



## Operation Guideline

Product Model: KONOse

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# KONOse (KN-ZW-SE1-20)

## Operation Guideline (Rev 1.2)





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### 1. MODELS

- KONOse Smart Hub Thermostat

### 2. PACKAGE CONTENTS

- Device
- Wall Plate
- Mounting Hardware
- Quick Start Guide
- Wire Labels

### 3. ITEMS NEEDED FOR INSTALLATION

- Phillips Screwdrivers
- Wire stripper/cutter
- A Z-Wave™ Hub / Gateway to operate with KONOse

### 4. SPECIFICATIONS AND COMPLIANCE

- Operating Voltage: 24VAC
- Battery Type: 4 AA premium brand Alkaline
- Operating Temperature: +14F to 122F (+10C to 50C)
- Operating Humidity: 20% to 80% (non-condensing)
- Certifications: Z-Wave Plus™

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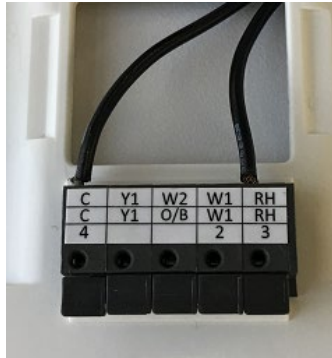
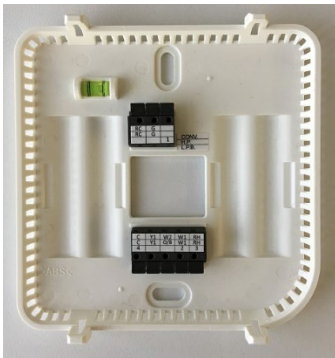
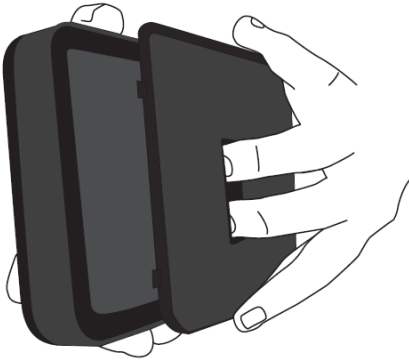
### 5. CONNECTING POWER/INSERTING BATTERIES

KONOse needs either one of the power source options:

- C-terminal
- Battery (4 AA alkaline batteries)

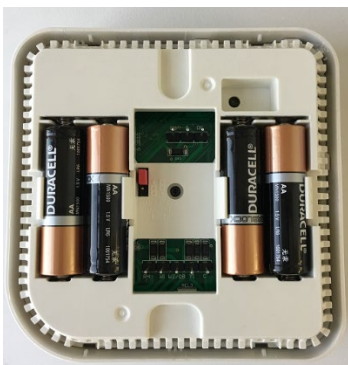
#### C-terminal

Separate KONOse from its base. Pull the wires from your wall through the center hole of the KONOse base. Secure the base to the wall using the include mounting hardware.



After wiring, secure KONOse front onto base. Once KONOse front has been secured to base (line up and firmly push), return power to system.

#### Battery



Insert 4 AA alkaline batteries and secure KONOse front onto base.

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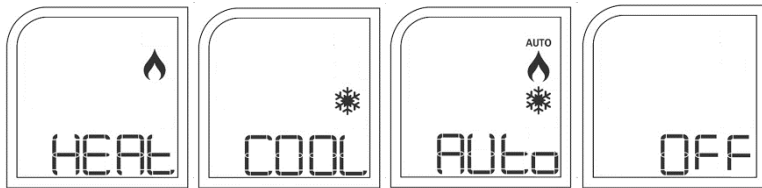
### 6. THERMOSTAT OPERATION

#### 6.1 First Time Power Up

- On the first time power up, the thermostat will wait for the terminal wire connection and stay in the 'HI' screen. If the wirings are detected, then the thermostat will go to the system type menu immediately and then return to Home screen. Otherwise, it will wait for 5 minutes until timeout, or until the user press-and-hold the knob for 5 secs to return to Home screen.

#### 6.2 Change Control Modes

- In HOME screen, press the knob once to turn on the backlight. Then press the knob again to enter the control mode menu
- In the control mode menu, press the knob to select the desired mode (HEAT/COOL/AUTO/OFF). Wait for 5 seconds for the thermostat to confirm the selection.




**Note:** The available control mode(s) should be selected through the installer setting #03. See Section 9 for details.


#### 6.3 Adjust Set Temperature

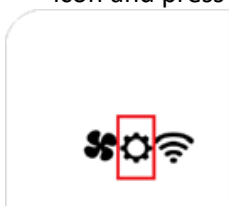
- In HOME screen, rotate the knob to select the desired set temperature. Wait for 5 seconds for the thermostat to confirm the selection.

#### 6.4 Change Fan Mode

- In HOME screen, press-and-hold the knob for 5 secs to enter the main menu. Then select the  icon and press the knob to enter the fan mode menu, and change the desired fan mode (Auto / On)

#### 6.5 Enter Installer Setting Menu

- In HOME screen, press-and-hold the knob for 5 seconds to enter the main menu. Then select the  icon and press the knob to enter the installer setting menu.

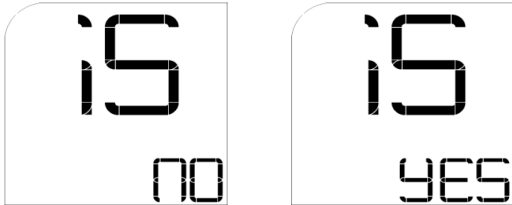


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- When the screen show 'IS', rotate the knob clockwise to select YES and press to confirm.



- The first screen will show the system type information. Press the knob to view the installer setting items.
- Navigate the installer setting items and select the desired options until the setting item reaches #99. The thermostat will then return to HOME screen.
- To exit the installer setting, press and hold the knob for 5 seconds or wait for a 60 seconds timeout.

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### 7. SYSTEM INCLUSION

During the initial setup, you will be prompted to pair the device with your home control system. If you choose not to pair during the initial setup process, you can manually initiate the inclusion process at any time by following these steps:

#### 7.1 Steps of Adding the Device (Device Inclusion)

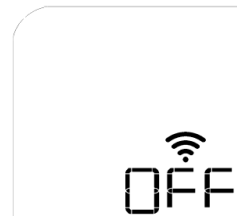
- Initiate inclusion on your home control system using the instructions provided with it
- In HOME screen, press and hold the knob for 5 seconds to enter the main menu



- Rotate the knob to select , then press the knob to enter the inclusion/exclusion menu
- In the inclusion/exclusion menu, select ADD and press the knob to confirm



Start the device adding process



Turn off the radio

- The device will begin the adding process – you will see this screen:  
Step 1: Device prepares to add to the hub:

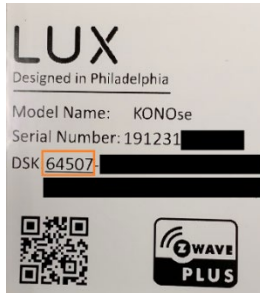


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Step 2: At the hub portal, click “Add device”.

**Noted:** If the hub is supporting S2 (authenticated) security mode, it will ask the user to provide the DSK code of the device to complete the inclusion process. The DSK code is printed on the product label as shown below:



Note: Just in case the label is damaged, you can still read the DSK PIN code on the LCD screen by entering the factory production test mode of the device. Please contact our technical support team.

Input the first 5 digits in the hub portal and follow the instructions provided by the hub.

Remove the décor snap cover from the device and the product label is attached on the device front housing. There is also the same product label attached on the product gift-box.



If S0 or S2 (unauthenticated) is used, no DSK is needed then.

Step 3: Device is added to the hub successfully.



- The device will automatically return to the HOME screen after 5 seconds, or you can press the knob to return to the HOME screen.
- If the inclusion process is not successful, then the HOME screen will display ER:02 to indicate the error. Press and hold the knob for over 5 seconds to return to the inclusion/exclusion menu and retry the inclusion.






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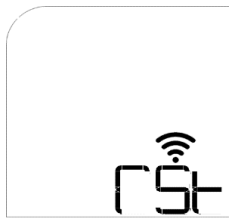
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### 7.2 Steps of Removing Device (Device Exclusion)

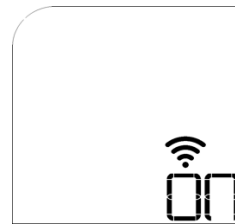
- In HOME screen, press and hold the knob for 5 seconds to enter the main menu



- Rotate the knob to select , then press the knob to enter the inclusion/exclusion menu
- In the inclusion/exclusion menu, select RST and press the knob to confirm



Start the device adding process



Skip the device removal and keep the RF radio to be on.

- The device will begin the removal process – you will see this screen:

Step 1: Device prepares to be removed from the hub:



Step 2: At the hub portal, click “Remove device”.

Step 3: Device is removed from the hub successfully.



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- If the exclusion process is not successful, then HOME screen will display ER:02 to indicate the error. Press and hold the knob for over 5 seconds to return to the inclusion/exclusion menu and retry the exclusion.



### 7.3 Error code and description

Error Code	Description
Er:00	System Error – Host Boot up fail
Er:01	System Error – No valve (O or B) connected in Heat Pump system
Er:02	Provisioning error – No network
Er:09	Radio Error – No response from module
Er:0A	Radio Error – Poor signal (<-76dBm RSSI)
Er:0B	Radio Error – Network not found

### 7.4 Z-Wave Command Classes

KONOse supports the following command classes:

#### Association Group:

Version	V2
Group ID	1
Maximum Nodes	5
Description	Z-Wave Plus Lifeline
Association NodeID	001

KONOse is associated with the Z-Wave controller/hub in the network.

The following events will trigger a notification(report) from KONOse to controller.

Event	Report
Device Reset Locally	Device Reset Locally Notification
Thermostat Mode Change	Thermostat Mode Report
Thermostat Setpoint Change	Thermostat Setpoint Report
Fan Mode Change	Thermostat Fan Mode Report
Thermostat Operating State Change	Thermostat Operating State Report
Thermostat Fan State Change	Thermostat Fan State Report
Battery Level Change	Battery Report
Temperature Change	Multilevel Sensor Report
AC power connected or disconnected	Notification Report - Power Management



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### Notification:

Version	V4
Notification Type	Power Management (0x08)
Notification Event	AC mains disconnected (0x02) AC mains connected (0x03) Battery replace soon (0x0A) Battery replace now (0x0B)

### Security:

KONOse is supporting 3 types of security:

- S2 (authenticated) – each device is assigned with an unique DSK.
- S2 (un-authenticated)
- S0

A Security (S0 or S2) Enabled Z-Wave Controller must be used in order to fully utilize the product.

### Basic:

KONOse supports the Comfort mode (Hold mode) and Energy-Saving mode (Away mode). The Energy-saving mode sets the heat temperature at 62F and the cool temperature at 83F.

To activate the Energy-saving mode, the hub should send a “BASIC\_SET 0x00” to KONOse and an icon of “A” is then shown on the LCD.

There are 2 ways to deactivate the Energy-saving mode:

- (i) Send the BASIC\_SET 0xFF from the hub. KONOse will switch to the Comfort mode (Hold mode).
- (ii) Turn or press the knob on the device. In this case, KONOse will send a BASIC\_REPORT with value 0xFF.

### Standard Command Class:

Standard Command Class	Version
Application Status	V1
Association*	V2
Association GRP Info*	V1
Basic*	V1
Battery*	V1
Clock*	V1
Configuration *	V1
Device Reset Locally*	V1
Firmware Update Meta Data*	V3
Manufacturer Specific*	V1
Multilevel Sensor*	V7
Notification*	V4
Power level*	V1
Protection*	V2
Security	V1



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Security 2	V1
Supervision	V1
Thermostat Fan Mode*	V1
Thermostat Fan State*	V1
Thermostat Mode*	V2
Thermostat Operating State*	V2
Thermostat Setpoint*	V3
Transport Service	V2
Version*	V2
Z-Wave Plus Info	V2

Note: The command classes with "\*" will be supported securely when the device is bootstrapped with a security key.



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### Configuration Command Class:

KON0se supports the following configuration parameters:

Parameter ID	Parameter Size (Byte)	Parameter Name	Parameter Values	Default Value	Description
1	2	User Temperature Calibration	-450 to 450, step-size = 10	0	in steps of 0.1°F
2	1	Temperature Unit (C/F)	0 : C 1 : F	1	
3	1	Available Control mode	0-4	0	0: Heat and Cool, Auto 1: Heat Only 2: Cool Only 3: Heat and Cool, no Auto 4: reserved
4	1	System Type	0-4	0	0: Furnace Gas 1: Furnace Electric 2: Heat Pump 3: Boiler no fan 4: reserved
5	1	Reversal valve Type in Heat Pump	0 – O-valve 1 – B-valve	0	
6		reserved			
7		reserved			
8	2	Temperature Limit - Heat Max	60.00F-90.00F (16C-32C)	90F (32C)	
9	2	Temperature Limit - Heat Min	45.00F-60.00F (7C-16C)	45F (7C)	
10	2	Temperature Limit - Cool Max	60F-95F (16C-35C)	95F (35C)	Note: The actual allowable range is dependent on the heat set point limit
11	2	Temperature Limit - Cool Min	50F-75F (10C-24C)	50F (10C)	Note: The actual allowable range is dependent on the heat set point limit
12	2	Temperature Minimum Setpoint Deadband	200 to 500, step-size = 10	200 (0xC8)	in a step of 0.1F
13	1	Enable / Disable Emergency heat option in mode menu	0 or 1	1	0 - disable 1 – enable  Note: for Heat Pump system only

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14	2	Ambient Temperature Change Step-size	0.5F (0.25C) : 50 1.0F (0.50C) : 100 1.5F (0.75C) : 150 2.0F (1.00C) : 200 2.5F (1.25C) : 250 3.0F (1.50C) : 300 3.5F (1.75C) : 350 4.0F (2.00C) : 400	50	0.5F – 4F range with a step-size of 0.5F (0.25C):
15	1	Regular Ambient Temperature Reporting Interval	1-24	4	1 - 24 hours
16	1	Regular Operating State Reporting Interval	1-24	4	1 - 24 hours
17	1	Command Echo for - Thermostat Mode - Thermostat Fan mode - Thermostat Setpoint	0 or 1	1	0 - disable 1 - enable

### 7.5 OTA Firmware Upgrade


KONOse complies with the Z-wave standard to perform the OTA firmware upgrade on the Host Processor. User can follow the steps below to activate and verify the OTA upgrade process.

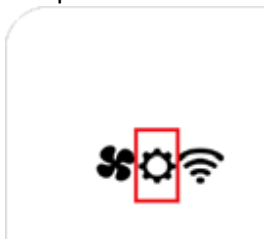
Step 1. Upload the provided OTA image to the hub and push the image to KONOse

Step 2. Wait for around ~45mins until KONOse has completed the firmware download and installation process. The total time may vary depending on the data rate of the hub.

Step 3. When the OTA upgrade is completed, check the Host firmware version on the KONOse LCD display.

To check the firmware versions:

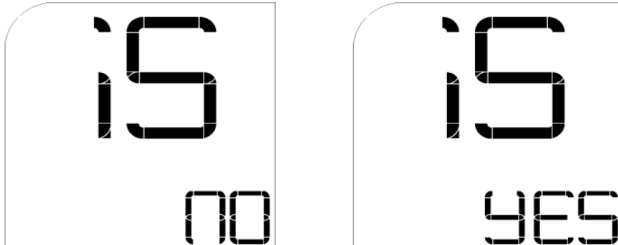
- In Home screen, press and hold the knob for 5 seconds to enter the main menu. Then select the  icon and press knob to enter the installer setting menu.



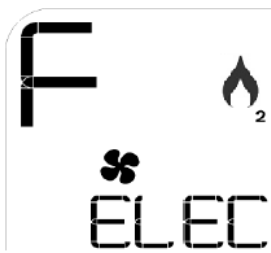
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- When the screen show 'iS', rotate the knob clockwise to select YES and press to confirm



- The first screen will show the system type information. Rotate the knob clockwise to show the Host firmware version. Rotate the knob clockwise again to show the Z-Wave firmware version.  
Example screens:



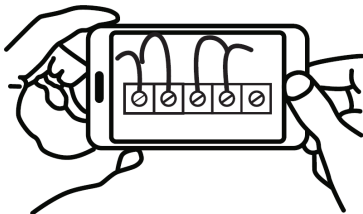
Host firmware version



Z-Wave firmware version

## 8. INSTALLATION

- Switch power off at circuit breaker to both heating and cooling systems before performing any wiring
- Remove front of existing thermostat from base
- Photograph current wiring for reference




- Release wires and mounting screws and remove base from wall
- Open KONOse from base and pull wires through
- Secure KONOse base to wall (mounting hardware and optional wall plate included)
- Referencing your wiring photo, attach your thermostat wires to the KONOse using your original wiring letters and the following terminal reference as a guide based upon your system type.



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### 9. CONFIGURE SYSTEM AND DISPLAY SETTINGS

KONOse will guide you through setup. In Home screen, press and hold the knob for 5 seconds to enter the main menu, select the  icon and press knob to enter the installer setting menu. Rotate the knob to navigate through options and values. To make a selection, press the knob once. To go back, press and hold the knob for 3 seconds. KONOse will prompt you to select:

- Keypad lock / unlock
- Available system modes (heating, cooling, both, automatic)
- Temperature unit (C/F)
- System type (gas, electric, heat pump, boiler)
- Temperature swing
- Number of heating and cooling stages
- Backlight
- Factory reset
- etc

#### Installer settings

Menu Item Number (temp digits)	Function Description	User Option Number (time array)	Default setting	Change may update set temperature if setting contradicts?
00 (KN-ZW-SE1-20 only)	Key Lock	No Yes	No	N/A
01	Temperature Scale	F: Fahrenheit C: Celsius	F	N/A
02	User Temperature Calibration	Amb Temp +/- 4.5°F (+/-2.5°C)	0F (0C)	No
03	Available modes	00 : Heat, Cool & Auto 01 : Heat only 02 : Cool only 03 : Heat, Cool & no Auto	00	
04	Max Heat Set Temp (skip if available modes = cool only)	F: 60F – 90F (C: 16C – 32C)	90F (32C)	Yes, update set temperature if necessary
05	Min Heat Set Temp (skip if available modes = cool only)	F: 45F – 60F (C: 7C – 16C)	45F (7C)	Yes, update set temperature if necessary
06	Max Cool Set Temp (maximum allowed cool set temp)	F: 60F – 95F (C: 16C – 35C)	95F (35C)	Yes, update set temperature if necessary
07	Min Cool Set Temp (minimum allowed cool set temp)	F: 50F – 75F (C: 10C – 24C)	50F (10C)	Yes, update set temperature if necessary





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08	System Type	Furnace Gas Furnace Electric HP Boiler without fan	Furnace Gas	No
09	HP valve type (skip if System Type = Furnace)	O: O Valve B: B Valve	O	No
10	Minimum On/Off Time	5: 5 minutes 2: 2 minutes	5	No
11	Swing	±0.25°F (±0.14°C) ±0.50°F (±0.28°C) ±1.00°F (±0.56°C) ±2.25°F (±1.25°C)	0.25F	No
12	Stage 2 offset (show only if systemType = Furnace & avMode != Cool only)	OFF ; -1.0°F (-0.56°C) -2.0°F (-1.11°C) -3.0°F (-1.67°C) -4.0°F (-2.22°C) -5.0°F (-2.78°C)	OFF / 1°F (depends on terminal detection)	No
13	Stage Aux offset (show only if systemType = HP)	OFF ; -1.0°F (-0.56°C) -2.0°F (-1.11°C) -3.0°F (-1.67°C) -4.0°F (-2.22°C) -5.0°F (-2.78°C)	OFF / 2°F (depends on terminal detection)	No
14	Clock Format (skip if unit not support override)	12 : 12 hour 24 : 24 hour	12	No
15	Backlight always on? (skip the option "ON" if it is battery powered)	10: turns off after 10s 30: turns off after 30s ON: always ON	AC: 30 Batt: 10	No
16	Filter Life (Skip if systemType = boiler without fan & avMode = Heat Only)	OFF 0-365	OFF	No
98	Compressor protection bypass	NO: no action Yes: suspends minimum off time for next 10 mins	NO	No
99	Ex-Factory Reset	NO YES	NO	YES

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### 10. KEYPAD LOCK


KONOse has provided the keypad lock function to limit full user-control. The function can be set either through the device itself or by Z-Wave network.

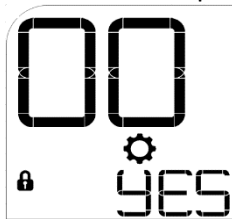
There are only 1 level of keypad lock on the device

- Level 1: Not available.
- Level 2: When keypad lock is set to level 2, both the rotary and press button will have no function and the device is not capable of leaving home screen.

To control the keypad lock at the device side:

Activate the Lock:

1. Press and Hold the knob for 5 seconds to enter main menu.
2. Select the  icon and press knob to enter the installer setting menu. Navigate to the installer option '00'
3. Select 'Yes' and press the knob, then KONOse will enter keypad lock level 2 and return to Home screen.



4. The rotary control and press button will no longer operate, however the device can still be controlled via the App or web portal.

Cancel the lock:

1. Press the knob so that backlight is illuminated and home screen is displayed
2. Press and Hold the knob for 10 seconds.
3. After 10 seconds device will unlock the keypad

To control the keypad lock / unlock via Z-Wave Command:

Command Class	Command	Value Definition
Protection	01 – Protection Set	0x00 : No lockout (default) 0x01 : Reserved 0x02 : Level 2 lockout



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### 11. DEVICE RESET

#### 11.1 Factory Reset

Note: Please use this procedure only when the network primary controller is missing or otherwise inoperable.

1. Enter the installer setting menu and select the installer option #99, then press the knob to confirm.
2. All the device parameters will be restored to factory default. The Z-Wave network setting will also be erased. User must perform the device inclusion with their hub / gateway again to re-establish the network.

#### 11.2 Hardware Reset

1. To reboot the device, remove the KON0se front from the base. Locate the reset button directly above the battery compartment, then press and hold for 3 seconds to reboot. Alternatively, remove the power or battery completely and then power the device again activate the hard reset.
2. Performing hardware reset will not erase the device setting and the Z-Wave network settings

### 12. INTEROPERABILITY

This product can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

#### IMPORTANT:

KON0se will act as a listening device if it is included in the Z-Wave network while on 24VAC system power, and it will act as a listening sleeping slave if it is included on battery power. DO NOT power the device by battery only if it is previously included while on system power, otherwise it will shorten the battery life. If user desires to use battery-only power for operations, please make sure the Z-Wave inclusion is done under the battery only powered condition.

### 13. TROUBLESHOOTING

If the device is having trouble with inclusion/exclusion with the controller

- Attempt to move the device to a location closer to the Controller.
- Remove obstacles or other wireless devices between device to Controller. Large appliances, mirrors, stone/brick, and bookshelves or file cabinets located between the device and the Controller can interfere with communication.
- Ensure the device is compatible with the Controller.

If the device was communicating with the controller but is no longer communicating

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- Check if the power cord/batteries to the device has been disconnected or if the power switch is in the OFF position.
- Turn the power to the device OFF and then ON. The device should re-connect with the controller automatically.

### 14. MANUFACTURER CONTACT INFORMATION

If you are experiencing issues with your heating and cooling system or with your thermostat's functionality, please contact our technical support team



**Lux Products Corporation**

4747 South Broad Street, Building 101-Suite 330,  
Philadelphia, PA 19112



**Hours**

Mon - Fri  
8:00 am - 4:30 pm EST



**Information**

P: 856.234.8803 or  
TechSupport@LuxProducts.com



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### 15. DISPOSAL INSTRUCTIONS

Johnson Controls is committed to responsible environmental stewardship. Please dispose of this product in accordance with local laws and regulations in your area. Contact your local waste disposal authorities or consult [www.e-cyclingcentral.com](http://www.e-cyclingcentral.com) to find an electronics recycling center near you.

### 16. WARNING INFORMATION

#### FCC Part 15C

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. NOTE: 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.
- 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. 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 RF Radiation Exposure Statement

Caution: To maintain compliance with the FCC's RF exposure guidelines, place the unit at least 20cm from nearby persons.

#### RSS-247

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

*Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*