



# **IQ EASY MODULAR SENSOR**

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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 the 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.



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

1. Read the 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. Do not operate equipment in close proximity to flammable liquids.



**NOTE!** – **SENSITIVE ELECTRONICS, RISK OF EQUIPMENT DAMAGE**

1. Do not electrically discharge to the sensor. The sensor must be connected to the power supply in the presence of charged materials.
2. Avoid sharp blows to the modular sensor. Dropping a modular sensor may cause damage to the sensor.



**CAUTION!** – **FIRE HAZARD**

Do not install or operate a static sensing modular sensor in close proximity to any flammable liquids or solvents.

## 2. DESCRIPTION

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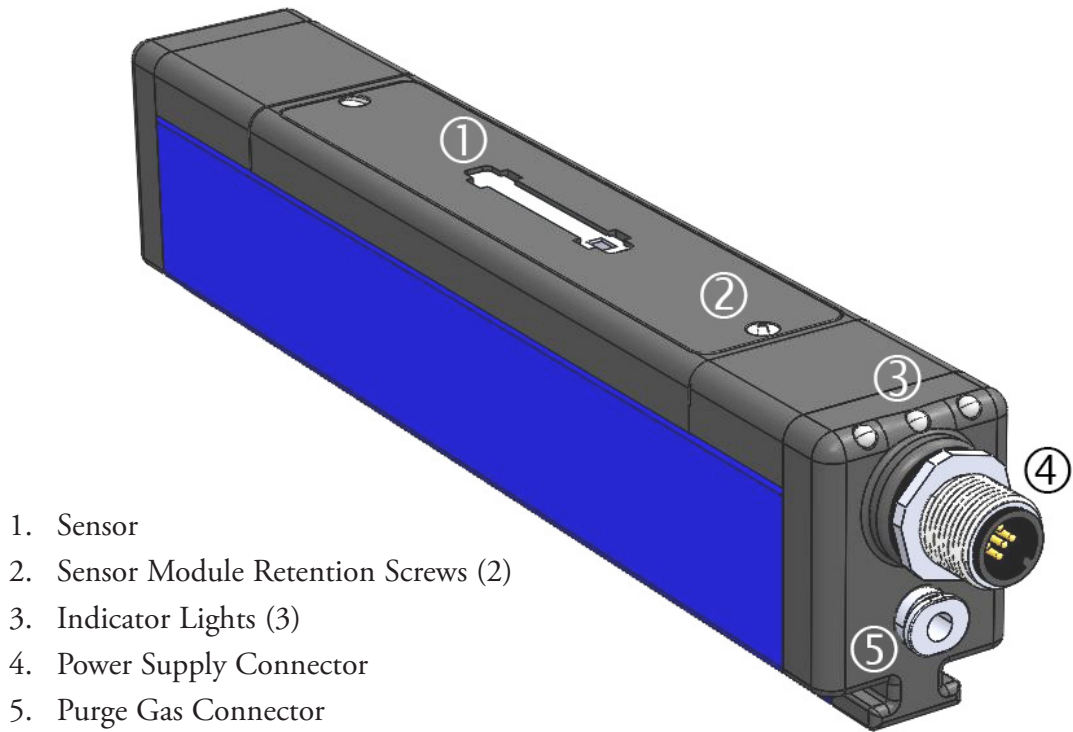
The IQ Easy Modular Sensor is an electrostatic field measuring. There are two versions of this modular sensor; one contains a single M12 input, while the other contains two RJ-45-style connectors (one on each end of the sensor). The dual-input RJ-45 sensor is designed to work in a daisy-chained (pass-through) fashion, while the M12 sensor is designed to work as a standalone device. The IQ Easy Modular Sensor is a single sensor bar best suited for use in plastic film and web processing applications. It can monitor processed materials for the presence, polarity, and degree of electrostatic charges. This allows for the detection of undesirable levels of static electricity.

The IQ Easy Modular Sensor may be integrated with additional IQ Easy Modular Sensors as well as an IQ Easy Static Neutralizing Bar to provide closed-loop feedback control of static elimination. This provides for precise neutralization of static charges. Closed-loop control will minimize troublesome under-compensation and over-compensation often found in simple (open-loop) static neutralizing applications. Sensing the charge on the processed material also has the benefit of monitoring the static neutralizer's performance. Excess static charge on the processed material can be an indication of service needed at the static neutralizing bar.

The IQ Easy Modular Sensor may be integrated with an IQ Easy or IQ Power™ Static Neutralizing Bar or Fantom Blower to provide closed-loop feedback control of static elimination. This provides for better neutralization of static charges. Closed-loop control will minimize troublesome under-compensation and over-compensation often found in simple (open-loop) static neutralizing applications. Sensing the charge on the processed material also has the benefit of monitoring the static neutralizer's performance. If the static charge on the processed material becomes excessive, it could be an indication of service needed at the static neutralizer.

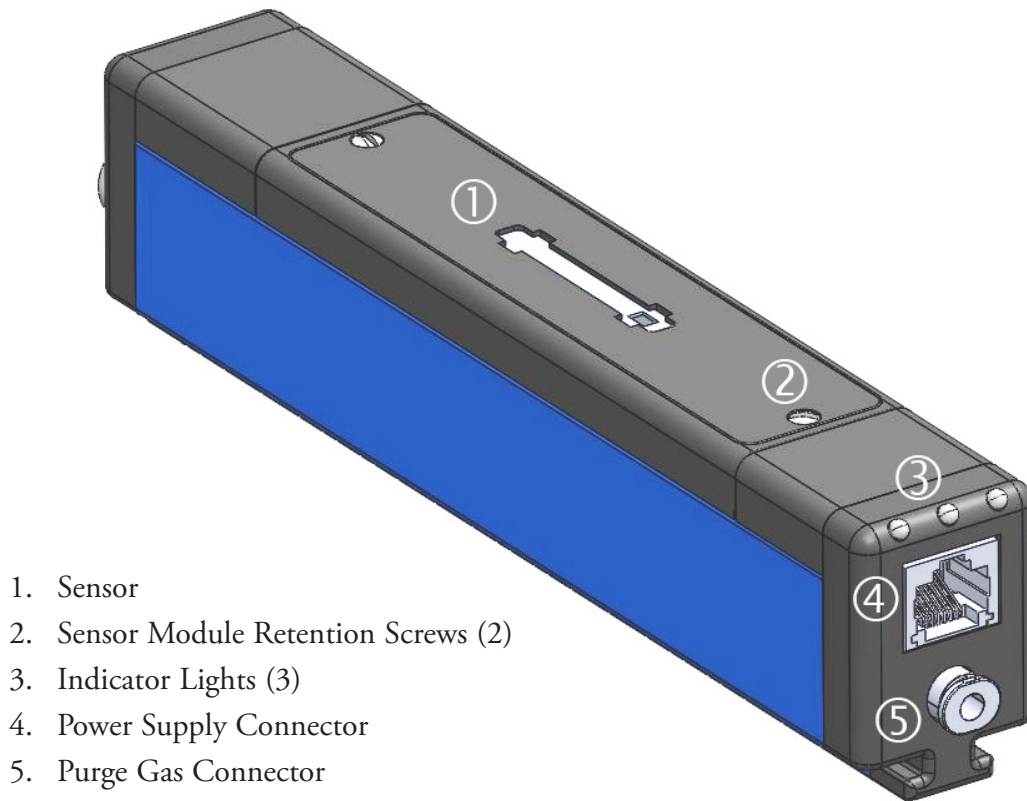
The IQ Easy Modular Sensor may also be used in conjunction with electrostatic charging systems. In these applications, the sensor assures that desired levels of static charge are being maintained. The sensor offers two user-settable levels of static detection: a warning level to alert the user that less than optimum levels of static charge are being generated and an alarm level to alert of drastic or complete loss of static charge generation.

Static charge may not be readily apparent on processed materials but often makes itself noticeable in static shocks to machine operators, mis-fed materials, jammed operation, and the attraction of dust and dirt. The Modular IQ Easy Sensor makes the intangible tangible by providing hard data about electrostatic charges on processed materials. This data can easily be correlated to machine operation or mis-operation. Being aware of static charges can even make process troubleshooting easier, for example, understanding coating irregularities as they relate to the level of static charge.



1. Sensor
2. Sensor Module Retention Screws (2)
3. Indicator Lights (3)
4. Power Supply Connector
5. Purge Gas Connector

Figure 1: IQ Easy Modular Sensor (M12-Style Connector)



1. Sensor
2. Sensor Module Retention Screws (2)
3. Indicator Lights (3)
4. Power Supply Connector
5. Purge Gas Connector

Figure 2: IQ Easy Modular Sensor (RJ-45 Connector End)

### 3. SPECIFICATIONS

<b>Power Supply</b>	IQ Power Control Station	
<b>Input Voltage</b>	24 VDC, 0.075 mA	
<b>Input Connection</b>	5-pin M12 (A-coded) Connector; RJ-45 Connector	
<b>Input Purge Gas</b>	1-2.5 psi (7-17 kPa) operating pressure 5 psi (35 kPa) max operating pressure 0.14 scfm (4 NL/min) @ 1 psi (5 kPa) 0.22 scfm (6 NL/min) @ 2.5 psi (20 kPa) Clean, dry, filtered, oil-free compressed air or nitrogen	
<b>Gas Input</b>	5/32" (4 mm) OD Tubing, Quick Disconnect	
<b>Operating Environment</b>	122° F (50° C) max; 70% RH, no dewing permissible (max)	
<b>Operating Distance</b>	2" (50 mm), 20 kV max 3" (75 mm), 25 kV max 4" (100 mm), 30 kV max (factory default setting) 6" (150 mm), 40 kV max 8" (200 mm), 50 kV max 10" (250 mm), 60 kV max	
<b>Enclosure</b>	Glass fiber reinforced polycarbonate, conductive polyamide	
<b>Dimension</b>	RJ-45: 8.02"L x 1.19"W x 2.08"H M12: 8.09"L x 1.19"W x 2.08"H	includes mounting bracket & connector
<b>Weight</b>	0.36 lb (0.16 kg)	
<b>Mounting</b>	Polyamide bracket, zinc plated metal perforated strip, stainless steel hardware	
<b>Compliance</b>	RoHS	
<b>Approval</b>	cETLus, 4000065	



**NOTE!** – The operating distance set for the Modular Sensor in the Control Station must be the same as the mounting distance sensor to the web. This is critical for accurate calibration.

## 4. INSTALLATION

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### Unpacking

Carefully remove all equipment from its carton and inspect the contents:

- Check that the details on the packing slip correspond to the details of the product received.
- Check that the equipment is free from damage.
- If any damage has occurred during shipment, notify the local carrier at once. A report should also be forwarded to Simco-Ion, 2257 North Penn Road, Hatfield, PA 19440. See Section 9 of this manual for Return Shipment information.

### Mechanical Installation



**NOTE!** – Conductive machine parts or a static neutralizing bar in the vicinity of the static sensor have an undesired influence on its operation. For optimum results, the static sensor must be installed as per Figure 6.

1. Upstream or Downstream of the static neutralizing bar, at a recommended distance of 12" (300 mm), so that any electric fields from the static neutralizing bar will not interfere with charge measurement.
2. Downstream of the charging bar (where used in static charge generation monitoring), at an absolute minimum distance of 12" (300 mm); greater distances are preferred, as installation allows. So that electric fields from the static charging bar will not interfere with charge measurement.
3. At an optimum distance from the material to be measured. The mounting distance is related to the maximum static charge anticipated. The higher the anticipated charge, the further the sensor should be mounted from the material. The factory default mounting distance of 4" (100 mm) will provide an operating range of +/-30 kV.

Other operating distances are:

Distance	Maximum Voltage
2" (50 mm)	20 kV
3" (75 mm)	25 kV
4" (100 mm)	30 kV (factory default setting)
6" (150 mm)	40 kV
8" (200 mm)	50 kV
10" (250 mm)	60 kV



**NOTE!** – Calibration of the static sensor is distance dependent. If a distance other than the factory default setting is used, then the Mounting Distance setting will need to be changed at the IQ Power Control Station to maintain calibrated accuracy.

4. Sensors must face the material to be measured perpendicular to the surface.
5. DO NOT mount the Modular Sensor over a roller where the material to be measured is in contact with any other surface.

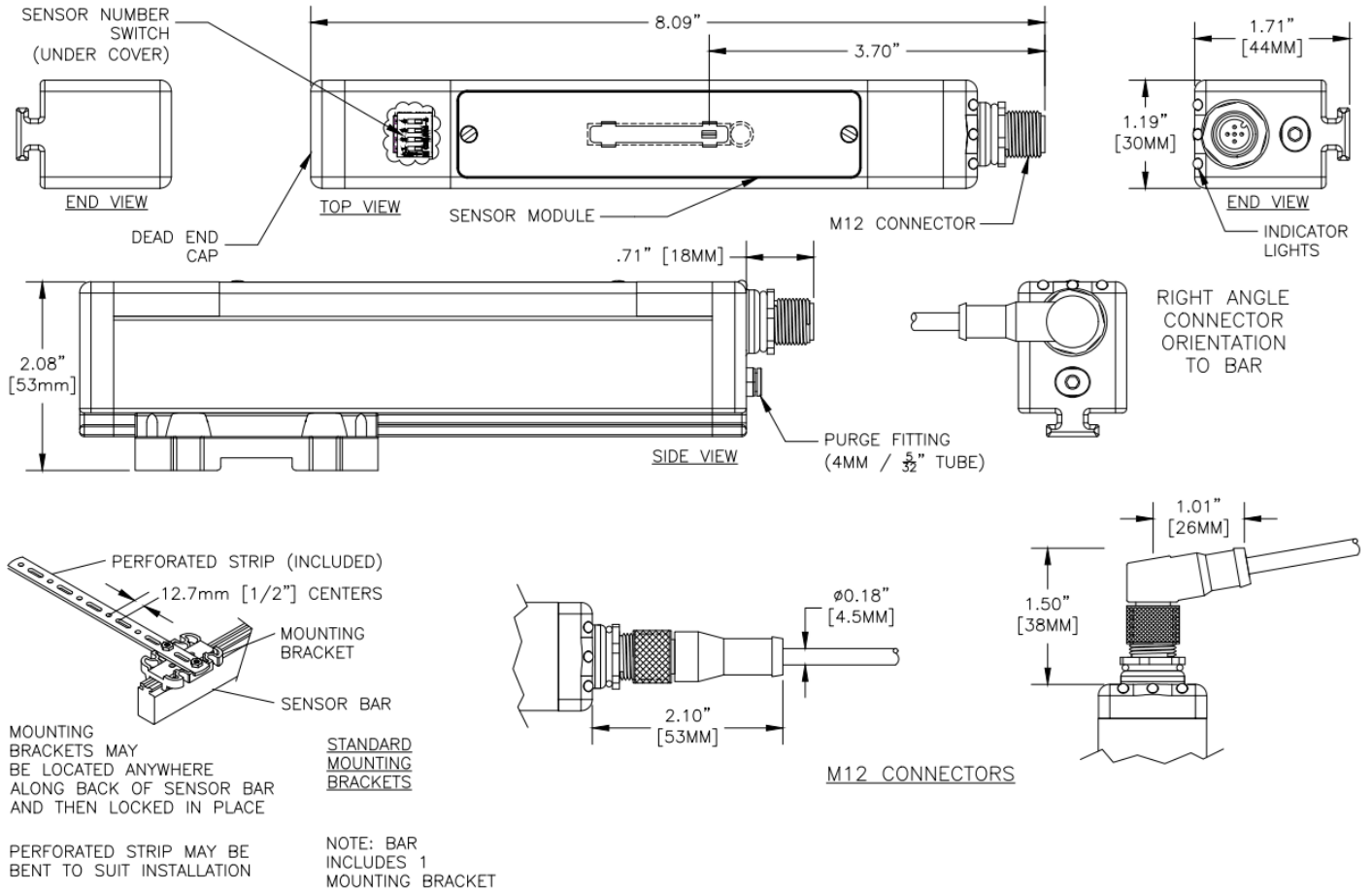


Figure 3: IQ Easy Modular Sensor Dimensions (M12 Connector)



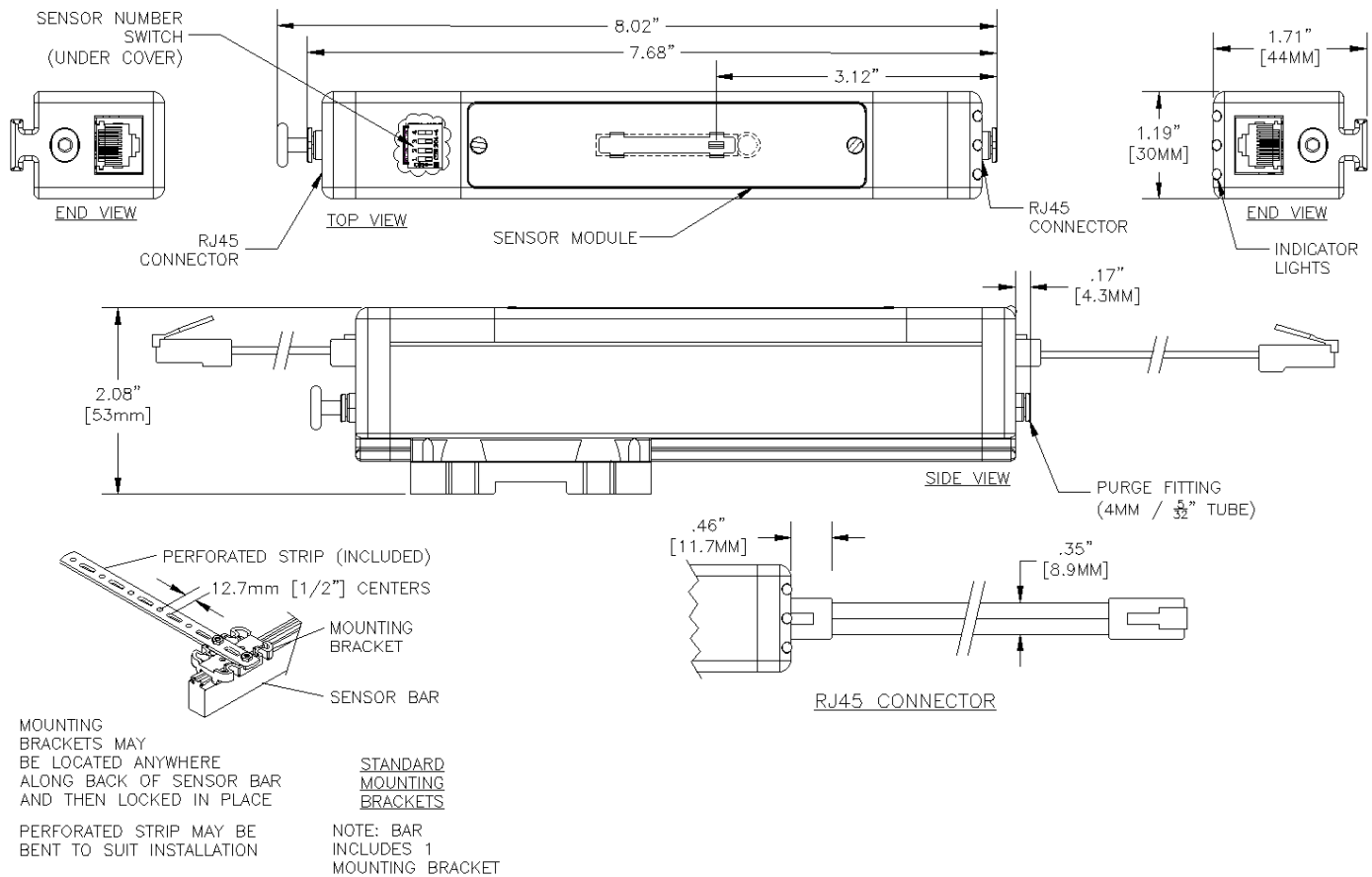
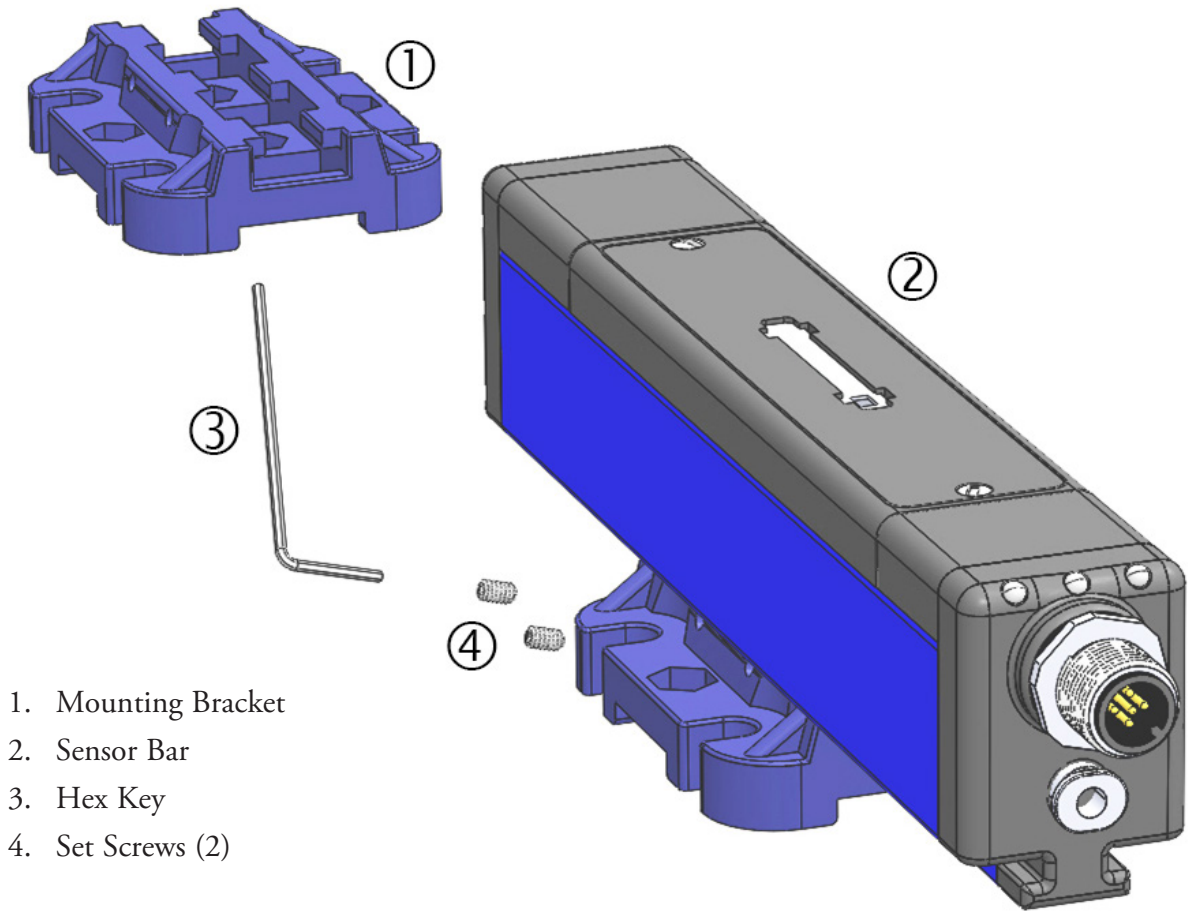


Figure 4: IQ Easy Modular Sensor Dimensions (RJ-45 Connector)



**NOTE! – SENSITIVE ELECTRONICS, RISK OF EQUIPMENT DAMAGE**

Do not install a sensor with charged materials present. Modular Sensor must already be connected to the power supply in the presence of charged materials. Avoid sharp blows to a Sensor Module. Dropping a Modular Sensor may cause damage to the sensor element. Modular Sensor should be mounted on a structure that is free of vibration.



1. Mounting Bracket
2. Sensor Bar
3. Hex Key
4. Set Screws (2)

Figure 5: IQ Easy Modular Sensor Mounting

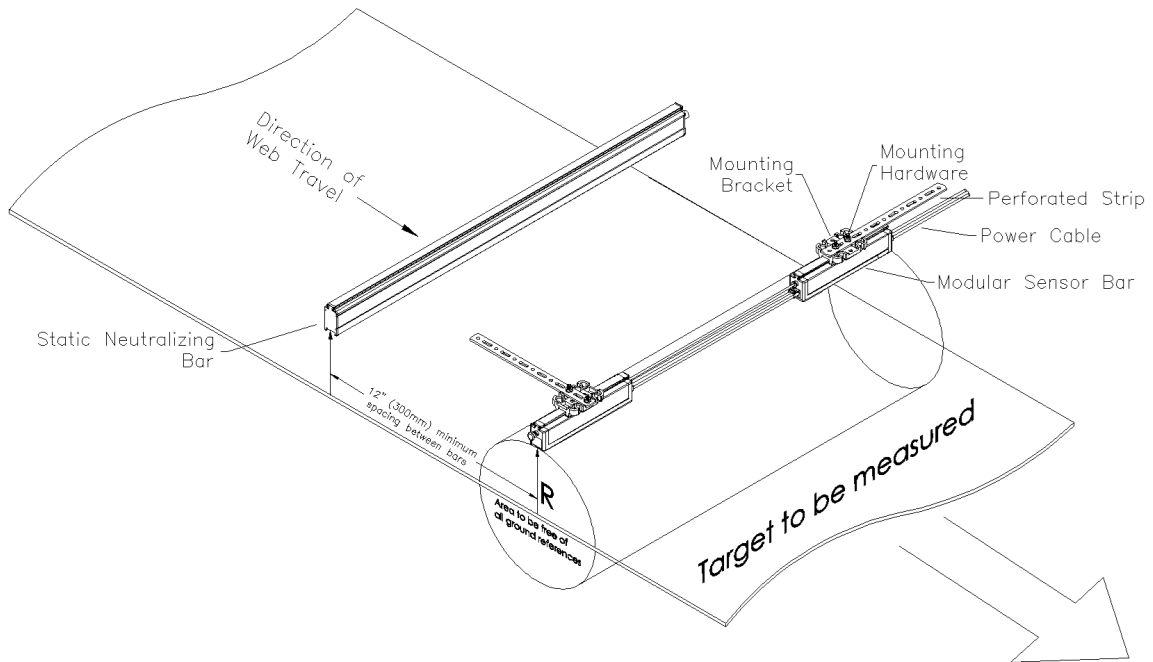


Figure 6: IQ Easy Modular Sensor Positioning 12" (recommended downstream of neutralizing bar)

6. Attach the sensor using the mounting bracket and hardware supplied. See Figures 5 and 6.
7. Lock the sensor in the mounting bracket by manually tightening the set screws in the brackets.
8. Connect either the M12 or RJ-45 connector of the power cable to the Modular Sensor (depending on the connection style chosen) and route the power cable to the power supply safely.
9. To connect multiple RJ-45-style sensors, connect a separate RJ-45 power cable from the rear (non-LED side) RJ-45 connector of the lead sensor to the front (LED side) of the next sensor. Repeat this process as needed for additional sensors.



**NOTE!** – A maximum of FOUR RJ-45-style sensors per control station Device Address can be connected this way.

## Electrical Connections



**NOTE!** – Turn line voltage power off at IQ Power Control Station before connecting/disconnecting any devices. This is to avoid potential equipment failure and ensure proper digital communication.

### M12-Style Connector

1. Remove the protective cap from the sensor inlet connector.
2. Place the appropriate M12 connector on the cable against the sensor connector and rotate the connector until the keyed connectors align. Press the connectors together and turn the knurled coupling nut clockwise to thread it on. Finger-tighten the coupling nut until the connector is fully seated.
3. Remove the protective cap from one of the Control Station's outlet connectors.
4. Place the other M12 connector on the cable against the Control Station connector and rotate the connector until the keyed connectors align. Press the connectors together and turn the knurled coupling nut clockwise to thread it on. Finger-tighten the coupling nut until the connector is fully seated.
5. Route the cable away from any moving machine parts and secure the cable to prevent damage.
6. See Section 8, Parts and Accessories for available cables.

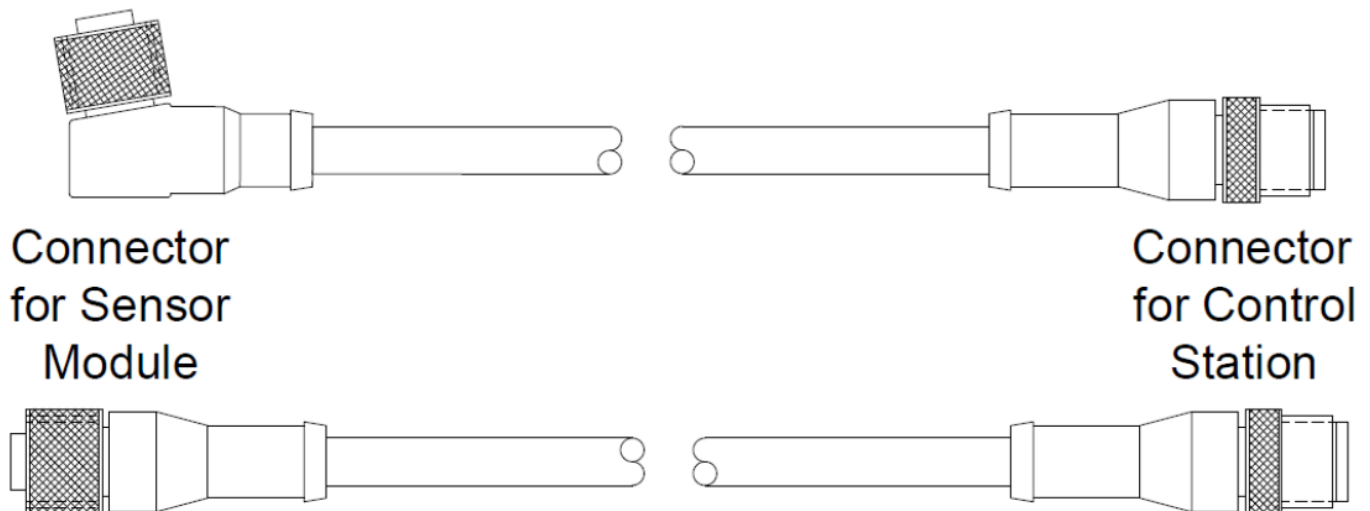


Figure 7: M12 IQ Easy Modular Sensor Cable

## **RJ-45-Style Connector**

1. Insert the RJ-45 cable into the RJ-45 connector on the input side (the input side is the same side as the LEDs).
2. Route the other end of the lead cable to the Control Station. Remove one of the RJ-45 connector dust covers and connect the RJ-45 cable to the control station.
3. Route the cable away from any moving machine parts and secure the cable to prevent damage.
4. If connecting more than one sensor, either remove the rear connector label and connect a separate RJ-45 cable to the opposite end of the lead sensor (non-LED end) or connect the sensor directly to the control station, following the same process as the first sensor.
5. See Section 8, Parts and Accessories for available cables.

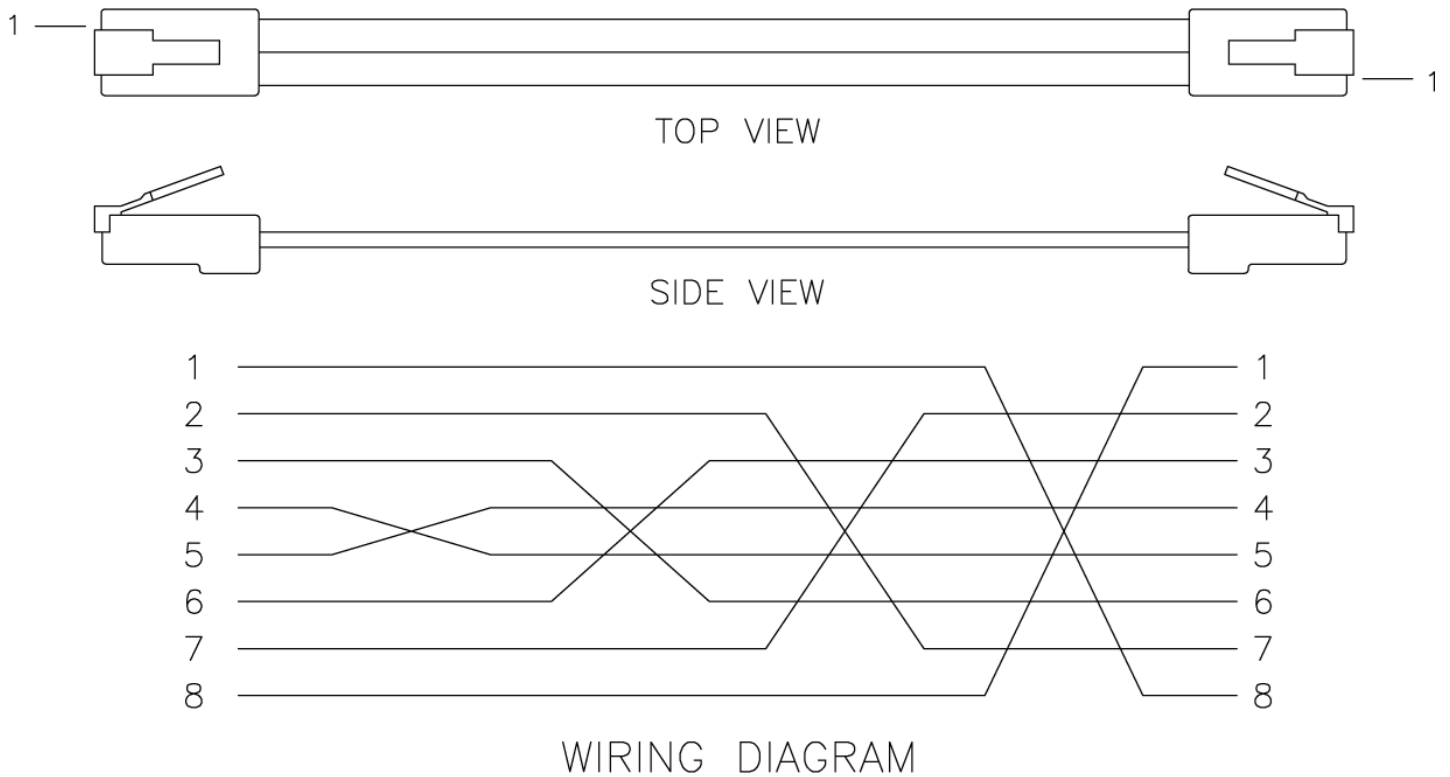


Figure 8: RJ-45 IQ Easy Modular Sensor Crossover Modular Cable (black)



**NOTE!** – Do not use any Ethernet cables. Use only modular cable terminated, as shown above. The use of Ethernet cables may cause equipment failure or damage.

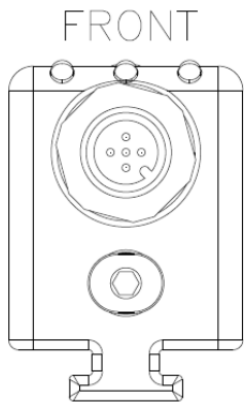


Figure 9: IQ Easy Modular Sensor Connector (M12)

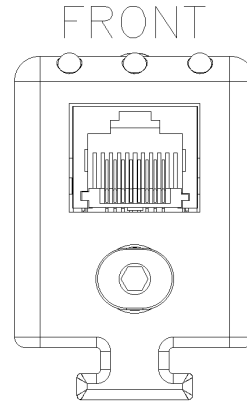
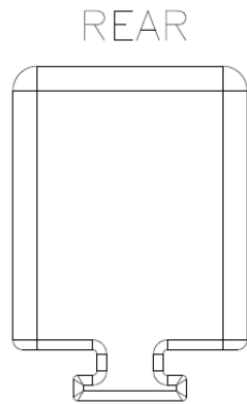
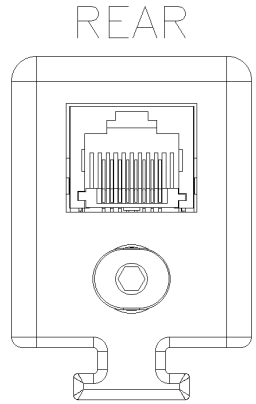


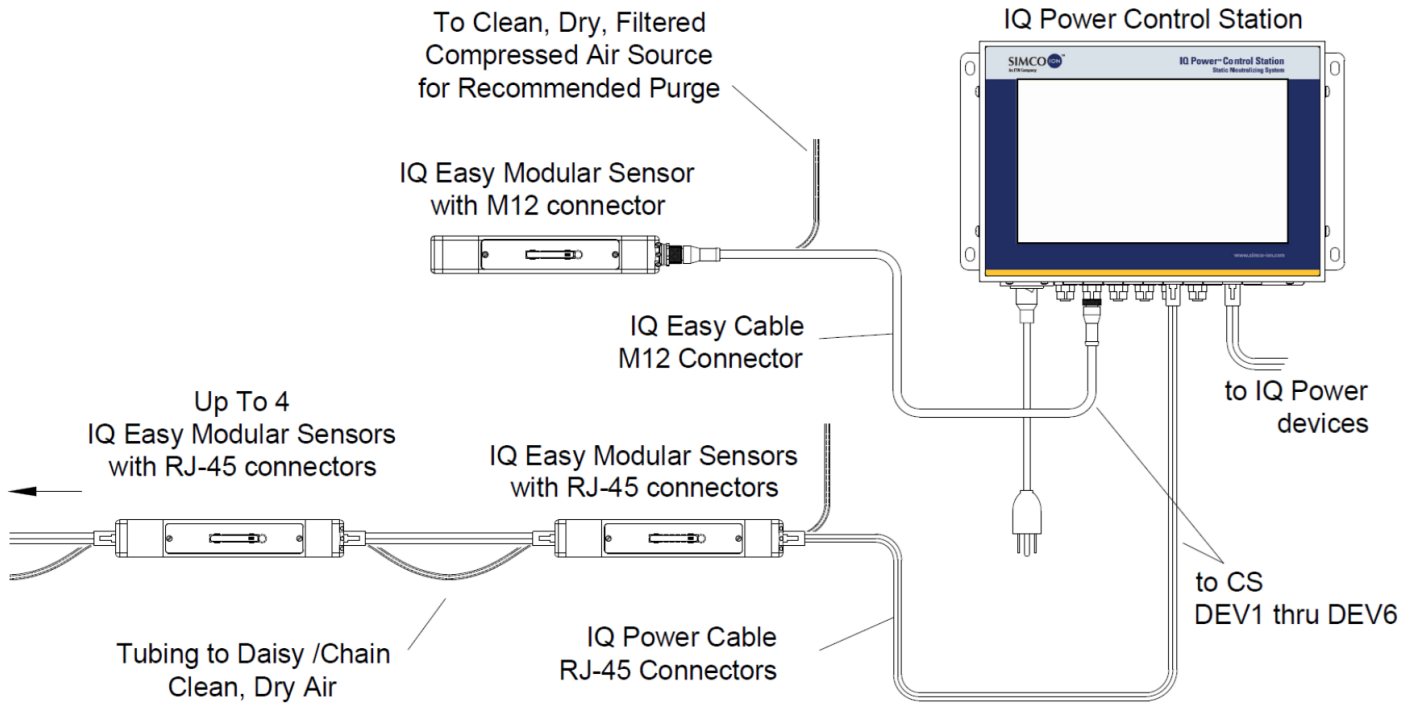
Figure 10: IQ Easy Modular Sensor Connectors (RJ-45)



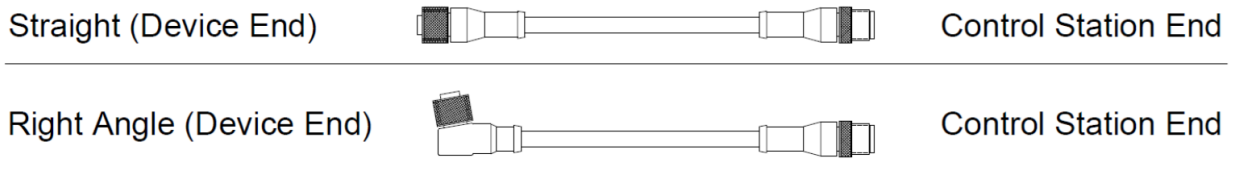
The IQ Easy Modular Sensor is available in two styles: one M12 electrical connector or two RJ-45 connectors. Both styles also have a connection at each electrical connector for purge gas. The Modular Sensor with RJ-45 connectors may be daisy-chained with up to four (4) units.

The Modular Sensor with RJ-45 connectors is most suitable for direct connection to a BPS power supply. In this arrangement, the Modular Sensor is automatically paired with the BPS power supply. When the IQ Easy Modular Sensor is used with a BPS (typically in CLFB—Closed-Loop Feedback), the sensor should be plugged into connector “PS COMM 2” of that BPS power supply. This will automatically associate (pair) the sensor with the BPS for CLFB mode. This prepares the system for operation in the CLFB (Closed-Loop Feedback) mode.

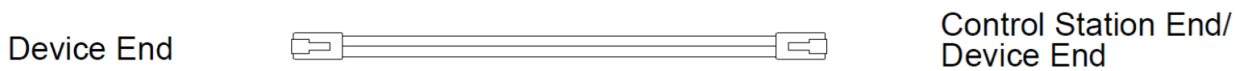
The IQ Power Control Station has both M12 and RJ-45 connectors to support connection with either style Sensor Module.



M12 to M12 Connector Cable Construction



RJ-45 to RJ-45 Connector Cable Construction

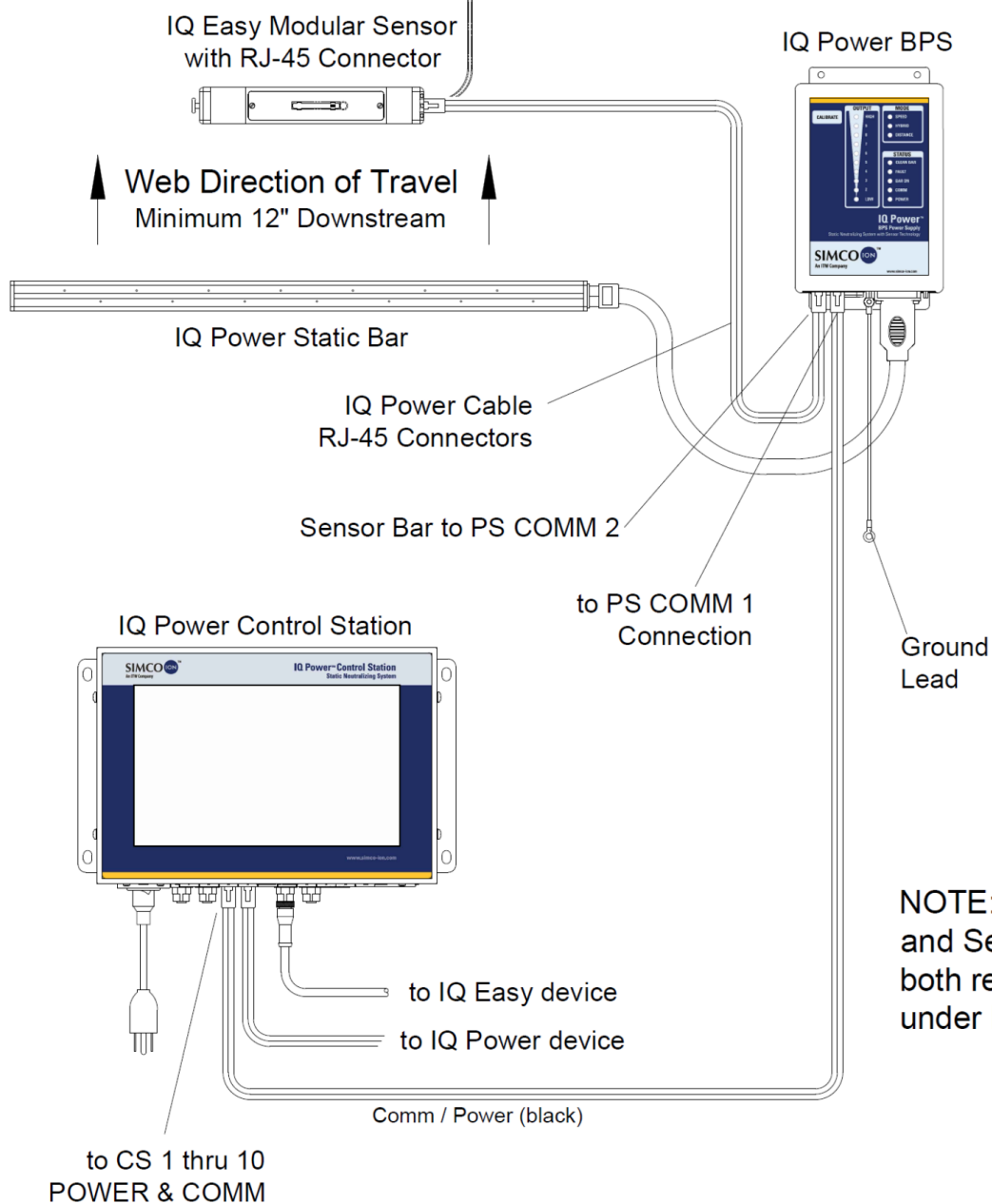


**DO NOT USE** any Ethernet cables.  
See Section 8 Parts and Accessories for available cable lengths and part numbers.

Figure 11: Modular Sensor to Control Station

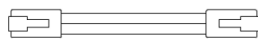
IQ Power BPS with  
IQ Easy Modular Sensor  
typically used for CLFB mode

To Clean, Dry  
Compressed Air Source  
if Purge Required



### RJ-45 Connector Cable Construction

Crossover Wired



Reference color black

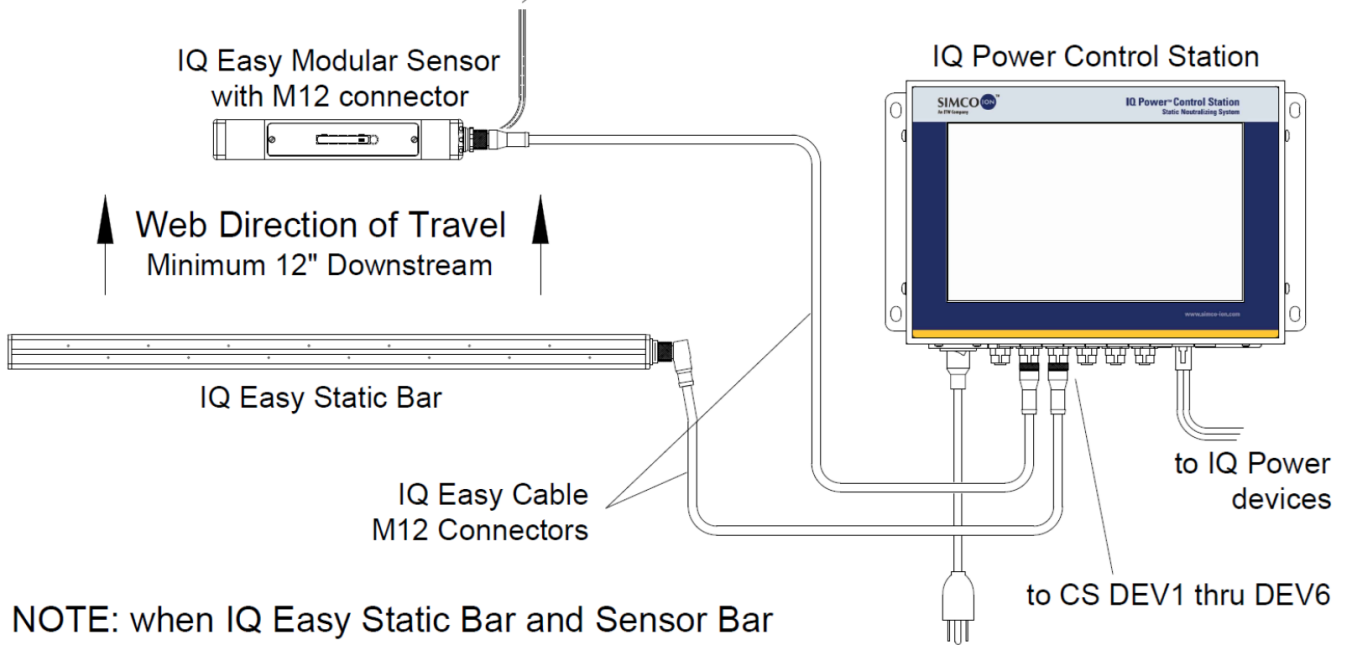
**DO NOT USE** any Ethernet cables.

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

Figure 12: Modular Sensor to Control Station through BPS Power Supply

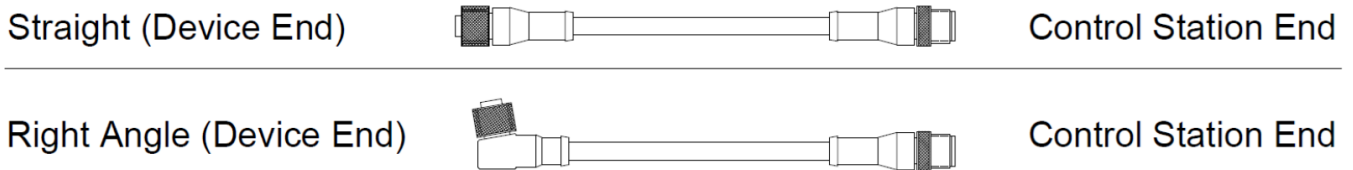
IQ Easy Neutralizer with IQ Easy Modular Sensor typically used for CLFB mode.

To Clean, Dry Compressed Air Source if Purge Required



NOTE: when IQ Easy Static Bar and Sensor Bar share the same address they pair for CLFB operation.

### M12 to M12 Connector Cable Construction



Alternate cable that may be used if IQ Easy Modular Sensor has RJ-45 Connectors connect to CS 1 thru 10 POWER & COMM.

### RJ-45 Connector Cable Construction

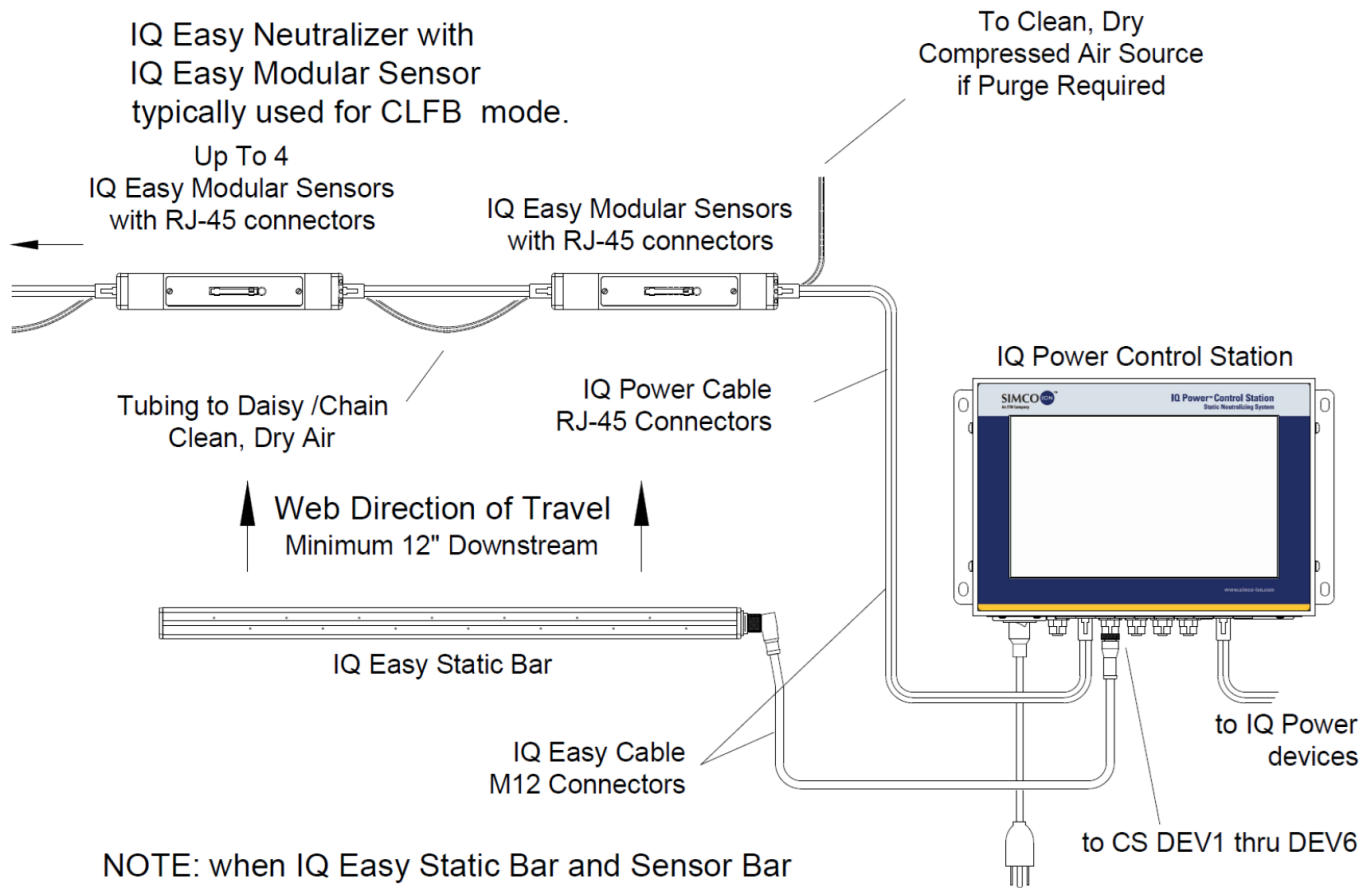


**DO NOT USE** any Ethernet cables.

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

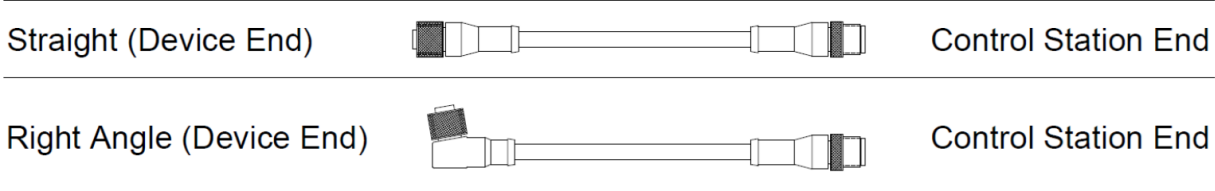
Figure 13: Modular Sensor and IQ Easy Static Bar to Control Station



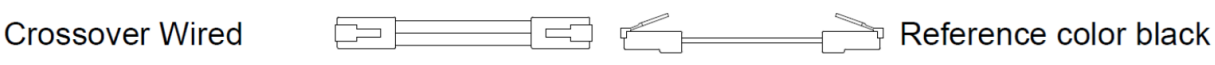


NOTE: when IQ Easy Static Bar and Sensor Bar share the same address they pair for CLFB operation.

M12 to M12 Connector Cable Construction

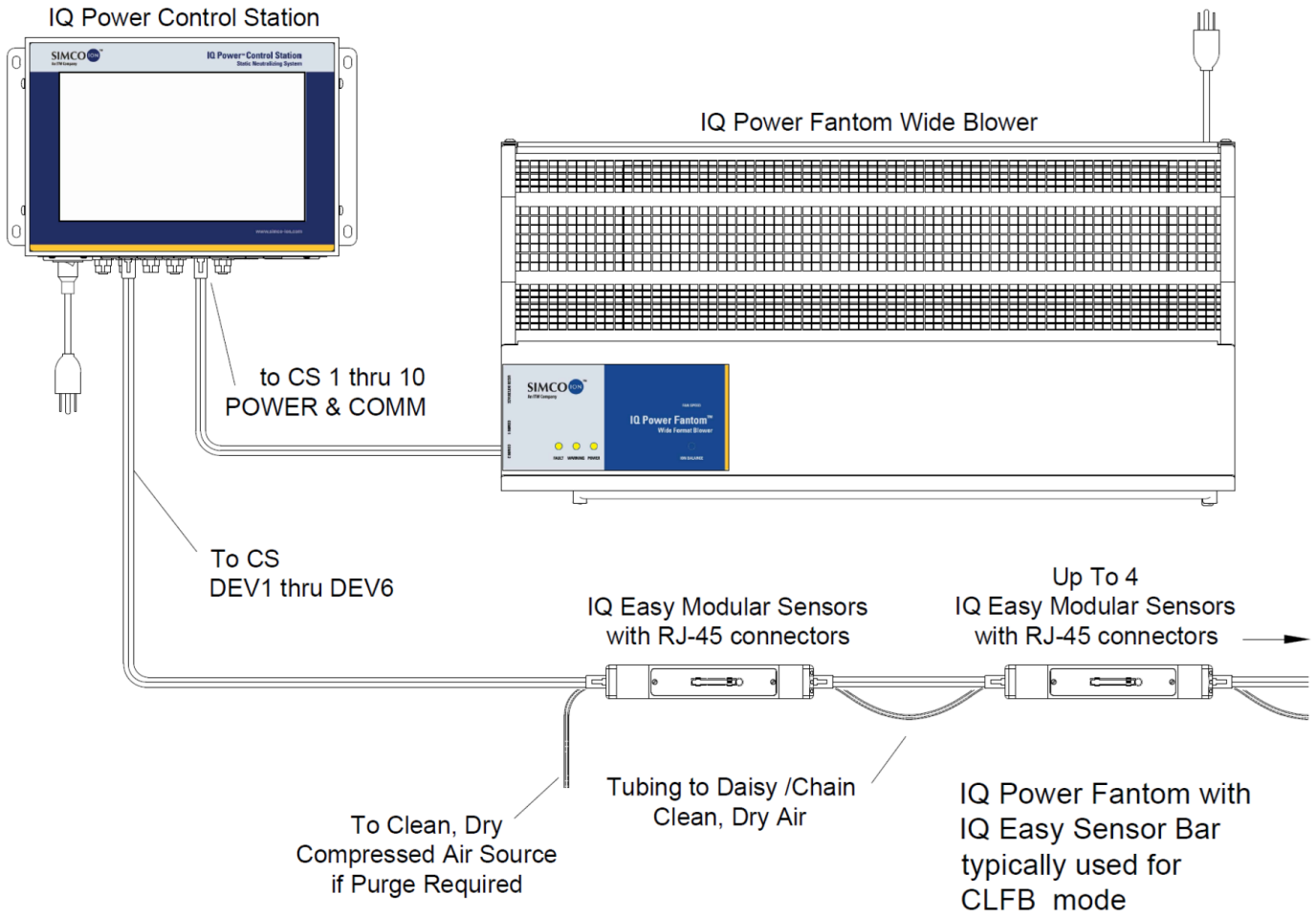


RJ-45 Connector Cable Construction



DO NOT USE any Ethernet cables.  
See Section 8 Parts and Accessories for available cable lengths and part numbers.

Figure 14: Multiple Modular Sensors and IQ Easy Static Bar to Control Station



NOTE: when IQ Power Fantom and IQ Easy Modular Sensor share the same address they pair for CLFB operation.

#### RJ-45 Connector Cable Construction

Crossover Wired   Reference color black

**DO NOT USE** any Ethernet cables.

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

Figure 15: Modular Sensor and Fantom Blower to Control Station

## Purge Gas Connection (recommended)



**NOTE!** – Purge gas or compressed air used with this device **MUST** be clean, dry, and filtered. Dirt, water, or oil in the purge gas will damage the sensors.

In dirty or dusty environments low pressure purge gas may be used to prevent the sensors from becoming fouled with debris. The purge system is designed to provide a gentle flow of purge gas to the sensor aperture, where the electrostatic field is measured.

The purge gas must be prepared with filtration and pressure regulation to ensure a low-pressure flow of clean, dry, oil-free air. The operation of the purge system calls for purge gas at 1 to 2.5 psi (7 to 17 kPa). Connection to the Modular Sensor is made with 5/32" (4 mm) outside diameter quick disconnect tubing. The tubing must be clean and may include typically used tubing materials such as nylon, polyethylene, or polyurethane. To connect the purge line to the sensor, ensure the tubing is cut cleanly and not at an angle, then simply push the tubing into the fitting end of the sensor.



**NOTE!** – Do not apply more than 5 psi (35 kPa) to the purge gas fitting, or equipment damage may result.

Route the tubing away from any moving machine parts and secure the tubing to prevent damage.

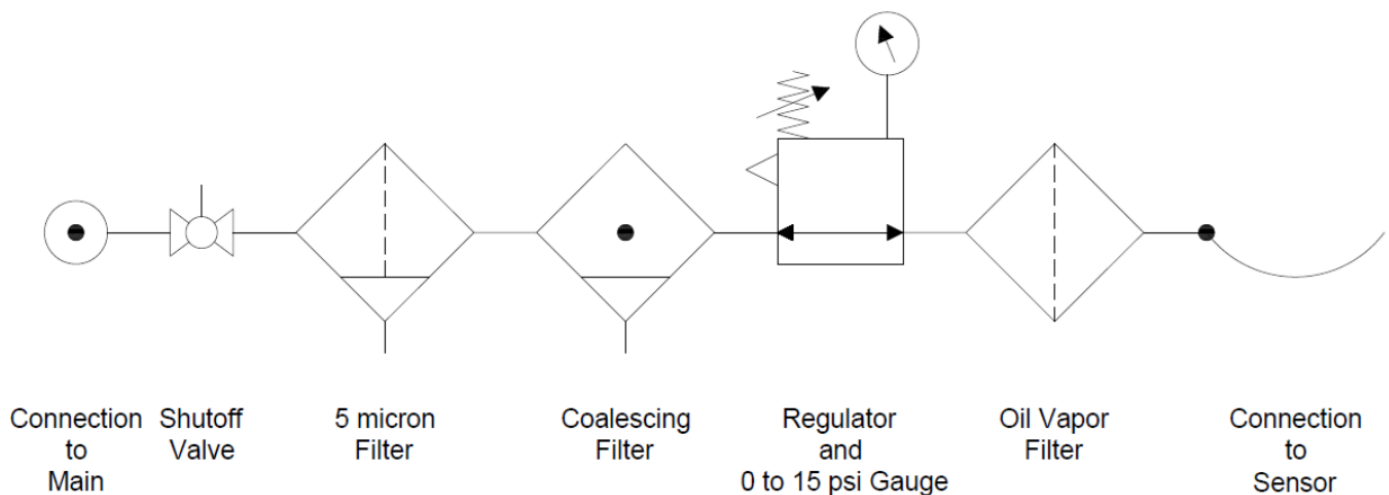


Figure 16: Purge Gas Preparation

## Set-Up

A variety of information can be checked, and operating parameters set for the IQ Easy Modular Sensor through the IQ Easy Control Station via the sensor page. Tap on the device icon for the sensor module to access these pages.

To edit or select an operating parameter, tap the pencil icon to the right of the parameter description.

**Device Name:** A user-editable name to identify the specific Modular Sensor(s) (18 characters) at a given Device Address.

**Sensor Quantity:** The number of sensor modules (up to 4) at that Device Address in the Control Station.

**Mounting Distance:** A user-chosen distance, the spacing between the face of the Modular Sensor and the web (surface being measured). The factory default mounting distance is 4" (100 mm).



**NOTE!** – This information (Mounting Distance) **MUST** be correct. It is used by the sensor for calibration. If this information is not correct, the sensor calibration will be incorrect.

**Overall Average:** The numeric average of voltages from all sensor modules on the given sensor Device Address.

**Feedback Average:** The numeric average of voltages from Sensors for Feedback. This value is used during closed-loop feedback (CLFB) control for the static neutralizing bar.

**Sensor Mode:** Two sensor modes are available: Neutralizing and Charging.

The Neutralizing Mode triggers the Warning and Alarm on rising voltage, indicating excess static electricity. This indicates a static neutralizing bar is not effectively neutralizing static electricity.

The Charging Mode triggers the Warning and Alarm on falling voltage, indicating a lack of static electricity. This indicates static charging equipment is not effectively electrostatically charging material.

The default Sensor Mode setting is Neutralizing.

**Warning Setpoint:** The web voltage level at which the Modular Sensor will set a “Warning” and illuminate the yellow indicator light on the end of the sensor. In the Neutralizing (default) Sensor Mode, the Warning triggers on rising voltage (indicated by “>”), i.e., the Warning triggers when the voltage rises above the Warning Setpoint. In the Charging Sensor Mode, the Warning triggers on falling voltage (indicated by “<”), i.e., the Warning triggers when the voltage falls below the Warning Setpoint. The factory default value is 5 kV; however, this value may be user-adjusted.

**Fault Setpoint:** The web voltage level at which the Modular Sensor will set a Fault and illuminate the red indicator light on the end of the sensor. In the Neutralizing (default) Sensor Mode, the Fault triggers on rising voltage (indicated by “>”), i.e., the Fault triggers when the voltage rises above the Fault setpoint. In the Charging Sensor Mode, the Fault triggers on falling voltage (indicated by “<”), i.e., the Fault triggers when the voltage falls below the Fault Setpoint. The factory default value is 20 kV; however, this value may be user-adjusted.

**Sensors for Feedback:** The sensor modules were selected to provide feedback for closed-loop feedback (CLFB) control. The default setting for this is to use all sensors on the given sensor Device Address for feedback control.

**Paired Bar:** The specific static neutralizer used with this sensor in closed-loop feedback (CLFB) mode. The static neutralizing bar **MUST** be upstream (before) the sensor.

Pairing is controlled by connection to “PS COMM 2” on a BPS power supply or by matching the sensor Device Address to an IQ Easy static neutralizing bar or Fantom ionizing blower. In either case, the sensor will appear as a tab on the neutralizer device page on the Control Station Display.

**Voltage Range:** The voltage range is the maximum (both positive and negative) that the sensor is capable of measuring. The voltage range is determined by the mounting distance. As the mounting distances increase, the voltage range also increases.

**Web Voltage Sensor 1,2,3, or 4:** The voltage level reported by a given sensor module.

**Firmware Version and Last Calibration Date:** Included with web voltage data reported from the sensor module.

The IQ Easy Modular Sensor can be used as part of a closed-loop feedback system to control an IQ Easy or IQ Power Static Bar or Fantom Blower. In this configuration, the ion output from the static bar or blower is optimized to provide the best possible web neutralization. Enabling the CLFB Mode (closed-loop feedback) is performed on the IQ Easy Control Station under the device pages.



**NOTE!** – CLFB with a neutralizer is not possible when the modular sensor is configured in the charging mode. Ensure Sensor Mode is set to “Neutralizing” for CLFB applications. System Priority will automatically be set to “Neutralizer” for CLFB applications.

### Changing the Sensor’s Number

Each Modular Sensor includes a sensor number switch located under the sensor’s rear (longer) cover. Carefully pry the sides of the cover to remove it. Each switch has four different positions that can be used to link up to four sensors per one control station Device Address. To hook up multiple sensors to one Device Address, the switch pack must have the first switch turned on for the first sensor (all other switches off), switch two turned on for the second sensor (all other switches turned off), and so on. A label is provided on the inside of the rear cover where the switch is located, which shows the user how to set the sensor’s number; see Figure 17 and Figure 18. Snap the cover back in place after setting the sensor number.

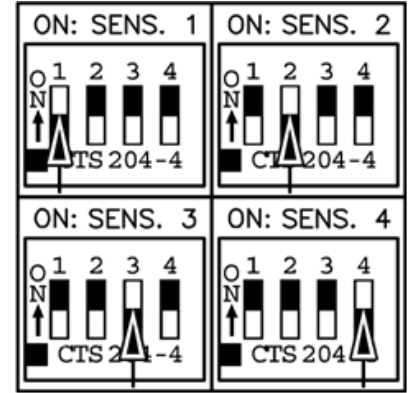


Figure 17: Sensor Number Label

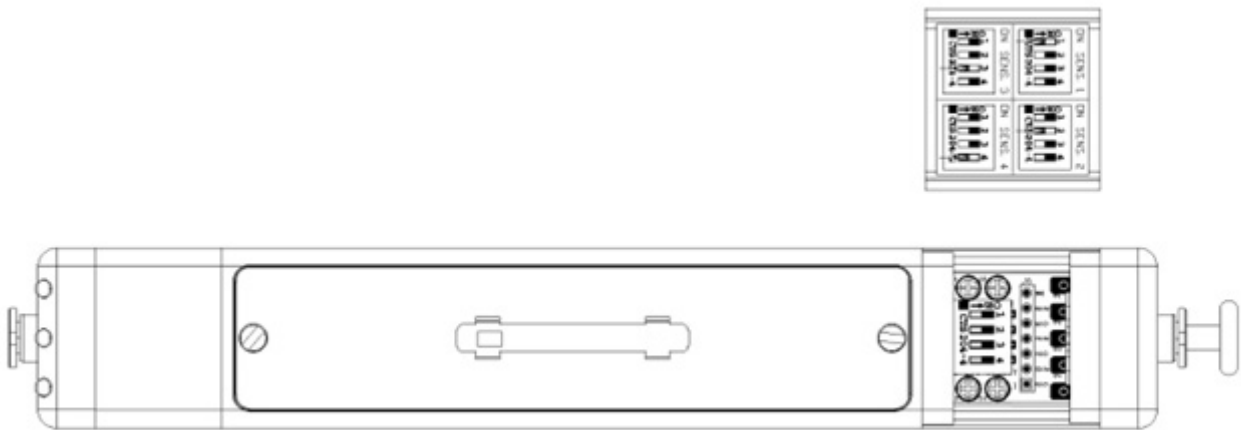


Figure 18: Sensor Number Label Location

### Changing the Sensor’s Address

Once the sensor number is set, the sensor’s address can then be set (using the IQ Power Control Station). Below is a list of steps on how to set the sensor’s address properly.

**Step 1:** When a new sensor is plugged into the Control Station for the first time, it will appear at Address 10. To ensure proper installation of the new sensor, be sure to unplug or relocate all sensor devices from Address 10 as well as the desired Control Station Address first. The Modular Sensor can be paired with up to THREE other Modular Sensors per one Control Station Address. **YOU CANNOT PUT AN EXISTING IQ EASY SENSOR BAR AND MODULAR SENSOR AT THE SAME CONTROL STATION ADDRESS.** The images below show the steps for moving the sensor from Address 10 to Address 3.





Figure 19: Control Station Home Page of a New Sensor Startup

**Step 2:** Once the sensor appears on the Control Station (at Address 10), click on the Address 10 tile to access the device operating parameters. The first screen contains operating parameters such as the mounting distance, overall sensor average, sensor quantity, etc. For this example, there is a group of four new sensors being connected. See Figure ().

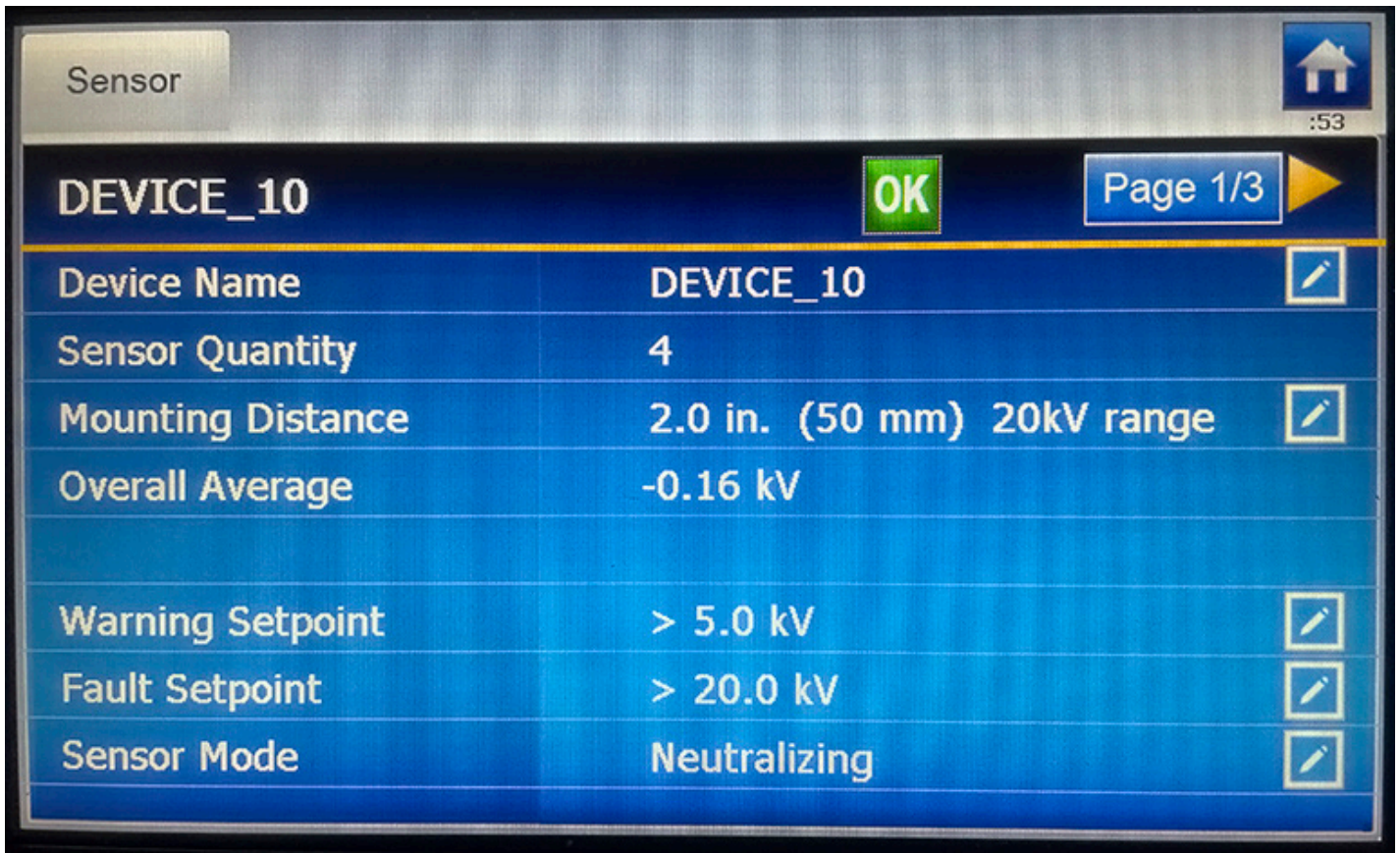


Figure 20: Control Station Address 10 Page 1

**Step 3:** Click on the forward arrow next to the “Page 1/3” text box (top right of the screen) to move to the second page of the device’s operating parameters. On Page 2, the customer can view the output of each individual sensor and see what sensor numbers are being used. As a note, the overall average output found on Page 1 displays the average value of all four sensors.



Figure 21: Control Station Address 10 Page 2

**Step 4:** Click on the forward arrow next to the “Page 2/3” text box (top right of the screen) to move to the third page of the device’s operating parameters. On Page 3, the customer can view operating parameters such as the sensor run time, device address, sensor firmware version, etc. To change the address of the sensor(s), click on the pencil icon that is to the far right of the “Device Address” row. See Figure ().



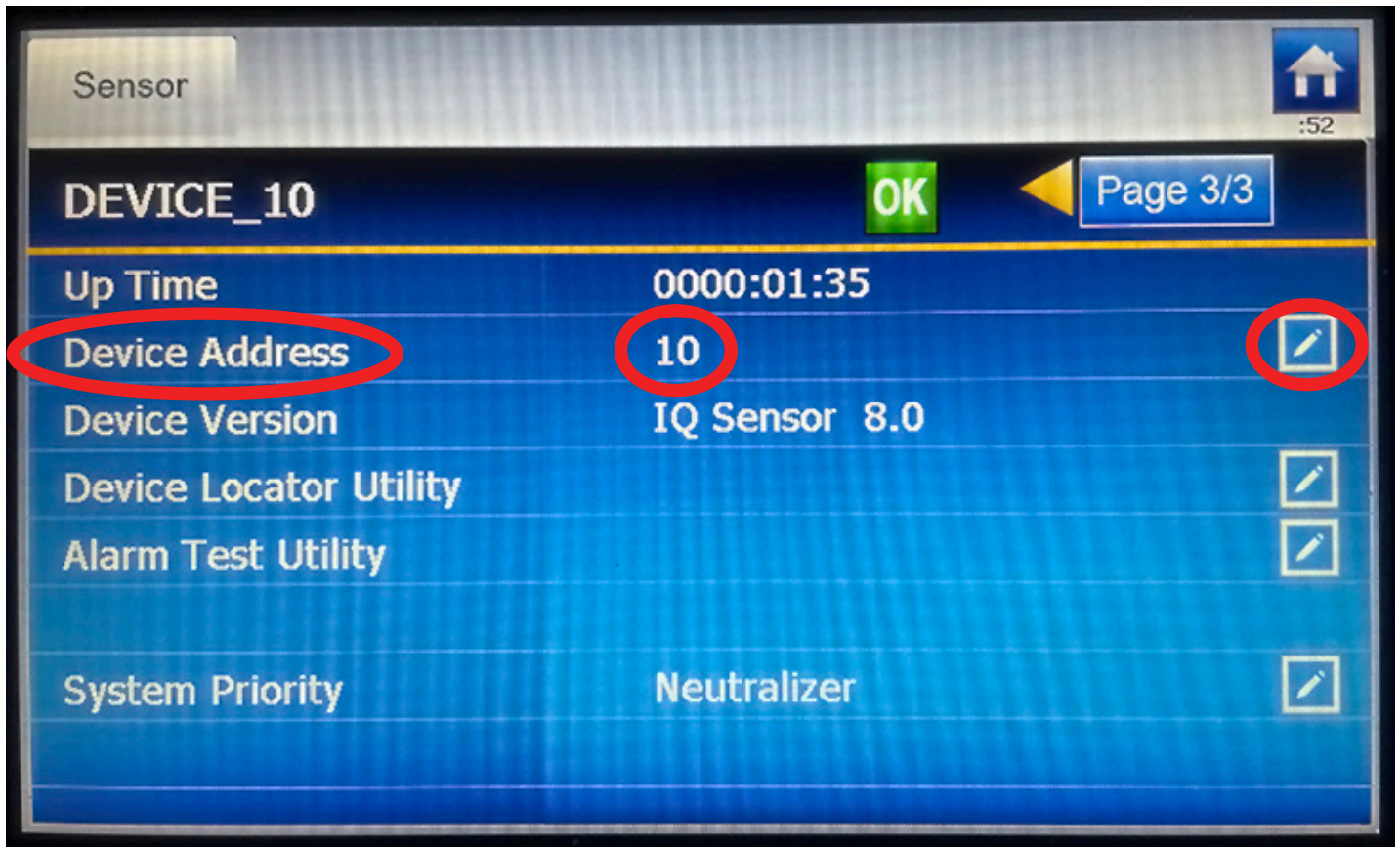


Figure 22: Control Station Address 10 Page 3

**Step 5:** A small window will then pop up asking which address you would like to change the sensors to. For this example, the user will click “3”, as indicated in Figure 23. As a note, when changing the address of the sensor(s), the Control Station will reposition all the sensors at the current address to the new address.



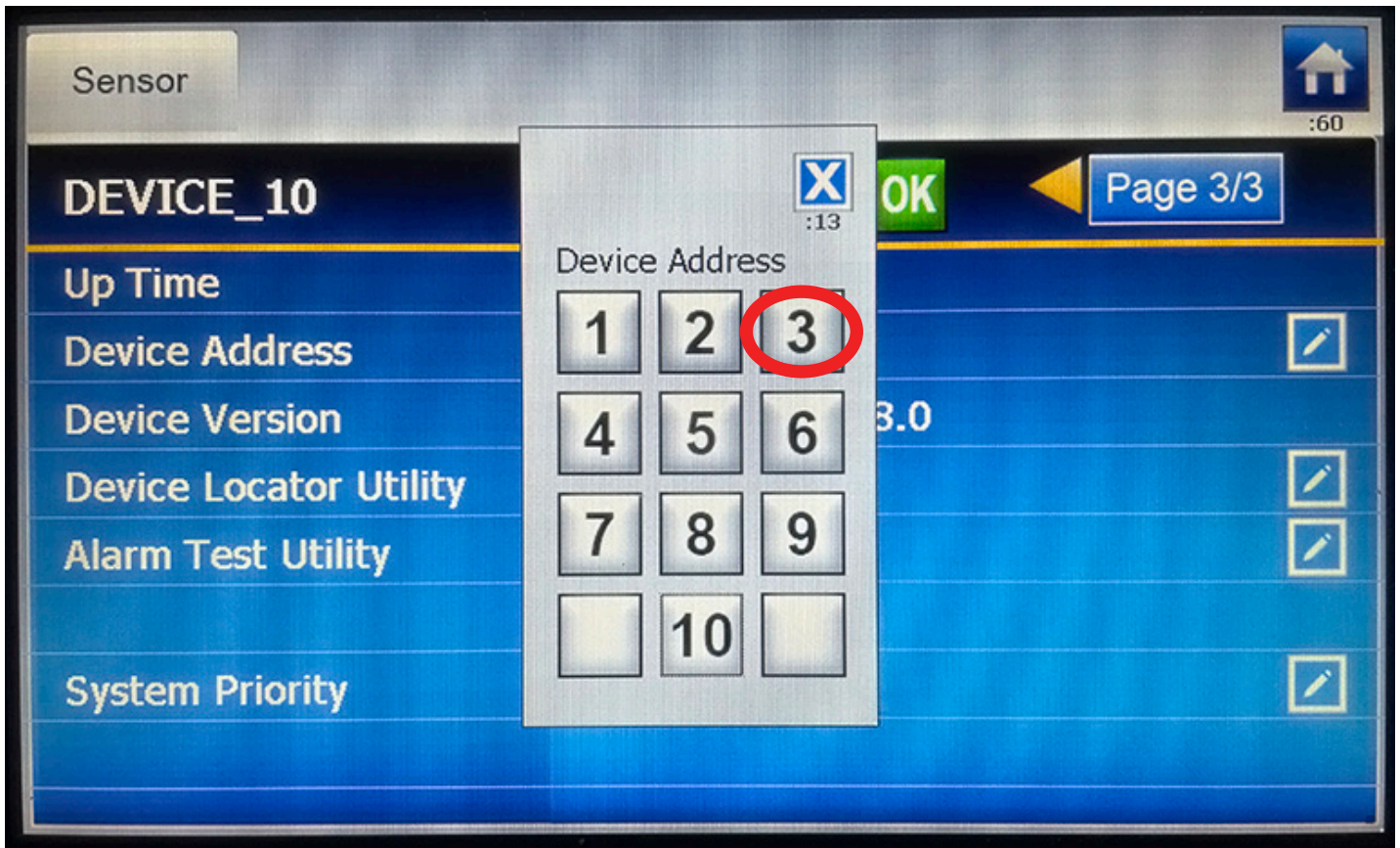


Figure 23: Device Address Select Screen

**Step 6:** Once the address is changed, the green LEDs on the sensors that were moved will begin to flash until the change is completed, at which point, they will return to a solid green state. A completed address change can be seen in Figure 24. It is recommended to tap the refresh button found on the lower right corner of the control station after this process is completed.



Figure 24: Completed Device Address Change

## 5. OPERATION

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The operation of the Modular Sensor is controlled through the IQ Power Control Station. In operation, a device icon appears on the IQ Power Control Station; a tab appears on the neutralizer page when a sensor is paired with the neutralizer. Tapping on the device icon/tab for the sensor enters a series of pages containing information about that sensor. This includes descriptive information such as device name, quantity of sensor segments, and firmware revision levels. User inputs such as the sensor mounting distance (critical for correct calibration), device name, selection of sensor modules for CLFB, and warning and alarm setpoints are available. Output information includes the average voltage for all sensors and the voltage for individual sensor modules. Warning and alarm outputs are also included in these pages. Additional features may be available.

### Indicator Lights

Three indicator lights are present on the modular sensor: green, yellow, and red.

#### **Green**

- A steady green light indicates the sensor is powered and active.
- A rapidly flashing green indicator light indicates the sensor has received a command. The rapid flashing only lasts for several seconds.

#### **Yellow**

- A steady yellow light indicates the user-adjustable web voltage warning set point is being exceeded. This is a non-latching feature; the indicator light will go out when the web voltage drops back below the setpoint.

#### **Red**

- A steady red light indicates the user-adjustable web voltage alarm set point is being exceeded. This is a non-latching feature; the indicator light will go out when the web voltage drops back below the setpoint.
- A blinking red indicator light indicates an internal failure of the modular sensor.

### Sensor Mode

Selection of the Sensor Mode is available through the IQ Power Control Station.

The default Sensor Mode setting is “Neutralizing” for applications where the modular sensor is used in typical static-eliminating applications.

For applications where the modular sensor is being used with electrostatic charging equipment, it will be necessary to manually set the Sensor Mode, through the Control Station, to “Charging.”

This adjustment is required to obtain the proper function of the Warning and Alarm indicators and outputs.

## 6. MAINTENANCE

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**NOTE!** – Turn off the power to the modular sensor before performing any maintenance. Do not disconnect the modular sensor if charged materials are present.

### **Cleaning**

Clean the Modular Sensor using a lint-free wiper moistened (but not saturated) with isopropyl alcohol. Use caution around the sensor modules and avoid contact with the sensor aperture. Allow the sensor to dry completely before applying power.

### **Calibration**

Sensor modules should be calibrated to ensure accurate measurement. Calibration is performed at the factory or authorized service center. The recommended calibration interval is one year.

## 7. TROUBLESHOOTING

Signal	Problem	Cause	Solution
LEDs on sensor do not light	No supply voltage	Control Station is off	<ul style="list-style-type: none"> <li>• Apply power to Control Station &amp; turn on</li> </ul>
		Wiring problem	<ul style="list-style-type: none"> <li>• Replace cable with known good cable</li> <li>• Change connection at the Control Station</li> </ul>
Yellow LED on sensor is lit	Sensor is in "Warning"	Web voltage above Warning threshold	<ul style="list-style-type: none"> <li>• Correct problem causing unacceptable web voltage</li> <li>• Adjust Warning Setpoint to eliminate nuisance warning</li> </ul>
Red LED on sensor is lit	Sensor is in "Alarm"	Web voltage above Alarm threshold	<ul style="list-style-type: none"> <li>• Correct problem causing unacceptable web voltage</li> <li>• Adjust Alarm Setpoint to eliminate nuisance warning</li> </ul>
Red LED on sensor is blinking	Internal fault / communication problem	Various	<ul style="list-style-type: none"> <li>• Cycle power to sensor to see if fault clears</li> <li>• Change connection at the Control Station</li> <li>• If fault does not clear, return sensor to factory for repair</li> </ul>
Red and Yellow LEDs flashing together	Repeat Sensor Number at same Control Station Address	Repeat Sensor Number at same Control Station Address	<ul style="list-style-type: none"> <li>• Move one of the repeat sensors to a different control station address</li> </ul>

## 8. PARTS AND ACCESSORIES

Item	Part Number
Cable for connecting Modular Sensor to Control Station / another Modular Sensor with RJ-45 connectors at both ends. 0.3 meter (1 foot) 0.9 meter (3 foot) 2.1 meter (7 foot) 4.3 meter (14 foot) 7.6 meter (25 foot) 15.2 meter (50 foot) 22.9 meter (75 foot) 30.5 meter (100 foot)	4520828 4520785 4520786 4520787 4520784 4520844 4520845 4520832
Cable for connecting Modular Sensor to Control Station with straight connector at sensor end (M12). 1.5 meter (4.9 foot) 5 meter (16.4 foot) 10 meter (32.8 foot) 20 meter (65.6 foot) 30 meter (98.4 foot)	5051939 5051791 5051792 5051793 5051794
Cable for connecting Modular Sensor to Control Station with right angle connector at sensor end (M12). 5 meter (16.4 foot) 10 meter (32.8 foot) 20 meter (65.6 foot) 30 meter (98.4 foot)	5051796 5051797 5051798 5051799
Mounting Kit	5051777
Replacement Sensor Module	5052109

## 9. WARRANTY

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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, with 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.

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

Specifications are subject to change without notice.

**Simco-Ion**

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