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User's guide

“TSSHC-3DNPSB-16.7A” Electronic thermostat



For further information or to consult this guide on line,
please visit our Web site.

INS-TSSHC-3DNPSB-16.7A-1209

⚠ WARNING ⚠

*Before installing and operating this product, the owner and/or installer must read, understand and follow these instructions and keep them handy for future reference. If these instructions are not followed, the warranty will be considered null and void and the manufacturer deems no further responsibility for this product. **Moreover, the following instructions must be adhered to in order to avoid personal injuries or property damages, serious injuries and potentially fatal electric shocks.** All electric connections must be made by a **qualified electrician**, according to **the electrical and building codes** effective in your region. Do NOT connect this product to a supply source other than 120 VAC, 208 VAC or 240 VAC, and do not exceed the load limits specified. Protect the heating system with the appropriate circuit breaker or fuse. You must regularly clean dirt accumulations on the thermostat. Do NOT use fluid to clean thermostat air vents.*

1.Description

The electronic thermostat TSSH-3DNPSB-16.7A is designed to control ENERGY Radiant Ceiling Panels, and electric resistance heaters, including units with fans. Set point temperature is accurately attained and maintained. The electric current design resistive load range extends from 1.2A to 16.7A when operating at 120 to 240 Volts as explained in the detail that follows.

This thermostat is not compatible with the following installations

- electrical current higher than 16.7 A with a resistive load (4000 W @ 240 VAC, 3475 W @ 208 VAC and 2000 W @ 120 VAC);
- electrical current lower than 1.2 A with a resistive load (300 W @ 240 VAC, 260 W @ 208 VAC and 150 W @ 120 VAC);
- inductive load (presence of a contactor or a relay); and
- central heating system.

Parts supplied :

- one (1) thermostat;
- two (2) mounting screws; and
- two (2) solderless connectors suitable for copper wires.

2. Installation


Selection of thermostat location

The preferred thermostat location is on an inside wall four feet (1.2m) above the floor, in a conveniently accessed locations such as next to the light switch, and away from random temperature impacts detailed in the examples that follow.

Do not install the thermostat in a location where temperature measurements could be altered. For example :

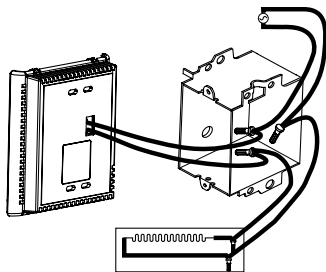
- close to a window, on an external wall, or close to a door leading outside;
- exposed directly to the light or heat of the Sun, a lamp, a fireplace or any other heat source;
- close or in front of an air outlet;
- close to concealed ducts or a chimney; and
- in a location with poor air flow (e.g. behind a door), or with frequent air draft conditions (e.g. head of stairs).

Thermostat mounting and connection

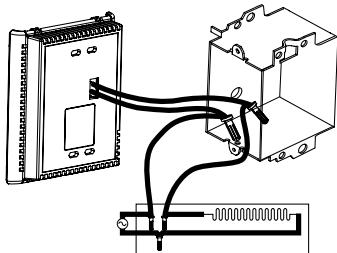
1.  **Cut off power supply on lead wires at the electrical panel in order to avoid any risk of electric shock.**
2. Ensure that the air vents of the thermostat are clean and clear of any obstruction.
3. Make the required connections using the following figures by selecting the proper type of installation (2 wires or 4 wires), and using solderless connectors. For connections with

aluminium wires, you must use CO/ALR connectors. Please note that thermostat does not have polarity.

Two-wire installation



Four-wire installation



Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable State/Country codes and standards.

4. Using a screwdriver, loosen the screw retaining the mounting base and front part of the thermostat. Remove the front part of the thermostat from the mounting base by tilting it upward.



5. Align and secure the mounting base to the connection box using the two screws supplied.



6. Reinstall the front part of the thermostat on the mounting base and tighten the screw at the bottom of the unit.

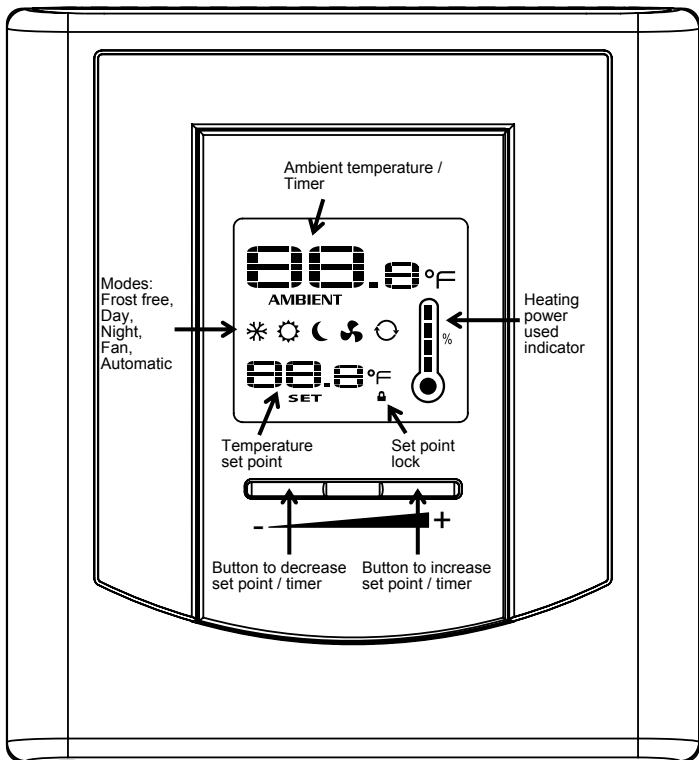


7. Turn on the power.
8. Set the thermostat to the desired setting (see the following section). **Important : you must activate the Fan mode when the heating unit is equipped with a fan; failure of the heating unit could occur if not doing so.**



Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable State/Country codes and standards.

3. Operation



Ambient temperature

The figures displayed above the word “AMBI-ENT” indicate the ambient temperature, ± 0.5 degree. Temperature can be displayed in degrees Fahrenheit or Celsius (see “Display in degrees Fahrenheit/Celsius”).

Temperature set point

The figures displayed above the word “SET” indicate the temperature set point. It can be displayed in degrees Fahrenheit or Celsius (see “Display in degrees Fahrenheit/Celsius”).

To adjust the set point, just press down the right button to increase the value, or the left button to decrease it. Set points can be adjusted by increments of 1°F or 0.5°C . To quickly scroll through the set point values, press and hold down the button. The minimum set point is 37°F (3°C), and the maximum set point is 86°F (30°C).

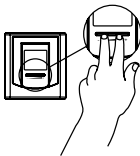
In Day mode, you can turn off the thermostat by lowering the set point below 37°F . The set point value displayed will be OFF, and heating system start up will be impossible.

Day mode and Night mode ☀️ 🌙

The thermostat includes a Day mode and a Night mode, both of them having their own independently adjustable and recorded set point. When switching from one mode to the other, the system will automatically use the temperature set point corresponding to the Day/Night mode

selected. The standard factory set point adjustment is 68°F (20°C) for the Day mode, and 60°F (16°C) for the Night mode.

The current Day/Night mode selection is indicated on the display by the Sun or Moon icon. In order to manually switch from one mode to the other, simultaneously press down the two buttons and release them immediately.



Night mode timer

The Night mode features a timer that automatically returns to the Day mode after a selectable time period. This timer allows the temporary use of a temperature set point. The standard factory adjustment of the timer is 8 hours. With this adjustment, the thermostat automatically returns to Day mode 8 hours after being switched to the Night mode.

For example, if you want a night temperature lower than the day temperature, both Day/Night modes set points will first have to be set at the desired temperatures. Before bedtime, the Night mode temperature set point will be activated by switching manually to the Night mode. The timer is set for the duration of the night. The thermostat will automatically return to the Day mode at the end of the night, and the Day mode temperature set point, which is higher, will become effective at this time.

Night mode timer adjustment procedure

1. If necessary, adjust the Day/Night mode set points at the desired temperatures. If needed, switch from one mode to the other by simultaneously pressing down the two buttons and releasing them immediately.
2. From the Night mode, simultaneously press down the two buttons for more than 3 seconds until the icon SET starts to blink, indicating that the adjustment of the Night mode timer is effective. The figures displayed above the word "AMBIENT" indicate the current adjustment of the timer.
3. If needed, adjust the timer by pressing down the right button to increase the value, or the left button to decrease it. The adjustment range is from 1 hour to 999 hours. To quickly scroll through timer values, press and hold down the button.
4. When the adjustment is completed, release the buttons and wait for 5 seconds to exit the adjustment function.

NB : *The Night mode timer will be automatically reinitialized to the latest recorded value when switching from the Day mode to the Night mode. It is not necessary to readjust the timer every time you switch to the Night mode. The timer is also reinitialized when this value is adjusted.*

Once the timer has completed its cycle and when the thermostat is in the Day mode, you must manually return to the Night mode. If you want to automatically return to the Night mode, the Automatic mode must be selected

Automatic mode

The Automatic mode, which is associated to the Night mode timer, allows alternating between the Day/Night modes and the two corresponding set points over a 24-hour period. Once activated, this mode allows an automatic return to the Night mode after 24 hours. The Automatic mode allows you to define two periods in a single day with different set points.

For example, if the Automatic mode is activated and the Night mode timer is set at 8 hours, the thermostat will be operating in the Night mode for 8 hours at the night temperature set point. Then, it will return to the Day mode for 16 hours operating at the day temperature set point. At the end of the 24-hour cycle, the thermostat will return to the Night mode, and the cycle will start again.

The 24-hour cycle starts with the Night mode as soon as the Automatic mode is activated. The Automatic mode activation should be made when you want to return to the Night mode. The normal course of a cycle in the Automatic mode is as follows :

- 1-Night mode : activated for the duration of the Night mode timer cycle. It returns to the Day mode when the timer cycle is completed.
- 2-Day mode : activated for the remaining time of the 24-hour cycle. It returns to the Night mode at the end of the 24-hour cycle.

Adjustment procedure of the Automatic mode :

1. If necessary, adjust the Day/Night set point at the desired temperatures. If needed, switch from one mode to the other by simultaneously pressing down the two buttons and releasing them immediately.
2. From the Night mode, simultaneously press down the two buttons for more than 3 seconds, until the icon SET starts to blink, indicating that the adjustment of the Night mode timer is effective. The figures displayed above the word "AMBIENT" indicate the current timer adjustment.

If needed, adjust the timer by pressing down the right button to increase the value, or the left button to decrease it. The Night mode timer adjustment range is from 1 hour to 23 hours in the Automatic mode. To quickly scroll through the timer values, press and hold down the button. ***NOTE : If you set the timer to any value exceeding 23 hours, it will be impossible to activate the Automatic mode and if it was activated, the Automatic mode will be deactivated.***

3. Activate the Automatic mode by simultaneously pressing down the two buttons for at least 3 seconds. The Automatic mode icon will appear. If the Automatic mode was already activated, the same procedure should be used to deactivate it.
4. When the adjustment is completed, release the buttons and wait for 5 seconds to exit the adjustment function.

NOTE : It is always possible to manually change the Day/Night mode during a 24-hour cycle. However, any manual return to the Night mode will re-initialize the Night mode timer to the latest value recorded, which modifies the cycle in progress. In all cases, at the end of the 24-hour cycle, the thermostat will return to the Night mode and start a new cycle. It is thus not necessary to readjust the Automatic mode when a manual change is made to the Day/Night mode.

Frost-free warning ❄️

The Snowflake icon is displayed when the temperature set point is between 37°F (3°C) and 41°F (5°C). A minimum temperature will be maintained to ensure frost control.

Display in degrees Fahrenheit/Celsius

The thermostat can display the ambient temperature and the set point in degrees Fahrenheit (standard factory setting) or Celsius.

Selection procedure for degree Fahrenheit/Celsius display

1. From the Day mode, simultaneously press down the + and – buttons for more than 3 seconds until the SET icon starts to blink..
2. Press down the + button to switch from the degrees Fahrenheit to the degrees Celsius, and conversely. The degree Fahrenheit or Celsius symbol will be displayed.
3. When the adjustment is completed, release the buttons and wait for 5 seconds to exit the adjustment function.

Fan mode 🌀

When the thermostat is used to control a heating system equipped with a fan, the Fan mode **MUST** be activated. This mode prevents the system from continuously starting and stopping, which could cause fan failure. The Fan mode is by default deactivated at the factory. The status of this mode is indicated on the display by the Fan icon.

Adjustment procedure for the Fan mode

1. From the Day mode, simultaneously press down the + and – buttons for more than 3 seconds, until the SET icon starts to blink.
2. Press down the – button to activate or deactivate the Fan mode. The Fan icon will be displayed or not, as applicable.
3. When the adjustment is completed, release the buttons and wait for 5 seconds to exit the adjustment function.

Lock option

It is possible to impose a maximum temperature set point by activating this mode. Then, it becomes impossible to exceed this set point, regardless of the mode. However, it is still possible to lower the set point at your discretion.

Locking procedure

1. From the Day mode, adjust the set point at the maximum desired value.
2. From the Day mode, simultaneously press down the + and – buttons for more than 10 seconds, until the Lock icon displays (note that the SET icon will also blink after 3 seconds).
3. Release the buttons. The thermostat is now locked.

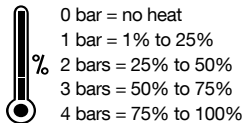
Unlocking procedure

1. Cut off the power supply of the thermostat at the electrical panel.
2. Wait at least 20 seconds.
3. Restore the power supply of the thermostat at the electrical panel.
4. The Lock icon is blinking on the thermostat display, meaning that it is possible to unlock the thermostat.
5. While the Lock icon is blinking, simultaneously press down the + and – buttons for more than 10 seconds, until the Lock icon disappears.
6. Release the buttons. The thermostat is now unlocked.

NOTE : If the thermostat isn't unlocked within 5 minutes after the restoration of the power supply, the Lock icon will stop to blink and it will be impossible to unlock the thermostat unless cutting off the power supply again.

Heating power indicator

The level of power used to maintain the temperature at the set point is expressed as a percentage indicated by the number of bars in the thermometer displayed. The heating power used is displayed as follows :



Power failure

In the case of a power failure, the adjustments are automatically saved and recovered when power is restored. Note that the Day/Night mode is recovered only if the Automatic mode was previously deactivated. Otherwise, the thermostat comes back in Day mode and the Automatic mode icon blinks, meaning that the Automatic mode was previously activated and that it is now deactivated. Blinking will stop as soon as a button is pressed down.

4. Troubleshooting

Problem	Description	Solution
1	The thermostat is hot.	In normal operating conditions, the thermostat housing can reach nearly 104°F (40°C) at maximum load. That is normal and will not affect the effective operation of the thermostat.
2	Heating is always on.	Check to be sure that the thermostat is properly connected. Refer to the installation section.
3	Heating does not run even if the thermostat indicates it is on.	Check if the thermostat is properly connected. Refer to the installation section.
4	The display does not come on.	Check if the thermostat is properly connected. Refer to the installation section. Check the power supply at the electrical panel. Check if the heating unit has a switch. If so, check the circuit breaker and intervening switches performance.
5	The display turns off a few minutes and then turns on again.	The thermal protection of the heating unit has deactivated the unit due to overheating. Check if the heating unit is in good condition of operation and that clearance around the appliance is according to the manufacturer's specifications.
6	The display has low contrast when heating is on.	The load is lower than the minimum load. Install a heating unit that is within the load limits of the thermostat.
7	The displayed ambient temperature is incorrect.	Check the presence of an air stream or a heat source near the thermostat, and correct the situation. Note that the thermostat measures dry bulb air temperature at the location of the thermostat.
8	The display indicates E1 or E2.	Faulty thermal sensor. Contact customer service.
9	Weak luminosity of the display.	Possibility of a bad contact. Check thermostat wirings. Refer to the installation section.

5. Technical specifications

Supply voltage :

120/208/240 VAC, 50/60 Hz

Minimum electrical current with a resistive load :

1.2 A

300 W to 240 VAC

260 W to 208 VAC

150 W to 120 VAC

Maximum electrical current with a resistive load :

16.7 A

4000 W to 240 VAC

3475 W to 208 VAC

2000 W to 120 VAC

Temperature display range :

32 °F to 99.5°F (0 °C to 40°C)

Temperature display resolution :

0.5 °F (0.5 °C)

Temperature set point range :

37 °F to 86°F (3 °C to 30°C)

Temperature set point increments :

1 °F (0.5 °C)

Storage temperature :

-4 °F to 120 °F (-20 °C to 50 °C)

Certification :



Limited Warranty

This unit has a **3-years** warranty. If at any time during this period the unit becomes defective, it must be returned to its place of purchase with the invoice copy, or simply contact our customer service department (with a copy of the invoice in hand). In order for the warranty to be valid, the unit must have been installed and used according to instructions. If the installer or the user modifies the unit, he will be held responsible for any damage resulting from this modification. The warranty is limited to the factory repair or the replacement of the unit, and does not cover the cost of disconnection, transport, and installation.

Customer service

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