



# **IQ Power™ HLC Power Supply & Control Station with Sensor Technology**

**Associated Equipment - Appareillage Connexe for  
the IQ Power HL Static Bar**

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## **INSTALLATION AND OPERATING INSTRUCTIONS**

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# 1. SAFETY WARNINGS

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Simco-Ion recommends that these instructions be read completely before installation or operation is attempted. Failure to do so could result in personal injury and/or damage to the equipment.



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



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

**ATTENTION** – Les déclarations identifiées avec ATTENTION indiquent des dangers potentiels pour la sécurité.



**WARNING** – Statements identified with WARNING indicate potential serious injury hazards.

**AVERTISSEMENT** – Les déclarations identifiées avec AVERTISSEMENT indiquent un risque de blessures graves.



**NOTE** – This equipment must be correctly installed and properly 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 machine frame to which the equipment is mounted.
4. Disconnect input power to Power Supply before connecting or disconnecting static neutralizing bars to high voltage Power Supply.
5. Do not use standard Ethernet cables with IQ Power Systems.



**CAUTION** – This product is intended to be supplied by a Listed AC Adapter or Power Unit marked “Class 2” or “LPS” and rated output 24 VDC, 1.6A.

**ATTENTION** – Ce produit est destiné à être alimenté par un adaptateur de courant alternatif ou transformateur listé “classe 2” ou “LPS” et avec une puissance nominale 24 VDC, 1.6A.

**CAUTION – Electrical Shock Hazard**

Disconnect input power to the 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.

**ATTENTION – Risque De Choc Électrique**

Couper l'alimentation à l'alimentation électrique de haute tension avant de brancher ou de débrancher la barre de neutralisation statique ou d'effectuer un entretien au système. Évitez de toucher la barre de neutralisation statique lorsque l'alimentation électrique est sous tension.

**WARNING – Fire Hazard**

Do not install or operate Remote Display Module in close proximity to any flammable liquids or solvents.

**AVERTISSEMENT - Risque d'incendie**

Ne pas installer ou d'utiliser le module d'affichage à distance à proximité de liquides ou de solvants inflammables.



**WARNING** – Substitution of components may impair intrinsic safety. (See Figure 3a, 3b and 3c).

**AVERTISSEMENT** – La substitution de composants peut compromettre la sécurité intrinsèque. (référez-vous au schéma 3a, 3b et 3c)

## 2. DESCRIPTION

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Simco-Ion's IQ Power HLC Power Supply and Control Station provide microprocessor controlled high voltage DC output to the static bar. High voltage causes ionizing pins on the static bar to generate positive and negative ions. The electric field from the static charge on 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 IQ Power HL 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.

The IQ Power HLC Power Supply is agency approved for mounting within hazardous locations:

- Class I, Division 1, Group D
- Class II, Division 1, Groups F and G
- Class III, Division 1

The Control Station is a convenient hub that provides power and communication for IQ Power or IQ Easy devices. 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 Power HL Static Sensor is required).

All IQ Power optional modules use 8-conductor modular cable and RJ-45 connectors for connection to the IQ Power system. They are typically supplied with 7 foot cable assemblies but longer lengths are available by calling Simco-Ion customer service (800) 203-3419 (refer to Section 8, Parts & Accessories).

### Features

- Easy calibration procedure simplifies set-up.
- Relay contact output “echoes” indicators for remote sensing and alarm.
- Control Station provides power and a communication hub for HLC Power Supply.
- Control Station displays status of neutralizing system, power, service required and detection of system faults.
- Optional static sensor for gathering web charge data (used in CLFB mode).

### 3. SPECIFICATIONS

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<b>IQ Power HLC Power Supply</b>	
<b>Input Power</b>	24 VDC, 1.5A from AC adapter or Control Station
<b>Output Voltage</b>	+/-7 kV "Speed Bar"; +/-8 kV "Hybrid Bar"
<b>Dimensions</b>	388L x 253W x 159H mm [15.25"L x 9.25"W x 6.25"H]
<b>Weight</b>	14.5 kg [32 lb]
<b>Operating Temperature</b>	43°C [110°F] max
<b>Enclosure</b>	Cast Aluminum
<b>IQ Power Control Station</b>	
<b>Input Power</b>	100-240V~ 50/60 Hz, 4A max (IEC 320 inlet)
<b>Output Voltage</b>	24 VDC (all IQ Power and IQ Easy connectors)
<b>Device Port</b>	USB-A
<b>Network Port</b>	Ethernet
<b>Interface</b>	10.2" Color TFT LCD (backlit) with resistive touch screen
<b>Operating Temp</b>	39°C [102°F] max
<b>Mounting Slots</b>	M6 or M5 [1/4" or #10] hardware (not included)
<b>Enclosure</b>	Steel, blue epoxy powder coated
<b>Dimensions</b>	197L x 314W x 118H mm [7.75"L x 12.38"W x 4.65"H]
<b>Weight</b>	5.2 kg [11.4 lb]

## 4. INSTALLATION

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### Mounting the Power Supply

- A. Locate at a convenient place within reach of static bar high voltage cable. Note the HLC Power Supply is agency listed for mounting within hazardous (classified) locations (see Figure 3a, 3b and 3c).
- B. Secure to mounting surface (commonly a machine frame) using M10 [3/8"] hardware (not supplied).



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

### Mounting the Control Station (or Legacy Remote Display Module)

- A. Locate at a convenient place within reach of power supply cable. Power for Control Station or AC adapter and an electrical ground connection must be available.
- B. Secure Control Station to mounting surface using M6 or M5 [1/4" or #10] hardware (not supplied).
- C. Secure Remote Display Module (in legacy installations) to mounting surface (commonly a machine frame) using M5 or M4 [#10 or #8] hardware (not supplied).



#### **WARNING – Fire Hazard**

Do not install Control Station or Remote Display Module within hazardous (classified) locations. Install in non-hazardous (unclassified) locations only (see Figure 3a, 3b and 3c).

#### **AVERTISSEMENT – Risque d'incendie**

Ne pas installer la station contrôle ou module d'affichage à distance des emplacements dangereux (classifiés). Installer dans des emplacements non dangereux (non classifiés) seulement (voir Figure 3a, 3b et 3c).

### Electrical Connections

- A. Ground Power Supply by connecting a ground lead between metal conduit to Power Supply and a good electrical machine ground. Note that conduit seals must be properly installed to prevent the propagation of vapors and flames through conduit runs (see Figure 1). Outer jacket of modular cables must be removed (and individual wires separated) before filling conduit seals with cement.



## Modular Cable HV Cable

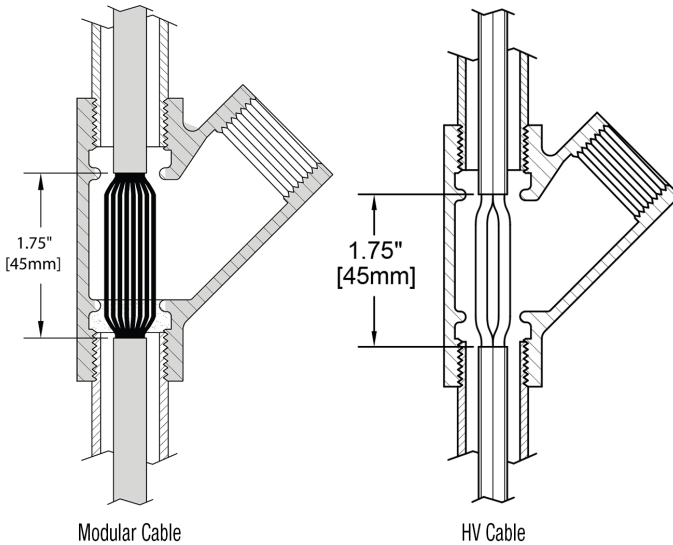


Figure 1. Conduit Seal

- B. Connect static bar by cutting the high voltage cable to length, terminating the leads, and connecting to the power supply: (see to Figure 2)
1. Strip black plastic jacket back  $3\frac{1}{4}$ " being careful not to nick insulation of HV wires and strip insulation of HV wires back 1" using a wire stripper (being careful not to nick conductor of HV wire).
  2. Straighten conductors and insert into HV connector until conductor protrudes out from the tip of connector.
  3. Solder conductor to tip of connector by applying solder to exposed conductor. Ensure that the solder does not overflow and fill neck area of tip.
  4. Trim off excess conductor protruding from tip of connector.

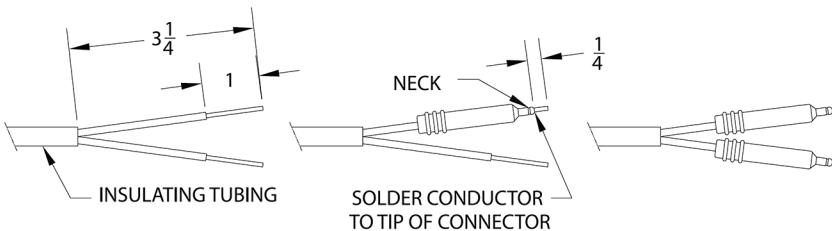


Figure 2. High Voltage Cable Termination

5. Plug connectors into sockets labeled HV1 or HV2 on Power Supply.

Note that conduit seals must be properly installed to prevent the propagation of vapors and flames through conduit runs. Outer (black) jacket of HV cables must be removed and (white) insulated wires separated) before filling conduit seals with cement. Use care not to nick or cut insulation on HV wires.



**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.

**ATTENTION – Risque De Choc Électrique**

Ne branchez pas la barre de neutralisation statique avec alimentation sous tension. Couper l'alimentation ou coupez le courant avant de connecter la barre statique.

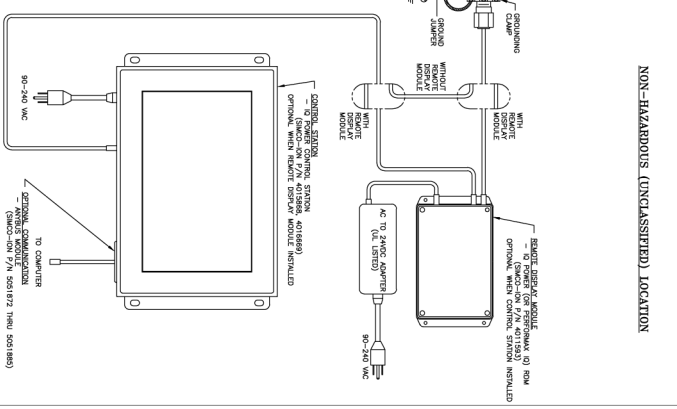
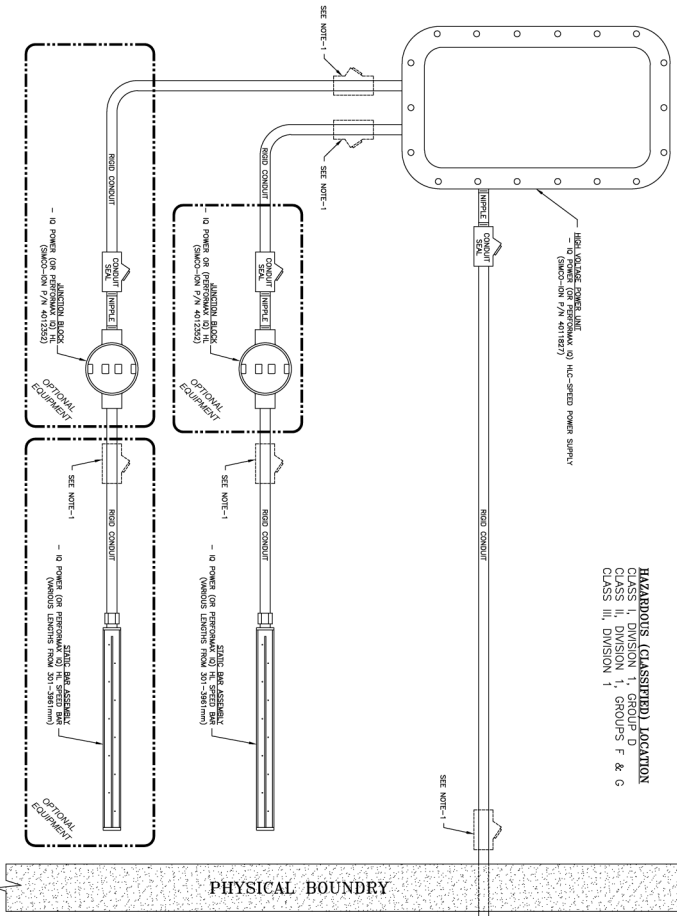


**NOTE** – Failure to fully seat high voltage connectors into power supply connectors may result in permanent damage to bar, cable or power supply.

# CONTROL DRAWING

**HAZARDOUS (CLASSIFIED) LOCATION**  
 CLASS II, DIVISION 1, GROUPS F & G  
 CLASS III, DIVISION 1

HEAT SINKING POWER LINE (SMD-ON P/N 401927) HLC-SPEED POWER SUPPLY



REVISIONS	
NO.	DESCRIPTION
1	ISSUE FOR PRODUCTION

DATE	BY	CHKD BY	APP'D BY
10/12/2011			

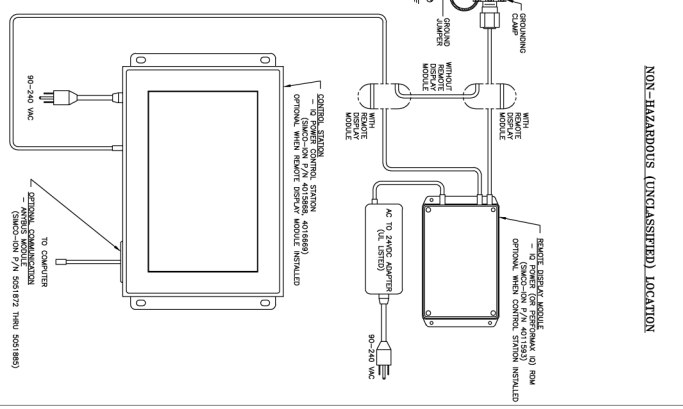
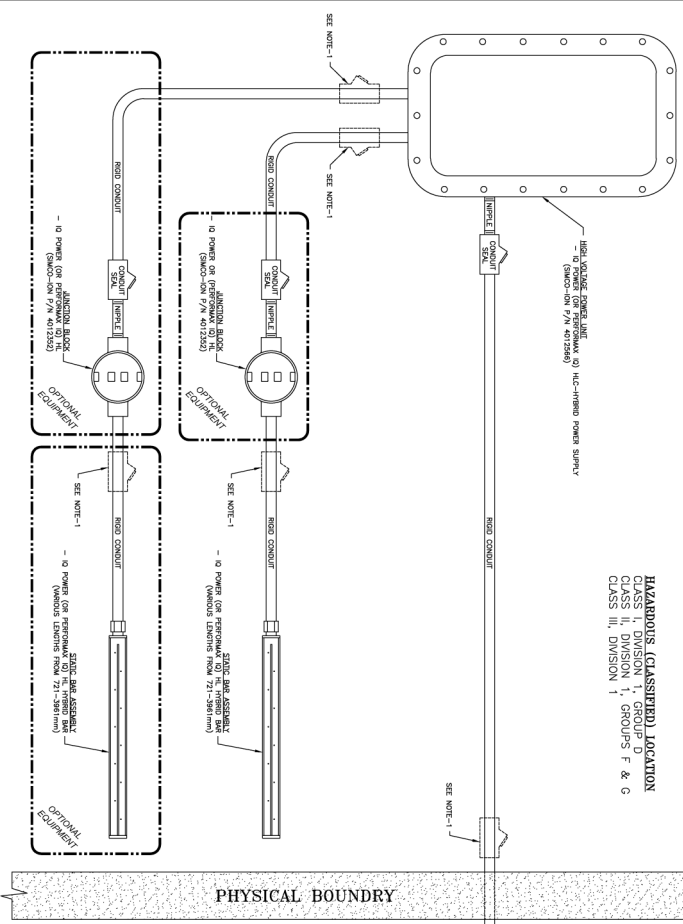
PERFORMAX IQ HLC-SPEED HLC-SPEED POWER SUPPLY HLC-SPEED CONTROL STATION HLC-SPEED AC TO 24VDC ADAPTER HLC-SPEED HEAT SINKING POWER LINE (SMD-ON) HLC-SPEED POWER SUPPLY (SMD-ON)	SIMCO 10000 5150004
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Figure 3a. IQ Power HLC SPEED Control Drawing

# CONTROL DRAWING

**HAZARDOUS (CLASSIFIED) LOCATION**  
 CLASS II, DIVISION 1, GROUPS F & G  
 CLASS III, DIVISION 1

HEAVY DUTY POWER LINE (H) HLC-HYBRID POWER SUPPLY  
 (SMD-ON P/N 401246)



- NOTES
- INSULATION MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) OR APPLICABLE CANADIAN, STATE, PROVINCE AND LOCAL REGULATIONS. SOME CONDUIT RUNS MAY REQUIRE ADDITIONAL SIZING FITTINGS.
  - REFER TO SMD-ON INSTRUCTION MANUALS SD1050, SD1051, SD1070, SD10700 AND SD10703 FOR ADDITIONAL INFORMATION.

REV	DATE	BY	CHKD	DESCRIPTION
1	07/20/10	SA	SA	ISSUE FOR CONSTRUCTION

SIMCO ELECTRIC CO. INC. 1000 W. 15th Street, Suite 100 West Des Moines, IA 50319 Phone: (515) 281-2400 Fax: (515) 281-2401 Email: sales@simcoelectric.com		PERFORMIX IQ HLC-HYBRID 1000 W. 15th Street, Suite 100 West Des Moines, IA 50319 Phone: (515) 281-2400 Fax: (515) 281-2401 Email: sales@performix.com	
SIMCO ELECTRIC CO. INC. 1000 W. 15th Street, Suite 100 West Des Moines, IA 50319 Phone: (515) 281-2400 Fax: (515) 281-2401 Email: sales@simcoelectric.com		PERFORMIX IQ HLC-HYBRID 1000 W. 15th Street, Suite 100 West Des Moines, IA 50319 Phone: (515) 281-2400 Fax: (515) 281-2401 Email: sales@performix.com	

Figure 3b. IQ Power HLC HYBRID Control Drawing

# CONTROL DRAWING

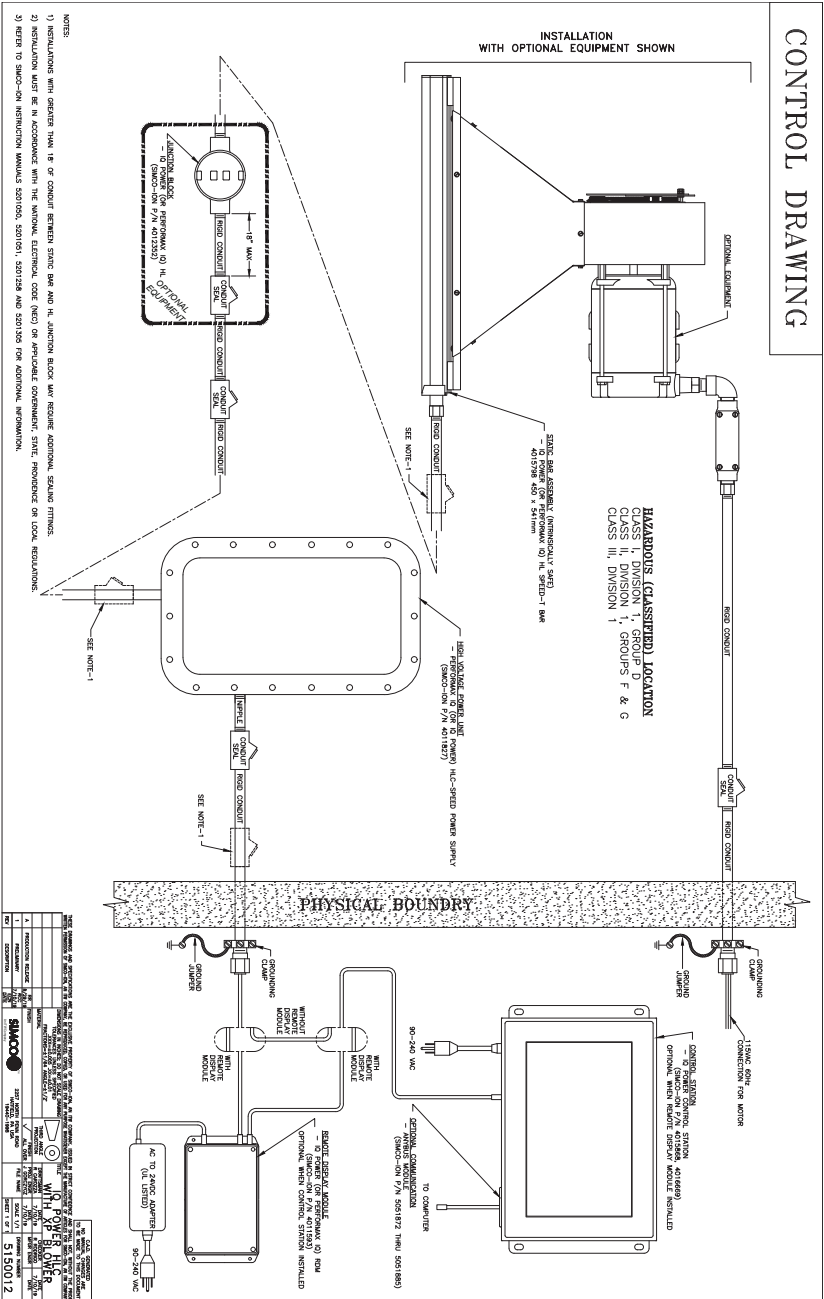


Figure 3c. IQ Power HLC SPEED with Phantom HL Control Drawing



**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 & Accessories).

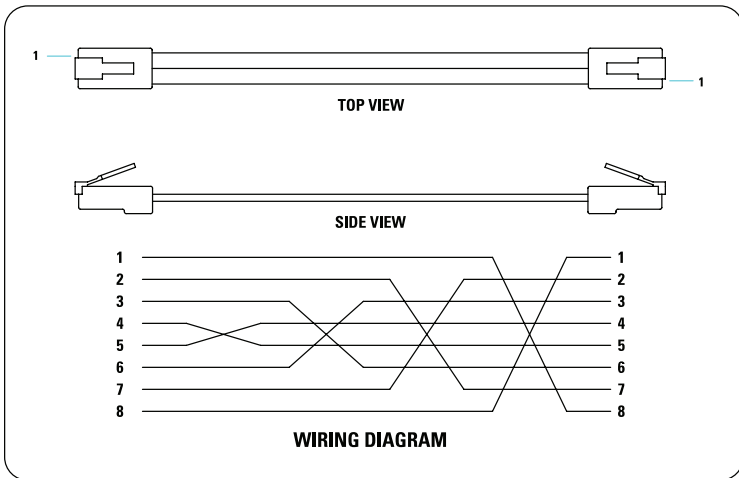


Figure 4. IQ Power Crossover Modular Cable (black)

- C. **Connect Control Station.** The Control Station supplies 24 VDC power for the IQ Power static eliminator power supplies. Use the 7.62 meter [25 foot] (black) modular cable supplied with HLC. Longer cables (not supplied) are available. Cables must be IQ Power 8-conductor modular cables with RJ-45 connectors wired “crossover” (reference color: black, Figure 4).

The modular cable plugs into one of the connectors labeled “POWER & COMM” on the Control Station and into either “PS COMM 1” connector on the HLC Power Supply. (see Figure 5)

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, 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).

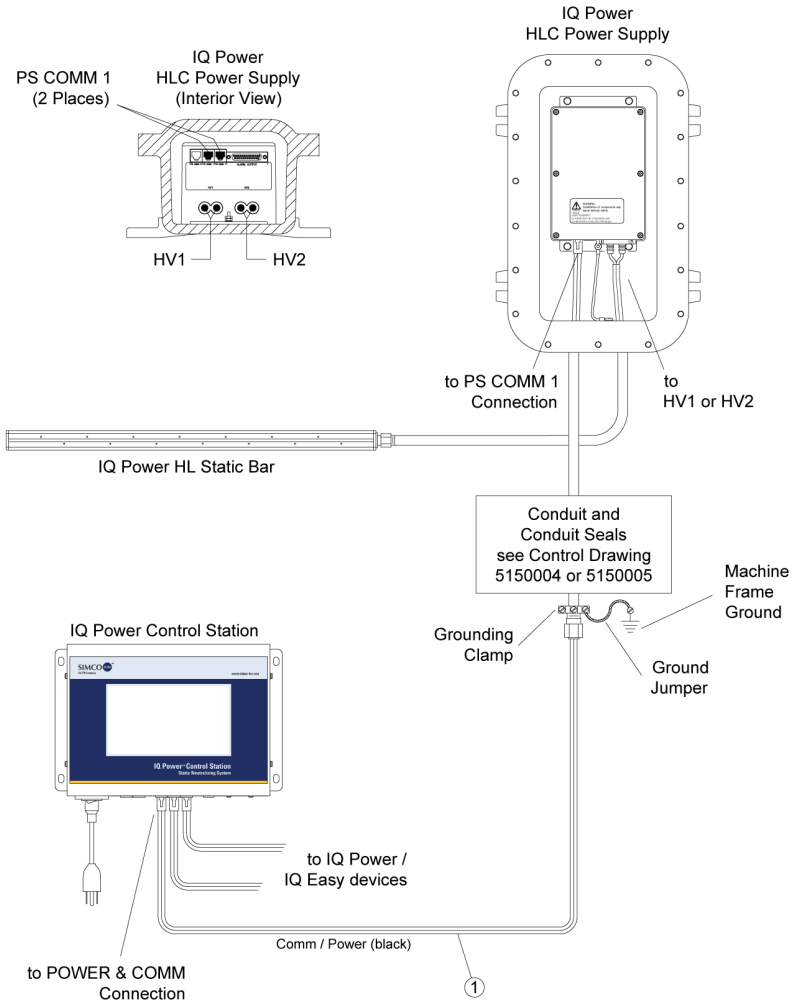
The IQ Power HLC will report to the Control Station using the Power Supply Number (address / device number). It will appear on the Control Station as a single device. If an IQ Power HL Sensor Interface is paired with the HLC, it will appear as a tab on the device page.

If multiple IQ 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 first HLC (only) into Control Station and turn Control Station on. Allow Control Station to boot-up and begin operation. Plug second system into Control Station. The Control Station will re-address the second HLC to “2”. Plug third system into Control Station. The Control Station will re-address the third HLC 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 HLC power supplies may also be manually re-addressed through the Control Station.

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



**Comm / Data Cable Construction**

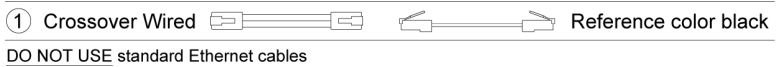


Figure 5: IQ Power Connections (HLC to Control Station)



- D. **Connect Sensor** (if used). An IQ Power HL Sensor 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.

Use the 7.62 meter [25 foot] (black) modular cable supplied with HLC. Longer cables (not supplied) are available. Cables for Sensor Interface must be IQ Power 8-conductor modular cables with RJ-45 connectors wired “crossover” (reference color: black, Figure 4).

The modular cable plugs into one of the connectors labeled “SI COMM 1” on Sensor Interface and into the “PS COMM 1” connector on HLC Power Supply. (see Figure 6)

The second modular cable plugs into the other connector labeled “SI COMM 1” on Sensor Interface and into one of the connectors labeled “POWER & COMM” on the Control Station.

Route 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, 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).

See instructions included with IQ Power HL Sensor for sensor installation.

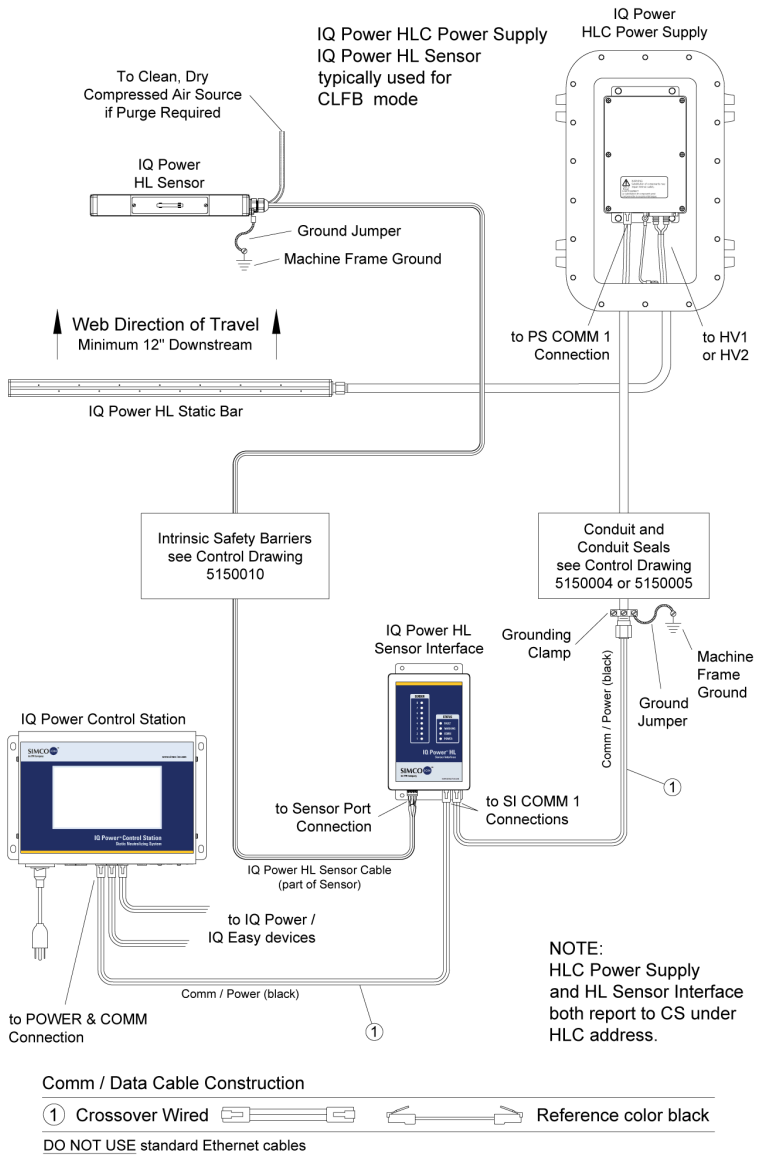


Figure 6: IQ Power Connections (HLC with Sensor Interface to Control Station)

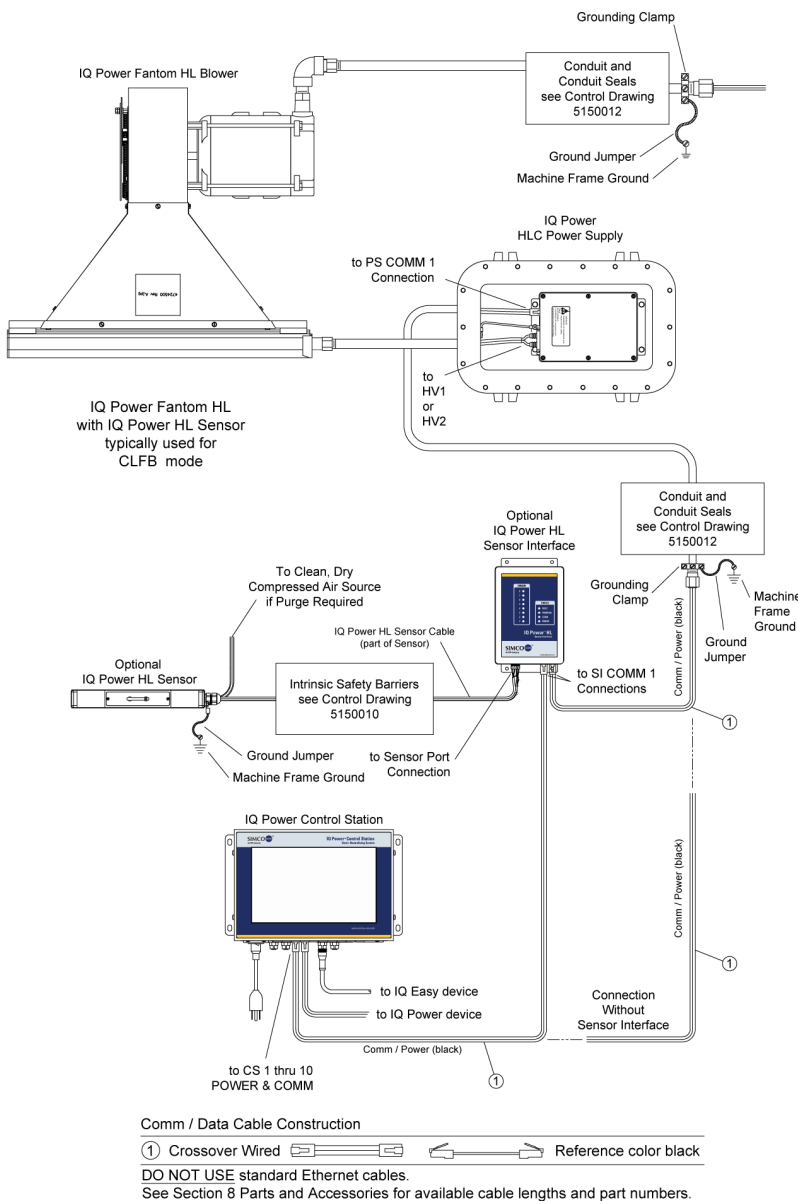


Figure 7: IQ Power Connections (HLC-SPEED (only) to Control Station with Phantom HL and Options)

- E. **Connect power supply alarm output** (if used). The HLC Power Supply and (legacy) Remote Display Module “Alarm Output” is a standard DB25 pin connector. A maximum distance of 3 meters [10 feet] or less is recommended. The alarm output provides a variety of relay contact outputs that indicate the status of the power supply. The relay contacts are rated for a maximum of 1A at 30 VDC. The alarm output connector also provides a means of remote power in. (see Figure 7).



Figure 7. IQ Power HLC Power Supply and Remote Display Module Alarm Output

Alarm Output Pin-out			
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 (normally closed)*	7	Power Relay (normally closed)*
16	Clean Bar Relay (normally 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 (+24V === DC)**
5	Bar On Relay (normally closed)*	25	Power in (+24V === DC)**
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.

- F. **Remote On/Off Control** (if used). 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 Alarm Output circuit board. The default configuration is with remote control disabled. The remote control can be configured “normally off” or “normally on” by the jumper setting (see Figure 7). To access the jumpers the cover will have to be removed from the HLC Power Supply or (legacy) Remote Display Module. Disconnect all input power, then remove the six screws securing the cover and slowly and carefully remove the cover.

On the Remote Display Module (in legacy installations) there is a ribbon cable connecting the face label on cover to the main circuit board. Use care not to disconnect this cable. If cable becomes disconnected, lift the latches on sides of ribbon cable connector, insert ribbon cable fully into connector and press latches back down.

Reposition jumper to enable remote control either “normally on” or “normally off”, as desired (see Figure 9). Then replace cover and secure with six screws.

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

Remote control is established by applying 24V  $\equiv$  DC to the “Alarm Output” connector pins as specified in Figure 7. User-applied 24V  $\equiv$  DC drives a low current optoisolator on the main circuit board, turning Power Supply on or off, depending on configuration of jumper J3.

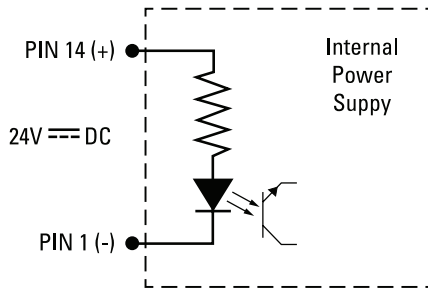


Figure 8. Remote Control Optocoupler Schematic

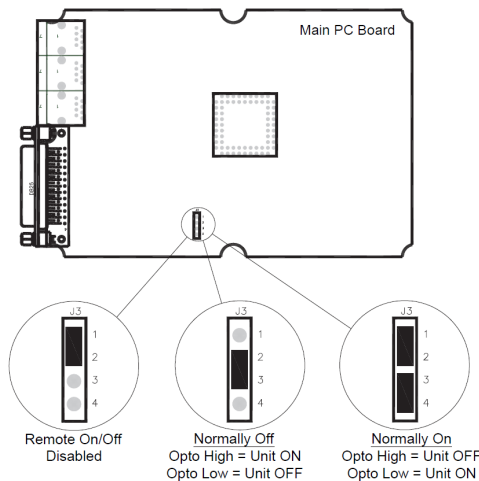


Figure 9. Jumper Position at J3 for Remote Control Operation

G. **Connect User Supplied Power** (if used). In cases where the system does not include a Control Station and the user wants to supply 24 VDC power to the IQ Power HLC Power Supply directly, user supplied 24 VDC power may be applied through the “Alarm Output” connector on end panel of the IQ Power HLC power supply. 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.

Power supplied in above fashion must have adequate current available to power all components on system (maximum 1.6A). Input power should be appropriately fused for safety purposes.

In cases where a Control Station is not used, monitoring of operation through the “Alarm Output” connector is recommended. See section E above.

H. **Connect Power to Remote Display Module (legacy installations)**. Make sure “POWER” switch on Remote Display Module is in “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 Remote Display Module. 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 50/60 Hz. 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 line voltage receptacle used for AC adapter. This ground must not be defeated.

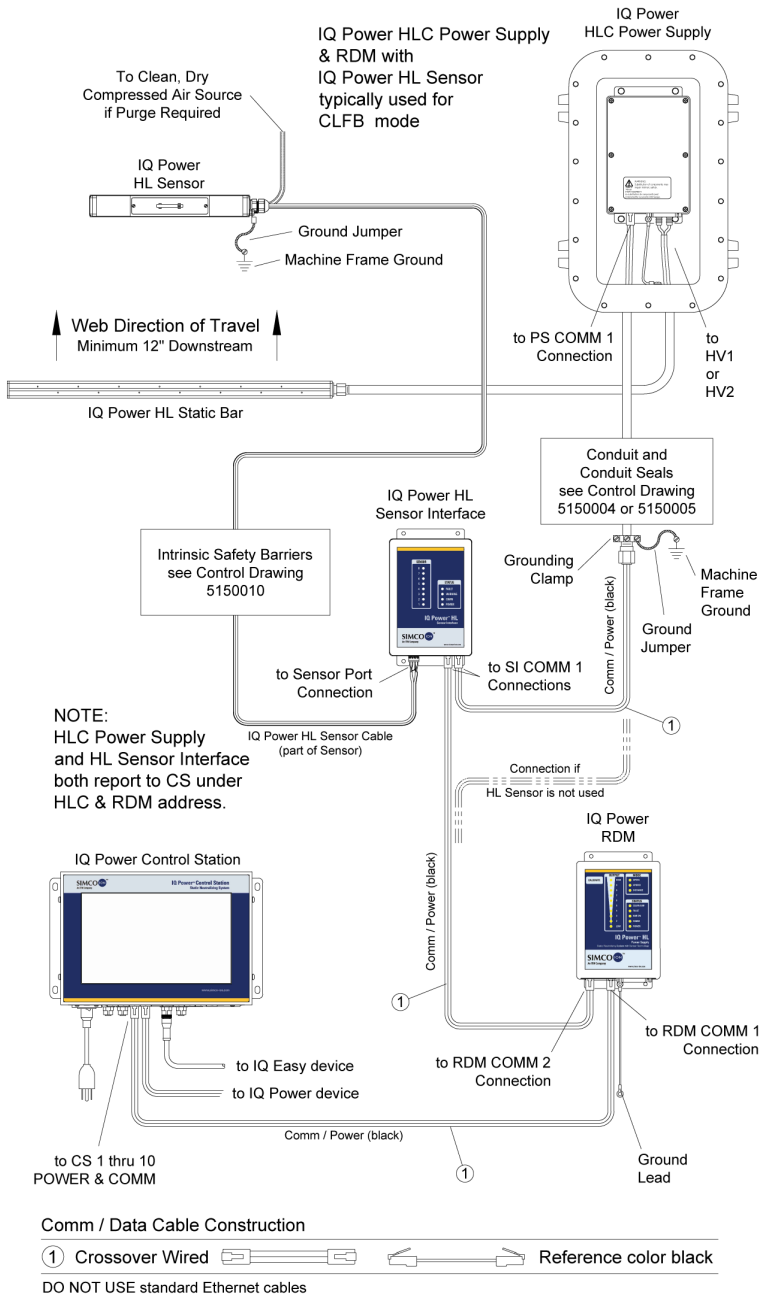


Figure 10: IQ Power Connections (Legacy Installations)

In cases where the user does not want to use the AC adapter but wants to supply 24V === DC power to the IQ Power Remote Display Module, user supplied 24V === DC power may be applied two ways.

The “Power In” connector on end panel of IQ Power Remote Display Module 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 +24V === DC to center and common (ground) to outer barrel. The common must be bonded to electrical ground. Wired in this fashion, the “Power” switch on end panel of Remote Display Module is in-circuit.

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

- +24V === DC 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 end panel of Remote Display Module is bypassed (see Figure 5).

Power supplied in above fashion must have adequate current available to power all components on system (maximum 1.6A). Input power should be appropriately fused for safety purposes.

### **Power Supply Number (Address / Device Number)**

Each IQ Power HLC Power Supply 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”)

If a Sensor Interface is to be used with an HLC power supply, they will have to be “paired”. To pair an HLC power supply and Sensor Interface they must have the same Address number. This will require manually setting the Sensor Interface Address number to the same as the HLC power supply. They will appear on the Control Station as a single device with multiple tabs.

For the IQ Power HLC & RDM, the pair will report using the Power Supply Number (address / device number) of the RDM (Remote Display Module). If a Sensor Interface is wired with the HLC & RDM, the Sensor data will also report using the RDM Address number. They will appear on the Control Station as a single device with multiple tabs.

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 power supply address**, connect unit by itself to a Control Station. Turn the Control Station on and allow the Control Station to begin running. Tap the device icon for the HLC power supply. Tap the Neutralizer tab. Tap the right arrow to get to page 2. Locate and tap the editing pencil icon for Device Address. You will be prompted to enter the Control Station password (default password is “password”). A touch pad will appear that may be used to manually set the power supply address. Note: if a Sensor Interface is paired with the power supply, but not connected to the power supply, its address will also have to be changed manually by tapping the Sensor tab and tapping the right arrow to get to page 4.

**To automatically set power supply address of HLC**, use the Control Station. The default Power Supply Number for a new unit is “1”. Plug first HLC system (only) into Control Station and turn Control Station on. Allow Control Station to boot-up and begin operation. Plug second system into Control Station. The Control Station will re-address second HLC system to “2”. Plug third system into Control Station. The Control Station will re-address third HLC system 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).

### **Set Up (with IQ Power Control Station)**

A variety of information can be checked, and operating parameters set, for the IQ Power HLC power supply through the IQ Power Control Station via the device page. Tap on device icon for the HLC power supply 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 specific device (14 character).

**Bar Type:** A fixed description for the type of bar the HLC power supply is set for (speed or hybrid).

**Bar HV:** Allows turning internal 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 face of static neutralizing bar and web, or material to be neutralized.
- **CLFB - Closed-Loop Feedback**. The best control of ion balance. The IQ Power HL Sensor connected to an HLC power supply will automatically pair with that power supply for closed-loop control. The sensor 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 face of bar and web (surface being neutralized / measured). The factory default mounting distance for neutralizing bars is 4" (100 mm) for speed type bars and 6" (150 mm) for hybrid type bars. This is only used in the Auto-Tune mode. The mounting distance may be set for individual HL Sensors. The factory default mounting distance for sensors is 4" (100 mm).



**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 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 may report incorrect web voltages.

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

**Device Address:** The Power Supply Number (address / device number) assigned to the HLC power supply. The address may be edited, but duplicate address numbers are not permitted. The exception to this rule is static sensors. When a static Sensor Interface is connected with an HLC Power Supply, the static Sensor Interface must have its address number manually set the same as the HLC Power Supply to pair

with the power supply. On the Control Station, the data from Sensors connected to that Sensor Interface will appear as a tab under the HLC and the interface will automatically be paired with that HLC power supply for CLFB operation.

**Sensor Quantity:** The number of sensors found on sensor interface.

**Overall Sensor Avg:** The average voltage reported by all sensors on a sensor interface.

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

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

**Warning Setpoint:** The web voltage level at which sensor interface will set a “Warning” and illuminate yellow indicator light on interface. The factory default value is 5 kV, however this value may be user adjusted.

**Alarm Setpoint:** The web voltage level at which the sensor interface will set an “Alarm” and illuminate the red indicator light on the interface. 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.

**Device Version:** The firmware revision in device.

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

**Device Calibration:** Displays the time and date of last calibration and allows for calibration of the power supply and bar. Calibration is used to set the output level to 100% with the bar at maximum output (maximum output varies with bar length and operating conditions).

**Clean Bar Threshold:** Displays the threshold in output level percent used to set the clean bar alarm and allows for setting of the clean bar threshold.

## 5. OPERATION

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**NOTE** – Before switching on power; ensure that units are properly grounded and that static bars and sensors are properly installed.

### System Start-up

- A. Turn on Control Station.
- B. Allow Control Station software to begin running.
- C. After a brief time, an icon for the HLC Power Supply will appear.

On new systems the neutralizer status will display low output, initial 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.

- D. If the system is new, perform an initial calibration. The initial calibration sets relative nominal ion output for the system. The 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 Remote Display Module firmly on the word “Calibrate”. This will initiate the calibration sequence and set relative nominal ion output for the system.

Legacy installations only; the system should be “on”, in the operating mode and connected to the Control Station. From the Home page, tap on the device icon. Tap on the Neutralizer tab. Tap on the right arrow to get to page 2. Locate and tap the editing pencil icon for Device Calibration. You will be prompted to enter the Control Station password (default password is “password”). Tap on “Yes” for Calibrate Device? At the completion of calibration the Device Calibration date and time will be updated.

During calibration the system output will be cycled. At completion of calibration the indicated ion output will be high. The calibration sequence takes five to ten seconds.

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

## System Operation

The operation of the IQ Power HLC Power Supply is 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 HLC power supply, static neutralizing bar, and static sensor (if connected). More detailed information and user editable parameters are available through device tabs.

There are four Operation Modes available for the IQ Power Neutralizing Bar: Fixed, Auto-Tune, CLFB and Manual. The Operation Mode is found on the Control Station, HL Device page, Neutralizer tab. By tapping on the pencil icon adjustment may be made to the Operation Mode.

**Fixed** is the default setting and requires no user input. Fixed provides standard operation, with output voltage regulation. The output current is monitored (against a calibration point) and when output current is outside acceptable limits a clean bar alarm will occur.

**Auto-Tune** is an operation mode that includes the current monitoring found in the standard mode, plus automatic output 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:

- The Web Speed will have to be entered by the user.
- The Mounting Distance will have to be entered by user. It is the distance between face of bar and the web or material to be neutralized.

**CLFB (Closed-Loop Feedback)** is an operation mode that incorporates use of an IQ Power HL Sensor. The sensor must be mounted downstream (after, minimum 12”) the static bar so that it can “report back” to the static bar on how well it’s performing. The Sensor Interface must be paired with the HLC. Once CLFB is enabled and the bar is paired with the sensor, the sensor detects any electrostatic charge on the web and directs the static bar to adjust its ion output to minimize any residual charge on the web. For best performance, the static bar should be mounted as close as possible (within the operating distance range) to the web. This allows the static bar to use its maximum range of performance while still achieving a minimum of residual charge.

Manual is a power unit mode that includes the 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, exhibits extreme and consistent charging of one polarity.

## Legacy Remote Display Module Indicators

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

**Comm:** Lights (green) to indicate digital communication is established with an IQ Power Control Station.

**Bar On:** Lights (green) to indicate 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 the 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).

**Mode:** The indicator next to the type of bar the power supply is set for will light (green). “Speed” or “Hybrid” will be indicated.

**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.

The Output indicators also indicate the power supply number during start-up of power supply.

## Legacy Remote Display Module Operators

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

The Calibrate button may also be 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 an optional Control Station.

## 6. MAINTENANCE

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**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.

### **ATTENTION – Risque De Choc Électrique**

Coupez l'alimentation électrique avant de nettoyer la barre ou d'effectuer un entretien sur le système.

The accumulation of contamination on 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 Control Station 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 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 static bar with a dry, stiff nylon bristle brush.
- C. Blow off 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 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.

## 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.

### **ATTENTION – Risque De Choc Électrique**

Ne pas faire de dépannage des composantes de haute tension avec alimentation sous tension.

Couper l'alimentation ou coupez l'alimentation électrique avant le dépannage

PROBLEM	CAUSE	SOLUTION
Bar indicator OFF at Control Station	Bar power off at Control Station	Turn bar power on through device page on Control Station
	Poor electrical connections	Check input power connections, both 24V === DC and line voltage. Check modular cable
	Blown device fuse in Control Station	Try another modular connector on Control Station
Clean Bar indicator at Control Station	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
Fault indicator at Control Station	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
	High voltage module inside power supply faulty	Replace high voltage module
COMM fault at Control Station	Power supply operating stand-alone	COMM indicator only illuminates if Control Station connected
	Poor electrical connection	Check connections of modular cable at power supply and Control Station



**NOTE** – Device power input is protected by an internal fuse identified as F1 that is replaceable only by qualified service personnel. Use cartridge-type slow blow .25x1.25” fuses rated 250V, 5A only (such as Little Fuse 0313005, HXP or equivalent).



## 8. PARTS & ACCESSORIES

Part Description	Part Number
Replacement Power Unit for IQ Power HLC SPEED (for use with HL Speed Bars only)	4110350
Replacement Power Unit for IQ Power HLC HYBRID (for use with HL Hybrid Bars only)	4110351
Ground Lead (90" with ring terminals)	4108926
DB25 Connector (for Alarm Output)	4612203
DB25 Back Shell (for Alarm Output)	4612204
Modular Cable (IQ Power 8-conductor, crossover wired, RJ-45) for use between IQ Power HLC Power Supply and Remote Display Module and Sensor Interface and Control Station (Figure 4) 0.91 meter [3 foot] black 2.13 meter [7 foot] black 4.27 meter [14 foot] black 7.62 meter [25 foot] black 15.24 meter [50 foot] black 22.86 meter [75 foot] black 30.48 meter [100 foot] black	 4520785 4520786 4520787 4520784 4520844 4520845 4520832
HL Junction Block	4012352
HL Conduit Seal	4108231

## 9. WARRANTY & SERVICE

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This product has been carefully tested at the factory and is warranted to be free from 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 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.

Information in this publication supersedes that in all previous published material.

Specifications are subject to change without notice.

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