections.

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

---

Normally, the emitter points will be cleaned by the compressed air that flows through the units. If for some reason the points have become contaminated (poor air filtration, long term operation, etc.), they may be cleaned using a lint-free swab moistened with the IPA solution. Remove the input or output fitting and gently swab the emitter points and the Teflon tube. Emitter points are made of a proprietary material which will last 3 to 5 years in normal operation.

The emitter points are not replaceable.


# 4

## Specifications


---

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

# 4.1 Specifications

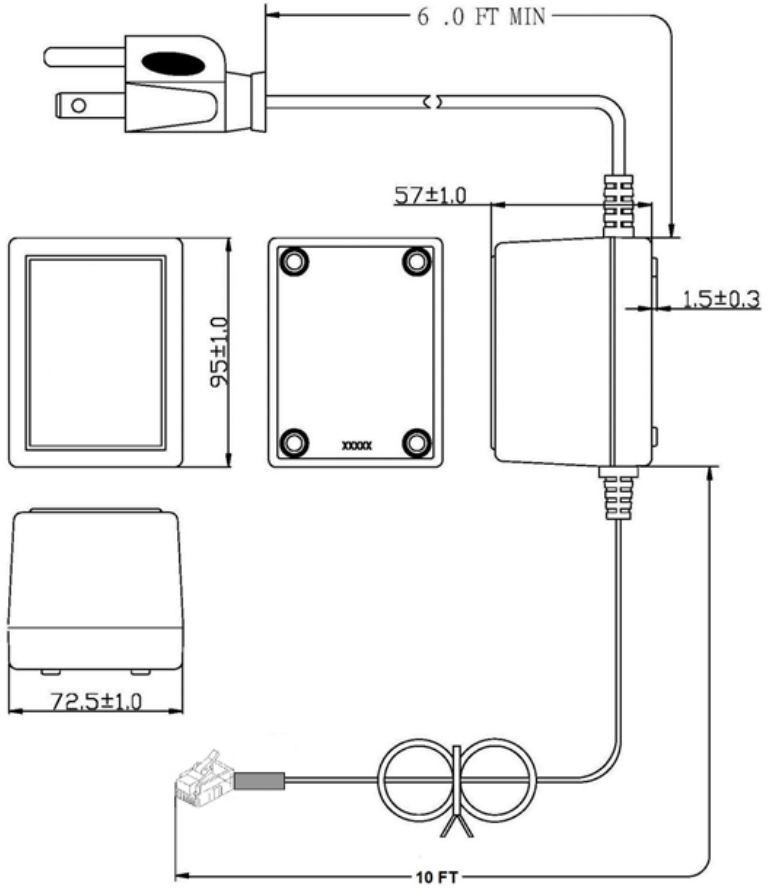
<b>Model 6110(A)</b>	
<b>Input Voltage</b>	24 VAC @ 40 mA, <1W
<b>Power</b>	120 VAC, 100 VAC and 230 VAC powered by transformer; up to 10 units may be powered by a single transformer
<b>LED Indicator</b>	Green POWER ON
<b>Ion Emission</b>	Steady-state DC
<b>Emitter Points</b>	Permanent tungsten alloy, est. life 5 years of continuous use
<b>Air Flow Requirements</b>	2 scfm (57 lpm), min
<b>Air Line Connector Requirements</b>	1/4" NPT female (input and output); 1/8" NPT adapter available
<b>Inlet Pressure</b>	2-3 psi (nominal) is needed to create a 2 scfm min flow through the Model 6110(A) cartridge with a 3/16" ID x 36" long outlet tube installed; for safety reasons, the inlet pressure to a blow-off gun with a 6110(A) cartridge installed should be limited to 30 psi max; the 6110(A) is not designed to be pressurized
<b>Internal Sensor (Model 6110A only)</b>	Turns ionizer off when air is not flowing; Model 6110 without sensor also available for continuous flow applications
<b>Dimensions</b>	2.2D x 3.1L in. (5.6 x 7.9 cm) not including fittings
<b>Weight</b>	6 oz (170.1g)
<b>Certifications</b>	 RoHS 2 Compliant

---

**Transformer 14-1306****Input Voltage** 100 VAC  $\pm 10\%$ , 50/60 Hz, 300 mA**Output Voltage** 24 VAC,  $\pm 5\%$ , 1A**Certifications** RoHS 2 Compliant **Transformer 14-21527****Input Voltage** 120 VAC  $\pm 10\%$ , 60 Hz, 250 mA**Output Voltage** 24 VAC  $\pm 5\%$ , 1670 mA**Certifications** RoHS 2 Compliant **Transformer 14-21570****Input Voltage** 230 VAC  $\pm 10\%$ , 50 Hz, 410 mA**Output Voltage** 24 VAC  $\pm 5\%$ , 1670 mA**Certifications** RoHS 2 Compliant  

# 4.2 Dimensional Drawings

## Wall Transformer P/N 14-21527

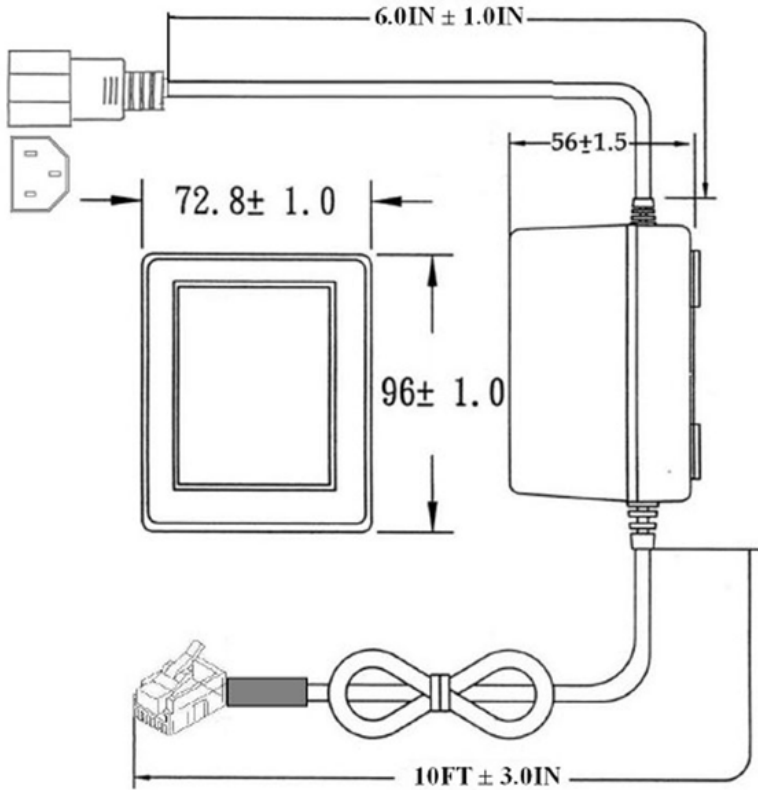


---

**Note:** The separate interconnect cable supplied with the Model 6110 is not needed with the 120 VAC transformer, P/N 14-21527. This transformer includes a hardwired interconnect cable.

---

# Desktop Transformer P/N 14-21570



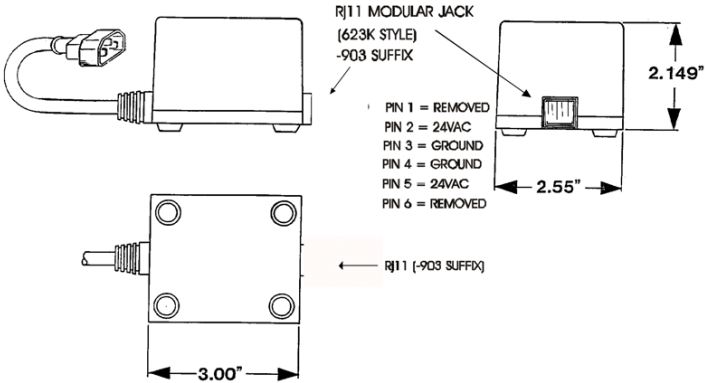
---

**Note:** The separate interconnect cable supplied with the Model 6110 is not needed with the 230 VAC transformer, P/N 14-21570. This transformer includes a hardwired interconnect cable.

---



# Transformer P/N 14-1306



# 4.3 Parts & Accessories

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

Simco-Ion P/N	Description
91-6110	Air Cartridge Ionizer
91-6110A	Air Cartridge Ionizer with airflow sensor
91-6150	Optional air gun/hose kit for Model 6110A
14-1306	100 VAC Desktop Transformer
14-21527	120 VAC Desktop Transformer
14-21570	230 VAC Desktop Transformer
<b>Power Cords (required for 100 VAC and 230 VAC transformers only)</b>	
25-20660	IEC power cable with US plug, 8.2 ft (2.5m)
25-0700	IEC power cable with no plug, 10 ft (3m)
25-20710	IEC power cable with UK plug, 8.2 ft (2.5m)
25-20735	IEC power cable with German Schuko plug, 8.2 ft (2.5m)
25-20750	IEC power cable with China plug, 8.2 ft (2.5m)



# 5

## Warranty & Service

---

Simco-Ion provides a limited warranty for the Model 6110(A) Air Ionizing Cartridge. 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](mailto:techsupport@simco-ion.com) or (510) 217-0470.



# Notes

---

# Notes

---

**ISO 9001  
CERTIFIED**



An ITW Company

*Technology Group*

1750 North Loop Rd., Ste 100

Alameda, CA USA 94502

Tel: 510-217-0600

Fax: 510-217-0484

Toll free: 800-367-2452

Sales services: 510-217-0460

Tech support: 510-217-0470

[ioninfo@simco-ion.com](mailto:ioninfo@simco-ion.com)

[saleservices@simco-ion.com](mailto:saleservices@simco-ion.com)

[techsupport@simco-ion.com](mailto:techsupport@simco-ion.com)

[service@simco-ion.com](mailto:service@simco-ion.com)

[www.simco-ion.com](http://www.simco-ion.com)



