

Caution

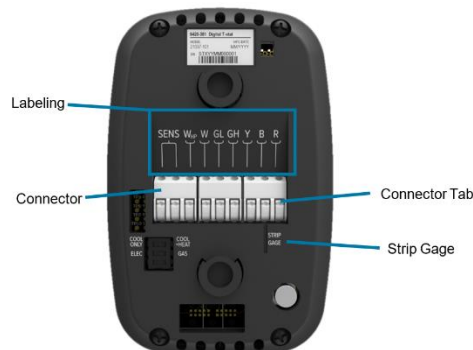
This thermostat should be installed by trained technicians only. Adhere to all the local and national codes and ordinance. Disconnect all power to the system before installing, removing, or cleaning.

Wire Labeling and Connectors

The labeling of the inputs/outputs of the thermostat can be found on the rear of the device.

The table below lists the labels with their meaning.

Label on Thermostat	Definition
R	Voltage input (+12V)
B	Ground
Y	Compressor output
GH	Fan high output
GL	Fan low output
W	Gas heat output
WHP	Elec heat output
SENS	External sensor input



The connectors of the thermostat are able to accept 20 AWG solid wire. To insert a wire, simply strip the wire to the appropriate length (5/16"). The stripped length can be checked by using the strip gage on the back of the thermostat. Press the stripped wire into the connector until the initial resistance is overcome. Lightly tug on the wire to ensure the connection is solid. To remove a wire, press down on the connector's tab with a screwdriver and pull wire vertically. It doesn't take much force to pull the wire to remove it. If the thermostat has had wires previously inserted into one of the connectors, it is not recommended to use a smaller gauge wire in that same position.

User Interface

The user interface consists of a black background, white segmented LCD and a rotary encoder with a push button (the knob). The user interface is broken down in the image below.



Dip Switches

The dip switches will enable/disable certain function of the thermostat. To apply changes of the dip switches, the device must be rebooted. The dip switches perform actions described in the table below.

Dip Switch	Label	Function
1	No Label	Future use
2	Gas Heat (Factory Default)	Disables Elec heating mode (gas only)
	Elec Heat	Enables Elec and gas heating mode
3	Cool+Heat (Factory Default)	Enables cool and heat modes
	Cool Only	Enables cool mode and disables heating modes

The dip switches can be accessed from the rear of the thermostat when no back plate is attached. They are labeled according to their function.

HVAC Mode and Fan Mode Selection

Upon power up, the display will show the HVAC mode set to 'Off', the fan mode set to 'Off', the current temperature, temperature units, and the sensor in use. To set the HVAC mode, press the knob then the display will now show the HVAC mode section with the currently selected mode blinking. Rotate the knob to scroll through the options. When the desired setting is blinking, press the knob to accept. If off, cool, or cool+heat mode was selected, the fan mode will illuminate with the currently selected mode blinking. Rotate the knob to scroll through the options. When the desired setting is blinking, press the knob to accept. The display will now show HVAC mode and state (if applicable), the current temperature, temperature units, the sensor in use, the set point temperature (when in an HVAC mode other than off), and the fan mode and state (if applicable). Once the thermostat returns to this screen, it will check to see if any outputs need to be enabled or disabled and performs those actions.

Set point Adjustment

To select a set point, the thermostat must be in any HVAC mode other than 'Off'. Once an HVAC mode has been selected and the set point temperature is visible, rotate the knob. The display will now blink the set point temperature and adjust it according to the rotation direction (clockwise for increase and counterclockwise for decrease of the set point). When the desired set point is displayed, press the knob. The display will revert to the previously displayed information with the new set point. Once the thermostat returns to this screen, it will check to see if any outputs need to be changed and perform those actions.

Temperature Units Change

The thermostat can display temperature in either Fahrenheit or Celsius. To change the temperature units, press and hold the knob until the display changes (4 seconds). The display will show the current temperature, the set point temperature (if it was previously displayed), and the temperature units options with the currently selected units blinking. Rotate the knob to change the selection. Upon selecting units, the temperature(s) displayed will update values accordingly. Once the desired units are blinking, press the knob to accept the changes.

Retained Settings

Some settings are retained when power is lost or the thermostat is rebooted. The retained settings include set points and temperature unit. There are three set points that are retained: one for cool, one for heat, elec heat, and gas heat, and one for cool+heat. Settings are stored automatically upon any changes made to any set point or temperature unit change. The table below shows the factory default settings.

Mode	Settings
Cool	85
Elec Heat	62
Gas Heat	
Heat	
Cool + Heat	72
Temperature Unit	Fahrenheit

Temperature Sensing

The thermostat is equipped with internal thermistor to detect the room temperature.

When an external thermistor is detected by the thermostat, it will be used as the primary source of measurement. The user interface will then show the 'REMOTE' segment at the top of the display. The thermostat is designed to use the 8330-3101 as an external sensor.

Current Temperature

The temperature is updated every 5 seconds based on the primary sensor. The displayed temperature is rounded from the actual. This means any decimal value of 0-0.35 is rounded down, 0.65-0.99 is rounded up, and everything in between will retain as the previously display temperature. The table below shows some examples.

If the current temperature is below 32°F (0°C), the display will show 'LO'. Alternatively, if the temperature is above 99°F (37°C), the display will show 'HI'.

HVAC Mode Descriptions

The table below describes which outputs are live by the thermostat in the specified HVAC mode.

HVAC Mode	Live Outputs
Off	HVAC outputs are disabled, fan is based on selection
Cool	Compressor and selected fan speed
Elec Heat	Electric heat and gas heat
Gas Heat	Gas Heat
Heat	
Cool + Heat	Cooling Cycle: Compressor and selected fan speed
	Heating Cycle: Electric heat (when Dip switch 2 is on), gas heat and Fan

While in cool+heat mode, a 15min timer (auto change-over timer) will prevents the opposite HVAC mode from operating if the set temperature and room temperature remain within 2 F degrees. This timer is automatically disabled upon changing the HVAC mode, fan mode, or set point temperature.

Elec Heating Mode

When in elec heating (or heat pump) mode some extra rules are applied. If the elec heating mode is selected and the current temperature ever reaches 5°F below the set point temperature, the gas heat mode will turn on in conjunction with the elec heat. When the gas heat has to turn on to assist the elec heat, the elec heat gets a strike. Once the elec heat gets three strikes and that heating cycle has completed, it is disabled for 1hr and 45min. When the elec heat is disabled in this way, the gas heat becomes the primary source of heat. Once the 1hr and 45min has expired, the elec heat becomes the primary source again. If the elec heat gets a strike but completes a heating cycle without the assistance of the gas heat, the elec heat will lose a strike. If the elec heat is running for 20min without the gas heat needing to turn on, the strike counter is reset. Whenever the gas heat is running in this mode, the 'Elec' segment will flash.

Compressor/Elec Heat Short Cycle Protection (DOB)

To protect the compressor/heat pump from short cycling, a 3min delay will be initiated for both the compressor and elec heat outputs after either output's demand is satisfied. During this 3min delay, if there is a demand for the compressor or elec heat, the HVAC state segment will blink according to the selected mode. Once the delay has expired, the thermostat will resume normal operation.

Sleep Mode

Sleep mode is activated automatically 10sec after the last user interaction. In sleep mode the LCD will dim and power usage will drop. The first user interaction (rotation, knob press, or knob hold for 4sec) will wake up the device and brighten the display.

Auto Accept

If the user was changing any setting (HVAC mode, fan mode, set point, or temperature units) and the knob was not pressed to accept the current selection, the thermostat will auto accept the current selection after 7sec and apply any changes.

Manual Reboot

The thermostat can be manually rebooted by pressing and holding the knob for 12sec. When the knob is held for 4sec, the thermostat will go to the units selection screen, after another 4sec, the thermostat will begin a count down. Once the countdown reaches 0 and the display turns off, the device will wait for the knob to be released. Upon the release of the knob, the device reboots.

The table below lists all important timing information.

Installation

Electrical Shock Hazard: Turn off the power at the main service panel by removing the fuse or switching the appropriate circuit breaker to the OFF position before removing the existing thermostat.

Check the DIP Switches Setting: Review the section “Dip Switches” in this manual for further details about choosing the correct DIP switch settings.

A – Thermostat Location

The thermostat is a sensitive electronic instrument. For accurate temperature control and comfort, the following should be considered:

1. Locate the thermostat on an inside wall about five feet above the floor. Pick a dry area where the air circulation is good.
2. Do not install thermostat where there are unusual heating conditions such as direct sunlight, near heat producing appliances (TV, radio , wall lamp... etc), or a furnace or air conditioner supply register.
3. The Thermostat must be installed in vertically position.

B – Installing the Thermostat

1. Place the thermostat mounting plate against the wall where the thermostat will be mounted.
2. Affix the mounting plate to the wall using two screws.
3. Wire the thermostat to the motorcoach (after reviewing the section “Wire Labeling and connectors” in this manual.
4. Place the thermostat on the mounting plate and gently slide the thermostat down to lock the thermostat onto the mounting plate.
5. Turn on the power to the thermostat.