

IQ Easy Modular Sensor

Required Materials

- IQ Easy Modular Sensor(s) (M12 or RJ-45 Versions)
- IQ Easy Modular Sensor mounting kit
- Appropriate cables for Modular Sensor to Control Station (M12 or RJ-45)/daisy-chained cable connection (RJ-45 only)
** Purchase appropriate connection cables from Simco-Ion. Ethernet cables CANNOT be substituted for RJ-45 cables*
- IQ Power Control Station
- Air Filter (recommended if using air purge)
- 1/4" tubing for compressed air source to air filter connection
- 5/32" (4 mm) tubing for the air filter to first sensor connection/thru air connection

Sensor Number vs. Control Station Address (Key Terms)

Control Station Address: Address tiles found on the home page of the Control Station. There are a total of 10 available addresses on the Control Station, which are used to monitor and control the parameters of different Simco-Ion devices.

Sensor Number: Controlled using switch pack found on Modular Sensor. Each sensor has the capability to be set from Sensor #1 to Sensor #4. This is important because each Control Station address can support up to four sensors, so the switch pack must be set accordingly.



NOTE – There **CANNOT** be any repeat sensor numbers per one address (i.e., two Sensor #1's at Address 1, two Sensor #2's at Address 3, etc.). If there are two or more of the same sensor numbers at an address, the red and yellow LEDs will rapidly flash together.



NOTE – The sensor comes from the factory with the rear channel cover removed to allow the user to set the switch pack. Additionally, there is a label on the underside of this cover giving directions on how to set the sensor number switch pack. Install the rear channel cover onto the sensor when the Sensor Number is set.



NOTE – **THE IQ EASY MODULAR SENSOR IS DESIGNED TO WORK WITH UP TO FOUR IQ EASY MODULAR SENSORS PER ONE CONTROL STATION ADDRESS. THE MODULAR SENSOR CANNOT BE PAIRED AT THE SAME ADDRESS WITH OLDER IQ EASY SENSOR BARS.**

Installing One New Modular Sensor

1. Unbox the new Modular Sensor and verify that all the required materials are present.



NOTE – Each purchase of a new Modular Sensor includes a mounting kit with one mounting bracket and the required hardware.

2. To begin the new sensor setup, locate the detached rear channel cover included in the sensor packaging.
3. Locate the Sensor Number dip switch (switch pack) on the IQ Easy Modular Sensor. (See Figure 1)

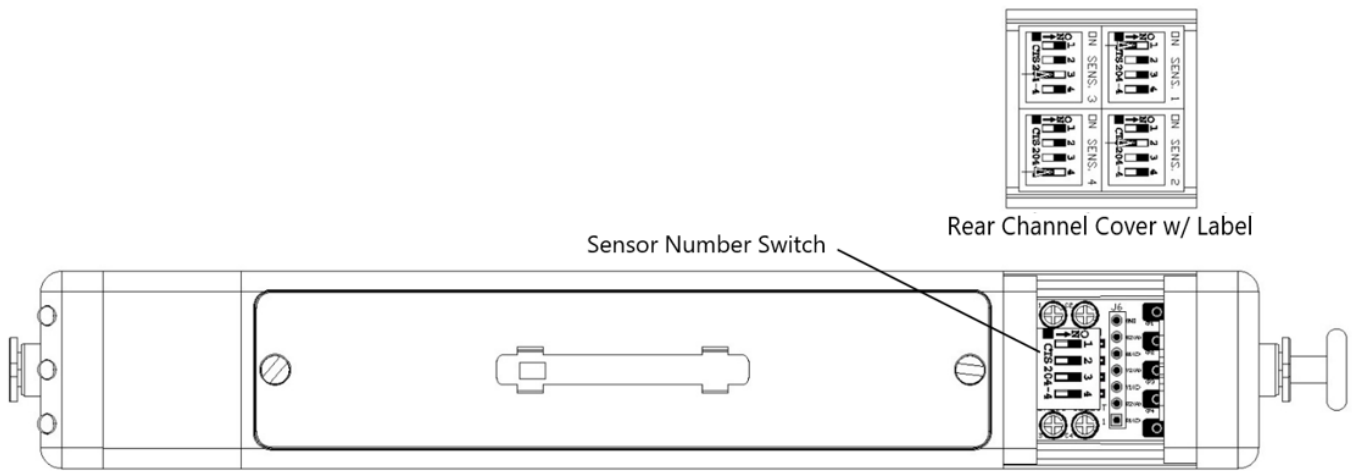


Figure 1: Sensor Number Switch Location

- Using the rear channel cover as a guide, verify that the sensor number switch pack is set to Sensor #1.



NOTE – Each sensor is set to Sensor #1 when it leaves the factory and should be the default setting when using only **ONE** standalone sensor.

- Once the sensor number has been verified, install the rear channel cover onto the sensor and ensure that it clicks into place.
- Choose an appropriate mounting location for the sensor. As a note, the sensor must be mounted at a distance that adheres to the available mounting distances available in the IQ Power Control Station. (See Figure 2)

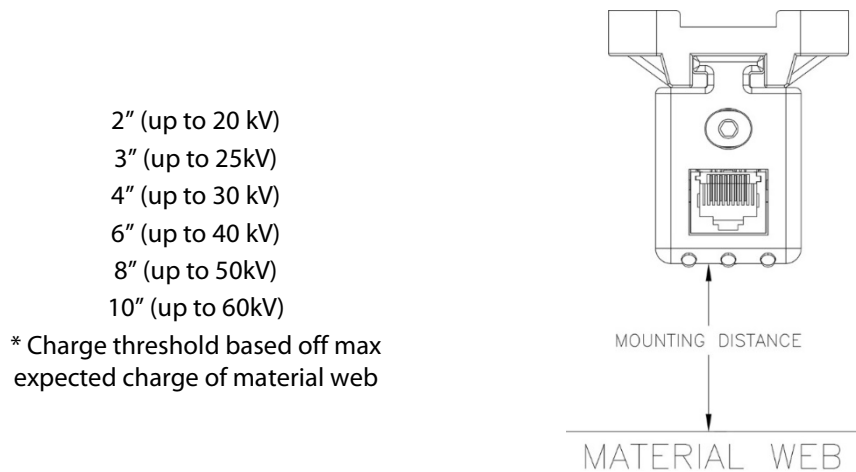


Figure 2. Modular Sensor Mounting

- Using the supplied mounting bracket and hardware, install the Modular Sensor into the chosen location. Ensure that the sensor face is the same distance from the web as what is specified in the Control Station before running the sensor to ensure accurate results.
- (Step Applies Only for Customers Using Suggested Air Filter)** Now that the sensor is mounted, choose an appropriate location for the suggested air filter. The ¼" connection end will be connected to the user's air source, while the 4 mm outlet will connect to the push-to-connect air fitting found on the front of the Modular Sensor.



NOTE – The suggested air filter additionally acts as a regulator. Set the regulator to 2.5 psi, which will help clean debris off the sensor while maintaining accurate measurements. If not using the suggested air filter, connect the regulated air source (at 2.5 psi) directly to the sensor using a 5/32" (4 mm) airline.

9. With the air installed, run the cable that will connect the sensor to the Control Station. See Figure 3 for an example of a completed sensor installation with an RJ-45-style sensor.

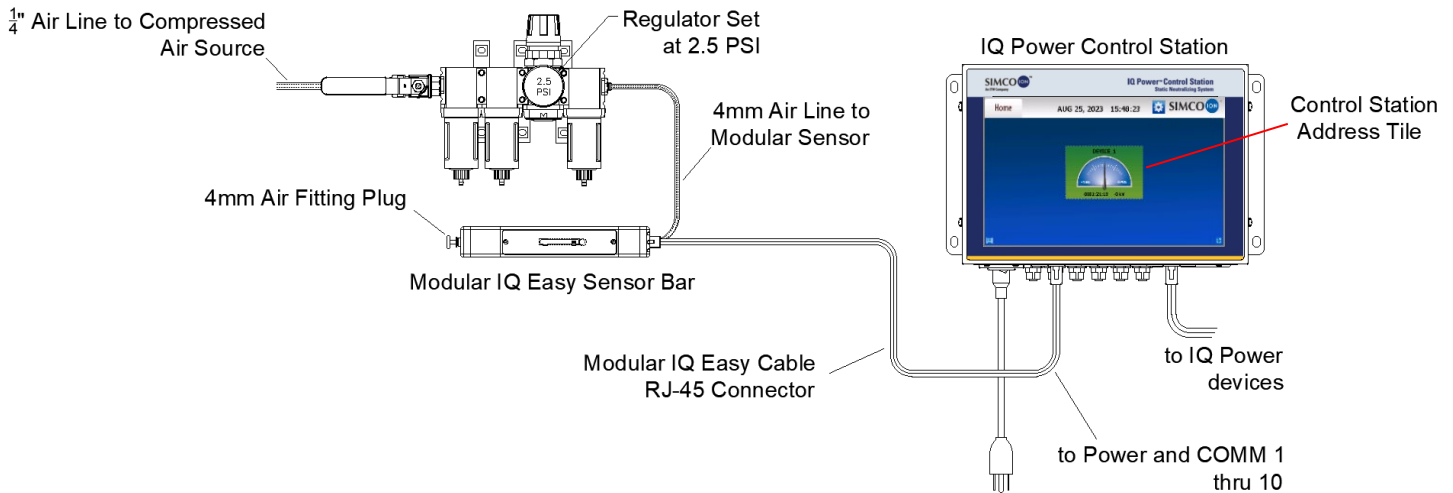


Figure 3. Completed Single Sensor Installation

Sensor LED Startup

- The sensor contains three LED lights: (1) green, (1) yellow, and (1) red
- Once the sensor is connected to the Control Station, it will go through the following startup sequence:
 1. Rapid Flashing Green LED: Occurs when the sensor is first plugged in, indicates boot loading procedure in progress.
 2. Each LED Flashing Individually (x1 Green, x1 Yellow, x1 Red): Acts as an LED test to confirm to the user that all LEDs are working properly.
 3. Green and Yellow LEDs Flashing Simultaneously: Indicates the Sensor Number set on the Modular Sensor's switch pack.
 4. x2 Green LED Flash: Indicates that the sensor has completed its startup sequence.

Modular Sensor Control Station Setup

When a new sensor is installed, the factory default Control Station address is Address 10. Click on Address 10 on the Control Station to open the sensor's operating parameters.



NOTE – If other non-sensor devices are present at Address 10, click on the “Sensor” tab located in the upper left-hand corner of the Address screen. If other sensors are present at Address 10, they will need to be disconnected or re-addressed to properly address the new sensor.

Once the Address screen is opened, there will be three pages that outline the Modular Sensor's operating parameters.

- **Page 1:** Contains Device Name, Sensor Quantity, Mounting Distance, Overall Average, Warning Setpoint, Fault Setpoint, and Sensor Mode.
- **Page 2:** Outlines each individual sensor's charge reading.
- **Page 3:** Contains the sensor run time, Device Address, Software Version, Device Locator Utility, Alarm Test Utility, and System Priority.



NOTE – It is important to review these parameters as the factory default likely will not be appropriate for every application. 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”.

Installing Multiple Sensors

1. Unbox the new Modular Sensors and verify that all the required materials are present.

NOTE - Each purchase of a new Modular Sensor includes a mounting kit with one mounting bracket and the required hardware.

2. To begin the setup for the new sensors, locate the detached rear channel covers included in each of the new sensor's packaging.
3. Locate the Sensor Number dipswitch on each of the IQ Easy Modular Sensors. (See Figure 1)
4. Using the rear channel cover as a guide, set the Sensor Number on each of the new sensors. The available sensor numbers vary from Sensor #1-Sensor #4, which can be set using the dipswitch found on the sensor, however, it is important to note that there can only be one of each Sensor Number per one Control Station address. See Figure 4 below.

NOTE – The preinstalled air plug should remain in the last sensor of the interconnected sensor group to prevent the supplied compressed air from escaping.

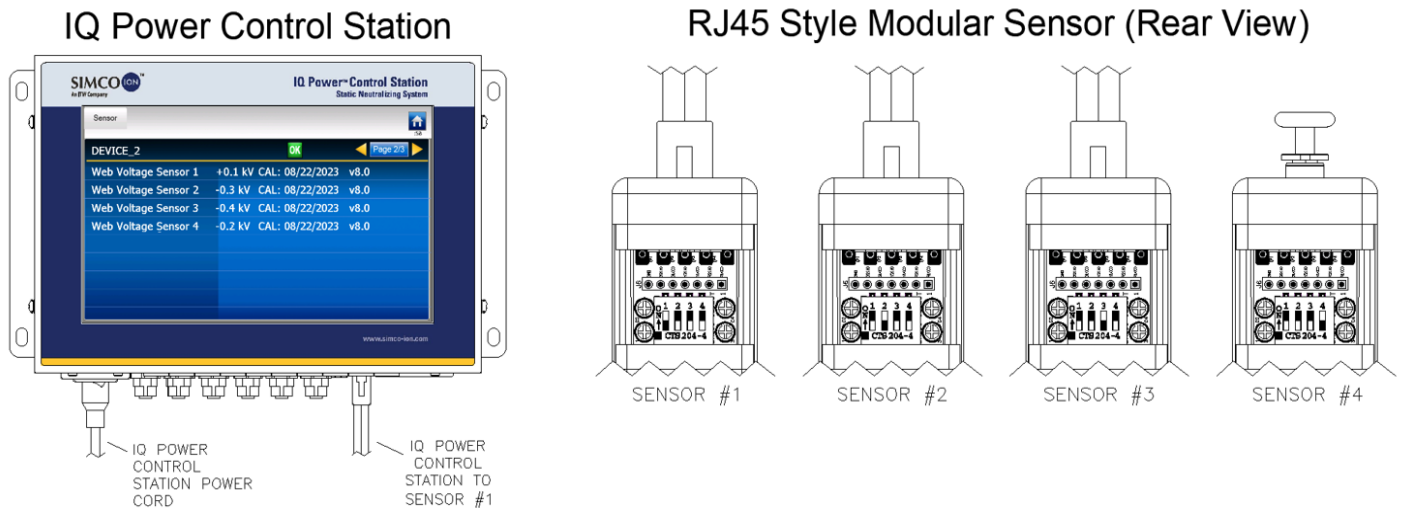


Figure 4. Correct Sensor Numbering of Four Modular Sensors

5. Once the Sensor Number has been set on each sensor, install the rear cover on the sensor, it will click into place.
6. **(THIS STEP IS FOR RJ-45-STYLE SENSORS ONLY):** On each RJ-45-styled sensor, there is a label on the rear endcap (opposite side as the sensor LEDs) that will need to be removed if interconnecting multiple sensors. See Figure 5.

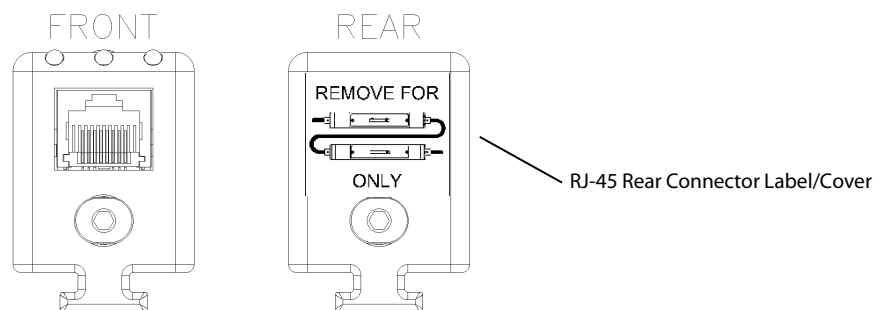


Figure 5. Front and Rear Connector Ends of RJ-45-Style Modular Sensor

- (THIS STEP IS FOR M12-STYLE SENSORS ONLY):** If using the M12-style Modular Sensor, the user can still have up to four Modular Sensors per one Control Station address; however, this style does not feature an interconnection feature.
- To complete the install, follow the Mounting/Control Station instructions from the “Installing One Modular Sensor” section. See Figure 6. for a completed install with multiple RJ-45-style Modular Sensors.

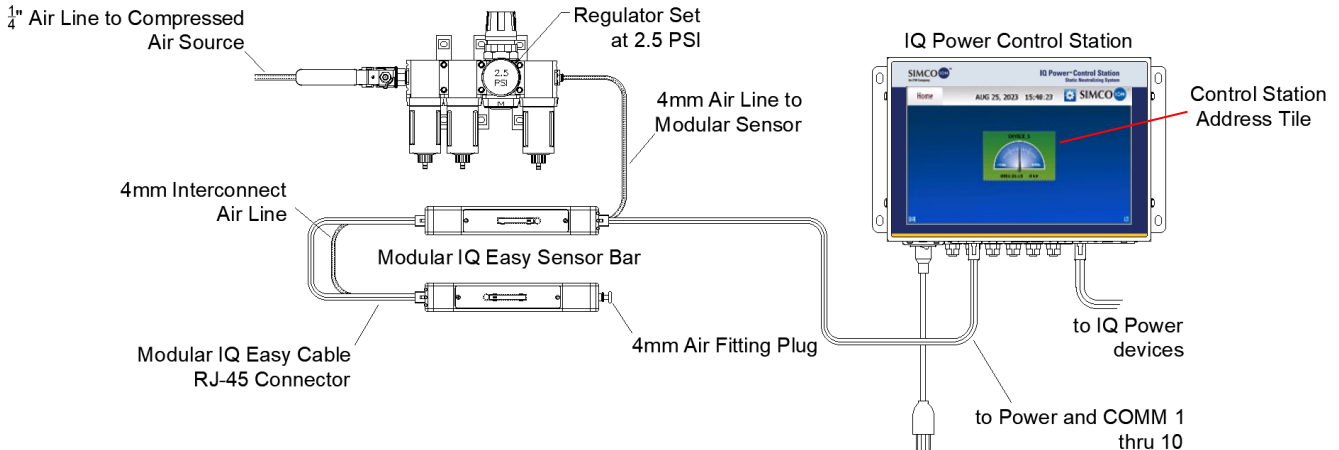


Figure 6. Completed Multi-Sensor Install

Adding/Subtracting New Sensors to a Group of Sensors

When adding or subtracting sensors to a group of sensors, the following steps must be followed to ensure proper operation of the sensors.

For ADDING a New Sensor

- First, identify how many sensors are at the desired Control Station address.



NOTE – There can be up to **FOUR** Modular Sensors per one Control Station address.

- If there are less than four modular sensors at the desired address, identify the sensor numbers that each sensor is set to. The easiest way to do this is to unplug all the sensors and then plug them back in. This will cause the sensors to repeat their startup sequence, which indicates the sensor number using the green and yellow LEDs.
- Set the new sensor to a sensor number that does not already exist in the current group of sensors. See Figure 7.



NOTE – If there is a repeat sensor number in a group of sensors at one Control Station address, the yellow and red LEDs will rapidly flash indicating there is a conflict.

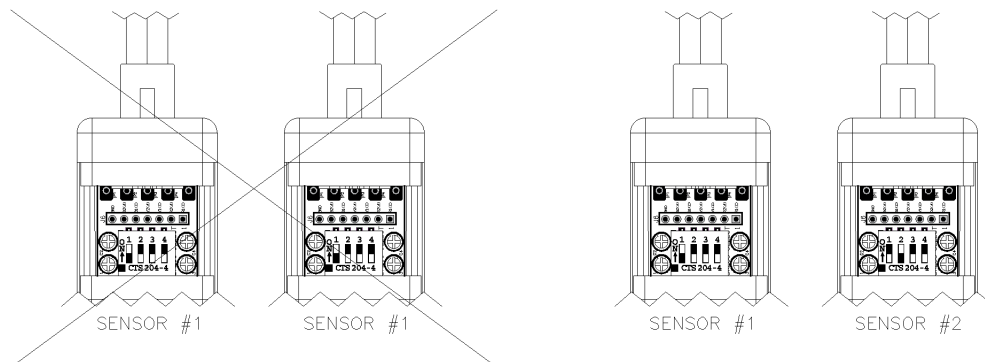


Figure 7. Incorrect vs. Correct Sensor Numbering

4. Once the sensor number is set, once again unplug the current sensor(s) at the desired Control Station address and readdress the new sensor to the desired Control Station address.
5. With the new sensor readdressed, plug back in the original sensors, and refresh the Control Station.
6. Once the refresh cycle is complete, go into the Control Station address tile with the old and new sensors and verify that all sensors appear on Page 2 of the address tile. See Figure 8.

Sensor			
DEVICE_2 OK			
Page 2/3			
Web Voltage Sensor 1	+0.1 kV	CAL: 08/22/2023	v8.0
Web Voltage Sensor 2	-0.3 kV	CAL: 08/22/2023	v8.0
Web Voltage Sensor 3	-0.4 kV	CAL: 08/22/2023	v8.0
Web Voltage Sensor 4	-0.2 kV	CAL: 08/22/2023	v8.0

Figure 8: Control Station Address Display with Four Modular Sensors

For SUBTRACTING a Sensor from a Group

1. Identify the sensor that needs to be removed from the sensor group.
2. Disconnect the sensor from the Control Station. (If the sensor is interconnected with the other sensors, ensure that all sensors are still connected/receiving power after removing the problem sensor).
3. Once the sensor is disconnected, the Red LED will begin blinking on each of the sensors in the group, indicating that there is lost communication with one of the sensors. To fix this, refresh the Control Station. This will allow the sensors to refresh and remove the fault.