



# T631W-2

**Pro1 Technologies**

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 Hours of Operation: M-F 9AM - 6PM Eastern

**Thermostat Application Guide**

Description	
Gas or Oil Heat	Yes
Electric Furnace	Yes
Heat Pump (No Aux. or Emergency Heat)	Yes
Heat Pump (With Electric Aux.)	Yes
Heat Pump (With Gas Aux.)	No
Multi-Stage Systems	No
Heat Only Systems - Floor or Wall Furnace	Yes
Cool Only Systems	Yes
High and Low Fan Speed	Yes
Millivolt	No
Emergency Heat	No
Conventional Single Stage Furnace	Yes
Geothermal	Yes

**Power Type**

Battery Power  
 Hardwire (Common Wire)  
 Hardwire (Common Wire) with Battery Backup

**A trained, experienced technician must install this product.**

Carefully read these instructions. You could damage this product or cause a hazardous condition if you fail to follow these instructions.

Una version en español de este manual se puede descargar en la pagina web de la compañía.

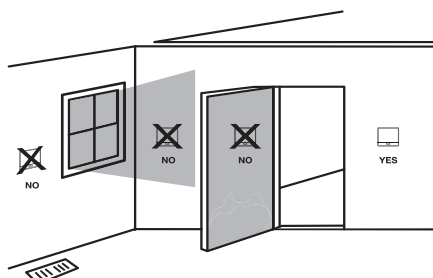
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**Wall Locations**

The thermostat should be installed approximately 4 to 5 feet above the floor. Select an area with average temperature and good air circulation.



**Do not install thermostat in locations:**

- Close to hot or cold air ducts
- That are in direct sunlight
- With an outside wall behind the thermostat
- In areas that do not require conditioning
- Where there are dead spots or drafts (in corners or behind doors)
- Where there might be concealed chimneys or pipes

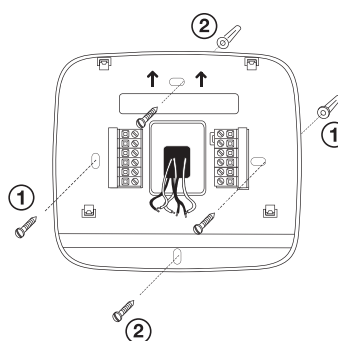


**Installation Tip**

Pick an installation location that is easy for the user to access. The temperature of the location should be representative of the building.

**Subbase Installation**

- ① Horizontal Mount
- ② Vertical Mount



For vertical mount put one screw on the top and one screw on the bottom.  
 For horizontal mount put one screw on the left and one screw on the right.



**Installation Tip: Electrical Hazard**

Failure to disconnect the power before beginning to install this product can cause electrical shock or equipment damage.



**Mercury Notice**

All of our products are mercury free. However, if the product you are replacing contains mercury, dispose of it properly. Your local waste management authority can give you instructions on recycling and proper disposal.

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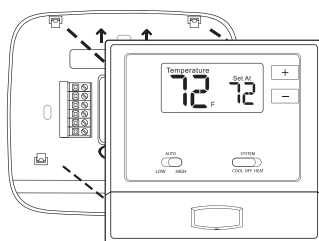
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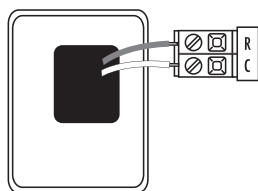
**Installation Tips**

**Mount Thermostat**

Align the 4 tabs on the subbase with corresponding slots on the back of the thermostat, then push gently until the thermostat snaps in place.



**Battery Installation**

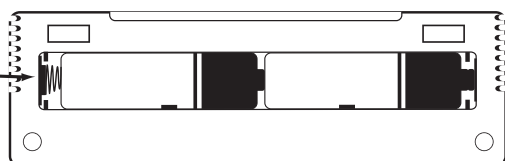


Battery installation is optional if thermostat is hardwired (R and C terminal connected to 24V power).

**Important:**

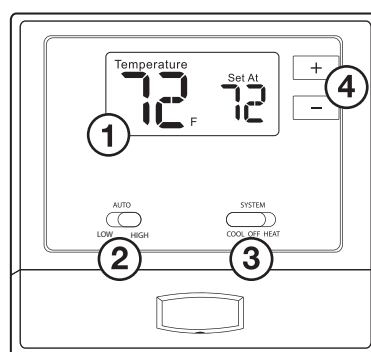
High quality alkaline batteries are recommended. Rechargeable batteries or low quality batteries do not guarantee a 1-year life span.

Insert 2 AA Alkaline batteries (included). High quality alkaline batteries are recommended.



Located on the back of thermostat.

**Getting to know your thermostat**



- ① LCD
- ② Fan Switch
- ③ System Switch
- ④ Setpoint Buttons

**Low Battery Indicator:** Replace batteries when indicator is shown.

**System operation indicators:** On will display when the COOL or HEAT is on.

+1 will appear in the display when the auxiliary heat is active.

Displays the user selectable setpoint temperature.

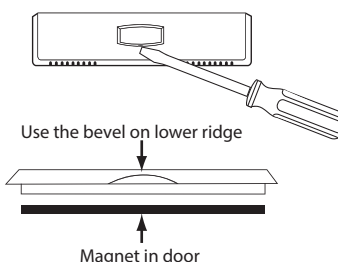


**Important**

The low battery indicator is displayed when the AA battery power is low. If the user fails to replace the battery within 21 days, the screen will only show the low battery indicator but maintain all functionality. If the user fails to replace the batteries after an additional 21 days (days 22-42 since first "low battery" display) the setpoints will change to 55°F (Heating) and 85°F (Cooling). If the user adjusts the setpoint away from either of these, it will hold for 4 hours then return to either 55°F or 85°F. After day 63 the batteries must be replaced immediately to avoid freezing or overheating because the thermostat will shut the unit off until the batteries are changed.

Gently slide a screwdriver into the bottom edge of the badge. Gently turn the screwdriver counter clockwise. The badge is held on by a magnet in the well of the battery door. The badge should pry off easily. **DO NOT USE FORCE.**

**Removing The Private Label Badge**



**About The Badge**

All of our thermostats use the same universal magnetic badge. Visit the company website to learn more about our free private label program.

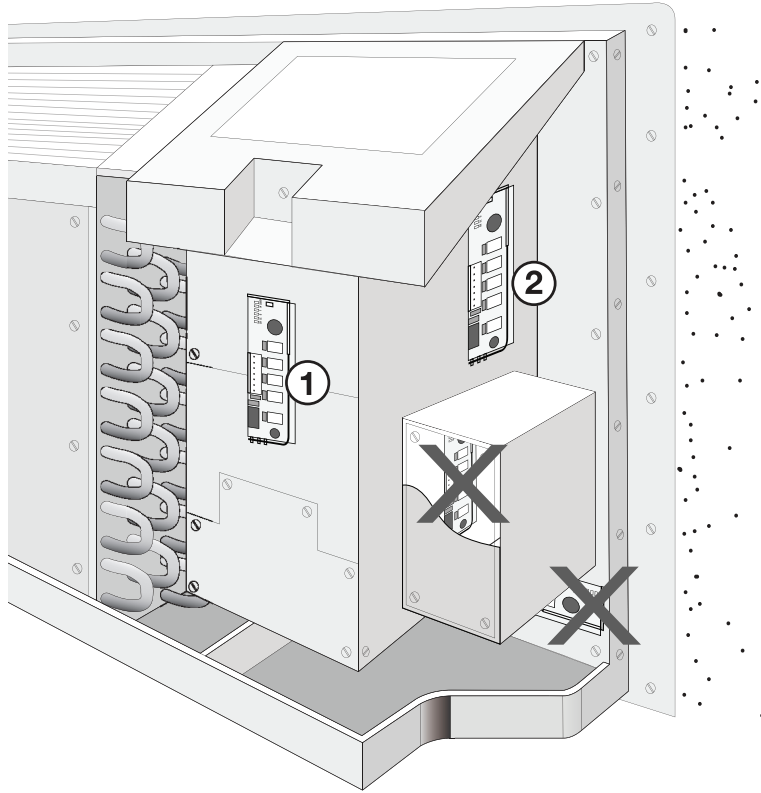
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Base Module - PTAC Installation

Range between the T631W-2 and the base module is up to 100 feet with no obstructions and up to 50 feet through standard building materials. To optimize the range try placing the base module with no metal between it and the thermostat.

The base module is designed to be mounted behind the front grille of a packaged terminal air conditioner (PTAC). Refer to the PTAC manufacturer's manual for instruction to remove the front grille. Check clearance to ensure the fit of front grille after base module installation. See below for a few location recommendations.



① Front Mount: Inside PTAC Housing

② Side Mount: Inside PTAC Housing

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Wiring Diagrams

**Caution: Electrical Hazard**

Failure to disconnect the power before beginning to install this product can cause electrical shock or equipment damage.

**Warning:**

All components of the control system and the thermostat installation must conform to Class II circuits per the NEC Code.

- ① Power supply
- ② Jumper (not supplied) to connect GL and GH terminals.
- ③ Thermostat must be set to O and B to match the changeover valve, O is the cool changeover valve, B is heat changeover valve.
- ④ The Aux Heat Relay is energized as the second stage of heat.

Wiring Tips

**C Terminal**

The C (common wire) terminal does not have to be connected when the thermostat is powered by batteries.

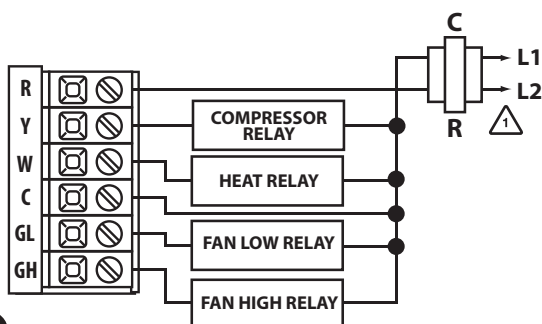
**Wire Specifications**

Use shielded or non-shielded 18-22 gauge thermostat wire.

**Note:**

Most PTAC systems support two speed fan operation. In a single speed fan PTAC system or conventional single speed fan system, a jumper should be installed between GL and GH on the thermostat.

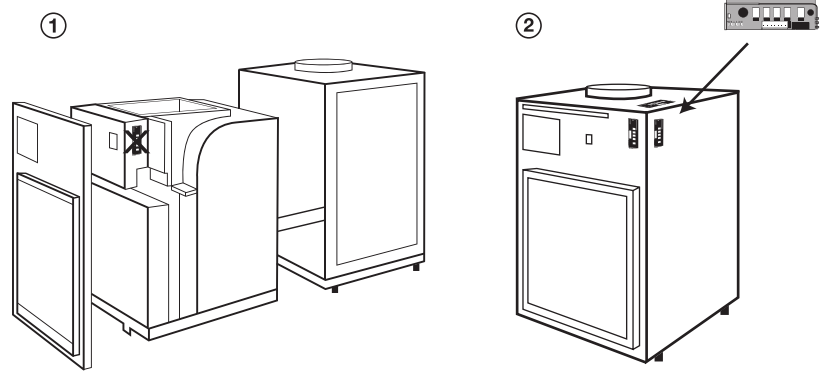
Typical 1H/1C System: 2 Speed Fan



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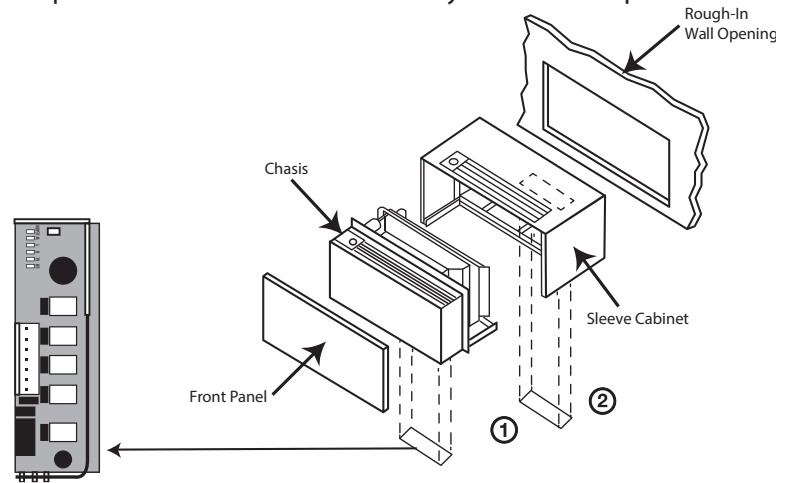
When Working With A Vertical Unit

1. Do not mount Module inside the cabinet of the unit, or in a metal enclosure.
2. Mount on the outside of the unit to maximize wireless communication.



When Working With A Metal Sleeve Cabinet, Room Cabinet, or PTAC Cover

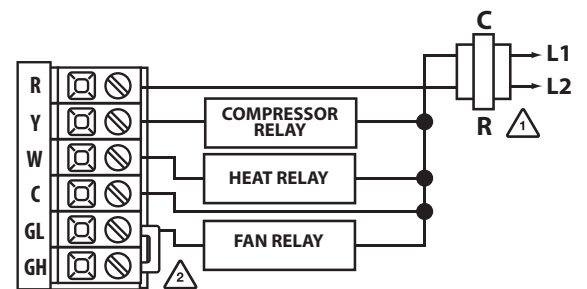
1. If cabinet has open bottom, mount the module just inside the cabinet as close to the open bottom as possible without placing it in danger of being bumped or touched by furnishings, vacuum, etc.
2. Another good module location would be on the underside of the top of the cabinet or cover. Directly behind the open Louver/Grill.



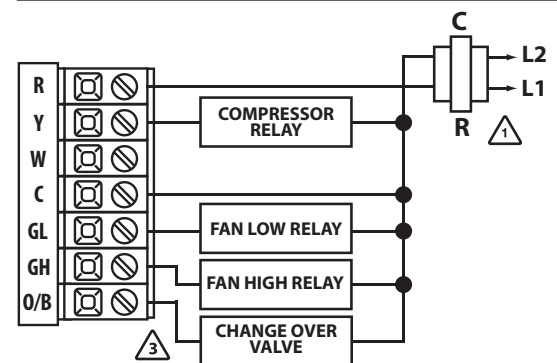
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Wiring Diagrams

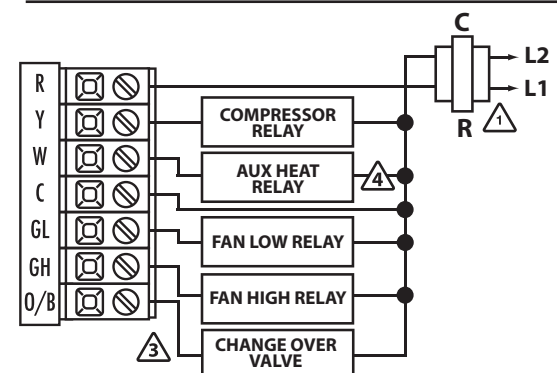
Typical 1H/1C System: 1 Speed Fan



Typical 1H/1C Heat Pump System: 2 Speed Fan



Typical 2H/1C Heat Pump System: 2 Speed Fan



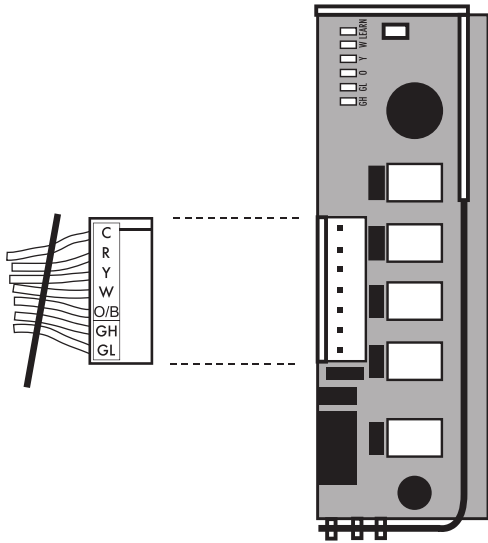
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**Wiring Note:**

The base module is packaged with labeled thermostat wire. Wire appropriately into the PTAC board terminals.

**Note:**

The thermostat and Base Module come factory linked (communicating) out of the box. However, if the link is lost, use the process on page 14 to re-link the devices.



**Note:**

The base module may be mounted using adhesive tape, such as double-sided tape or hook and loop strips. The base module must be hardwired (C & R terminals connected to 24V power). Use secondary source of securement to prevent module from dropping into condenser drain pan.

**Connecting to a PTAC:**

When connecting the Base Module to a PTAC, refer to the PTAC manufacturer instructions to enable remote thermostat operation.

Wiring

1. If you are replacing a thermostat, make note of the terminal connections on the thermostat that is being replaced. In some cases the wiring connections will not be color coded. For example, the red wire may not be connected to the R terminal.
2. Loosen the terminal block screws. Insert wires then retighten terminal block screws.

**Installation Tip**

Do not overtighten terminal block screws, as this can damage the terminal block. A damaged terminal block can keep the thermostat from fitting on the subbase correctly or cause system operation issues.

**Max Torque = 6in-lbs.**

Terminal	1 Heat 1 Cool Conventional System	1 Heat 1 Cool Heat Pump System	2 Heat 1 Cool Heat Pump System
R	Transformer power (cooling)	Transformer power (cooling)	Transformer power (cooling)
C	Transformer common	Transformer common	Transformer common
B/O	Energized in heating	Heat pump changeover valve energized in heating	Heat pump changeover valve energized in heating
B/O	Energized in cooling	Heat pump changeover valve energized in cooling	Heat pump changeover valve energized in cooling
GL	Fan Relay, Low	Fan Relay, Low	Fan Relay, Low
GH	Fan Relay, High	Fan Relay, High	Fan Relay, High
W	First stage of heat	N/A	Second stage of heat
Y	First stage of cool	First stage of heat & cool	First stage of heat & cool

Wiring

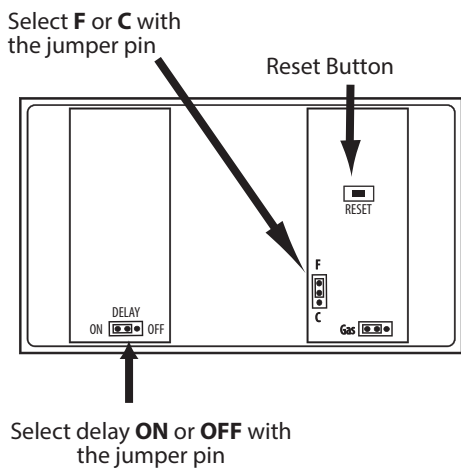
This thermostat is shipped from the factory to operate a conventional heating and cooling system. This thermostat will also operate a heat pump system. See the "heat pump" configuration step on page 12 of this manual to configure the thermostat for heat pump applications.

Technician Setup

**Fan Operation Setup**

**Electric:** The thermostat operation jumper pin should be put in the ELEC position. This setting allows the thermostat to operate the fan during a call for heat. Most PTAC systems will require ELEC Fan Operation Setup.

**Gas:** For systems that control the fan during a call for heat, put the jumper pin into the GAS position.



**Fahrenheit/Celsius Display**

Select F or C with the jumper pin to select desired display.

**Compressor Short Cycle Delay**

The compressor short cycle delay protects the compressor from short cycling. This feature will not allow the compressor to be turned on for 5 minutes after it was last turned off.

Using the jumper on the back of the thermostat, selecting ON will not allow the compressor to be turned on for 5 minutes after the last time the compressor was on. Selecting OFF will remove this delay.

**Important**

The RESET button must be pressed after changing any switch or jumper pin setting. Batteries must be installed for this operation.

Technician Setup

1. Set the thermostat system switch to **OFF**.
2. To enter Tech Setup Menu, press and hold **-** and **+** together for 3 seconds.
3. Use **-** or **+** to select desired setting for each option.
4. Tap **-** and **+** together to move next option.
5. To exit Tech Setup Menu, move system switch or wait 15 seconds.

Tech Setup Steps	LCD Will Show	Adjustment Options	Default
Room Temperature Calibration	RA 0	You can adjust the room temperature display to read up to 4° above or below the factory calibrated reading.	0°F
Change Over Valve Selection	CO 0	0 for cooling changeover valve. b for heating changeover valve.	0
Heat Pump	HU OF	OFF configures the thermostat for non heat pump systems. ON configures the thermostat for heat pump systems.	OFF
Heating Temperature Setpoint Limit	HE 90	45.0° - 90.0° F 7.0° - 32.0° C	90°F
Cooling Temperature Setpoint Limit	CL 45	45.0° - 90.0° F 7.0° - 32.0° C	45°F
Link Establish	LE	NA	NA

1. Set the thermostat system switch to the desired position (**COOL** or **HEAT**).
2. Press and hold **-** and **+** together for 3 seconds.
3. Use **-** or **+** to adjust desired swing setting. (The display reads in tenths of a degree.)
4. To exit, move system switch or wait 15 seconds.

Swing Settings	LCD Will Show	Adjustment Options	Default
<b>Cooling Swing (SYSTEM COOL)</b> The swing setting, often called "cycle rate," "differential" or "anticipation" is adjustable. A smaller swing setting will cause more frequent cycles and a larger swing setting will cause fewer cycles.	08	The cooling swing setting is adjustable from 0.2° to 2°. For example: A swing setting of 0.5° will turn the cooling on at approximately 0.5° above the setpoint and turn the cooling off at approximately 0.5° below the setpoint.	0.8°
<b>Heating Swing (SYSTEM HEAT)</b> The swing setting, often called "cycle rate," "differential" or "anticipation" is adjustable. A smaller swing setting will cause more frequent cycles and a larger swing setting will cause fewer cycles.	08	The heating swing setting is adjustable from 0.2° to 2°. For example: A swing setting of 0.5° will turn the heating on at approximately 0.5° below the setpoint and turn the heating off at approximately 0.5° above the setpoint.	0.8°

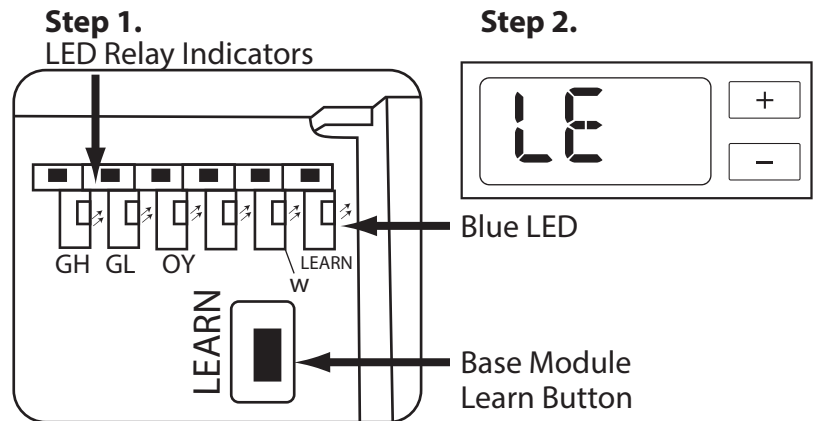
**Swing Setting**

The second stage will turn on at 2x the swing setting. The second stage will turn off when 1x the swing is reached. For example, if the swing setting is 0.8° for heating and the thermostat is set at 70° F, the first stage will turn on at approximately 69.2° F. The second stage will turn on at 68.4°F and the first will turn off at 70.8° F.

**Establishing Communication between T631W-2 & the base module**

The thermostat and base module come factory linked out of the box. If however, communication is lost, follow this easy- **Two Step** process to re-establish the communication link.

1. Press and hold the base module learn button for 3 seconds. The **Blue LED** will flash when ready to receive initial signal from **T631W-2**. (Base module must be powered by 24V. **Blue LED** will be continuously on when 24V power is present.)
2. Set the thermostat system switch to OFF. Press and hold **-** and **+** for 3 seconds. Tap **-** and **+** together until LE is displayed. Press and hold **+** until LE flashes 3 times, the Blue LED on the base module will stop flashing after communication has been established between base module and T631W-2. **Slide system switch to exit.**



**Note:**

The **Blue LED** on the base module will be on when power is present. The **Blue LED** will flash 3 times every time it receives a signal from T631W-2. When a relay is on the corresponding **LED** relay indicator will be on. If the base module does not receive a signal from the **T631W-2** for 15 minutes it will turn off all relays until communication is reestablished. The **Blue LED** on the base module will also turn off to show communication has been lost.

**Specifications**

**Specifications**

**T631W-2 Thermostat**

- The display range of temperature ... 41°F to 95°F (5°C to 35°C)
- The control range of temperature.... 44°F to 90°F (7°C to 32°C)
- Load rating.....1 amp per terminal, 1.5 amp maximum all terminals combined
- Swing (cycle rate or differential) ..... Heating is adjustable from 0.2° to 2.0°  
Cooling is adjustable from 0.2° to 2.0°
- Power source ..... 18 to 30 VAC, NEC Class II, 50/60 Hz for hardwire  
Battery power from 2 AA Alkaline batteries
- Operating ambient ..... 32°F to +105°F (0°C to +41°C)
- Operating humidity ..... 90% non-condensing maximum
- Dimensions of thermostat ..... 4.7"W x 4.4"H x 1.1"D
- Frequency ..... 916 MHz

**Base Module**

- Load rating ..... 1 amp per terminal, 1.5 amp maximum all terminals combined.
- Power source ..... 18 to 30 VAC, NEC Class II, 50/60 Hz
- Operating ambient ..... 32°F to +150°F (0°C to +65°C)
- Operating humidity ..... 90% non-condensing maximum