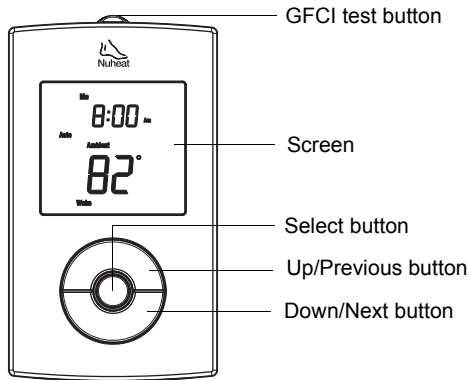


1 Description

The SOLO thermostat is designed to control the temperature of a floor heating system for both 120-volt and 240-volt applications. The thermostat can be used to control either the floor temperature or the ambient temperature. It has a maximum load capacity of 15 A (1800 W @ 120 VAC or 3600 W @ 240 VAC).



SUPPLIED PARTS

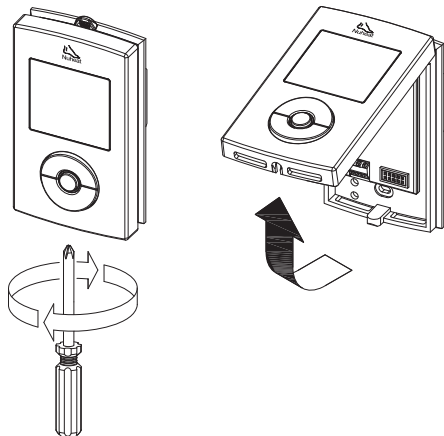
- One (1) thermostat
- One (1) floor temperature sensor
- Four (4) solderless connectors
- Two (2) 6-32 mounting screws
- One (1) flat-tip screwdriver

2 Installation

TURN OFF POWER TO THE HEATING SYSTEM AT THE MAIN POWER PANEL TO AVOID ELECTRICAL SHOCK. THE INSTALLATION MUST BE PERFORMED BY A QUALIFIED ELECTRICIAN.

The thermostat's housing is not watertight. Do NOT install the thermostat in an area where it can be exposed to water or rain.

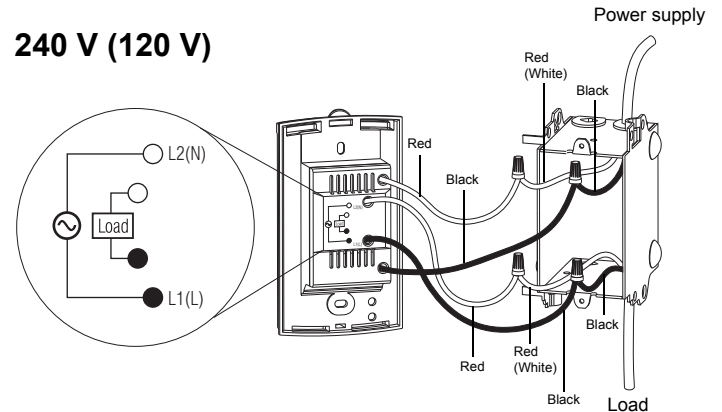
- 1 To remove the thermostat faceplate, loosen the screw at the bottom of the thermostat and lift the bottom of the faceplate outwards towards you. (The screw cannot be completely removed.)



- 2 Connect the thermostat wires to the power supply and to the load using solderless connectors for copper wires as shown in the following illustration.

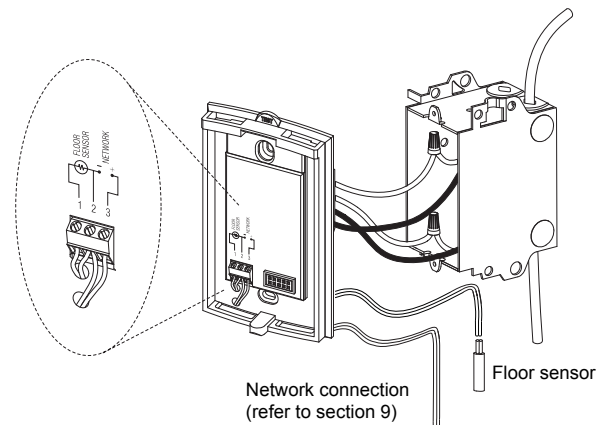
NOTE: The SOLO thermostat does not have a ground wire. The grounding of the system is done via the ground wire from the heating apparatus (load side).

240 V (120 V)



NOTE: All wires and connections must conform to the local electrical code. This thermostat has tinned copper wires for line and load connections. Special CO/ALR solderless connectors must be used if these wires are to be connected to aluminium conductors.

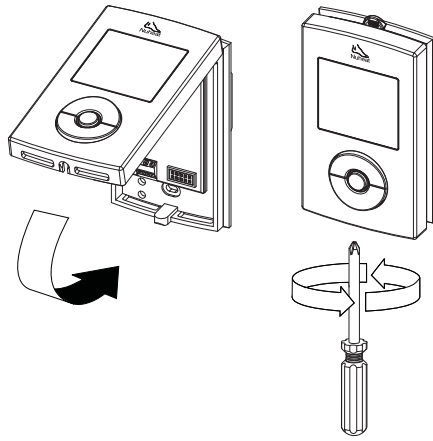
- 3 Pull the temperature sensor wires through one of the openings on the thermostat base and connect the wires to terminals 1 and 2 (no polarity).
 - The sensor cable must not come in contact with the electrical wires and must be routed outside the electrical box and follow the wall down to the floor.
 - Position the sensor cable such that it does not come in contact with the floor heating wires. The sensor must be centered between two floor heating wires for best temperature control.
 - Do NOT staple the sensor head (the plastic end) to the floor. Doing so might damage the sensor. The damage might not be noticeable during testing but can become apparent several days later.



- 4 Push the excess length of the line voltage wires back inside the electrical box. Install the thermostat base onto the electrical box using the provided screws.
- 5 Set the DIP switches (refer to section 2.1).



- Reinstall the thermostat faceplate on its base and secure it with the screw. If there is a sticker on the screen, peel it off.



- Apply power to the heating system. Verify the installation by making sure that the heating system can be turned on or off by increasing or decreasing the setpoint respectively.
- Test the GFCI (refer to section 6).

NOTE: Keep the air vents of thermostat clean and unobstructed at all times.

2.1 DIP Switch Settings

Set the DIP switches on the back of the thermostat faceplate for your specific application. Refer to Table 1:

Table 1

DIP Switch	Function	Up	Down
1	Master/Slave selection	Slave	Master
2	Floor type selection	Tile	Wood

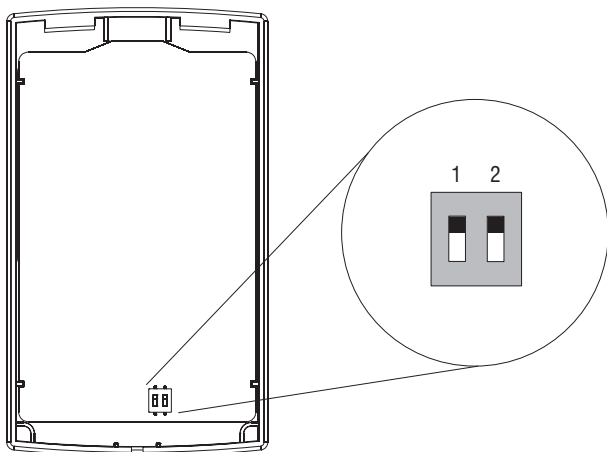
NOTE: The default settings are shown inside the grey cells.

DIP switch 1

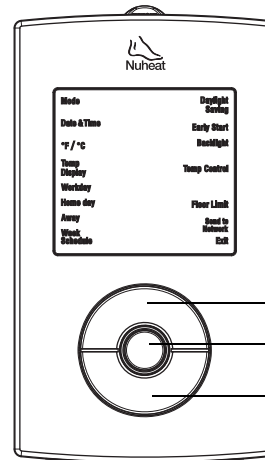
Leave in "Slave" if you are not connecting the thermostat to a network (refer to section 9).

DIP switch 2

Set according to your floor type. For laminate or engineered wood floor, you must set the DIP switch to 'Wood' to limit the maximum floor temperature to 82°F (28°C).



3 Programming



Programming Menu

- To enter the programming menu, press and hold the **Select** button for 2 seconds.
- To navigate inside the menu, press the **Next** or **Previous** button.
- To select an item inside the menu, briefly press the **Select** button (do not hold down).
- To return to the previous menu, press and hold the **Select** button for 2 seconds.

- Previous button
- Select button
- Next button

3.1 Setting the Time and Date

- Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- Using the **Up** or **Down** button, go to **Date+Time** and briefly press the **Select** button.
- Using the **Up** or **Down** button, choose the time format and briefly press the **Select** button.
- Set the hour and briefly press the **Select** button.
- Set the minutes and briefly press the **Select** button.
- Set the year and briefly press the **Select** button.
- Set the month and briefly press the **Select** button.
- Set the day and briefly press the **Select** button. You will automatically be returned to the Programming Menu.

3.2 Setting the Week Schedule

Set the week schedule by assigning a Day Type (workday / home day / away day) for each day of the week. The default Day Type for each day is shown in Table 2:

Table 2

Day Type	MO	TU	WE	TH	FR	SA	SU
Workday	√	√	√	√	√		
Home day						√	√
Away							

To change the Day Type:

- Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- Using the **Up** or **Down** button, go to **Week Schedule** and briefly press the **Select** button.
- Using the **Up** or **Down** button, go to the day that you wish to modify and briefly press the **Select** button.
- Choose the Day Type (**Workday** / **Home day** / **Away**) and briefly press the **Select** button.
- Repeat steps 3 and 4 if you wish to modify another day.
- When done, press the **Up** or **Down** button until **Exit** is flashing and briefly press the **Select** button to return to the Programming Menu.

3.3 Setting the Workday Schedule

The default workday schedule (Table 3) represents a typical workday.

Table 3

Period	Start Time	Floor Temperature	
		Tile	Wood
Wake	6:00 am	88 °F (31 °C)	82 °F (28 °C)
Leave	9:00 am	74 °F (23 °C)	74 °F (23 °C)
Return	5:00 pm	88 °F (31 °C)	82 °F (28 °C)
Sleep	11:00 pm	74 °F (23 °C)	74 °F (23 °C)

To modify the Workday schedule:

- 1 Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- 2 Using the **Up** or **Down** button, go to **Workday** and briefly press the **Select** button.
- 3 Using the **Up** or **Down** button, choose the Period (**Wake / Leave / Return / Sleep**) that you wish to modify and briefly press the **Select** button.
- 4 Set the hour and briefly press the **Select** button.
- 5 Set the minutes and briefly press the **Select** button.
- 6 Set the temperature and briefly press the **Select** button to return to the Workday submenu.
- 7 Repeat steps 3 to 6 if you wish to modify another Period.
- 8 When done, press the **Up** or **Down** button until **Exit** is flashing. Briefly press the **Select** button to return to the Programming Menu.

3.4 Setting the Home day Schedule

The default home day schedule (Table 4) represents a typical day when you stay at home (example: Saturdays and Sundays).

Table 4

Period	Start Time	Floor Temperature	
		Tile	Wood
Wake	8:00 am	88 °F (31 °C)	82 °F (28 °C)
Sleep	11:00 pm	74 °F (23 °C)	62 °F (16.5 °C)

To modify the Home day schedule:

- 1 Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- 2 Using the **Up** or **Down** button, go to **Home day** and briefly press the **Select** button.
- 3 Using the **Up** or **Down** button, choose the Period (Wake / Sleep) that you wish to modify and briefly press the **Select** button.
- 4 Set the hour and briefly press the **Select** button.
- 5 Set the minutes and briefly press the **Select** button.
- 6 Set the temperature and briefly press the **Select** button to return to the Home day submenu.
- 7 Repeat steps 3 to 6 if you wish to modify another Period.
- 8 When done, press the **Up** or **Down** button until **Exit** is flashing. Briefly press the **Select** button to return to the Programming Menu.

3.5 Setting the Away Temperature

The Away temperature setting is useful when you want the thermostat to maintain a lower temperature for an extended period of time. The default Away temperature setting is 50 °F (10 °C). This

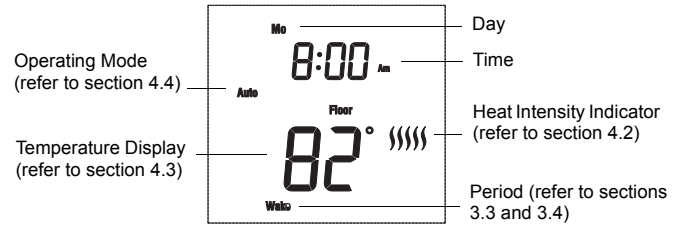
setting can be used when you go on vacation or during warmer months (refer to section 4.4).

To modify the Away temperature:

- 1 Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- 2 Using the **Up** or **Down** button, go to **Away** and briefly press the **Select** button.
- 3 Using the **Up** or **Down** button, set the desired temperature and briefly press the **Select** button. You will automatically be returned to the Programming Menu.

4 Basic Operation

4.1 Main Display



4.2 Heat Intensity Indicator (|||||)

The heat intensity indicator is a graphic representation of how long the floor heating system is turned on compared to how long it is turned off in order to reach and maintain the set temperature. The more bars means the longer the floor heating system is turned on.

4.3 Temperature Display

The thermostat can display either of the following temperatures:

- Floor temperature (default display mode)
- Ambient temperature

To switch the temperature display mode:

- 1 Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- 2 Using the **Up** or **Down** button, go to **Temp Display** and briefly press the **Select** button.
- 3 Using the **Up** or **Down** button, choose the Temperature Display (**Ambient/ Floor**) and briefly press the **Select** button. You will automatically be returned to the Programming Menu.

4.4 Operating Modes

The thermostat has the following operating modes:

- Manual mode
- Automatic mode (default operating mode)
- Workday mode
- Home-day mode
- Away mode
- Off mode

Mode selection button

If the thermostat is in Automatic (**Auto**), Manual (**Man**) or **Off** mode, you can switch between these three operating modes by pressing the **Select** button.



NOTE: Mode selection via the **Select** button is disabled when the thermostat is in Workday, Home-day or Away mode.

Mode selection menu

To switch between the six operating modes:

- 1 Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- 2 Using the **Up** or **Down** button, go to **Mode** and briefly press the **Select** button.
- 3 Using the **Up** or **Down** button, choose the Operating Mode (**Man / Auto / Workday / Home day / Away / Off**) and briefly press the **Select** button. You will automatically be returned to the Programming Menu.

Manual mode

In Manual mode, the programmed schedule is not followed. Use this mode if you always want to set the temperature manually. The thermostat will maintain the set temperature until it is manually changed or until you switch to another operating mode.

Automatic mode (default setting)

Use Automatic mode if you want the thermostat to follow the programmed week schedule (refer to section 3.2).

Workday mode

Use Workday mode if you want the thermostat to follow the Workday schedule for all 7 days of the week (refer to section 3.3).

Home-day mode

Use Home Day mode if you want the thermostat to follow the Home Day schedule for all 7 days of the week (refer to section 3.4).

Away mode

Use Away mode when you want the thermostat to use the Away temperature setting (refer to section 3.5). This mode is useful when you want the thermostat to maintain a lower temperature for an extended period of time. It can be used when you go on vacation or during warmer months. In Away Mode, the thermostat will still display the clock and the temperature readings.

Off mode

Use Off mode to turn off the floor heating system. This mode can be used when you are away for an extended period of time such as a vacation. The Off Mode **does not** erase any programmed settings. The thermostat will display the clock but will not display any temperature reading.

4.5 Temporarily Bypassing the Programmed Temperature

The thermostat uses a programmed temperature when it is in Automatic mode, Workday mode, Home day mode or Away mode. To temporarily bypass the programmed temperature, press the **Up** or **Down** button until the desired temperature is displayed. The mode indicator will flash indicating that you are temporarily bypassing the programmed temperature. The thermostat will maintain this temperature until the start of the next period (or for 2 hours for Away mode).

5 Configurations

5.1 Temperature Control Setting

The thermostat can be configured to control the floor temperature, ambient air temperature, or a combination of ambient air and floor temperature (as shown in Table 5):

Table 5

Temperature Control Setting	Description
Floor (default)	The thermostat controls the floor temperature.
Ambient	The thermostat controls the ambient air temperature. This setting is useful if the floor temperature sensor is damaged or not installed.
Ambient+Floor	For advanced users only (refer to section 5.7).

To change the Temperature Control setting:

- 1 Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- 2 Using the **Up** or **Down** button, go to **Temp Control** and briefly press the **Select** button.
- 3 Using the **Up** or **Down** button, choose the Temperature Control setting (**Ambient / Floor / Ambient+Floor**) and briefly press the **Select** button. You will automatically be returned to the Programming Menu.

5.2 Ambient Temperature Settings

If the thermostat has been configured to control ambient temperature (refer to section 5.1), the default temperatures for workday and home day are shown in Table 6:

Table 6

Period	Ambient Temperature	
	Workday	Home day
Wake	70 °F (21 °C)	70 °F (21 °C)
Leave	62 °F (16.5 °C)	
Return	70 °F (21 °C)	
Sleep	62 °F (16.5 °C)	62 °F (16.5 °C)

To modify the temperature settings, refer to sections 3.3 and 3.4.

5.3 Early Start

Early Start calculates the optimal time to start heating in order to obtain the desired temperature by the set time. It applies only if your thermostat is following a programmed schedule (i.e. not in Manual Mode or Away Mode). By default, this feature is enabled (On).

To turn Early Start on/off:

- 1 Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- 2 Using the **Up** or **Down** button, go to **Early Start** and briefly press the **Select** button.
- 3 Using the **Up** or **Down** button, choose the Early Start setting (On / Off) and briefly press the **Select** button. You will automatically be returned to the Programming Menu.

5.4 Temperature Unit Setting

The thermostat can be configured to display the temperature in Fahrenheit or Celsius.

To change the temperature unit:

- 1 Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- 2 Using the **Up** or **Down** button, go to °F/°C and briefly press the **Select** button.
- 3 Using the **Up** or **Down** button, choose the temperature unit (°F / °C) and briefly press the **Select** button. You will automatically be returned to the Programming Menu.

5.5 Daylight Saving

This feature automatically switches the thermostat to daylight saving time on the second Sunday of March and reverts it back to normal time on the first Sunday of November. By default, this feature is enabled (On).

To change the Daylight Saving setting:

- 1 Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- 2 Using the **Up** or **Down** button, go to **Daylight Saving** and briefly press the **Select** button.
- 3 Using the **Up** or **Down** button, choose the Daylight Saving setting (On / Off) and briefly press the **Select** button. You will automatically be returned to the Programming Menu.

5.6 Backlight

The thermostat has three backlight settings:

Table 7

Setting	Backlight Effect
Off (default)	The screen is backlit for 12 seconds when any button is pressed.
Low	The screen is permanently backlit at low intensity.
High	The screen is permanently backlit at high intensity.

To change the Backlight setting:

- 1 Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- 2 Using the **Up** or **Down** button, go to **Backlight** and briefly press the **Select** button.
- 3 Using the **Up** or **Down** button, choose the Backlight setting (**Off / Low / High**) and briefly press the **Select** button. You will automatically be returned to the Programming Menu.

5.7 Floor Limit Settings (advanced users only)

You can set the minimum and maximum temperature that your floor can reach. These settings are available only if the Temperature Control setting is at **Ambient+Floor** (refer to section 5.1).

NOTE: The desired ambient air temperature might not be attainable if the maximum floor temperature is set too low.

To change the Floor Limit settings:

- 1 Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- 2 Using the **Up** or **Down** button, go to **Floor Limit** and briefly press the **Select** button.
- 3 Using the **Up** or **Down** button, choose the Floor Limit (**Min / Max**) that you wish to modify and briefly press the **Select** button.
- 4 Set the temperature and briefly press the **Select** button to return to the Floor Limit submenu.
- 5 Repeat steps 3 and 4 if you wish to modify the other Floor Limit temperature.

- 6 When done, press the **Up** or **Down** button until **Exit** is flashing. Briefly press the **Select** button to return to the Programming Menu.

5.8 Resetting to default Values

To return the thermostat to its default settings, simultaneously press both the **Select** and **Down** buttons and hold. **rSt** (reset) will flash on the screen. After 5 seconds, the thermostat returns to its normal display. Release the buttons. The thermostat is now reset.

6 GFCI

This thermostat has a built-in GFCI (Ground Fault Circuit Interrupter). The GFCI protects against risks of electrocution caused by a current leakage. If the leakage current exceeds 5 mA, the GFCI will automatically be triggered, thus cutting power to the floor heating system. To indicate the fault, the **TEST** button at the top of the thermostat will illuminate (red) and the display as shown on the right will appear on the screen.



If the GFCI is triggered during normal operation, check if the fault has been caused by an external interference such as a halogen light or an electric motor. If this is the case, reset and test the GFCI. However, if the GFCI is triggered again for unknown reasons, cut power to the floor heating system from the main electrical panel and have the installation verified by an electrician.

WARNING: The GFCI does not protect against electrical shocks resulting from contact with both conductor wires.

6.1 GFCI Reset

To reset the GFCI, press the **Select** button. The **TEST** button light will go off and the thermostat will return to its normal display.

6.2 GFCI Test

To ensure the GFCI is always in working order, test it once the thermostat is installed and test it every month thereafter.

- 1 Increase the temperature sufficiently to start heating.
- 2 Wait for about 5 seconds until the heat intensity indicator (|||||) appears on the screen.
- 3 Press the **TEST** button at the top of the thermostat.
 - If the **TEST** button does NOT illuminate, **the test has failed**. Cut power to the heating system at the main electrical panel, have an electrician verify the installation and, if necessary, replace the thermostat.
 - If the **TEST** button illuminates, continue to step 4.
- 4 Switch the thermostat to Off then back to On.
 - If the **TEST** button light goes off, **the test has passed**. Set the thermostat back to the desired temperature and ignore the remaining steps. The test is now completed.
 - If the **TEST** button light remains on, **the test has failed**. Continue to step 5.
- 5 Switch the circuit breaker (at the main electrical panel) of the heating system to off then back to on.
- 6 Repeat the test. If the test fails again, cut power to the heating system at the main electrical panel, have an electrician verify the installation and, if necessary, replace the thermostat.

7 Error Displays

NOTE: The **Select** button flashes during the error display when there is corrective action to be taken. Also, the appropriate wording flashes on the screen to pinpoint the source of the problem.



The GFCI has tripped. Reset the thermostat (refer to section 6). If the GFCI trips again, cut power to the heating system from the main electrical panel and have the installation verified by an electrician.



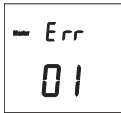
It is normal that this briefly appears at power-up. Wait for the thermostat to obtain its reading. No corrective action is necessary.



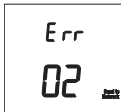
The temperature reading is higher than 158 °F (70 °C). Although the thermostat does not display temperatures above that value, it continues to operate and control the temperature. No corrective action is necessary.



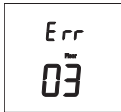
The ambient or floor temperature reading is lower than 32 °F (0 °C). Although the thermostat does not display temperatures below that value, it continues to operate and control the temperature. No corrective action is necessary.



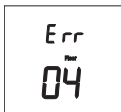
Two or more thermostats have been configured as “master” in the same network (refer to section 9). Only one thermostat per network must be configured as “master”. This error code will appear only on all thermostats configured as “master” thermostats.



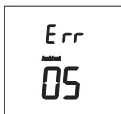
There is a short in the network wires. This can indicate the terminal polarity was not observed during the network cable connections (refer to section 9). Although the error code appears only on the master thermostat, the short or bad connection can be anywhere in the network.



The floor sensor circuit is open. This can be caused by a cut in the sensor wires. Replace the floor sensor. The thermostat is automatically set to use the “Ambient” setpoint temperatures (refer to section 5.2). The maximum heating power is 100% if the thermostat has been configured for a tile floor and 70% for a wood floor.



The floor sensor is shorted. This can happen, for example, if a nail or screw has been driven through the wires. Replace the floor sensor. The thermostat is automatically set to use the “Ambient” setpoint temperatures (refer to section 5.2). The maximum heating power is 100% if the thermostat has been configured for a tile floor and 70% for a wood floor.



The ambient temperature sensor circuit is open. Replace the thermostat.



The ambient temperature sensor is shorted. Replace the thermostat.

8 Power Outage

All programmed settings (time and temperature) are not erased during a power outage. However, if a power outage exceeds 4 hours, only the thermostat’s clock must be set (refer to section 3.1). When power returns, the thermostat returns to the operating mode preceding the power outage.

9 Network Connection

If you have multiple SOLO thermostats, you can connect them to form a network. This allows you to use the “Send to Network” feature. This feature allows you to program only one thermostat in the network and be able to send its settings to the other thermostats. This reduces programming time during installation and is useful when you are leaving for vacation or returning home from a vacation.

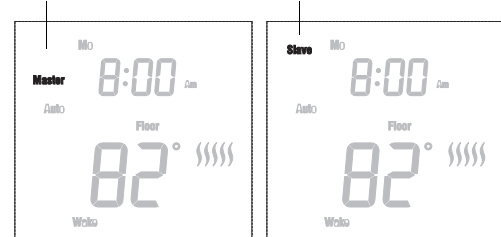
To connect thermostats in a network:

- 1 Insert a pair of 18-gauge wires (not supplied) through one of the two openings on the thermostat base and connect them to terminals 2 and 3.
NOTE: Pay close attention to the polarity of the connections. Link all terminals “2” together and all terminals “3” together.
- 2 Configure any one of the thermostats in the network as “Master” using DIP Switch 2 and leave the rest as “Slave”. Refer to step 5 in section 2.

The following will appear on the “master” thermostat and “slave” thermostat(s) when the thermostats are powered up:

Appears on
a “master”
thermostat

Appears on
a “slave”
thermostat



Send to Network

The Send to Network function is available on the “master” thermostat only. It is used to send the settings of the “Master” thermostat to all “slave” thermostats in the network.

NOTE: Send to Network is not available if the “Master” thermostat is not connected to other SOLO thermostats in a network.

To send the settings from the “master” thermostat to the “slave” thermostat(s):

- 1 Press and hold the **Select** button for 2 seconds to enter the Programming Menu.
- 2 Using the **Up** or **Down** button, go to **Send to Network** and briefly press the **Select** button.
- 3 Using the **Up** or **Down** button, choose Yes and briefly press the **Select** button. All settings are now transmitted to the “slave” thermostat(s). You will automatically be returned to the Programming Menu.

Specifications

Supply	120 VAC, 60 Hz	240 VAC, 60 Hz
Maximum load	15 A (1800 W)	15 A (3600 W)

Display range: 32 °F to 158 °F (0 °C to 70 °C)

Display resolution: 1 °F (0.5 °C)

Setpoint interval: 1 °F (0.5 °C)

Setpoint range: see table below

Temperature Control	Floor Type	Minimum Setpoint	Maximum Setpoint
Ambient or Ambient+Floor	Tile or wood	41 °F (5 °C)	86 °F (30 °C)
Floor	Tile	41 °F (5 °C)	104 °F (40 °C)
	Wood	41 °F (5 °C)	82 °F (28 °C)

Operating temperature: 32 °F to 122 °F (0 °C to 50 °C)

Storage temperature: -4 °F to 122 °F (-20 °C to 50 °C)

Control cycle: 15 minutes

GFCI rating: 5 mA

Certification: c CSA us

Warranty

NUHEAT INDUSTRIES THREE (3) YEAR LIMITED WARRANTY

This product is guaranteed against workmanship defects for a three-year period following the initial date of purchase. During this period, NUHEAT will repair or replace, at our option and without charge, any defective product which has been used under normal conditions.

The warranty does not cover delivery costs and does not apply to products poorly installed or randomly damaged before, during or after installation. This warranty cancels and replaces any other manufacturer's express or implied warranty as well as any other company commitment.

NUHEAT cannot be held liable for related or random damages before, during or after the installation of this product. The defective product as well as the purchase invoice must be returned to the place of purchase or mailed, prepaid and insured, to the following address:

NUHEAT INDUSTRIES LTD.

USA

6920 Salashan Parkway
Building D-200
Ferndale, WA 98248

CANADA

3105 - 6900 Graybar Road
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