Resense™ Air Display

Overview

The Resense Air Display Series offers precise environmental zone control in a sleek display screen for occupant interaction. Available in four models, these communicating sensors support temperature, humidity, and CO_2 monitoring in various combinations.

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

With its modern aesthetic and intuitive capacitive haptic buttons, the Resense Air Display Series blends effortlessly into any environment, combining functionality with elegant design.

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 from0% 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.

DISTECH CONTROLS

Device Markings

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

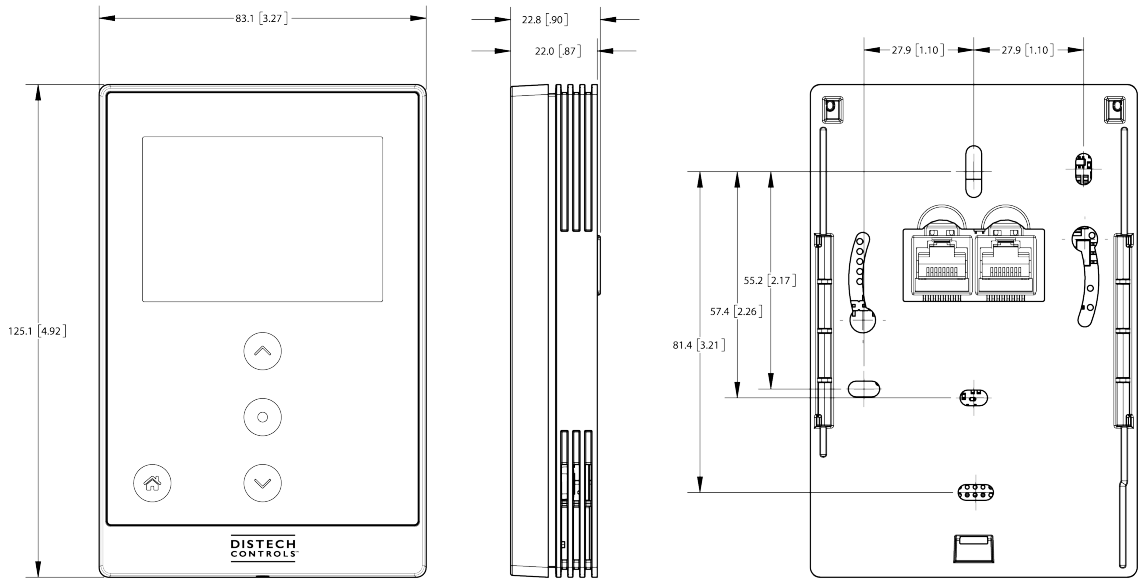
Symbol	Description
CE	CE marking: the device conforms to the requirements of applicable EC directives.
UKCA	UKCA marking: the device conforms to the requirements of applicable Great Britain regulations.
c UL us LISTED	UL marking: conforms to the requirements of the UL certification.
FC	FCC marking: This 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.

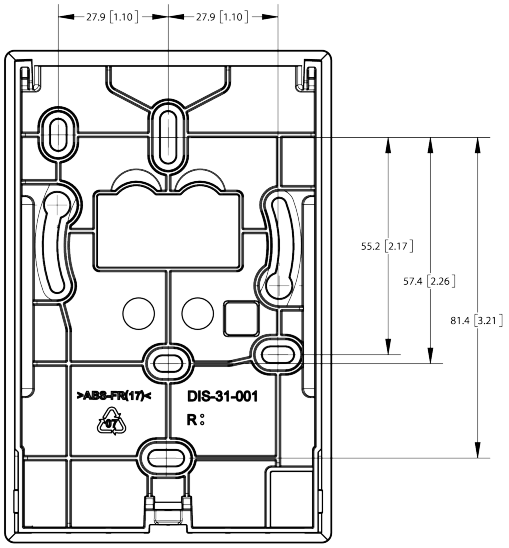
- Operating, handling, or servicing this product should be ensured by a qualified operator.
- All wiring must comply with electrical wiring diagrams as well as national and local electrical codes.

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 CO_2 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. Pull all cables 6” (15cm) out of the wall and insert them through the central hole of the back plate.
4. Screw the back plate onto the electrical junction box.
5. Plug the wire(s) into the connector(s). Gently push excess wiring back into the electrical junction box.
6. Reattach the front plate and make sure it clips tightly into place.
7. 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. Pull all cables 6” (15cm) out of the wall, and insert them through the central hole of the back plate.
4. 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.
5. Remove the back plate and drill holes in the wall if necessary.
6. Install anchors in the wall if necessary.
7. Make sure that the mounting surface is flat and clean.
8. Screw the back plate onto the wall. Do not over tighten.
9. Plug the wire(s) into the connector(s). Gently push excess wiring back into the wall.
10. Reattach the front plate and make sure it clips tightly into place.
11. Install security screw.

Device Mounting

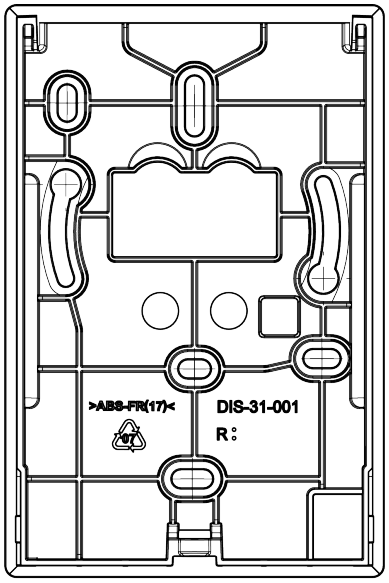
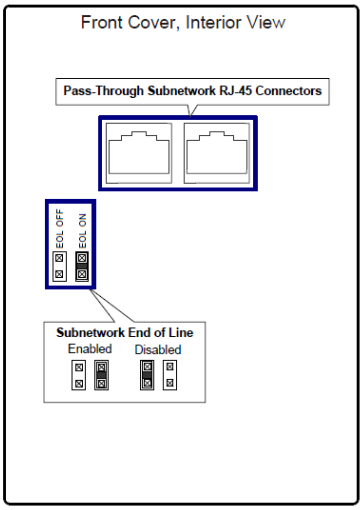


Figure 1. Mounting the sensor

Connector and Jumper Location, Identification and Configuration

The sensors have the following onsite configurable jumpers:



Connector and Jumper Locations

Sensor Equipped with a CO_2 Sensor

The sensors are factory calibrated to accurately read CO_2 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-*gfx*Program to the current location's elevation to obtain the most accurate readings.

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

Under normal conditions, a Resense Air Display sensor with CO_2 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 CO_2.

The sensor will maintain accuracy specifications using the automatic self-calibration, assuming that it is exposed to the atmospheric CO_2 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 Display 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 Display 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	Eclypse
ECLYPSE APEX			Active	Eclypse
ECY-400 Series			Active	Eclypse
ECY-600 Series			Active	Eclypse
ECY-103			Active	Eclypse
ECY-2x3 Series			Active	Eclypse
ECY-3x0 Series			Active	Eclypse

Series	Max Number of sensors[a]	Permitted Subnet ID Addressing Range	Status	Product Series
ECY-303	Up to 4	1 to 4	Active	Eclypse
ECY-VAV			Active	Eclypse
ECY-VAV-PoE			Active	Eclypse
ECY-TU/PTU			Active	Eclypse
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
Supported Discontinued Products				
ECB-VAV-O			Discontinued	ECB
ECL-VAV-O			Discontinued	ECL
ECB-VAVS			Discontinued	ECB
ECL-VAVS			Discontinued	ECL
ECB-VVTS			Discontinued	ECB
ECL-VVTS			Discontinued	ECL

[a] A controller can support a maximum of two (2) sensor models equipped with a CO_2 sensor. Any remaining connected sensor models must be without a CO_2 sensor.

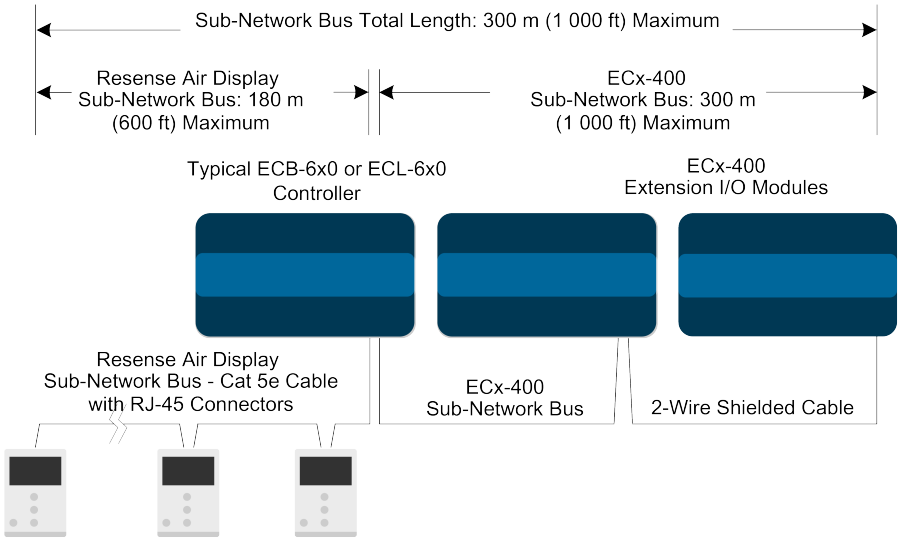
Adding devices to the subnetwork decreases the system responsiveness. This may cause a certain delay, which could be an issue for commands that require fast response, such as lighting and shades/sunblind commands.

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 Display 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

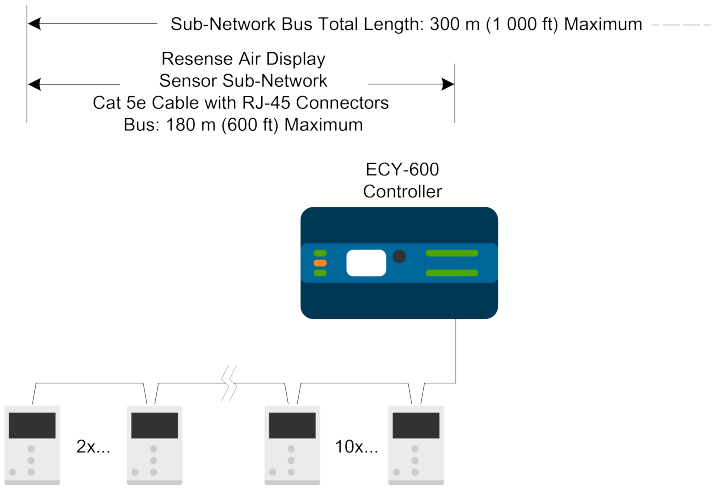
The total maximum length of all Subnetwork buses, including both the length of the Resense Air Display Series communicating sensor sub-network bus and the ECx-400 Series sub-network bus is 300 m (1 000 ft). The maximum length of the Resense Air Display Series communicating sensor sub-network bus is 180 m (600 ft). The maximum length of the ECx-400 Series sub-network bus is 300 m (1 000 ft).



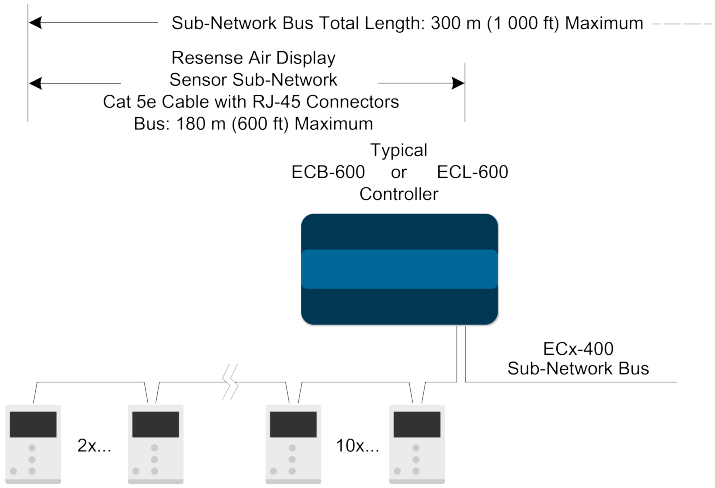
Subnetwork Bus Overview Showing the Resense Air Display Subnetwork Bus and the ECx-400 Series Subnetwork Bus.

A controller can support a maximum of two sensor models equipped with a CO_2 sensor; the remaining connected models must be without a CO_2 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 CO_2 sensor and the other two can be equipped with a CO_2 sensor.

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



Resense Air Display Sensor Subnetwork Length and Distribution using an ECY-600 Controller



Resense Air Display Sensor Subnetwork Length and Distribution

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.

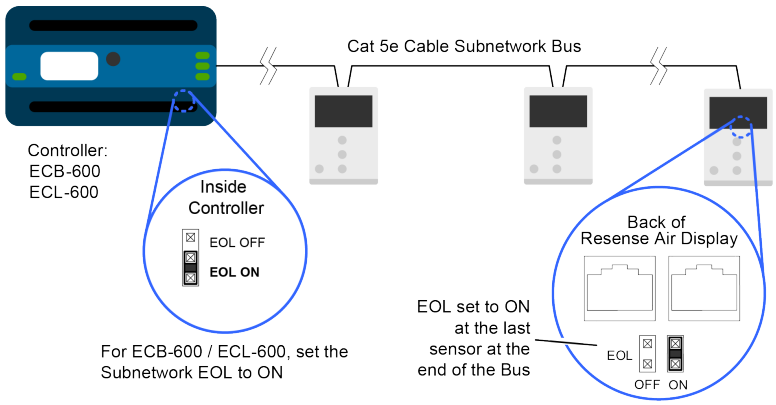
Some controller models support the connection of other devices to the Subnet Port as part of the DC Space solution (see the controller's specification sheet for more information).

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.

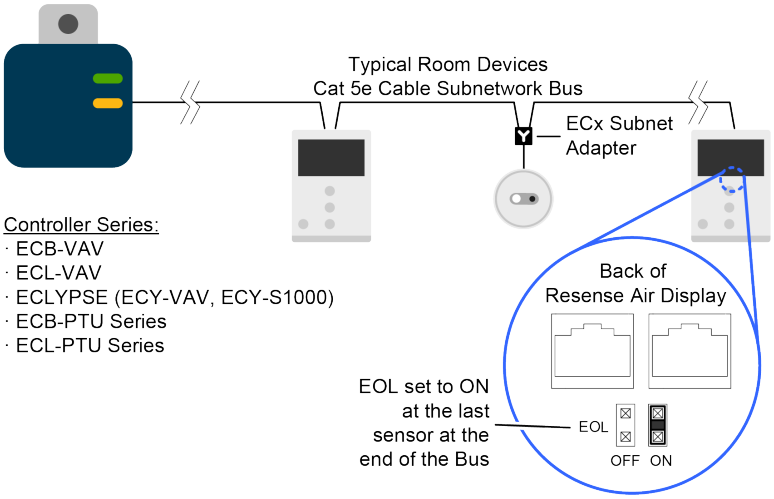
See the table in the Supported Quantity [5] section for the number of sensors that a given controller model can support.

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

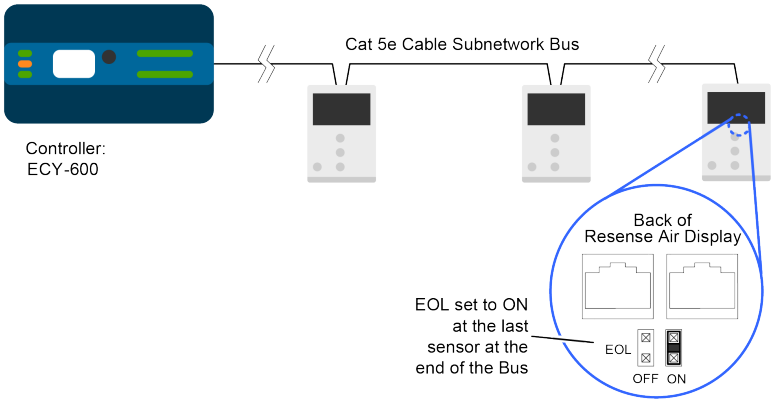
- Only the EOL terminations on the ECB-600 or ECL-600, and the last room device are set to **ON**.
- All other room devices must have their EOL terminations set to **OFF**.



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



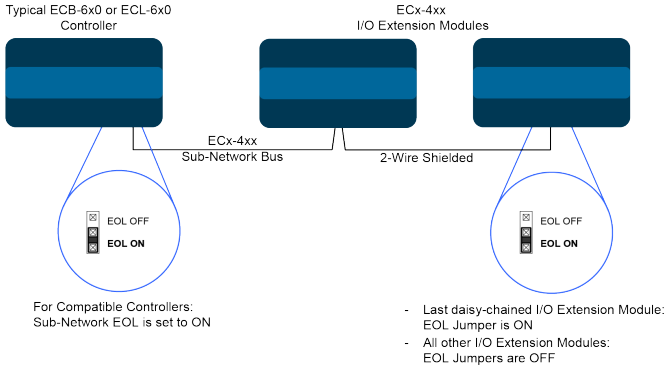
Setting the EOL Terminations on the Resense Air Display Sensor for Smart Room Control controllers



Setting the EOL Terminations on the Resense Air Display 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):

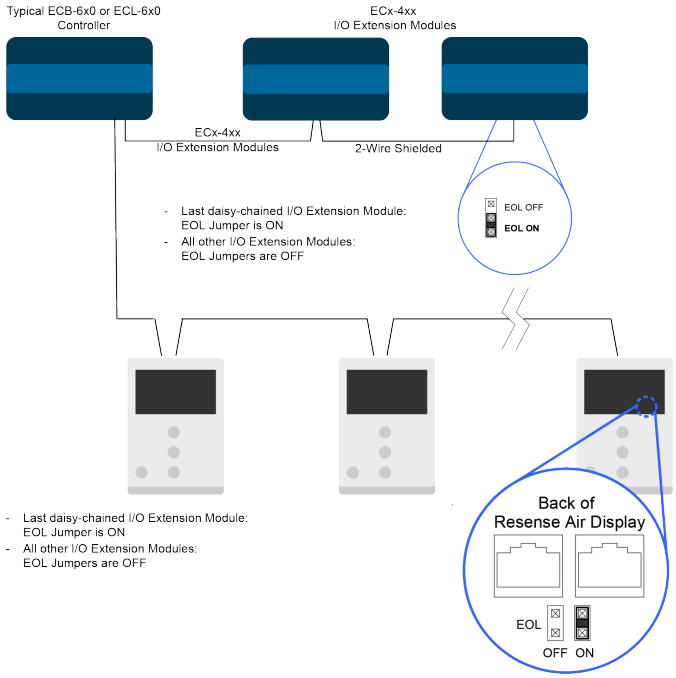
- Only the EOL terminations on the last ECx-4xx IO Extension Module and the last room device are set to **ON**.
- All other ECx-4xx IO Extension Modules and room devices must have their EOL terminations set to **OFF**.



Setting the EOL Terminations on the Subnetwork Bus

When ECx-4xx Series I/O 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 Display Sensors are used with ECx-4xx IO Extension Modules

ECx-4xx Series devices and Resense Air Display sensors 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 Communicating Sensor Subnet ID

The default Subnet ID is 1.

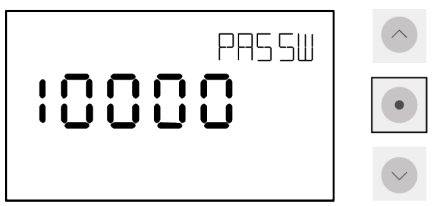
Controllers can be commissioned with a Resense Air Display sensor. To commission a controller, the sensor's Subnet ID must be set to 1. If the sensor's Subnet ID has been set to another value (for example, the display flashes error code 1 with the bell icon when the sensor is connected to a controller for commissioning), change Subnet ID to 1.

The subnet ID can be set as follows:

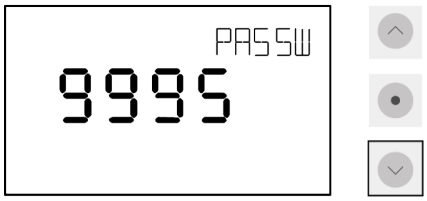
There is an idle timeout after 15 seconds on the Password screen, and 30 seconds on the GEN CFG and SUBNET ID menus.

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

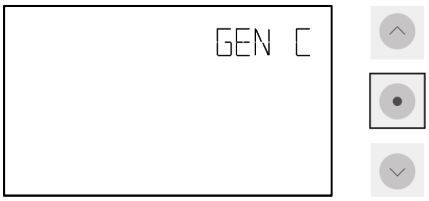
1. Connect the sensor to the controller with a Cat 5e patch cable. Upon connecting the cable, a clock icon flashes on the display for a few seconds, then the temperature appears on the display.
2. Press and hold the **Menu** button (between the arrow buttons) for 5 seconds to enter the **Password** menu. 10000 is shown on the display.



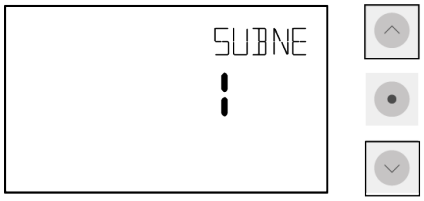
3. Press the **Down** button to set the number to 9995 (this is the default password).



4. Press the **Menu** button to submit the password. Upon submitting the password, the **GEN CFG** menu appears on the display.



5. Press the **Down** button once to enter the **GEN CFG** submenu.
6. Press the **Menu** button several times until **SUBNET ID** appears on the display. The current controller's Subnet ID is shown.



7. Use the **Up** or **Down** buttons to set the controller's Subnet ID to **1**. *Tip*: Hold down either the **Up** or **Down** button to fast-advance the display value.
8. Press the **Menu** button once.
9. Press the **Home** button to exit the configuration menu.

The sensor can now be used to go from one ECB, ECL, and ECY series controller to the next for commissioning purposes.

Commissioning Controllers

When using a Resense Air Display Series sensor for commissioning a controller (before code is downloaded to the controller from EC-*gfx*Program), connect a sensor to the controller with its Subnet ID set to 1. (see Setting the Resense Air Display Sensor Subnet ID).

For controllers embedding a pre-loaded application, commissioning can be used to perform application selection if needed. Pre-loaded applications are factory-loaded programs that enable the controller to control a typical equipment. See the Pre-Loaded Application User Guide for more information.

Setting a MAC Address

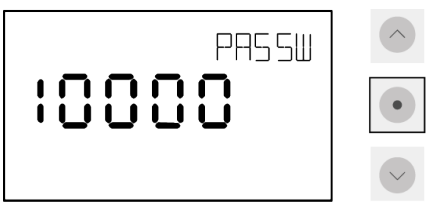
For ECB Series controllers only, during commissioning, the Resense Air Display sensor can be used to set the controller's BACnet® MAC Address.

For ECB series controllers, to change the controller's MAC Address, the DIP switch located on the face plate (or under the cover in the case of an ECB-VAV Series controller) must be set to 0 (all off).

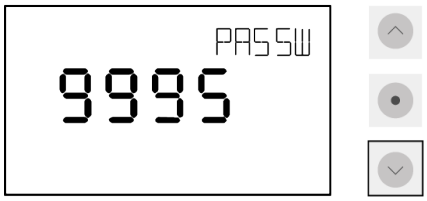
Set the connected controller's MAC Address as follows:

There is an idle timeout after 15 seconds on the Password screen, and 30 seconds on the GEN CFG and SUBNET ID menus.

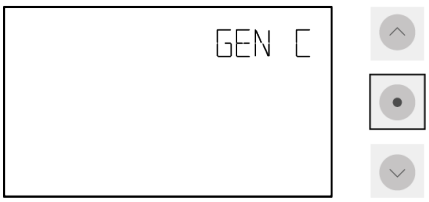
1. Connect a sensor to the controller with a Cat 5e patch cable. Wait for the display to show the room temperature.
2. Press and hold the **Menu** button for 5 seconds to enter the **Password** menu. 10000 is shown on the display.



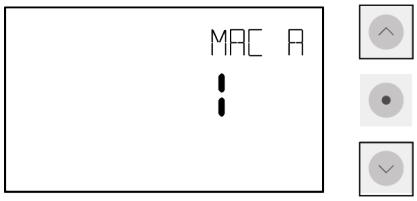
3. Use the **Down** button to set the number to 9995 (this is the default password).



4. Press the **Menu** button to submit the password. Upon submitting the password, the **GEN CFG** menu appears on the display.



5. Press the **Down** button once to enter the **GEN CFG** submenu. The **MAC ADDRESS** menu is shown with the current controller's BACnet MAC Address.



6. Use the **Up** and **Down** buttons to set the controller's MAC Address. Only addresses from 1 to 127 are recommended to be used.
7. Press the **Menu** button once to apply the value.
8. Press the **Home** button to exit the configuration menu.

Once the controller's network is operational, the controller can be programmed with EC-*gfx*Program. For each sensor set its Subnet ID number to the block number of its associated ComSensor block in EC-*gfx*Program. This is done in the sensor's **GEN CFG** menu under **SUBNET ID**.

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

Troubleshooting

Sensor's screen is blank & back light is on for about 30 to 45 seconds – Normal Operation	
Firmware upgrade in progress	Wait for the upgrade to complete. Do not disconnect the sensor from the controller as the upgrade will restart once it is reconnected.
Sensor's screen is blank & back light is off.	
Is the sensor connected to the controller?	Verify that the sensor is connected to the controller and that the patch cables are plugged into the connectors. Refer to Wall Mounting Installation Procedure for more information.
Is power being supplied to the controller?	There may be no power being supplied from the controller. Check if the controller has power or if the controller's internal fuses have blown or tripped.
Is the cable connected to the controller and sensor?	Verify wiring.
Was the patch cable made onsite?	Verify that the RJ-45 crimp connectors were installed on the cable correctly.
Device not communicating with controller	
Is the Subnet ID correctly set to a unique ID?	Each sensor must be set to a unique ID for each controller. See ???.
Is the device too far from controller?	Verify the distance between the device and the controller. See ???.
Is there a configuration problem?	With EC-*gfx*Program, check the configuration of the sensor; for example, is it enabled? Refer to the EC-*gfx*Program User Guide for more information.
Have the subnetwork EOL settings been correctly set?	Only the last sensor must have its EOL termination set to ON. See Figure 10 and Figure 12. When one or more ECx-400 IO Extension modules are connected to the controller, only the last ECx-400 must have its EOL termination set to ON. See Figure 13.
The CO_2 sensor readings are too high, too low, or inconsistent between sensors	

Immediately after installing the sensor with CO_2 sensors, are the CO_2 sensor readings incoherent?	If the CO_2 sensor readings seem unusual or show inconsistencies between sensors in the same building right after installation, the following reasons should be taken into consideration: • Concentration levels in each space may be different • The installer may have unintentionally blown into the sensor while installing it. • The sensor may have been dropped or mishandled during shipment causing a minor shift in the original factory calibration. Allow up to 14 days of operation (without power interruptions) for the sensor to calibrate itself according to its new environment.	
Error Code Interpretation		
Clock icon flashing for 15 seconds	Cannot communicate with controller.	Wait for the communication link to the controller to be established.
After 15 seconds: Flashing error code 1 with Bell icon		Verify wiring
		Verify that all sensor's Subnet IDs are unique for this controller. See ???.
Flashing error code 2 with Bell icon	Invalid configuration.	In EC-*gfx*Program, resynchronize the code with the controller. Contact Customer Support.
Flashing error code 3 with Bell icon	The sensor is not properly configured in the controller	With EC-*gfx*Program, check the configuration of the sensor, for example, is the ComSensor block enabled? Refer to the EC-*gfx*Program User Guide for more information.

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Resense Air Display_IG_11_EN