

Resense™ Air



Overview

The Resense Air Series communicating sensors deliver precise environmental monitoring, including temperature, humidity, and CO₂, in a discrete and elegant enclosure.

Designed for seamless integration, they are compatible with Distech Controls' Eclipse™ series BACnet/IP and Wi-Fi controllers, ECB series BACnet® controllers, and ECL series LonWorks® controllers, including the DC Space solution.

With its sleek and compact design, the Resense Air Series blends effortlessly into any modern environment, providing both functionality and style.

General Installation Requirements

For proper installation and subsequent operation of each controller, pay special attention to the following recommendations:

- Upon unpacking the product, inspect the contents of the carton for shipping damages. **Do not install damaged modules.**
- Orient the device with the ventilation slots towards the top to permit proper heat dissipation.
- The device is designed to operate under the following environmental conditions:
 - Operating temperature from 32°F to 122°F (0°C to 50°C)
 - Storage temperature -4°F to 122°F (-20°C to 50°C)
 - Relative humidity from 0% to 90% non-condensing.
- Ensure proper ventilation of the device and avoid areas where corroding, deteriorating or explosive vapors, fumes or gases may be present.



Make wiring connections to the device last. Pulling the cable while it is connected can damage the connector.



Any type of modification to any Distech Controls product will void the product's warranty



Take reasonable precautions to prevent electrostatic discharges to the product when installing, servicing or operating the product. Discharge accumulated static electricity by touching one's hand to a well-grounded object before working with the product.

Device Markings

Certain markings (symbols) can be found on the controller and are defined as follows:

Symbol	Description
	CE marking: the device conforms to the requirements of applicable EC directives.
	UKCA marking: the device conforms to the requirements of applicable Great Britain regulations.
	UL marking: conforms to the requirements of the UL certification.
	FCC marking: This device complies with FCC rules part 15, subpart B, class B.
	Warning Symbol: Significant information required. Refer to the Hardware Installation Guide

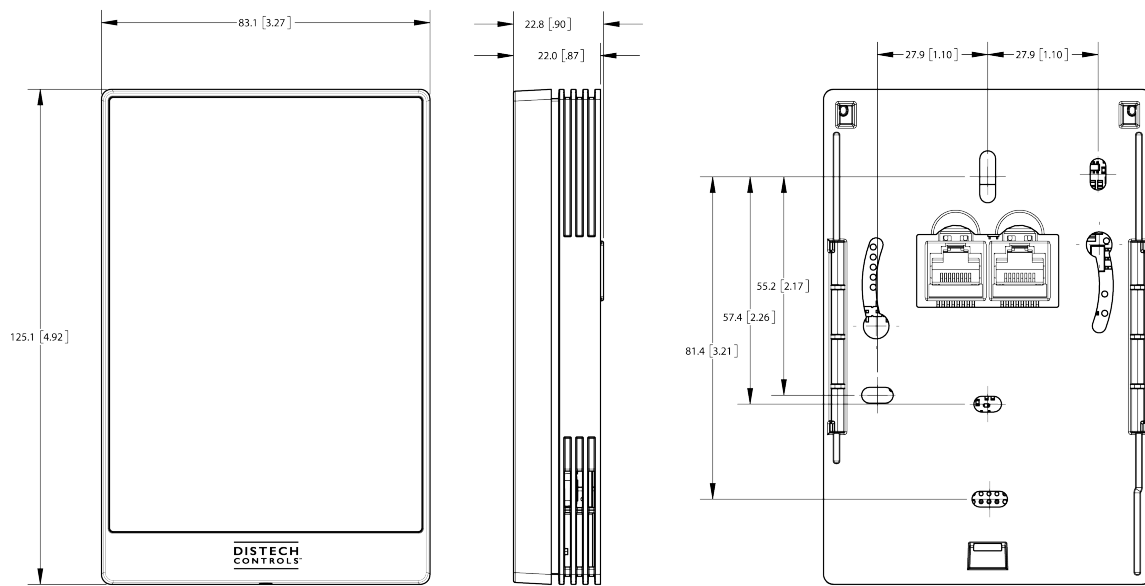
General Wiring Recommendations



Risk of Electric Shock: Turn off power before any kind of servicing to avoid electric shock.

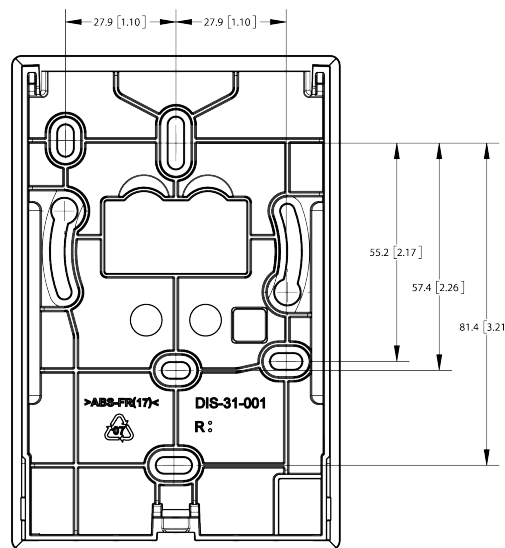
- Operating, handling, or servicing this product should be ensured by a qualified operator.
- All wiring must comply with electrical wiring diagrams as well as national and local electrical codes.

Dimensions



Millimeters[Inches]

Front View of Back
Mounting Plate



Mounting Instructions

The device has been specially designed for easy installation. However, certain conditions apply when choosing a suitable location for the device:

- Install the device in a location of average temperature approximately 1.5 m (5 ft) above the floor.
- The device should not be installed on an exterior wall.
- The device should not be installed near a heat source.
- The device should not be installed near an air discharge grill.
- The device should not be installed in a place where it can be affected by the sun.
- Install the device in an area that provides proper device ventilation. Nothing must restrain air circulation to the device.
- Models equipped with a CO₂ sensor must be used in spaces that are periodically unoccupied (e.g. during evening or nighttime hours).



The sensor has not been designed for outdoor use.

Electrical Junction Box Installation Procedure

The sensor can be mounted in most American, European or Asian style electrical junction box using screws.

1. Open the device by applying a flat head screwdriver to the side and turning gently.
2. Set any jumpers (see Connector and Jumper Location, Identification and Configuration).
3. Set the Subnet ID with DIP switch.
4. Pull all cables 6" (15cm) out of the wall and insert them through the central hole of the back plate.
5. Screw the back plate onto the electrical junction box.
6. Plug the wire(s) into the connector(s). Gently push excess wiring back into the electrical junction box.
7. Reattach the front plate and make sure it clips tightly into place.
8. Install security screw.

Wall Mounting Installation Procedure

The sensor can be mounted on a dry wall using supplied screws.

1. Open the device by applying a flat head screwdriver and turning gently.
2. Set any jumpers (see Connector and Jumper Location, Identification and Configuration).
3. Set the Subnet ID with DIP switch.
4. Pull all cables 6" (15cm) out of the wall, and insert them through the central hole of the back plate.
5. Align the back plate with the wall and mark the location of the mounting holes on the wall. Make sure to orient the proper side of the back plate facing upwards.
6. Remove the back plate and drill holes in the wall if necessary.
7. Install anchors in the wall if necessary.
8. Make sure that the mounting surface is flat and clean.
9. Screw the back plate onto the wall. Do not over tighten.
10. Plug the wire(s) into the connector(s). Gently push excess wiring back into the wall.
11. Reattach the front plate and make sure it clips tightly into place.
12. Install security screw.

Device Mounting

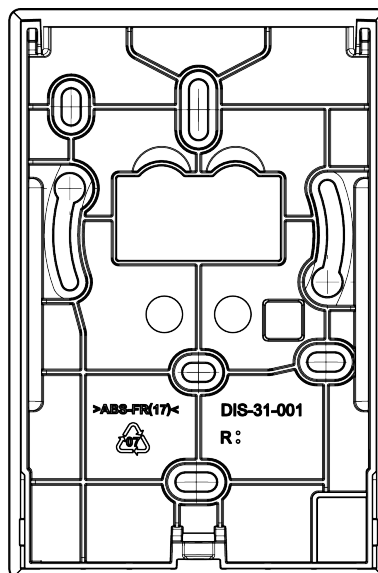
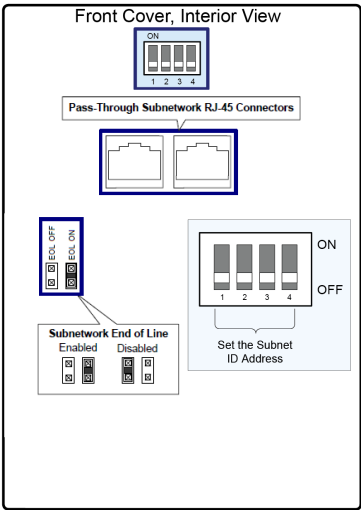


Figure 1. Mounting the sensor

Connectors and DIP Switch Location, Identification and Configuration

The sensors have the following connectors and onsite configurable DIP switches.



Sensor Equipped with a CO₂ Sensor

The sensors are factory calibrated to accurately read CO₂ concentration levels at sea level. When these sensors are used in locations where the elevation is greater than 500ft (152m) above sea level, you must set the **Elevation** input of the corresponding **ComSensor** block in *EC-gfxProgram* to the current location's elevation to obtain the most accurate readings.

For more information, refer to the **ComSensor** block section in the *EC-gfxProgram User Guide*.



Under normal conditions, a Resense Air sensor with CO₂ sensor will typically reach its operational accuracy after 24 hours of continuous operation on the condition that it was exposed to ambient air reference levels of 400 ppm ±10 ppm CO₂.



The sensor will maintain accuracy specifications using the automatic self-calibration, assuming that it is exposed to the atmospheric CO₂ concentration of 400 ppm for at least 15 minutes per 7-day period, which is typically seen during unoccupied periods.

Supported Quantity

The Resense Air sensor connects to the controller's **Subnet Port**. Other expansion modules may also be connected to this port in a daisy-chained fashion (see the controller's datasheet for compatibility information and supported quantities).

Each controller supports a maximum number of Resense Air sensors. The Subnet ID of all sensors must be set to be within the shown addressing range.

Table 1. Number of sensors supported by controller model

Series	Max Number of sensors ^a	Permitted Subnet ID Addressing Range	Status	Product Series
ECY-S1000 Series	Up to 12	1 to 12	Active	Eclipse
ECLYPSE APEX			Active	Eclipse
ECY-400 Series			Active	Eclipse
ECY-600 Series			Active	Eclipse
ECY-103			Active	Eclipse
ECY-2x3 Series			Active	Eclipse
ECY-3x0 Series			Active	Eclipse

Series	Max Number of sensors ^a	Permitted Subnet ID Addressing Range	Status	Product Series
ECY-303	Up to 4	1 to 4	Active	Eclipse
ECY-VAV			Active	Eclipse
ECY-VAV-PoE			Active	Eclipse
ECY-TU/PTU			Active	Eclipse
ECB-103	Up to 4	1 to 4	Active	ECB
ECB-203			Active	ECB
ECB-VAV			Active	ECB
ECB-VAV-N			Active	ECB
ECB-PTU Series			Active	ECB
ECB-300	Up to 12	1 to 12	Active	ECB
ECB-400 Series			Active	ECB
ECB-600 Series			Active	ECB
ECL-103	Up to 4	1 to 4	Active	ECL
ECL-203			Active	ECL
ECL-VAV			Active	ECL
ECL-VAV-N			Active	ECL
ECL-PTU Series			Active	ECL
ECL-300	Up to 12	1 to 12	Active	ECL
ECL-400 Series			Active	ECL
ECL-600 Series			Active	ECL

^a A controller can support a maximum of two (2) sensor models equipped with a CO₂ sensor. Any remaining connected sensor models must be without a CO₂ sensor.



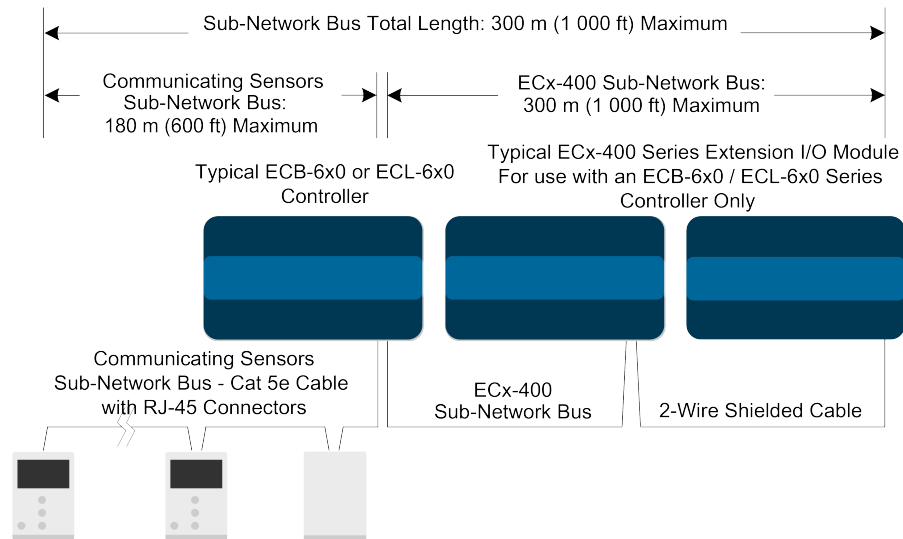
Adding devices to the subnetwork decreases the system responsiveness. This may cause a certain delay, which could be an issue for commands that require fast response, such as lighting and shades/sunblind commands.

About the Subnetwork Bus

The controllers use the subnetwork bus to communicate with the room devices (see each controller's datasheet for compatibility), including with the Resense Air Series sensors, by using standard structural (Cat 5e) cabling and by connecting the devices in a daisy-chained fashion to the controller's Subnet Port. For more information, please refer to the table in the [Supported Quantity \[5\]](#) section of this document.

Subnetwork Bus Total Length

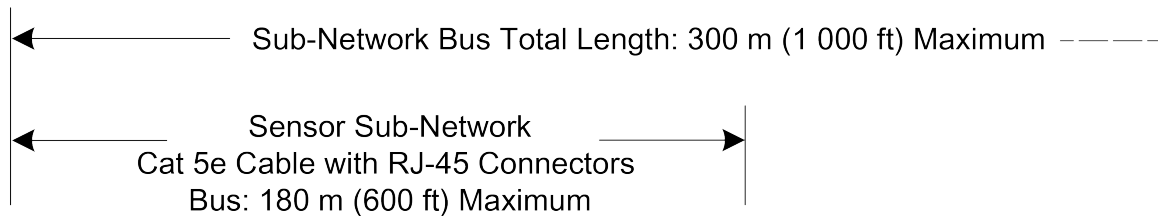
The total maximum length of all Subnetwork buses, including both the length of the sensors (Product Name variable to be added) Series communicating sensor sub-network bus and the ECx-400 Series sub-network bus is 300 m (1 000 ft). The maximum length of the (Product Name variable to be added) Series communicating sensor sub-network bus is 180 m (600 ft). The maximum length of the ECx-400 Series sub-network bus is 300 m (1 000 ft).



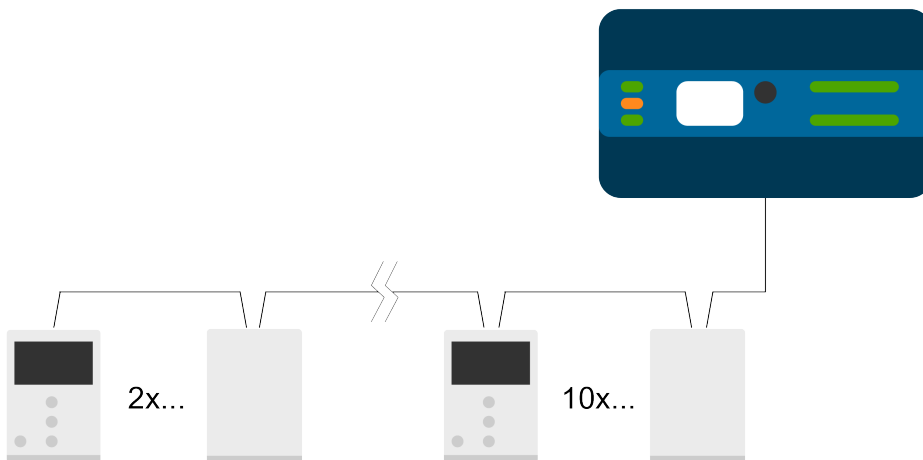
Subnetwork Bus Overview

A controller can support a maximum of two sensor models equipped with a CO₂ sensor; the remaining connected models must be without a CO₂ sensor. See the table in the [Supported Quantity \[5\]](#) section for the quantity of room devices supported by each controller model. For instance, if the controller model supports a sub-network with 12 sensors in total, then 10 sensor models must be without a CO₂ sensor and the other two can be equipped with a CO₂ sensor.

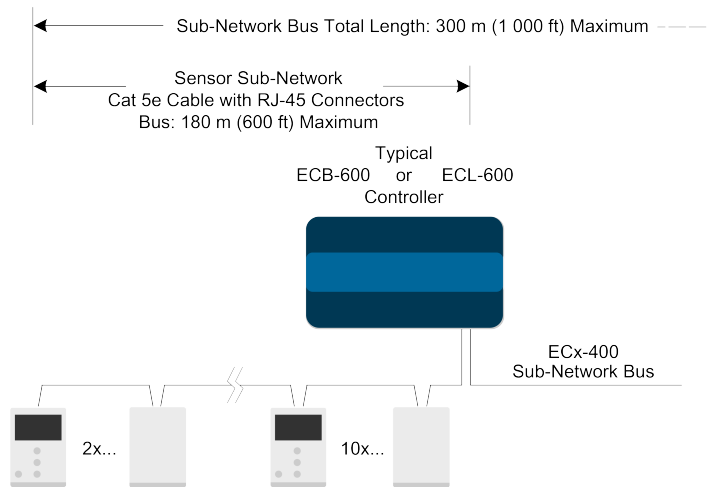
To ensure proper operation, it is recommended to distribute the sensors throughout the length of the subnetwork.



ECY-600 Controller



Subnetwork Length and Distribution using ECY-600 controller



Subnetwork Length and Distribution using ECB-600 or ECL-600 controller



For ECB/ECL-PTU Series controllers, the maximum length between two consecutive devices on the sub-network bus is 100 feet (30 m).

Subnetwork Bus Topology and EOL Terminations

Only a daisy chain topology is acceptable for the room device subnetwork bus. T connections are not allowed.

Some controller models support the connection of other devices to the Subnet Port as part of the DC Space solution (see the controller's specification sheet for more information).

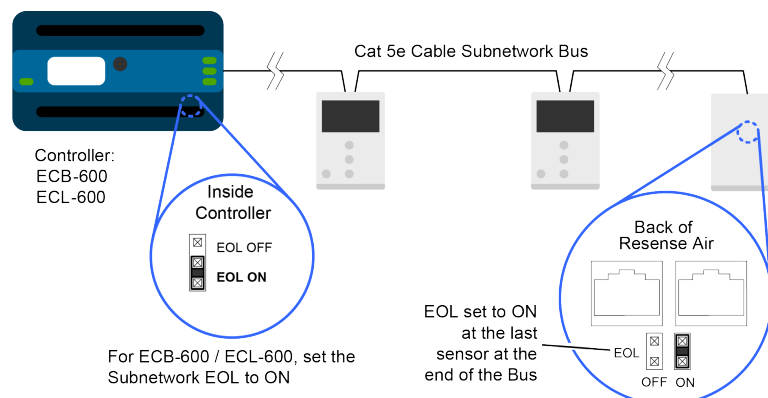
For non ECB-600 or ECL-600 Series controllers, only the EOL terminations of the last subnetwork bus device are set to **ON**. All other subnetwork bus devices must have their EOL terminations set to **OFF**. The controller must be the first device on the Cat 5e Cable Subnetwork bus as its internal EOL termination is permanently enabled.



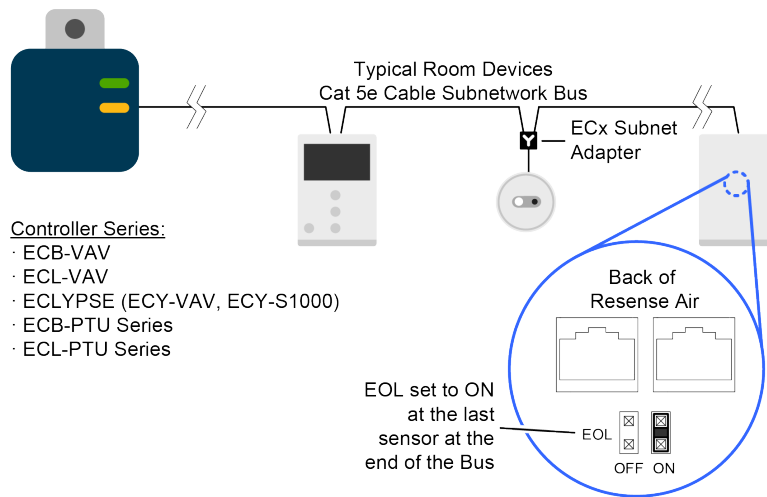
See the table in the [Supported Quantity \[5\]](#) section for the number of sensors that a given controller model can support.

When one or more room devices are installed with an ECB-600 or ECL-600 (without an ECx-4xx O Extension Module) controller:

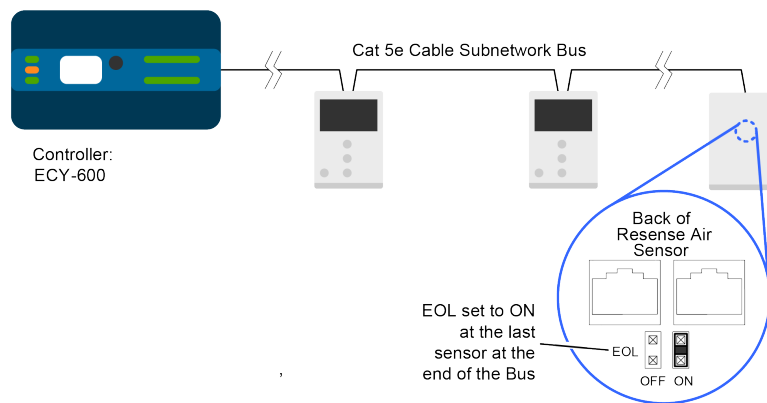
- Only the EOL terminations on the ECB-600 or ECL-600, and the last room device are set to **ON**.
- All other room devices must have their EOL terminations set to **OFF**.



Setting the EOL Terminations on the Resense Air Series sensor for any controller other than the ECB/ECL-600 series controllers and Smart Room Control controllers



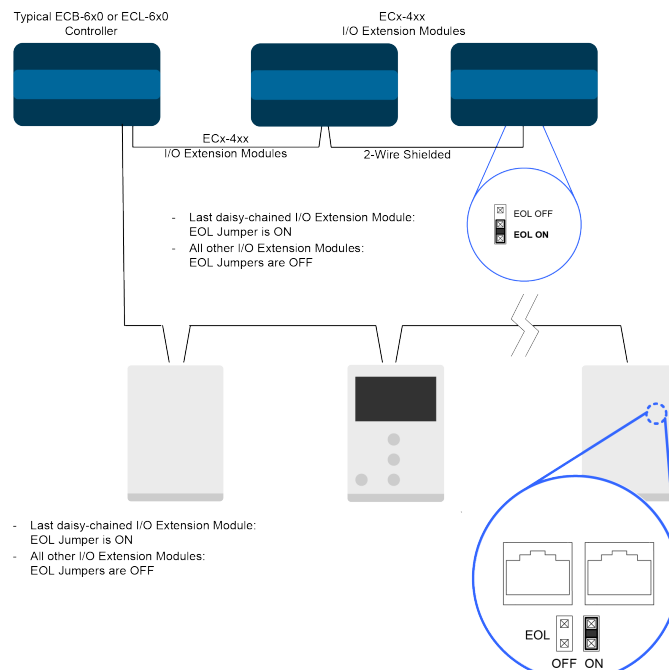
Setting the EOL Terminations on the Resense Air Sensor for Smart Room Control controllers



Setting the EOL Terminations on the Resense Air Sensor for ECY-600 Series controllers

When ECx-4xx IO Extension Modules are installed with an ECB-600 or ECL-600 Series controller and with room device(s):

- Only the EOL terminations on the last ECx-4xx IO Extension Module and the last room device are set to **ON**.
- All other ECx-4xx IO Extension Modules and room devices must have their EOL terminations set to **OFF**.



Setting the EOL Terminations when Resense Air Sensors are used with ECx-4xx IO Extension Modules

ECx-4xx Series devices and room devices are factory-set with the EOL set to **OFF** by default.

If inserting multiple wires in the terminals, ensure to properly twist wires together prior to inserting them into the terminal connectors.

For more information and detailed explanations on network topology and wire length restrictions, refer to the [Network Guide](#), which can be downloaded from the Documentation and Resources Portal.

Setting the Resense Air Subnet ID

Each Resense Air Series communicating sensor connected to a controller's Subnet Port must be set to a unique subnet ID. The ID is set through the DIP switch located next to the Subnet Port connectors.



The EC-Smart-View, Resense-Air and Resense-Air-Display share the same Subnet ID range.

Switch Position (Weight)				Subnet ID
1 (1)	2 (2)	3 (4)	4 (8)	
OFF	OFF	OFF	OFF	1
ON	OFF	OFF	OFF	1
OFF	ON	OFF	OFF	2
ON	ON	OFF	OFF	3
OFF	OFF	ON	OFF	4
ON	OFF	ON	OFF	5
OFF	ON	ON	OFF	6
ON	ON	ON	OFF	7
OFF	OFF	OFF	ON	8
ON	OFF	OFF	ON	9
OFF	ON	OFF	ON	10
ON	ON	OFF	ON	11
OFF	OFF	ON	ON	12
ON	OFF	ON	ON	No communication
OFF	ON	ON	ON	No communication
ON	ON	ON	ON	No communication

Maintenance and Cleaning

Gently clean the device with a soft, lint-free cloth slightly moistened with a solution of mild liquid dish soap and warm water or disinfect the device with a soft cloth slightly moistened with a 70% isopropyl alcohol.

Do not directly spray any liquid or disinfecting solution on the device. Do not clean with any other chemicals products.

Disposal

The Waste Electrical and Electronic Equipment (WEEE) Directive sets out regulations for the recycling and disposal of products. The WEEE2002/96/EG Directive applies to standalone products, for example, products that can function entirely on their own and are not a part of another system or piece of equipment.

For this reason Distech Controls products are exempt from the WEEE Directive. Nevertheless, Distech Controls products are marked with the WEEE symbol  indicating devices are not to be thrown away in municipal waste.

Products must be disposed of at the end of their useful life according to local regulations and the WEEE Directive.

North American Emissions Compliance



Changes or modifications not expressly approved by Distech Controls could void the user's authority to operate the equipment.



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna (if applicable).
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



This device complies with Part 15 of the FCC rules and with Industry Canada's license exempt RSS. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation of the device

Specifications subject to change without notice.

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