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TEMPERATURE / RELATIVE HUMIDITY
SENSOR
CATALOG # 21L07



WIRELESS REPEATER
CATALOG # 21L09

INSTALLATION INSTRUCTIONS FOR WIRELESS SENSOR AND REPEATER KITS

Table of Contents

Shipping and Packing List.....	2
Overview.....	3
Sensor (21L07).....	5
Sensor – Power Options.....	6
Sensor – S-Bus Wired Installation Setup.....	6
Sensor – Wired Standalone / NCP Setup.....	6
Sensor – Operation with BACnet Network (M3/M4 ONLY).....	12
Sensor – Wiring Troubleshooting.....	14
Sensor – Wireless Installation Setup.....	15
Sensor – Wireless Standalone.....	16
Sensor – Placement and Confirming Location (Test).....	17
Sensor – Wireless Checkout / Troubleshooting.....	18
Sensor – Signal Strength Alert Indication.....	18
Sensor – Low Battery Indication.....	18
Sensor – After Hour Override (AHO).....	18
Sensor – Data Verification.....	19
Sensor – Network Removal and Reset.....	19
Repeater (21L09).....	20
Repeater – 24VAC Line Power.....	20
Repeater – Wireless Installation Setup.....	20
Repeater – Signal Strength Alert Indication.....	21
Repeater – Placement and Confirming Location (Test).....	21
Repeater – Network Removal and Reset.....	22
Repeater and Sensor Placement Requirements.....	23
FCC Compliance Statement.....	26
FCC RF Exposure Information.....	26



CAUTION

Electrostatic discharge can affect electronic components. Take precautions during unit installation and service to protect the unit's electronic controls. Precautions will help to avoid control exposure to electrostatic discharge by putting the unit, the control and the technician at the same electrostatic potential. Neutralize electrostatic charge by touching hand and all tools on an unpainted unit surface before performing any service procedure.



IMPORTANT

Improper installation, adjustment, alteration, service or maintenance can cause personal injury, loss of life, or damage to property. Installation and service must be performed by a licensed professional installer (or equivalent) or a service agency.

Shipping and Packing List

Please note that wireless temperature sensor and wireless repeater are sold separately.

Wireless Temperature / Relative Humidity Sensor (21L07) 106924-01

Package 1 of 1 contains:

- 1 - Wireless Sensor
- 4 - AA Lithium batteries
- 2 - Wall anchors
- 2 - Screw #6 X 1.25 SMS
- 1 - Warranty and Installation instruction

Wireless Repeater (21L09) 106926-01

Package 1 of 1 contains:

- 1 - Wireless Repeater
- 2 - Wall anchors
- 2 - Screw #6 X 1.25 SMS
- 1 - Warranty and Installation instruction

Overview

The wireless system employs the following components:

M4/W4 Wireless Gateway System:

- Plenum-rated Bluetooth Low Energy (BLE) antenna which will assist in boosting the signal from to Lennox CORE Unit Controller to:
 - » CORE Service App
 - » Wireless room sensors (wireless mode)
 - » Wireless repeaters
- Efficient design allows for use in vertical and horizontal applications
- Return air mounted antenna reduces signal loss from roof and connected to gateway system via coax cable.

Wireless Repeater (21L09)

- Used to “repeat” signal to sensors
- Increases effective range
- Up to five repeaters can be used per rooftop unit

- Powered by external 24VAC only
- Used in wireless application only
- Locking captive screw

Wireless Temperature / Relative Humidity Sensor (21L07)

- TMP / RH / After hours override
- Unit powered by either 24VAC or four AA batteries. Batteries provided but not installed. Greater than two year battery life using AA Lithium batteries.

NOTE: Please allow for a 45 minute adjustment period on 24VAC powered sensors on temperature readings

NOTE: Battery life of greater than two years is subject to the sensor operating under good signal coverage. If signal is weak or the RTU is off for long periods the signal strength LED will be on and the battery will be depleted

- Wireless or S-BUS
- Locking captive screw
- Up to five sensors can be used per rooftop unit

Lennox® CORE Service Application Used for adding Sensors and Repeaters)

- Connects to the Lennox® CORE Unit Controller via the wireless gateway (W4)
- Pairs with a simple button press (requires physical access)
- Used for installation of wireless sensors and repeaters, service, and maintenance of Model L rooftop units

Sensor (21L07)

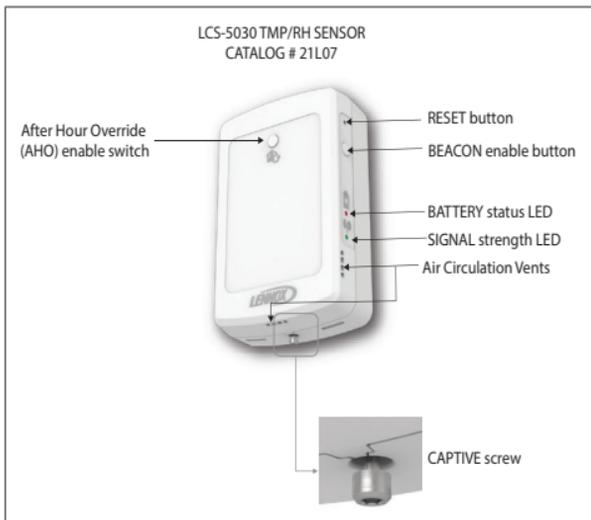


Figure 1. Wireless Sensor Buttons and Indicators

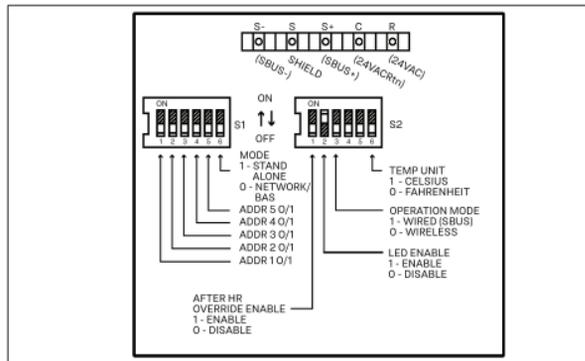


Figure 2. Wireless Sensor Configuration (Factory Defaults) Label

NOTE: Changed switch settings only take affect after a sensor power reset. Remove 24VAC or battery power after switch setting changes.

NOTE: Switch settings are 1 = ON and 0 = OFF
Example:

S1 switch 6 (MODE)

ON = 1 – STAND ALONE

OFF = 0 – NETWORK/BAS (DEFAULT)

NOTE: S2 switches 4 and 5 are for future use and have not affect on sensor operations.

SENSOR – POWER OPTIONS

- **Battery Power:** When the wireless sensor is powered by the included four AA Lithium batteries the sensor has a typical operational life of two years.
- **Line Power:** When the wireless sensor is powered by external line power (24VAC).

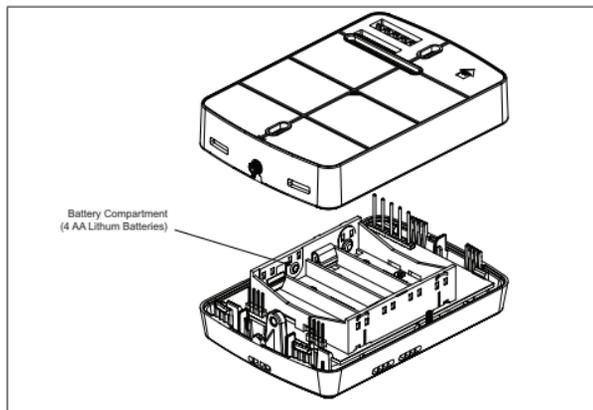


Figure 3. Wireless Sensor Battery Compartment

SENSOR – S-BUS WIRED INSTALLATION SETUP

S-Bus connections can be used with M1-8 (IMC), M2, M3 and M4 Unit Controllers. The sensor can be used in the following configurations:

- By itself with a controller (Wired Standalone)
- In a network with a Lennox Network Control Panel (NCP)
- In a network with a third party BACnet Controller – M3/M4 Unit Controllers ONLY.

SENSOR – WIRED STANDALONE / NCP SETUP

STANDALONE

Standalone operation is a consist of (1) Unit Controller and (1) sensor without a building automation system (BAS). See Figure 4. Wired Standalone for wiring connection detail example.

NCP

The sensor can also function with a unit controller with an NCP/L-Connection System. The 21L07 is compatible in standalone or with an NCP with the following unit controllers:

- M1-8
- M2
- M3
- M4

See Figure 5. NCP Wiring Configuration on page 8 for wiring connection detail example..

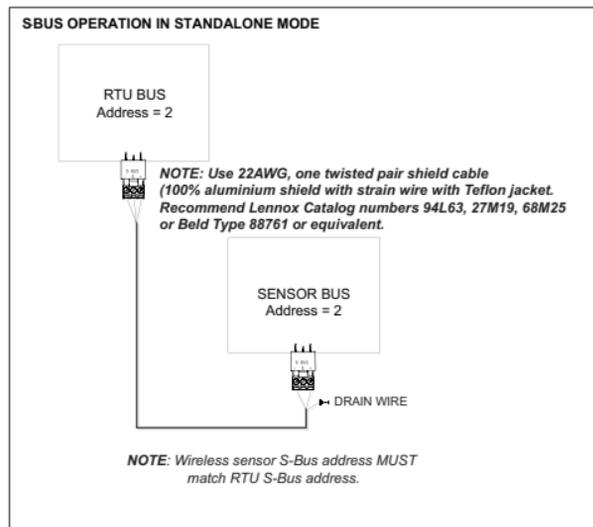
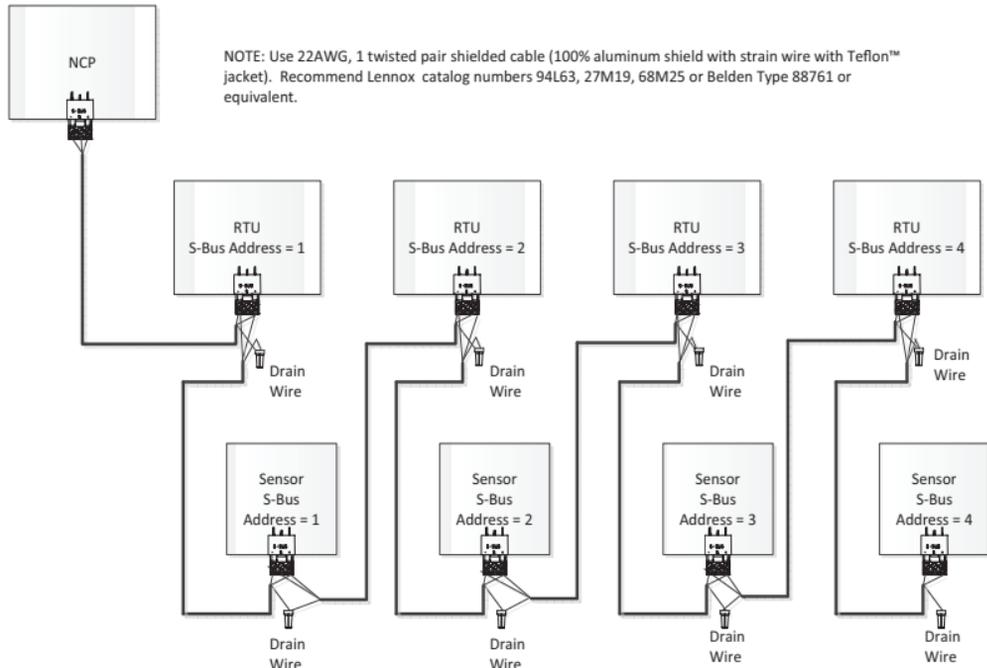


Figure 4. Wired Standalone

S-BUS OPERATIONS WITH NETWORK CONTROL PANEL (NCP)

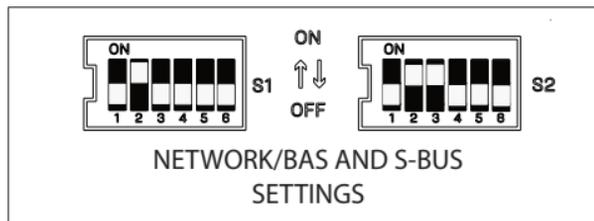
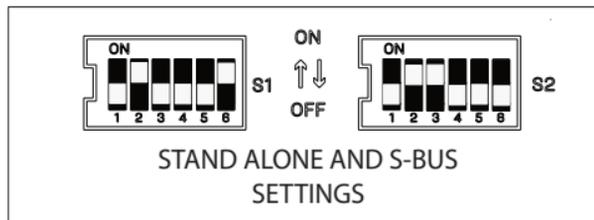


NOTE: Wireless Sensor S-Bus address MUST match RTU S-BUS address.

Figure 5. NCP Wiring Configuration

SETUP

NOTE: The following S1 and S2 switches need to be set before power is applied to the sensor.



NOTE: S2 switches 4 and 5 are for future use and have not affect on sensor operations.

1. Set **S1** (switches 1 through 5) for **S-BUS Address** to match the S-BUS address of the RTU. In operation with an NCP, each RTU must have a unique address.

NOTE: Lennox M3/M4 unit controllers use a default S-BUS address of 2. If the sensor and unit controller are both configured to use address 2, there is no need to go through S-BUS setup to change the unit S-BUS address.

2. Set **S1** (switch 6) for **Mode** to the **ON** position to enable **STAND ALONE** or **OFF** (factory default) for **NETWORK/BAS**.
3. Set **S2** (switch 3) **Operation Mode** to **ON**, for wired S-BUS mode.
4. Connect sensor and RTU controller using recommended wire (two conductor, twisted-pair, shielded, 22AWG). See Figure 5. NCP Wiring Configuration on page 8 for further details.
5. For setup with the **M4 Unit Controller** use the following procedure:
 - a. Download the CORE Service app.
 - b. Apply power to the sensor.
 - c. Using the CORE Service app, go to the **Rooftop Unit** menu and select **Network Integration** under **Setup**.
 - d. Select the **Network Setup Wizard**.
 - e. Select **S-Bus / Wireless Sensor** under **Network Setup Wizard** and select **Next**.
 - f. Enter the **S-Bus Address** and select **Next**.

- g. Select the **Control Source** as **Room Sensor** then select **Next**.
 - h. Select **CO2** sensor source as **Local** or **None**.
 - i. Select **Relative Humidity Sensor Source** as **Network** and select **Next**.
 - j. Select **Temperature Sensor Source** as **Network** and select **Next**.
 - k. Set **Occupied Blower Mode** as **Auto cycling/Continuous** depending on ventilation need and select **Next**.
 - l. Select **Backup Mode** as **None/Wired Thermostat/Return Air Backup** and then select **Next**.
 - m. The summary is displayed and then select **Next** after checking the displayed setting information.
 - n. Select **Finish**.
6. For setup with the **M3 Unit Controller** use the following procedure:
- a. Navigate on the M3 Unit Controller screen to **Setup > Network Integration**.
 - b. Select **L-CONNECTION** and select **SAVE**.
 - c. Enter the S-Bus address and select **SAVE**.
 - d. Select the **Control Mode** as **Room Sensor** then select **SAVE**.
 - e. Select **CO2 network sensor source** as **NO**, then select **SAVE**.
 - f. Select **Relative Humidity Network Source** as **YES**, then select **SAVE**.
 - g. Select **Temperature Network Source** as **YES**, then select **SAVE**.
 - h. Set **Occupied Blower Mode** as **Auto Cycling/Auto-Continuous 1/2/3** and select **SAVE**.
 - i. Select **Backup Mode** as **None/Wired Thermostat/ Return Air Backup** and then select **SAVE**.
- NOTE:** *Lennox recommends selecting backup mode (Return Air Backup).*
- j. Finish the wizard and return to the main menu.
7. For Setup with the **M2/M1-8 Unit Controllers**: Refer to the application manual for these controllers. Setup will be similar to the M3 Unit Controller.

S-BUS OPERATIONS WITH BACNET - WIRED

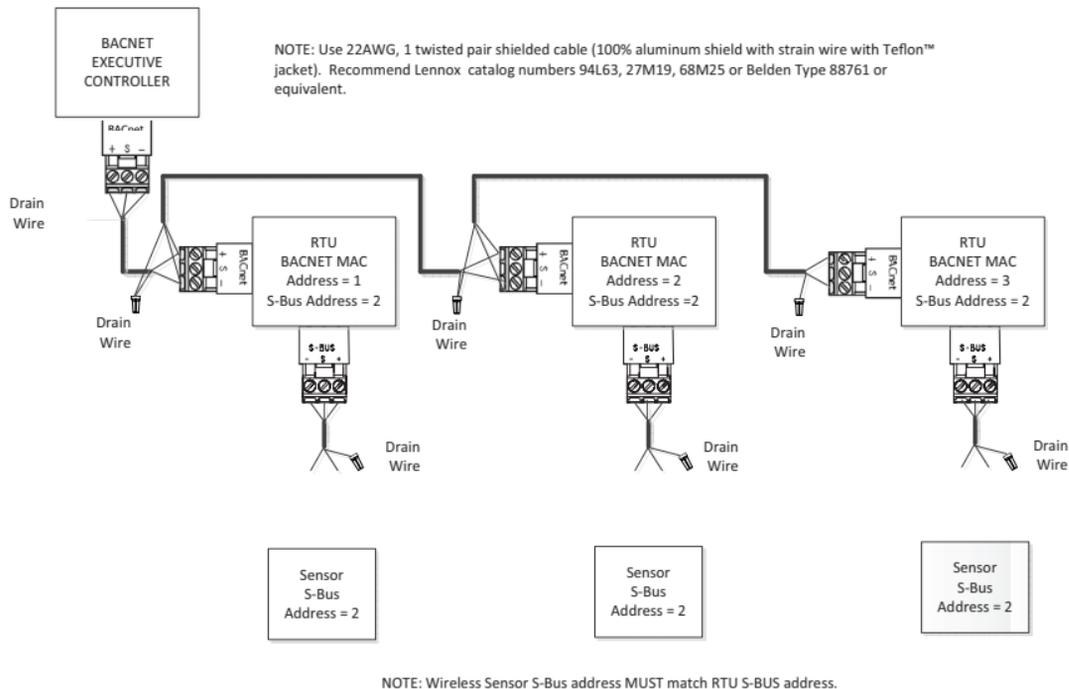
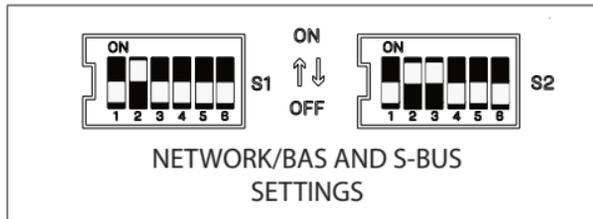


Figure 6. BACnet Wiring Configuration

SENSOR – OPERATION WITH BACNET NETWORK (M3/M4 ONLY)

The sensor can also function with a unit controller with an BACnet Building Automation System (BAS). The 21L07 is **ONLY** compatible in this mode of operation with M3 and M4 Unit Controllers.

NOTE: *The following S1 and S2 switches should be set before power is applied to the sensor.*



1. Set **S1** (switches 1 through 5) for **S-BUS Address** to match the S-BUS address of the RTU. Each RTU must have a unique address.
2. Set **S1** (switch 6) for **Mode** to the **OFF** position for **NETWORK/BAS**.
3. Set **S2** (switch 3) **Operation Mode** to **ON**, for wired S-BUS mode.
4. Connect sensor and RTU controller using recommended wire (two conductor, twisted-pair,

shielded, 22AWG). See Figure 6. BACnet Wiring Configuration on page 11 for further details.

5. For setup with the **M4 Unit Controller** use the following procedure:
 - a. Download the CORE Service app.
 - b. Apply power to the sensor.
 - c. Using the CORE Service app, go to the Rooftop Unit menu and select **Network Integration** under **Setup**.
 - d. Select the **Network Setup Wizard**.
 - e. Select **BACnet** under **Network Setup Wizard** and select **Next**.
 - f. Enter the **BACnet MAC address**, **Device Instance**, and **Baud Rate** and select **Next**.
 - g. Select the **Control Source** as **Room Sensor** then select **Next**.
 - h. Select **CO2 sensor source** as **Local** or **None**.
 - i. Select **Relative Humidity Sensor Source** as **SBUS / Wireless Sensor** and select **Next**.

- j. Select **Temperature Sensor Source** as **SBUS / Wireless Sensor** and select **Next**.
- k. Set **Occupied Blower Mode** as **Auto Cycling/Auto-Continuous1/2/3** and select **Next**.
- l. Select **Backup Mode** as **None/Wired Thermostat/ Return Air Backup** and then select **Next**.

NOTE: Lennox recommends setting a backup mode (Return Air Backup).

- m. The summary is displayed and then select **Next** after checking the displayed setting information.
 - n. Select **Finish**.
6. For Setup with the M3 Unit Controller:
- a. Use the M3 Unit Controller and navigate on the screen to **Settings > RTU Options > Edit Parameter**.
 - b. Use the up arrow until the screen shows **DATA ID = 385**, then select **SAVE**.
 - c. **Set ID 385** (BACnet and CS COEXIST) to **1**, then select **SAVE**.
 - d. Navigate on the screen to **Setup > Network Integration**.

- e. Select **L-CONNECTION** and select **SAVE**.
- f. Enter the **S-BUS Address** and select **SAVE**. This should match the S-BUS Address on switch S1 on the sensor.

NOTE: Lennox M3/M4 unit controllers use a default S-BUS address of 2. If the sensor and unit controller are both configured to use address 2, there is no need to go through S-BUS setup to change the unit S-BUS address.

- g. Select the **Control Mode** as **Room Sensor** then select **SAVE**.
- h. Select **CO2 network sensor source** as **NO**, then select **SAVE**.
- i. Select **Relative Humidity Network Source** as **YES**, then select **SAVE**.
- j. Select **Temperature Network Source** as **YES**, then select **SAVE**.
- k. Set **Occupied Blower Mode** as **Auto Cycling/Auto-Continuous1/2/3** and select **SAVE**.
- l. Select **Backup Mode** as **None/Wired Thermostat/ Return Air Backup** and then select **SAVE**.

NOTE: Lennox recommends setting a backup mode (Return Air Backup).

- m. Finish the wizard and return to the main menu.
- n. Navigate on the screen to **Setup > Network Integration**:
- o. Select **BACNET** and select **SAVE**.
- p. Enter the **BACNET MAC ADDRESS**, and **BAUD RATE** and select **SAVE**. The BACnet MAC address should be unique for each RTU. It does not have to match the S-BUS address.
- q. Select the **Control Mode** as **Room Sensor** then select **SAVE**.
- r. Select **CO2 network sensor source** as **NO**, then select **SAVE**.
- s. Select **Relative Humidity Network Source** as **YES**, then select **SAVE**.
- t. Select **Temperature Network Source** as **YES**, then select **SAVE**.
- u. Set **Occupied Blower Mode** as **Auto Cycling/Auto-Continuous1/2/3** and select **SAVE**.

- v. Select **Backup Mode** as **None/Wired Thermostat/ Return Air Backup** and then select **SAVE**.

NOTE: Lennox recommends setting a backup mode (Return Air Backup).

- w. Finish the wizard and return to the main menu.

SENSOR – WIRING TROUBLESHOOTING

1. Make sure 24VAC is supplied to the sensor.
2. Check communication cable wiring.
3. Check the sensor data from the zone sensor.
 - For the M1 unit controller (IMC), use the **IMC MODE TEMP** switch to display the data.
 - For the M2 unit controller, use the **DATA > SENSORS** menu to display the data.
 - For the M3 Unit Controller, use the **DATA > IN/OUTPUT > SENSORS > NETWORK**.
 - For the M4 Unit Controller, use **DATA > SYSTEM DATA > SENSORS > OUTPUTS > NETWORK**.

SENSOR – WIRELESS INSTALLATION SETUP

Wireless operation is **ONLY** compatible with M4 Unit Controller). To commission a wireless sensor, you must first pair the CORE Service App to the applicable RTU.

After the App is connected to the RTU, and the sensor search process has begun (step 3), you can leave the range of the RTU and provision sensors in the space.

IMPORTANT

Sensors **MUST** be added prior to the repeaters, otherwise power needs to be removed from the repeaters before adding the sensors.

1. Open the CORE Service App and navigate to **RTU Menu > Network Integration > Wireless Sensor Network Setup > Wireless Sensor Network**.

NOTE: *Provisioning the RTU is only required once. If you have already completed this step, proceed to step 3. Select Adding, and wait for the adding process to complete.*

2. Click **Add node** on the Network Nodes screen. This triggers the CORE Service App to scan for new sensors or repeaters.
3. **Press and hold** for two seconds the “Beacon button” on the side of the wireless sensor.
4. The MAC address of the wireless sensor should be visible now on the CORE Service App.

NOTE: *The wireless sensor MAC address can be verified with the label affixed to the cover of the sensor.*

5. Optionally, name the sensor. Otherwise follow the prompts on the screen to finish the setup process.
6. Verify that the CORE Service App displays the “Node Provisioned” on the Provision Sensor Network.

IMPORTANT

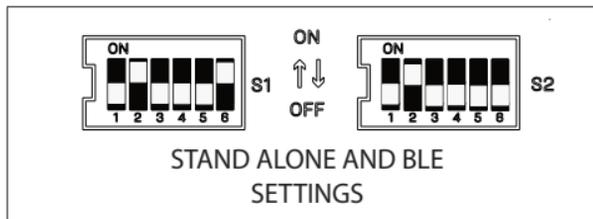
DO NOT interrupt the adding process of the wireless sensors. If interrupted the sensor will need to be factory-reset.

Maximum of five wireless sensors can be provisioned per RTU

SENSOR – WIRELESS STANDALONE

Standalone operation is a setup of one CORE Unit Controller and up to five wireless sensors without a Building Automation System (BAS).

NOTE: *The following S1 and S2 switches should be set before power is applied to the sensor.*



1. Set **S1** (switch 6) the **MODE** switch to **ON** to enable **STAND ALONE** operation.
2. Set **S2** (switch 3) **OPERATION MODE** switch to **OFF** to enable wireless BLE operation.
3. Download the CORE Service App and use the following procedure:
 - a. Using the CORE Service App, go to the **Rooftop Unit** menu and select **Network Integration** under **Setup**.
 - b. Select the **Network Setup Wizard**.
 - c. Select **S-Bus / Wireless Sensor** under **Network Setup Wizard** and select **Next**.
 - d. Leave the S-Bus address in its current setting and select **Next**.
 - e. Select the **Control Source** as **Room Sensor** then select **Next**.
 - f. Select **CO2** sensor source as **Local** or **None**.
 - g. Select **Relative Humidity Sensor Source** as **Network** and select **Next**.
 - h. Select **Temperature Sensor Source** as **Network** and select **Next**.
 - i. Set **Occupied Blower Mode** as **Auto cycling/Continuous** depending on ventilation need and select **Next**.
 - j. Select **Backup Mode** as **None/Wired Thermostat/Return Air Backup** and then select **Next**.
 - k. The summary is displayed and then select **Next** after verifying the displayed setting information.
 - l. Select **Finish**.

SENSOR – PLACEMENT AND CONFIRMING LOCATION (TEST)

The wireless sensor has a test functionality to confirm placement of the sensor is acceptable range of the RTU. To test the sensor placement:

1. Take the sensor to the desired location.
2. Hold the beaconing button for five seconds and release.
3. Observe the battery status (battery powered units only) and signal strength LED (see Table 1. Sensor LED Descriptions).

NOTE: *Wait 5 to 20 seconds for the test to complete and observe the status of the battery (if applicable) and signal strength LED*

Table 1. Sensor LED Descriptions

Battery LED	Signal Indicator LED	Description
Off	3 Blinks	Battery is good, and sensor is within range. Sensor is good to install.
Blinking for 10 seconds	3 Blinks	Sensor is within range, but battery power is low. Replace battery.

Table 1. Sensor LED Descriptions

Battery LED	Signal Indicator LED	Description
Blinking for 10 seconds	Solid for 10 seconds	Battery power is low, and sensor is out of range. Move sensor closer and replace batteries.
Off	Solid for 10 seconds	Battery is good, but sensor is not within range. Re-Test, or find a closer location.
Off	Off	Sensor does not have power. Power sensor and re-test.

In terms of BLE signal strength, in the technician application the following is display for signal strength:

- Out of range: ≤ -88 dBm
- Low RSSI: -71 to -87 dBm
- Fair RSSI: -56 to -70 dBm
- Good RSSI: ≥ -55 dBm

SENSOR – WIRELESS CHECKOUT / TROUBLESHOOTING

This step may be required to verify whether added wireless sensor is grouped and communicating with the rooftop unit.

Sensor data will be displayed on the CORE Service App dashboard screen. More details are available in the Sensor Menu (**RTU Menu > Network Integration > Wireless Sensor Network Setup > Wireless Sensor Network**).

1. Make sure 24VAC / AA Battery Power is supplied to the sensor.
2. Battery power can be used temporarily to confirm signal strength by moving sensor closer to unit / on roof.

NOTE: *Wireless range will vary based on building construction.*

NOTE: *By default the LED indicators are set to ON (enabled).*

SENSOR – SIGNAL STRENGTH ALERT INDICATION

Once the wireless sensor is added successfully, it will communicate with the RTU. If the signal strength is weak, the Signal Strength LED indicator will be ON for 10 seconds.

SENSOR – LOW BATTERY INDICATION

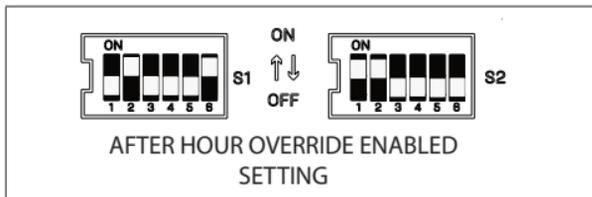
The Battery LED will blink for 10 seconds when the battery voltage drops below 20%. When used with an M4 Unit Controller an alarm will be activated.

SENSOR – AFTER HOUR OVERRIDE (AHO)

After hour override can be triggered by pressing the 'AHO button' on wireless sensor. The AHO event will notify the associated roof top unit. The roof top unit decides and performs AHO based on its 'Network type' selection. Refer to the unit controller manual to configure the duration of the after-hours override.

NOTE: *After Hour (Hr) Override is disabled by default, and can be enabled by setting the S2 (switch 1) to ON.*

NOTE: *The following S2 switch changed setting should be set before power is applied to the sensor or power cycled if already installed.*



SENSOR – DATA VERIFICATION

This step may be required to verify whether added wireless sensor is grouped and communicating with the rooftop unit.

Sensor data will be displayed on the CORE Service App dashboard screen.

SENSOR – NETWORK REMOVAL AND RESET

CORE SERVICE APP SENSOR REMOVAL

To remove the node (sensor) from the RTU, use the CORE Service App and navigate to **RTU Menu > Network Integration > Wireless Sensor Network**.

1. Select the node (sensor) to remove.
2. Select **Remove Sensor** at the bottom of the screen.
3. The screen **Remove Sensor** will appear, select **Yes** to proceed.
4. Press and hold the beacon button for two seconds to remove the node (sensor) from the BLE mesh network.
5. Enter the **sensor name** on this screen and select **Proceed**.

IMPORTANT

It is recommended that any sensors that are taken out of use should be removed from the network and a hard reset performed.

SENSOR HARD RESET

Use the following procedure to perform a sensor hard reset.

1. Press and hold both the **beacon** and **reset** buttons simultaneously for 10 seconds.
2. Release only the **reset** button.
3. After two seconds release the **beacon** button.

After performing the hard reset, the wireless sensor can be added to any other rooftop unit group or added back to same the rooftop unit network.

Repeater (21L09)

REPEATER – 24VAC LINE POWER

The wireless repeater can only be powered by an external 24VAC power source.

REPEATER – WIRELESS INSTALLATION SETUP

NOTE: *Wireless Repeaters are only compatible with the CORE (M4) Unit Controller.*

IMPORTANT

It is recommended to add the repeaters after adding the wireless sensors. It is highly recommended adding the repeaters at the rooftop unit before installation in desired locations.

To join the wireless repeater to the rooftop unit BLE mesh network, the following is required.

Using the CORE Service App, and go to the **RTU Menu > Network Integration > Wireless Sensor Network Setup > Wireless Sensor Network > Provision Sensor Network > Network Nodes.**

1. Click **Add Node** on the Network Nodes screen. This triggers the CORE Service App to scan Bluetooth Low Energy (BLE) mesh beacons.

2. Press and hold the **Beacon** button on the wireless repeater for two seconds.
3. The user should be able to see the MAC address of wireless repeater on the CORE Service app.

NOTE: *The wireless repeater MAC address can be verified with the label on the repeater.*

4. Verify the CORE Service app displays the “Node Added” on the **Sensor Network**.

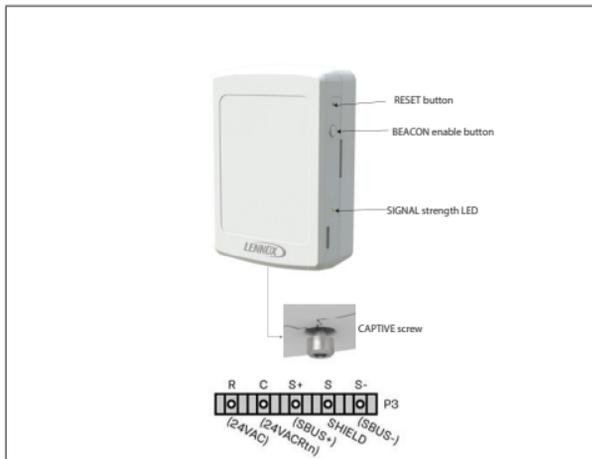


Figure 7. Wireless Repeater Buttons, Indicators and Terminals

IMPORTANT

A maximum of five wireless repeaters can be added per RTU

REPEATER – SIGNAL STRENGTH ALERT INDICATION

Once the wireless repeater is added successfully, it will communicate with the rooftop unit.

The signal (RSSI) LED will turn on if it cannot reach the RTU.

NOTE: *The signal strength LED is always enabled and cannot be disabled.*

REPEATER – PLACEMENT AND CONFIRMING LOCATION (TEST)

The wireless repeater has no test functionality to determine the repeater is within acceptable range of the RTU. To test a desired location for signal strength, use the following procedure:

1. Take a battery powered wireless sensor that is already connected to the BLE network to the desired location.
2. Hold the beaconing button for five seconds and release.

3. Observe the status of the signal strength LED (see Table 1. Sensor LED Descriptions on page 17).

NOTE: *Wait 5 to 20 seconds for the test to complete and observe the signal strength LED.*

Table 2. Repeater LED Descriptions

Signal Indicator LED	Description
3 Blinks	Repeater is within range. Repeater is good to install.
Solid for 10 seconds	Repeater is out of range. Re-Test, or find a closer location.
Off	Repeater does not have power. Power repeater and re-test.

In terms of BLE signal strength, in the technician application the following is display for signal strength:

- Out of range: ≤ -88 dBm
- Low RSSI: -71 to -87 dBm
- Fair RSSI: -56 to -70 dBm
- Good RSSI: ≥ -55 dBm

REPEATER – NETWORK REMOVAL AND RESET

This procedure will remove the specific wireless repeater (relay) from the rooftop unit group. Use the following steps to perform the network removal and repeater hard reset.

IMPORTANT

It is recommended that any repeater that are taken out of use, should be removed from the network and a hard reset performed

CORE SERVICE APP REPEATER REMOVAL

To remove the repeater (relay) from the RTU, use the CORE Service App and navigate to **RTU Menu > Network Integration > Wireless Sensor Network Setup**.

1. Select the **relay** to remove.
2. Select **Remove Relay** at the bottom of the screen.
3. The **Remove Relay** screen will appear, select **YES**.
4. Press and hold the beacon button for two seconds to remove particular node (repeater) from the BLE mesh network.
5. Type in the **relay name** and select **Proceed**.

REPEATER HARD RESET

Use the following procedure to perform a factory reset.

1. Press and hold both the **beacon** and **reset** buttons simultaneously for 10 seconds.
2. Release only the **reset** button.
3. After two seconds then release the **beacon** button.

After performing the hard reset, the wireless repeater can be added to any other rooftop unit group or added back to same the rooftop unit network.

Repeater and Sensor Placement Requirements

Wireless sensors can also be used as repeaters if powered by external 24VAC. Wireless sensors operated on battery power cannot hop a signal to the next device, and therefore operate only as a temperature sensor. A maximum of two repeater hops are supported.

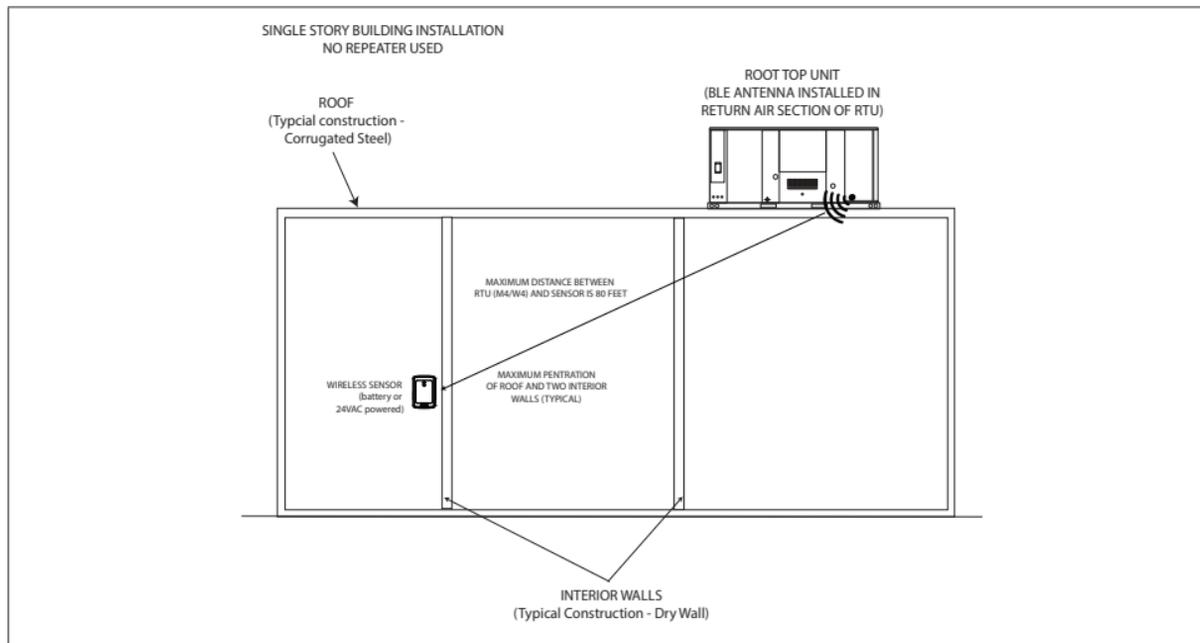


Figure 8. Single Story Application (2 Hops)

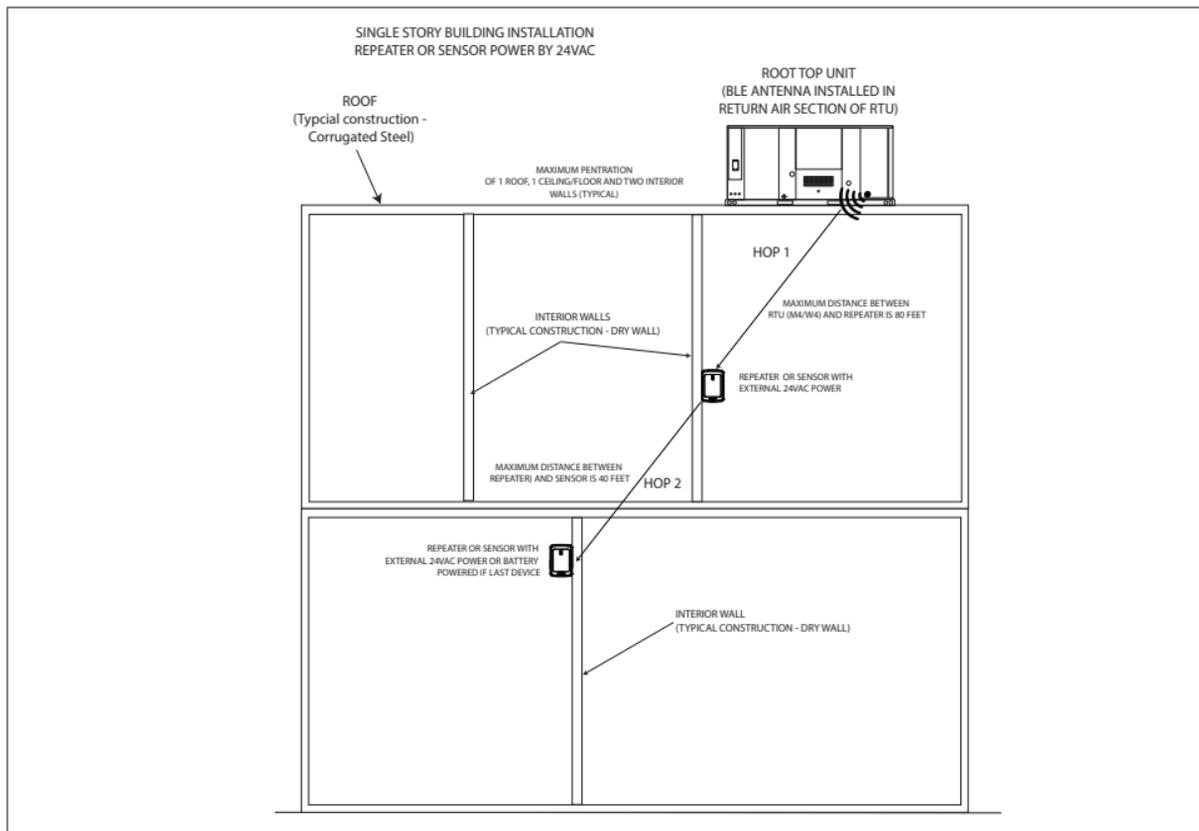


Figure 9. Two Story Application (2 Hops)

TWO STORY BUILDING INSTALLATION
REPEATER OR SENSOR USING 24 VAC

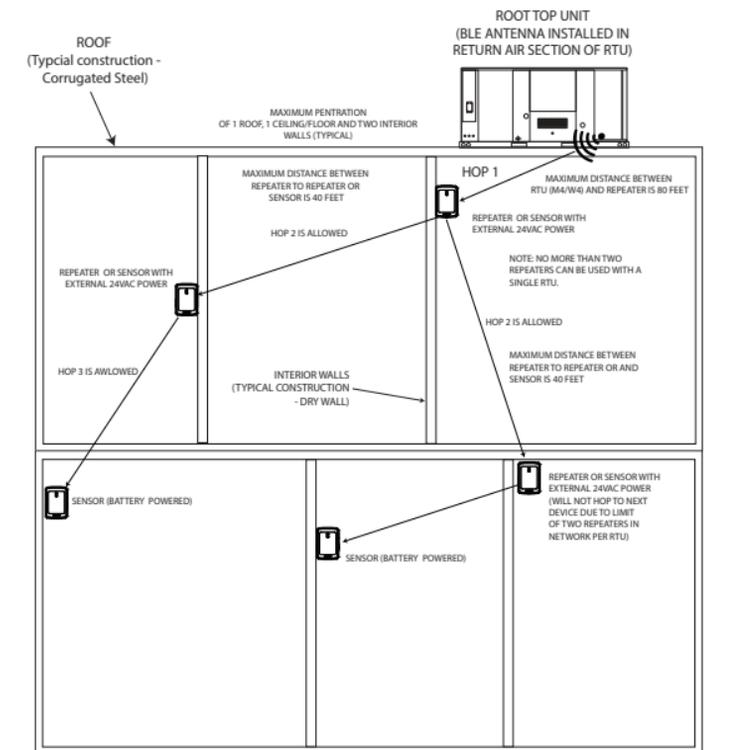


Figure 10. Two Story Application (3 Hops)

FCC Compliance Statement

PART 15.19 This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation. FCC Interference Statement — PART 15.105 (B).
3. 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.
4. 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 of the following measures:

- Reorient or relocate the receiving antenna.
- 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.

FCC RF Exposure Information

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm during normal operation.

