



An ITW Company

IQ PowerTM

Static Neutralizing System BPS Power Supply with Sensor Technology

INSTALLATION AND OPERATING INSTRUCTIONS

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1. SAFETY WARNINGS

PLEASE READ INSTRUCTIONS COMPLETELY BEFORE STARTING INSTALLATION

ALL INSTALLATION AND TROUBLESHOOTING OPERATIONS MUST BE PERFORMED BY QUALIFIED TECHNICAL PERSONNEL

This instruction manual uses symbols to identify dangerous situations as follows:



NOTE – Statements identified with a NOTE indicate precautions necessary to avoid potential equipment failure.




CAUTION – Statements identified with a CAUTION indicate potential safety hazards.



NOTE – This equipment must be correctly installed and maintained. Adhere to the following notes for safe installation and operation:

1. Read instruction manual before installing or operating equipment.
2. Only qualified service personnel are to perform installation and repairs.
3. All equipment must be properly grounded, including the machine frame to which the equipment is mounted.
4. Disconnect input power to power supply before connecting or disconnecting static neutralizing bars to the high voltage power supply.
5. Do not operate system in close proximity to flammable liquids.
6. Do not use standard Ethernet cables with IQ Power Systems.



This product is intended to be supplied by a Listed AC Adapter or Power Unit marked “Class 2” or “LPS” and rated output 24V  from 1.6A, as provided. Negative must be ground.



CAUTION – Electrical Shock Hazard

Disconnect input power to high voltage power supply before connecting or disconnecting static neutralizing bar or performing any maintenance to the system. Avoid touching static neutralizing bar when power supply is energized.



WARNING – Fire Hazard

Do not install or operate static neutralizing bar in close proximity to any flammable liquids or solvents.

2. DESCRIPTION

Simco-Ion's IQ Power Static Neutralizing System consists of a high voltage power supply, static neutralizing bar, and the following optional devices: control station, and static sensing bar. The IQ Power static bar is available in three different types; tailored for high speed processes, operating at a distance from the material or intermediate (hybrid) applications. The IQ Power Control Station provides the ability to both monitor and control real time system performance. The Control Station also features a Fieldbus Interface that provides for a factory installed Anybus® CompactCom module that provides network connectivity. The IQ Easy Static Sensor Bar enhances the Control Station's ability to both monitor and control the static eliminating system.

The high voltage power supply module provides microprocessor controlled high voltage DC output to the static bar. The high voltage causes the ionizing pins on the static bar to generate positive and negative ions. The electric field from the static charge on the material being processed will attract opposite polarity ions from the static bar causing the material to be neutralized. Excess ions will either recombine in air or dissipate to ground.

The static neutralizing bar features current limiting at each individual ion emitting pin to minimize the risk of hazardous electrical shock if the bar is touched while in operation. This safety feature does not compromise the IQ Power system's ability to neutralize static charges. The emitter pins are made of a special alloy to extend the longevity and sharpness of the points, providing optimal performance of the static bar.

The IQ Power static bar is tailored to the application. Speed bars are optimized to operate on high speed webs at distances of 50 to 230 millimeters [2 to 9 inches]. Hybrid bars operate at distances of 150 to 460 millimeters [6 to 18 inches] on webs where the web path is somewhat variable. Distance bars are designed to operate from 300 to 760 millimeters [12 to 30 inches] to the material. The variety of IQ Power static bars offered allows the user to install the optimum bar for their static neutralizing needs.

The IQ Power static bar has a plug-in style high voltage connector for fast and easy installation. The connector features a pin that "tells" the IQ Power BPS power supply what type IQ Power static neutralizing bar is installed and optimizes the power supply output for that type of bar.

The Control Station is a convenient hub that provides power and communication for up to ten IQ Power or IQ Easy devices. The two-way digital communication provided by the Control Station enables monitoring and logging of system performance and allows access to enhanced features in the static neutralization system. These enhanced features include; manual control of ionization balance, Auto-Tune automatic control of ionization balance and CLFB (Closed-loop Feedback) providing the ultimate in static eliminator control (use of the IQ Easy Static Sensor Bar is required).


IQ Power BPS Power Supplies use 8-conductor modular cable and RJ-45 connectors for connection to the IQ Power system. Cable assemblies are available by calling Simco-Ion customer service (800) 203-3419 (refer to Section 8, Parts and Accessories).

Anybus® CompactCom is a registered trademark of HMS Industrial Networks.

Features

- Three types of IQ Power static neutralizing bars are available to suit the specific application.
- Static bar disconnect plug pre-installed on static bar cable for quick and easy installation. Plug also identifies bar type to power supply automating power supply set-up.
- Single momentary push-button calibration simplifies set-up.
- Ionization emitter points current limited to enhance operator safety.
- Ionization emitter points of special alloy to extend operating life of emitter points.
- Continuous “T” slot at back of static bar and mounting brackets for easy and flexible installation.
- Bar graph display on power supply indicates ionizing performance of system.
- Indicators on power supply display status of neutralizing system, power, service required and detection of system faults.
- Relay contact output “echoes” indicators on power supply for remote sensing and alarm.
- Optional control station that provides power and a communication hub for IQ Power static neutralizing systems and an available fieldbus interface.
- Optional static sensor bar for gathering web charge data (used in CLFB mode).

3. SPECIFICATIONS

High Voltage Power Supply	
Input Power	24  VDC, 1.6A, negative ground, from AC adapter or Control Station
Output Voltage	BPS Basic Power Supply: ± 7 kV "Speed Bar", ± 9 kV "Hybrid Bar", ± 12 kV "Distance Bar"
Dimensions	202L x 123W x 106H mm [7.95"L x 4.85"W x 4.17"H]
Weight	1.94 kg [4.28 lb]
Operating Temp	43°C [110°F] max
Enclosure	Aluminum, blue polyester powder coated
High Voltage Connectors	2 proprietary IQ Power plug-in outlets
Replacement Fuse	250V, 5A, Type - 3AG, Time Delay
Static Neutralizing Bar	
Nominal Bar Length	301 to 3961 mm Overall Length [11.8" to 156"] 210 to 3870 mm; effective Length [8.27" to 152"]
Profile Dimensions	26W x 49H mm [1.00"W x 1.93"H]
Weight	1.8 g/mm [0.10 lb/in]
Operating Temp	80°C [176°F] max
Humidity	70% RH max, no dewing permissible
Enclosure	Glass-fiber-reinforced polyester
Cable Length	3m [10 ft] standard
HV Conduit	Flexible non-metallic, black
Emitter Spacing	Speed Bar – 30 mm [1.18"], Hybrid Bar – 90 mm [3.54"], Distance Bar – 180 mm [7.09"]
Operating Distance	Speed Bar – 50-230 mm [2" to 9"], Hybrid Bar – 150-460 mm [6" to 18"], Distance Bar – 300-760 mm [12" to 30"]
Installation Hardware	Plastic mounting brackets, metal perforated strips and stainless steel hardware (screws, washers, nuts).
AC Adapter	
Type	"Universal" desktop
Input Power	100-240V 50/60 Hz input (IEC 320 inlet)
Part Number	4108104
Output	24V, 1.6A max
Dimensions	110L x 52W x 32H mm [4.33"L x 2.05"W x 1.26"H]
Weight	150g [5.3 oz]
Enclosure	Thermoplastic, black

4. INSTALLATION

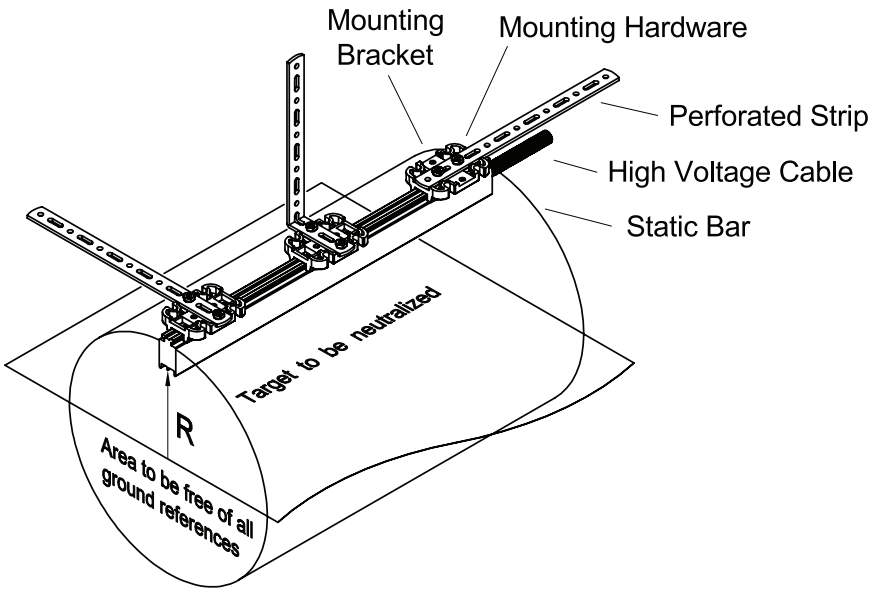


Figure 1. IQ Power Static Bar Installation

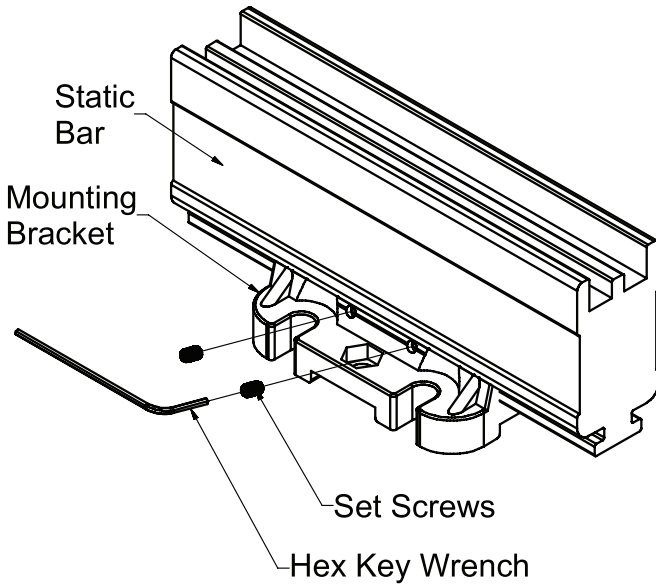


Figure 2. IQ Power Static Bar Bracket

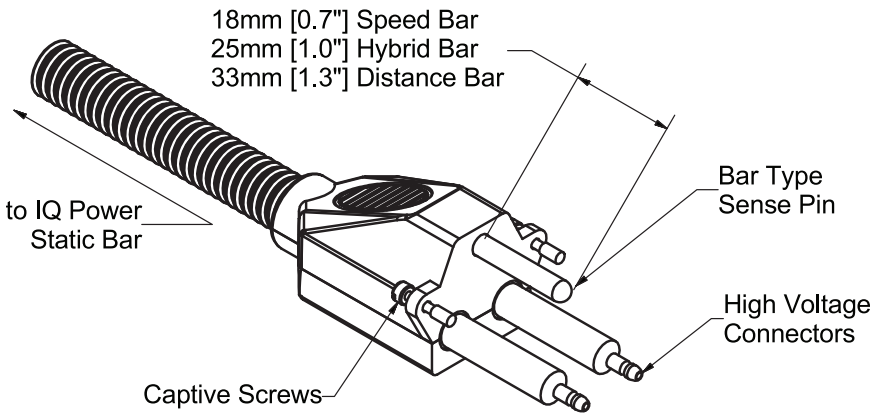


Figure 3. IQ Power High Voltage Connector

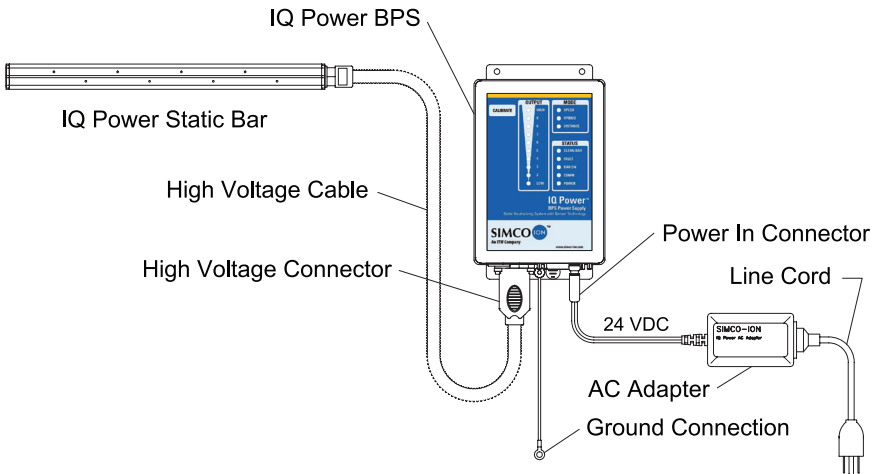


Figure 4. IQ Power Connections (Bar and BPS Power Supply)



NOTE – DO NOT USE standard Ethernet cables with IQ Power systems. Avoid permanent equipment damage by using only Simco-Ion modular cables. (Refer to Section 8, Parts and Accessories).

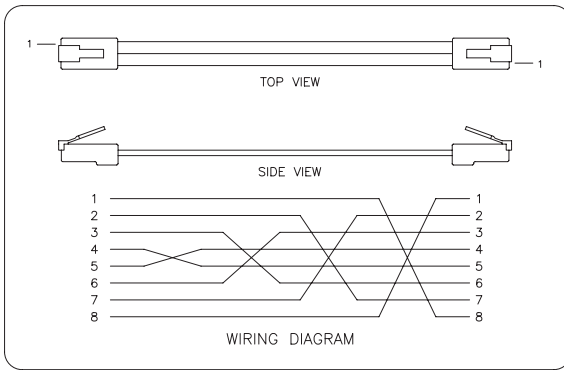
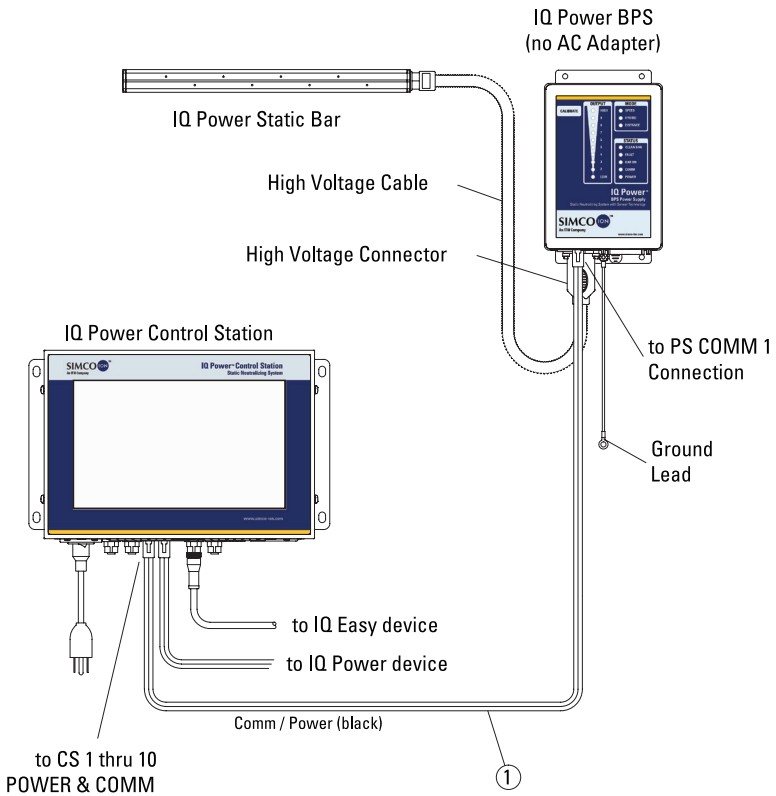


Figure 5. IQ Power Crossover Modular Cable

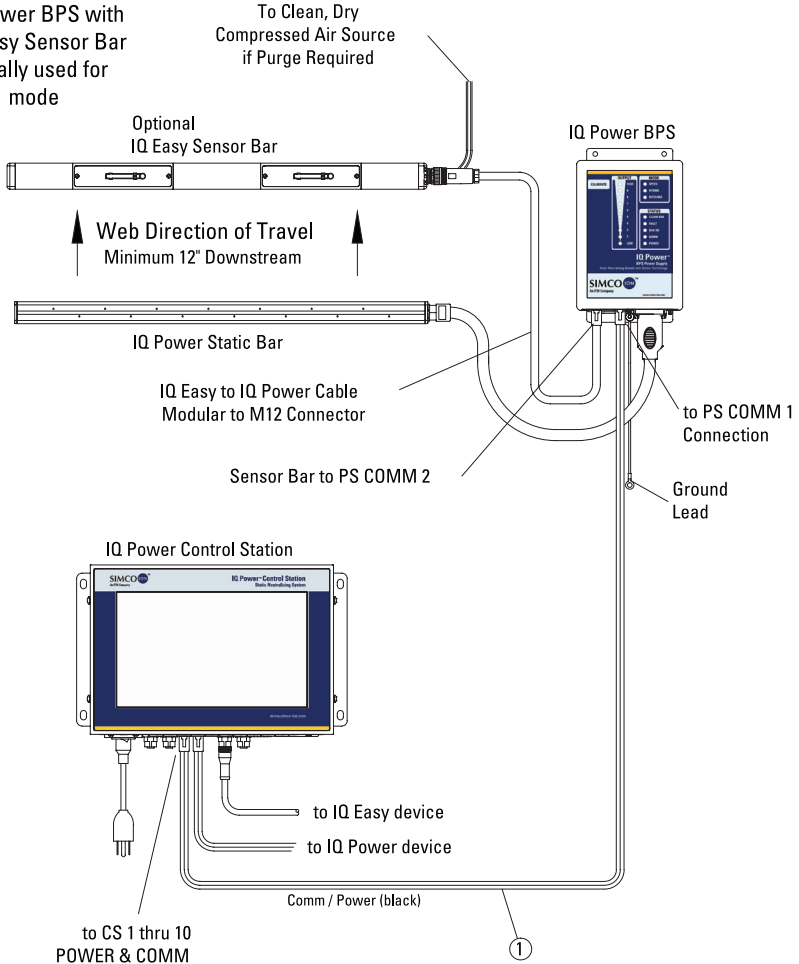


Comm / Data Cable Construction

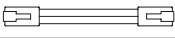
- ① Crossover Wired   Reference color black

Figure 6. IQ Power Connections (BPS Power Supply to Control Station 1 thru 10)

IQ Power BPS with IQ Easy Sensor Bar typically used for CLFB mode




Comm / Data Cable Construction

① Crossover Wired   Reference color black

DO NOT USE  standard Ethernet cables

Modular to M12 Connector Cable Construction

Straight M12 Connector  15' Long 5051840
30' Long 5051844

Right Angle M12 Connector  15' Long 5051841
30' Long 5051845

See Section 8 Parts and Accessories for available cable lengths and part numbers.

Figure 7. IQ Power Connections (BPS Power Supply and Sensor Bar)

Pin	Description	Pin	Description
1	Remote on/off optocoupler (-)	10	No connection
14	Remote on/off optocoupler (+)	6	No connection
		19	No connection
2	Clean Bar Relay (common)*	11	Power Relay (common)*
3	Clean Bar Relay (norm close)*	7	Power Relay (normal closed)*
16	Clean Bar Relay (norm open)*	20	Power Relay (normally open)*
8	Fault Relay (common)		
4	Fault Relay (normally closed)*	12	Power in (ground)**
17	Fault Relay (normally open)*	24	Power in (ground)**
9	Bar On Relay (common)*	13	Power in (+24 VDC)**
5	Bar On Relay (normal closed)*	25	Power in (+24 VDC)**
18	Bar On Relay (normally open)		

*30V 1A Rating on Contacts.

**1.6A Rating, Connect pins 12 & 24 in parallel and 13 & 25 in parallel.



Figure 8. IQ Power BPS Power Supply Alarm Output Connections

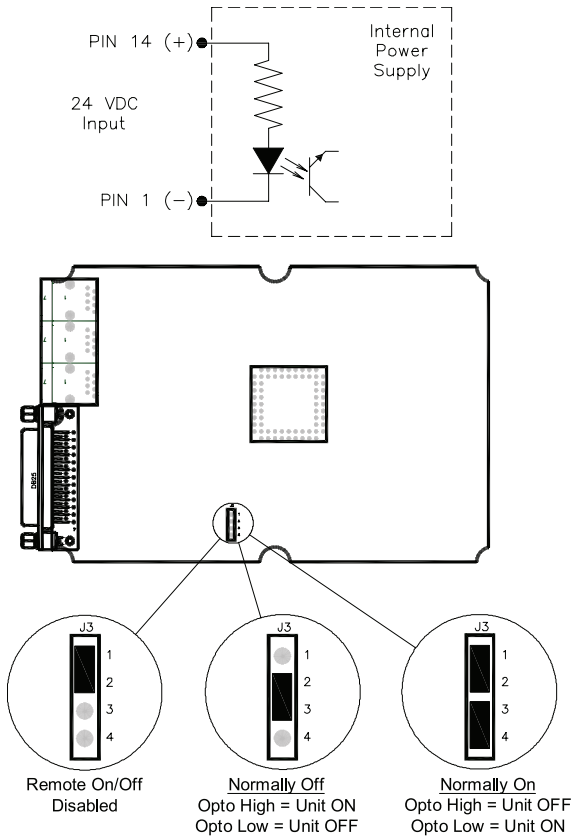


Figure 9. Jumper Position at J3 for Remote Control Operation

Initial Considerations

Installation starts with mounting of the static neutralizing bar. Static bars are typically installed just ahead of where problems due to static are occurring. The power supply is installed in a convenient location within reach of the static bar high voltage cable (standard length 3m [10 ft]) and visible to the machine operator. Control station (where used) may be installed at any convenient location and connected to the system using the modular low voltage cable.

Mounting the Static Neutralizing Bar



CAUTION – Fire Hazard

Do not install or operate static neutralizing bar in close proximity to any flammable liquids or solvents.

- A. Determine location for mounting the static bar. The static bar will typically be located just ahead of where problems due to static are occurring. A static audit by a Simco-Ion representative can determine the best location for the static bar.
- B. The appropriate operating distance, “R” (see Static Bar Installation diagram) for the IQ Power static bar is in part determined by the application:

Speed bars (emitter point spacing: 30 mm) are mounted closer to the web, 50 to 230 millimeters [2 to 9 inches] and may be installed in more congested areas of the machine, however the web path should be fixed for the speed bar. Optimum mounting distance for high speed webs is 100 mm [4 inches]. Speed bars can be identified by an ion emitter to emitter spacing of 30 mm [1.18 inches].

Hybrid bars (emitter point spacing: 90 mm) are mounted at a distance to the web, 150 to 460 millimeters [6 to 18 inches] and are usually installed where the web path is relatively free of obstructions. The benefit of hybrid bars is that they allow mounting where the web path is variable. Hybrid bars can be identified by an ion emitter to emitter spacing of 90 mm [3.54 inches].

Distance bars (emitter point spacing: 180 mm) are mounted at a greater distance to the target surface, 300 to 760 millimeters [12 to 30 inches] and must be installed in areas free of obstructions. Operating at a greater range of distances makes distance bars best suited for areas such as material roll wind-up applications. Distance bars can be identified by an ion emitter to emitter spacing of 180 mm [7.09 inches].

IQ Power bars should NOT be installed or operated at distances less than the minimum distance specified for the particular type of bar.

The “free area” between the static bar and web should have approximately equal height and width.

There should be NO grounded metal such as an idler roller immediately behind the web on the far side from the static bar. The area behind the static bar should be as free as possible from grounded metal.

See Static Bar Installation diagram.

The effectiveness of any static bar is determined in part by the distance to and speed of the target. If a static bar is not performing adequately at a given distance, it may be necessary to reduce the operating distance accordingly.

- C. The IQ Power static bar includes blue plastic mounting brackets, perforated metal strips and assorted hardware.
- D. Slide the mounting brackets onto the “T” channel on the back of the static bar.
- E. The perforated strip may be installed on the mounting bracket at right angle to the bar or parallel to the bar. The perforated strip may be bent or twisted to suit the application and will hold its shape as installed.
- F. Once the static bar is loosely installed, tighten all hardware.

- G. Install (2) set screws into the holes in the side of the mounting bracket using the provided hex key wrench. The set screws engage the “T” on the base of the bar securing it in place.

See Static Bar Installation and Static Bar Bracket diagrams.

Mounting the Power Supply

- A. Locate power supply at a convenient place within reach of the static bar high voltage cable (standard length 3m [10 ft]) and visible to the machine operator. Power for the AC adapter and an electrical ground connection must be available.
- B. Secure power supply to the mounting surface (commonly a machine frame) using M5 or M4 [#10 or #8] hardware (not supplied).
- C. Locate AC adapter (if used) at a convenient, secure place within reach of the power supply.



NOTE – Do not apply line voltage to the AC adapter until installation is complete. Also ensure that all input power switches are in the OFF (0) position.

Electrical Connections

- A. **Ground power supply** by connecting ground lead between ground terminal on flange of the power supply and a good electrical machine ground.
- B. **Connect static bar(s)** by plugging in high voltage connector on static bar to HV1 or HV2 on power supply. Secure high voltage connector with the (2) captive screws on the sides of the connector. Do not over-tighten.

See Bar and BPS Power Supply Connections diagram.



CAUTION – Electrical Shock Hazard

Do not connect static neutralizing bar with power supply energized. Disconnect input power or switch power off before connecting static bar.



NOTE – Failure to fully seat the high voltage connectors into the power supply connectors may result in permanent damage to the bar, cable or power supply.

The exposed pin on the connector “tells” the power supply what type of IQ Power static bar is being connected and automatically sets up the power supply for that type of bar.

Secure the high voltage cable from the static bar. Route the flexible conduit clear of moving machine parts and other wiring. Bends in the conduit must not “kink”. Secure conduit using nylon wire ties (not supplied).

- C. **Connect AC Adapter** (if used, AC adapter is not required if the BPS is connected to a Control Station). Make sure “POWER” switch on power supply is in the “OFF” (0) position. Route low voltage wire clear of moving machine parts and protect it from abrasion. Secure using nylon wire ties (not supplied). Do not over tighten. Insert barrel connector into “POWER IN” connector on the power supply. Hand tighten barrel connector nut to secure.

Connect line voltage to input side of AC adapter. The AC adapter is a universal input type that accepts line voltage from 100 to 240 VAC 50/60Hz. The AC adapter line voltage connector accepts a line cord with an IEC 320 connector (supplied). The line cord also provides electrical ground to the AC adapter. Check electrical ground integrity in the line voltage receptacle used for the AC adapter. This ground must not be defeated.

- D. **Connect Control Station** (if used). The Control Station can supply 24 VDC power for up to ten IQ Power static eliminator power supplies. Cables for the Control Station must be IQ Power 8-conductor modular cables with RJ-48 connectors wired “crossover” (reference color: black, Figure 5).

The modular cable plugs into one of the connectors numbered 1 thru 10, labeled “POWER & COMM” on the Control Station and into either “PS COMM 1” connector on the BPS power supply.

See diagram for BPS Power Supply to Control Station 1 thru 10 Connections.

The modular cable should not be run parallel with the static bar high voltage cable. Route the modular cable clear of moving machine parts and protect it from abrasion. Secure using nylon wire ties (not supplied). Do not over-tighten wire tie.

If there is an excess of modular cable, do not coil it in the vicinity of the static bar high voltage cable. If possible, cut modular cable to length and re-terminate using an RJ-45 connector installed with the same “polarization” as connector removed (note rib / wire color code to modular connector).

If multiple IQ Power BPS power supplies are connected to the Control Station, each power supply must have a unique Power Supply Number (address / device number). This is necessary to enable reliable digital communication.

The Control Station can be used to automatically address the power supplies. The default Power Supply Number for a new unit is “1”. Plug the first power supply (only) into the Control Station and turn the Control Station on. Allow the Control Station to boot-up and begin operation. Plug the second power supply into the Control Station. The Control Station will re-address the second power supply to “2”. Plug the third power supply into the Control Station. The Control Station will re-address the third power supply to “3”. Repeat this process until all power supplies (or IQ Power / IQ Easy devices) are installed. Each power supply or device will be given a unique address (device number).

IQ Power BPS power supplies may also be manually re-addressed or reset to the default address of “1”.

See Power Supply Number (Address / Device Number) section.

E. **Connect user supplied power** (if used). In cases where the user does not want to use the AC adapter but wants to supply 24 VDC power to the IQ Power system, user supplied 24 VDC power may be applied two ways.

The “Power In” connector on the end panel of the IQ Power BPS may be used to supply power to the system. This connector requires the use of a Switchcraft 760K barrel type power plug. The plug should be wired +24 VDC to center and common (ground) to outer barrel. The common must be bonded to electrical ground. Wired in this fashion, the “Power” switch on the end panel of the power supply is in-circuit.

The “Alarm Output” connector on the end panel of the IQ Power BPS may be used to supply power to the system. This connector requires the use of a standard DB25 connector. The connector should be wired:

- +24 VDC to pins 13 & 25
- Common (ground) to pins 12 & 24

To ensure current carrying capacity, two pins are used for each connection. The common must be bonded to ground. Wired in this fashion, the “Power” switch on the end panel of the power supply is bypassed.

Power supplied in the above fashion must have adequate current available to power all components on the system (maximum 4A). Input power should be appropriately fused for safety purposes.

See diagram for Power Supply Alarm Output Connections.

F. **Connect power supply alarm output** (if used). The power supply “Alarm Output” is a standard DB25 pin connector located on the end of the IQ Power BPS power supply. The power supply alarm output provides a variety of relay contact outputs that echo the status of the power supply indicator lights. The relay contacts are rated for a maximum of 1A at 30 VDC.

See Power Supply Alarm Output Connections diagram.

The alarm output connector also provides a means of remote power in. See section “E. Connect user supplied power” for more details.

Remote on/off Control. The “Alarm Output” connector also provides for remote on/off control of the power supply. Remote on/off control is configured with a jumper on a pin header on the main power supply circuit board. The default configuration is with the remote control disabled. The remote control can be configured “normally off” or “normally on” by the jumper setting. See Jumper Position at J3 for Remote Control Operation diagram. To access the jumper the cover will have to be removed from the power supply. Disconnect all input power from the power supply. Remove the six screws securing the cover and slowly and carefully remove the cover.

There is a ribbon cable connecting the face label on the cover to the main circuit board. Use care not to disconnect this cable. If the cable becomes disconnected, lift the latches on the sides of the ribbon cable connector, insert the ribbon cable fully into the connector and press the latches back down.

Reposition the jumper to enable the remote control either “normally on” or “normally off”, as desired as shown in the Jumper Position at J3 for Remote Control Operation diagram. Replace the cover and secure with the six screws.

When operating a power supply with the remote control circuit, power may be applied through the “Alarm Output” connector or the “Power In” connector on the end panel. If the “Power In” connector on the end panel is used, the “Power” switch must be set to the “On” (1) position.

Remote control is established by applying 24 volts DC to the “Alarm Output” connector pins as specified in the Power Supply Alarm Output Connections diagram. The user applied 24 VDC drives a low current optoisolator on the IQ Power BPS power supply main circuit board, turning the power supply on or off, depending on the configuration of jumper J3.

G. **Connect Sensor Bar** (if used). An IQ Easy Sensor Bar may be integrated into the IQ Power system to provide feedback on static eliminating performance and is used for the CLFB (Closed-Loop Feedback) static eliminating mode.

Standard cables are available for connecting the IQ Easy Sensor Bar to the IQ Power System. These cables are available with a straight or right angle connector for the sensor bar and have an RJ-45 connector for the IQ Power system connection. The cables are 4.57 meter [15 foot] long or 9.14 meter [30 foot] long and when used with the IQ Power BPS power supply, connect to “PS COMM2”.

The cable should not be run parallel with the static bar high voltage cable. Route the cable clear of moving machine parts and protect it from abrasion. Secure using nylon wire ties (not supplied). Do not over-tighten wire tie.

If there is an excess of cable, do not coil it in the vicinity of the static bar high voltage cable. If possible, cut the modular cable to length (at the IQ Power connector end) and re-terminate using an RJ-45 connector installed with the same “polarization” as connector removed (note orientation of rib / wire color to modular connector).

See BPS Power Supply and Sensor Bar Connections diagram.

Power Supply Number (Address / Device Number)

Each IQ Power BPS has an address (number) associated with it. These numbers serve to identify the power supply in digital communications. This address can be a number of 1 through 10 (the default is “1”)

When the IQ Power BPS is first turned on it will illuminate all LED indicators as a self-test. Then it will briefly display the IQ Power address in steadily lit indicators using the OUTPUT bar graph LEDs. See the following table for interpreting the address number.

Power Supply Number (Address / Device Number)	
IQ Power Address	OUTPUT LED Illuminated
1 (default)	LOW (1)
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	(none)

Where a Control Station is used, the power supply address numbers may be manually adjusted or may be automatically set by the Control Station. Having multiple power supplies with the same address number connected to a Control Station is not permitted.

To manually adjust the power supply address, turn the unit on and wait for the LED self-test to complete. The COMM light will briefly stay lit and the power supply number may be adjusted at this time. Press and hold the Calibrate button until the power supply number increments by one (5 second window). Subsequent presses of the Calibrate button will increment the power supply numbers (5 second window). The IQ Power BPS Power Supply Number will “map” as shown on the Power Supply Number (Address / Device Number) Table above. The incrementing “wraps around”. Stop pressing the Calibrate button when the desired power supply number has been reached. Wait 5 seconds, the COMM light will go out and the Speed and Distance LEDs will flicker, indicating the power supply address number has been saved.

To automatically set the power supply address, use the Control Station. The default Power Supply Number for a new unit is “1”. Plug the first power supply (only) into the Control Station and turn the Control Station on. Allow the Control Station to boot-up and begin operation. Plug the second power supply into the Control Station. The Control Station will re-address the second power supply to “2”. Plug the third power supply into the Control Station. The Control Station will re-address the third power supply to “3”. Repeat this process until all power supplies (or IQ Power / IQ Easy devices) are installed. Each power supply or device will be given a unique address (device number).

To reset the power supply address (to “1”) press and hold the Calibrate button while turning the unit on. Continue holding down the Calibrate button while the Output indicators “count-up” and when the COMM light starts flashing, release the Calibrate button. When just the Speed and Distance LED flicker, the power supply address number has been reset to “1” and saved.

Set Up (with IQ Power Control Station)

A variety of information can be checked, and operating parameters set, for the IQ Power BPS power supply through the IQ Power Control Station via the device page. Tap on the device icon for the BPS and static bar to access these pages. A summary tab will appear offering important information. Tabs for the neutralizer and sensor (if installed) will also appear. Tapping on a neutralizer tab or sensor tab opens a page where operating parameters may be edited or selected. Typical parameters are listed below.

Device Name: A user editable name to identify the specific device (14 character).

Bar Type: A fixed description for the type of bar connected to the BPS (speed, hybrid or distance).

Bar HV: Allows turning the HV power supplies on/off.

Ion Output: Displays the ionization level, in percent, where Bar Calibration = 100% and the ionization level in terms of microamps for both positive and negative ionization.

Balance: A ratio of input power supplied to the high voltage power supplies that is related to ion balance. In Fixed, Auto-Tune and CLFB modes this is a display only and non-editable. The Balance may only be user adjusted in the Manual mode.

Operation Mode: A user selectable operating mode for the static bar (Manual, Fixed, Auto-Tune, CLFB).

- **Fixed** - 50/50 balance standard operation (default factory setting). Fixed provides standard operation, with output voltage regulation.
- **Auto-Tune** - Enhanced operation. This mode includes the current monitoring found in Fixed mode, plus automatic compensation that takes into account web speed, bar type, bar mounting distance and measured ion current to optimize static neutralization performance. In order to successfully invoke Auto-Tune, certain operating parameters must be defined:
 - Web Speed will have to be entered by the user.
 - Mounting Distance will have to be entered by the user. It is the distance between the face of the static neutralizing bar and the web, or material to be neutralized.
- **CLFB** - Closed-Loop Feedback. The best control of ion balance. The IQ Easy Sensor Bar connected to a BPS will automatically pair with that BPS for closed-loop control. The sensor bar must be downstream of the static neutralizing bar in order for CLFB to work. The sensor bar detects any

voltage imbalance on the web, or material to be neutralized, then transmits this information to the static neutralizing power supply. The power supply makes incremental changes to the balance setting until downstream charges are minimized.

- **Manual** - Allows manual control of the ion balance. Manual mode includes voltage regulation and current monitoring found in the standard mode, plus manual control of the ion balance ratio. This mode of operation would only be selected where the web, or material to be neutralized, exhibited extreme and consistent charging of one polarity.

Mounting Distance: A user editable dimension, the spacing between the face of the bar and web (surface being neutralized / measured). The factory default mounting distance for neutralizing bars is 4" (100 mm) for a speed type bar, 6" (150 mm) for a hybrid type bar and 12" (300 mm) for a distance type bar. The factory default mounting distance for sensor bars is 4" (100 mm). This is only used in the Auto-Tune mode.



NOTE – This information (Mounting Distance) **MUST** be correct. It is used by the static neutralizing bar when in Auto-Tune mode and used by the static sensor bar for calibration. If this information is not correct, the static bar may not operate properly when in the Auto-Tune mode or the static sensor bar may report incorrect web voltages.

Web Speed: A user entered value used in the Auto-Tune mode.

Device Address: The Power Supply Number (address / device number) assigned to the BPS. The address may be edited, but duplicate address numbers are not permitted. The exception to this rule is static sensor bars. When a static sensor bar is connected to a BPS (PS COMM 2) the static sensor bar will automatically be assigned the same address number as the BPS. On the Control Station, the static sensor bar data will appear as a tab under the BPS and it will automatically be paired with that BPS for CLFB operation.

Sensor Quantity: The number of sensors found on the sensor bar.

Overall Sensor Avg: The average voltage reported by all sensor modules on a static sensor bar.

Feedback Sensor Avg: The feedback voltage for use in CLFB control.

This is determined by using the Sensors for Feedback, a user adjustable operating parameter.

Warning Setpoint: The web voltage level at which the sensor bar will set a "Warning" and illuminate the yellow indicator light on the end of the bar. The factory default value is 5 kV, however this value may be user adjusted.

Alarm Setpoint: The web voltage level at which the sensor bar will set an "Alarm" and illuminate the red indicator light on the end of the bar. The factory default value is 20 kV, however this value may be user adjusted.

Web Voltage Sensor 1,2,3...: The voltage level reported by a given sensor module.

Device Version: The firmware revision in the device.

Device Locater Utility: Causes the indicator lights on the device to flicker for a brief time to aid in verifying location of a given device.

Alarm Test Utility: Causes an alarm output to aid in checking/troubleshooting alarm sensing connections.

5. OPERATION



NOTE – Before switching on power supply; ensure units are properly grounded and static bar & sensor bar are properly installed.

Power Supply Indicators

Power: Lights (green) to indicate power is on and the IQ Power system is ready to operate.

Comm: Lights (green) to indicate digital communication is established with an IQ Power Control Station. The Comm light will flicker to indicate communication activity.

Bar On: Lights (green) when static neutralizing bar is active.

Fault: Lights (red) to indicate faulty condition of static bar, power supply or high voltage connections. Power will have to be turned off to clear the fault. When fault is cleared and power is restored, the fault light will be extinguished.

Clean Bar: Lights (yellow) to indicate need to clean static bar. Clean Bar indicator may light with low ion output (dirt build-up on ion emitters) or high output current (conductive contamination on face of bar). See Maintenance section for static bar cleaning details.

Mode: The indicator next to the type of bar connected will light (green). “Speed”, “Hybrid” or “Distance” will be indicated.

In cases where two different types of bars are connected, the system will set for the lower of the two operating voltages and light the corresponding Mode indicator.

Output: The output indicators range from “Low” to “High” in 10 steps (2-red, 3-yellow, 5-green) and light to indicate the system relative ion output. The output will normally be in the high range. Low output generally indicates the need to clean the static bar. See Maintenance section for static bar cleaning details.

The output indicators are also used to indicate the Power Supply Number during start-up.

Power Supply Operators

Calibrate: Is a momentary push button switch located on the face label. Pressing the face label firmly on “Calibrate” initiates the calibration sequence and sets the relative nominal ion output for the system.

The Calibrate button is also used to change the Power Supply Number. This number is used in software to identify the power supply in systems that contain multiple power supplies and include a Control Station.

System Start-up

- A. Apply line voltage to the AC adapter or switch on the Control Station.
- B. Move the power supply “Power” switch to the “On” (1) position (not necessary if using Control Station).
- C. The power supply indicators will briefly self-test during which all will light.
- D. Immediately after the self-test, the power supply number will be briefly displayed. (see Power Supply Number – Address/Number section).
- E. After the power supply number displays, the power supply indicators will settle to display the system status.

On new systems the output indicator will settle to display low output, calibration must be performed.



NOTE – Calibration should be performed when the system is first installed and may be performed after the static bar has been cleaned and the system verified as operating correctly.

- F. If the system is new, perform an initial calibration. The initial calibration sets the relative nominal ion output for the system. Calibration should only be performed on IQ Power systems that are new or just cleaned and known to be in proper working order.

During calibration the target to be neutralized (web, film, etc.) may remain in place, but **MUST NOT BE MOVING**. If the web is moving past the static bar (e.g. the machine is in operation) the calibration may be faulty.

The system should be “on” and in the operating mode (not in start-up self-test or power supply number display modes). Press the face label on the power supply firmly on the word “CALIBRATE”. This will initiate the calibration sequence and set the relative nominal ion output for the system.

During calibration the system output will be cycled and the three mode lights will illuminate. At completion of calibration the speed and distance lights will flicker. The indicated ion output will be high. The calibration sequence takes approximately five seconds.

The calibration data is stored in non-volatile memory in the BPS power supply and is used on subsequent power ups.

Static Bar Operation

- A. Operation normally requires only occasional checking of the system indicators on the power supply.
- B. Anticipated changes in the system indicators include a reduction of output over time. This may occur over several weeks and ultimately cause the “Clean Bar” indicator to light. Regular maintenance will typically prevent activation of the indicator.

- C. Unanticipated changes in the system indicators include activation of the Fault indicator. This would indicate faulty condition of static bar, power supply or high voltage connections. See Troubleshooting section.

System Operation (with IQ Power Control Station)

The operation of the IQ Power BPS Power Supply can be controlled through the IQ Power Control Station. In operation, a device icon appears on the Control Station Home Page. Tapping on the device icon opens a Summary page containing information about the BPS, static neutralizing bar, and static sensor bar (if paired). More detailed information and user editable parameters are available through device tabs. For information on these details see the Set Up (with IQ Power Control Station) section in this document.

6. MAINTENANCE



NOTE – Only qualified service personnel are to perform maintenance tasks.



CAUTION – Electrical Shock Hazard

Turn off power supply before cleaning bar or performing any maintenance on the system.



CAUTION – Fire Hazard

Do not turn on power supply with any trace of alcohol or mineral spirits on the equipment.

The accumulation of contamination on the ionization emitter points and static bar surfaces will reduce neutralizing efficiency of the bar, therefore it is recommended that maintenance of the system be performed when the Clean Bar indicator on the display module illuminates or every three weeks, whichever comes first. Dirty environments may require more frequent cleaning. Maintenance should be performed by qualified service personnel only.

Cleaning the Static Bar

A clean brush with nylon bristles should be used to keep the ionization emitter points of the static bar clean. Periodic use of the brush will prevent deposits from accumulating on the points. The emitter points must remain sharp for optimum operation.



NOTE – Do not scrape points with any hard or sharp object that may damage points.

- A. Turn off power supply.
- B. Remove dirt particles deposited on the static bar with a dry, stiff nylon bristle brush.
- C. Blow off the static bar with clean, dry compressed air.
- D. Remove resistant coatings deposited on static bar by wiping with isopropyl alcohol or mineral spirits applied to a clean cloth. Apply isopropyl alcohol or mineral spirits to a stiff nylon bristle brush and thoroughly scrub the ionization emitter channels of the bar.
- E. Blow static bar dry with clean, dry compressed air and ensure the bar is completely dry before re-applying power to the bar.



NOTE – Do not soak static bar or related components in alcohol or mineral spirits. Do not use harsh solvents such as lacquer thinner, naphtha or acetone. They will damage the bar housing and epoxy.



CAUTION – Fire Hazard

Do not turn on power supply with any trace of alcohol or mineral spirits on the equipment. Allow all alcohol or mineral spirits to evaporate.

Calibration



NOTE – Calibration should be performed when the system is first installed and may be performed after the static bar has been cleaned and the system verified as operating correctly.

If the system is new, perform an initial calibration. The initial calibration sets the relative nominal ion output for the system. Calibration should only be performed on IQ Power systems that are new or just cleaned and known to be in proper working order.

During calibration the target to be neutralized (web, film, etc.) may remain in place, but **MUST NOT BE MOVING**. If the web is moving past the static bar (e.g. the machine is in operation) the calibration will be faulty.

The system should be “on” and in the operating mode (not in start-up, self-test or power supply number display modes). Press the face label on the power supply firmly on the word “CALIBRATE”. This will initiate the calibration sequence and set the relative nominal ion output for the system.

During calibration the system output will be cycled and the three mode lights will illuminate. At the completion of calibration the speed and distance lights will flicker. The indicated ion output will be high. The calibration sequence takes approximately five seconds.

The calibration data is stored in non-volatile memory in the BPS power supply and used on subsequent power ups.

7. TROUBLESHOOTING



NOTE – Only qualified service personnel are to perform troubleshooting tasks.



CAUTION – Electrical Shock Hazard

Do not troubleshoot high voltage components with power supply energized.
Disconnect input power or switch power off before troubleshooting.

PROBLEM	CAUSE	SOLUTION
Clean Bar indicator illuminated	Process material fouling static bar ion emitters	Remove process material from static bar
	Dirt build-up on ion emitters or conductive contamination on face of bar	Clean ion emitters and static bar. See Maintenance section for details
Control Station not working	Power not on at Control Station	Turn on power switch near entry module. Check line voltage connections
	Poor Electrical connections	Check connections of modular cable at power supply control station
	Incorrectly wired modular cable (check against cable illustrations in Installation section)	Replace or repair modular cable
Power indicator NOT illuminated	Power not on at power supply	Turn on Power switch on end of power supply case
	Poor electrical connections	Check input power connections, both 24 VDC and line voltage
	Defective AC adapter	Replace AC adapter
COMM NOT illuminated	Power supply operating stand-alone	Comm indicator only illuminates if other modules are connected
	Poor electrical connections	Check connections of modular cable at power supply and other modules
	Power not on at other modules	Apply power/turn on other modules

Bar ON indicator NOT illuminated	No static bar connected	Install static bar and connect to power supply
	Static bar high voltage connector is not connected	Turn off power, reconnect static bar and secure plug with captive screws
	Static bar high voltage connector missing bar type sense pin	Replace static bar high voltage connector plug
Fault indicator illuminated	Static bar mounted too close to grounded metal	Separate static bar from grounded metal
	Damage to high voltage connector	Replace high voltage connector
	Damage to high voltage cable	Replace static bar
	Faulty HV module inside power supply	Replace high voltage module

8. PARTS AND ACCESSORIES

Part Description	Part Number
BPS Power Supply (no AC adapter)	4011725
(With AC adapter, 100/120 VAC Jpn. / N. Amer. Cord)	4011726
(With AC adapter, 230 VAC N. Amer. Cord)	4011727
(With AC adapter, 230 VAC European Cord)	4012041
(With AC adapter, 230 VAC UK Cord)	4012042
AC Adapter (100-240 VAC input, 1.6A)	4108104
Line Cord, North American / Japan 120/100 VAC	4106272
Line Cord, North American 230 VAC	4106274
Line Cord, Continental Europe 230 VAC	4106273
Line Cord, United Kingdom 230 VAC	4107957
Ground Lead (90" with ring terminals)	4108926
DB25 Connector	4612203
DB25 Back Shell	4612204
Modular Cable (IQ Power 8-conductor, crossover wired, RJ-45) for use between IQ Power BPS power supply and IQ Power control station. DO NOT USE Standard Ethernet Cables (Figure 5)	
0.91 meter [3 foot] black	4520785
2.13 meter [7 foot] black	4520786
4.27 meter [14 foot] black	4520787
7.62 meter [25 foot] black	4520784
15.24 meter [50 foot] black	4520844
22.86 meter [75 foot] black	4520845
30.48 meter [100 foot] black	4520832
Cable (RJ-45 to straight M12 connector)	
IQ Power BPS to IQ Easy Sensor Bar with straight connector at Sensor Bar end	
4.57meter [15 foot] Straight M12 Connector	5051840
9.14 meter [30 foot] Straight M12 Connector	5051844
Cable (RJ-45 to right angle M12 connector)	
IQ Power BPS to IQ Easy Sensor Bar with right angle connector at Sensor Bar end	
4.57 meter [15 foot] Right Angle M12 Connector	5051841
9.14 meter [30 foot] Right Angle M12 Connector	5051845
IQ Power Bar Mounting Bracket Kit	5051455
Static Bar Cleaning Brush	4670204
Control Station	4015868

9. WARRANTY AND SERVICE

This product has been carefully tested at the factory and is warranted to be free from any defects in materials or workmanship. Simco-Ion will, under this warranty, repair or replace any equipment that proves, upon our examination, to have become defective within one year from the date of purchase.

The equipment being returned under warranty should be shipped by the purchaser to Simco-Ion, 2257 North Penn Road, Hatfield PA 19440, transportation prepaid and insured for its replacement cost. Prior to returning any goods for any reason, contact Simco-Ion Customer Service at (215) 822-6401 for a Return Authorization Number. This number must accompany all returned items.

This warranty does not apply when the equipment has been tampered with, misused, improperly installed, altered, has received damage through abuse, carelessness, accident, connected to improper line voltage, or has been serviced by anyone other than an authorized factory representative.

The warranty does not apply when Simco-Ion parts and equipment have been energized by other than the appropriate Simco-Ion power supply or generator, or when a Simco-Ion power supply or generator has been used to energize other than Simco-Ion parts and equipment. Simco-Ion makes no warranty, expressed or implied, nor accepts any obligation, liabilities, or responsibility in connection with the use of this product other than the repair or replacement of parts stated herein.

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