

# INSTALLATION AND OPERATING INSTRUCTIONS

# LUXPRO

# P2000F

52167

## ***Radiant Floor/Slab Heating Only Thermostat with Remote Sensor (included)***

LUX Products Corporation - Mt. Laurel, New Jersey 08054 - <http://www.luxproproducts.com>

Thank you for your confidence in our product. To obtain the best results from your investment, please read these instructions and acquaint yourself with your purchase. Follow the installation procedures carefully, and save these instructions for future reference.

### **SYSTEM COMPATIBILITY:**

This thermostat can be used with most single-stage 24 Volt hydronic, and radiant underfloor heating applications up to 2 Amps. NOTE: this thermostat is system powered only, and requires 3 wires to the thermostat location for operation: 24V+ Power, 24V- Common, and Heat Activation Signal.

This thermostat cannot be used with: 3-wire zone valves (non self-closing upon power removal), 120/240 volt heating elements, cooling systems, or heat pumps. Ask your dealer for other LUXPRO thermostats to control those systems.

### **CAUTIONS AND WARNINGS:**

- The electrical rating for this thermostat is 2.0 Amps.
- The thermostat contains parts that may wear out through use and are susceptible to failure if over-loaded or used in a manner other than as indicated in the documentation.
- Check unoccupied residences regularly to ensure that all systems are operating properly.
- Check any heating/air-conditioning system including this product before operation and at regular intervals.
- Electrical interference, static electricity, failure or substandard performance of batteries, wiring defects in the installation and/or characteristics of the connected HVAC devices may prevent the system from regulating heating and cooling as anticipated.
- The thermostat is a sensitive device and dropping the product can cause damage to critical components. If the product is dropped or shaken violently during transport or installation then it should be replaced immediately.
- Persons with physical or mental limitations may not be able to promptly respond to a malfunction of the heating/air-conditioning system.
- All residents should be made aware of the potential in any system for malfunctions that could cause continuous heating or cooling and should be familiar with the operation and location of the heating/cooling appliance on/off switch.
- Read the instruction manual completely before installing the thermostat.

## MERCURY WARNING AND RECYCLING NOTICE:

Mercury is considered to be a hazardous material. If this product is replacing a thermostat that contains mercury in a sealed tube, contact your local waste management authority for instructions regarding recycling and proper disposal. It may be unlawful in your state to place it in the trash.

## THERMOSTAT FEATURES:

- Flexible Room/Air and Floor/Slab Temperature Control Settings
- Large LCD Screen
- Bright Blue Display Backlight
- Separate Wired Slab/Floor Sensor (Sensor Included)
- Room/Air Set Temperature Range 40°F (5°C) to 86°F (30°C) degrees
- Slab/Floor Set Temperature Range 40°F (5°C) to 99°F (45°C) degrees
- Clean, Attractive Design
- Keypad Lockout Protection
- Easy to Install
- F/C Selectable Temperature Display
- Adjustable MIN/MAX Room/Air Temperature Limits
- Adjustable MIN/MAX Slab/Floor Temperature Limits
- 3-Year Warranty
- Adjustable Freeze-Protection Mode
- Room/Air Sensor, User Temperature Calibration Adjustment
- Floor/Slab Sensor, User Temperature Calibration Adjustment

## TOOLS YOU MAY NEED:

Screwdrivers, wire strippers, wire cutters, and possibly a drill with assorted bits (typically for new installations only).

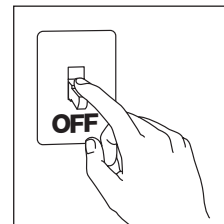
## INCLUDED FLOOR/SLAB TEMPERATURE SENSOR:

This thermostat kit contains a floor/slab temperature sensor that gets wired to the thermostat baseplate. The floor/slab sensor is an important component in the system, to properly control the heating output commands. The thermostat uses information from both the on-board internal room/air sensor, and also the wired remote floor/slab sensor during temperature control. The thermostat controls the room/air temperature to your desired setpoint value using the heat provided by the floor, but also maintains the floor/slab temperature to within the MIN/MAX thresholds that you would like it to remain within.

The recommended location in the slab for this sensor is inside of an extra piece of radiant floor tubing at least 3-4 ft. (90-120 cm) in from the perimeter of the slab, with this tube at a depth of approximately 1 in. (25 mm) below the finished surface of the slab. Please ensure that the sensor is positioned at least 8 in. (20 cm) from any heated water tubing within the floor/slab, so that the true temperature of the slab is being measured.

## REMOVAL OF OLD THERMOSTAT:

1. Turn OFF the electricity to all heating and cooling components. Do not turn the electricity back on until all work is completed.
2. Remove the front portion of your old thermostat to expose the wiring connections.
3. Write down the letters printed near each wire terminal that is used, and also the color of each wire that is connected to it.
4. Carefully remove the wires one at a time, and bend them in a manner so that they do not fall back inside the wall. Do not allow bare wire ends to touch each other.
5. Loosen the mounting screws for the old thermostat and carefully remove it from the wall.



## THERMOSTAT MOUNTING LOCATION:

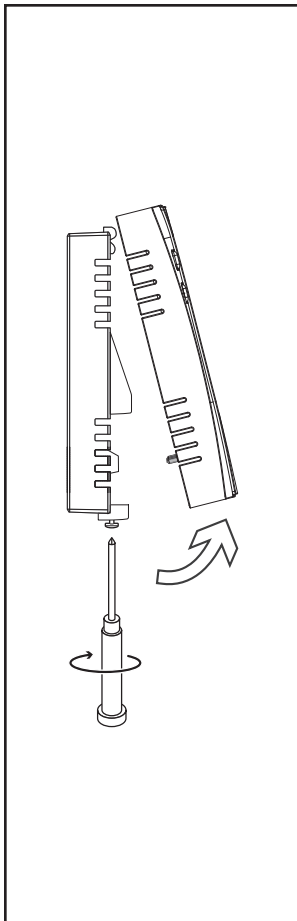
On replacement installations, mount the new thermostat in place of the old one unless the conditions listed below suggest otherwise. On new installations, please follow these general guidelines:

1. Mount the thermostat on an inside wall, about 5 ft. (1.5m) above the floor.
2. Do not locate the thermostat where air circulation is poor such as in a corner, alcove, or behind a door that is normally left open. Do not locate the thermostat where unusual heating or cooling conditions may be present, such as: direct sunlight, above a lamp, television, or radiator, or on a wall next to an exterior door or window.
3. Do not locate in a damp environment, as this can lead to corrosion that may shorten thermostat life. If painting or construction work is still ongoing, cover the thermostat completely or wait until this work is complete before installation.

## INSTALLATION NOTES:

- This thermostat is powered by the 24 VAC from the system, and must have a System Common wire (negative [-] side of the 24V transformer) attached to the “C” terminal adjacent to the “RH” wire connection.
- If you only have three wires going to the thermostat location (RH, C, and W), then your hydronic zone valve will need to receive its Common connection from the transformer. If your hydronic zone valve cannot receive a Common Power connection directly from the transformer, the thermostat can provide Common Power to the zone valve using the optional “C” terminal output along with the “W” terminal for heating activation, but a fourth wire must be added.

## INSTALLATION OF NEW THERMOSTAT:

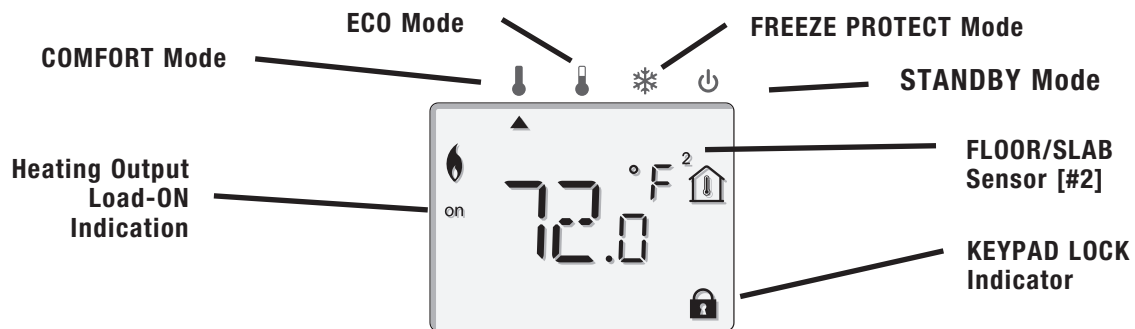


1. Loosen the screw underneath the middle of the thermostat housing, and separate the two halves by pulling the two bottom surfaces apart.
2. If needed, strip wire insulation leaving only 1/4 in. (6 mm) bare wire ends, and clean off any corrosion present.
3. Route the wires through the large opening in the new thermostat base plate, and attach your wires using the diagrams on the back page of this installation sheet.
4. When attaching the wires to the thermostat, please ensure that the bare wire ends are held all the way into the terminal block while the screws are being tightened.

## COMPLETE THE INSTALL:

1. Fill the wall opening with non-combustible insulation to prevent drafts from affecting the thermostat's normal operation.
2. Hold the base against the wall, and try to line up the screw holes from the prior thermostat to mount the base plate
3. If the previous holes cannot be used, hold the thermostat base against the wall so that it appears straight and level (position the base for best appearance) and mark for the new screw holes. Attach the base to the wall using the screws provided (use the supplied plastic anchors if needed when mounting to a soft material such as drywall).

## DISPLAY SCREEN CONTENT:



## FRONT PANEL CONTROLS:

**SYSTEM MODE BUTTON:** This changes the current operating mode of the thermostat

**SET BUTTON:** This button lets you adjust the target set temperature in the ECO and STANDBY modes.

**UP (+) and DOWN (-) BUTTONS:** These buttons increase and decrease the target set temperatures, and are also used to adjust system setup options while in the configuration menus.

**OK/INFO BUTTON:** This button is used to review current temperature settings and current data from the room/air and floor/slab temperature sensors.

## OPERATING INSTRUCTIONS:

### COMFORT MODE:

This is the normal operating mode for regular heating temperature control. To view the current COMFORT set temperature, select COMFORT mode with the mode button and press either the UP or DOWN button one time. You can adjust the set temperature by continuing to press either the UP or DOWN button to the desired target value. The available room/air temperature setting values while in COMFORT mode are between 40°F (5°C) and 86°F (30°C) degrees. Save the changes by pressing the OK/INFO button.

### ECO (ENERGY SAVING) MODE:

ECO mode uses a lower target set temperature to save energy while you are away, which you can adjust separately. To view the current ECO set temperature, select ECO mode with the mode button, then press the SET button. You can adjust the ECO mode set temperature by pressing UP or DOWN to the desired target value. Save the changes by pressing the OK/INFO button.

**NOTE:** The available range of the ECO mode set temperature is linked to and based upon, the current COMFORT mode target set temperature. The ECO mode set temperature can range from 2°F (1°C) degrees to 10°F (5°C) degrees LESS than the current COMFORT mode target set temperature.

**ECO MODE EXAMPLE:** if the present COMFORT temperature is 75°F (24°C) degrees, the ECO set temperature can be from 65°F (19°C) to 73°F (23°C) degrees.

### FREEZE PROTECT MODE:

This mode is intended to be used during times of vacancy or non-use, to prevent the floor/slab from getting close to freezing temperatures. To view the current FREEZE PROTECT set temperature, select FREEZE PROTECT mode with the mode button, then press the SET button. You can adjust the FREEZE PROTECT mode set temperature by pressing UP or DOWN to the desired target value. The available setting values while in FREEZE PROTECT mode are between 40°F (5°C) and 50°F (10°C) degrees. Save the changes by pressing the OK/INFO button.

### STANDBY (OFF) MODE:

This mode is used when you want to completely turn off the heating output signal. The thermostat does not protect the system from freezing when placed into STANDBY mode.

## SYSTEM CONFIGURATION AND SETUP OPTIONS:

**NOTE:** there are some menu items which are set to fixed values, and are NOT adjustable for this particular version of the thermostat. The non-adjustable menu items will be listed below as “fixed value, not adjustable”, will not respond to UP/DOWN button presses, please use the OK/INFO button to advance to the next available setting.

This thermostat has two configuration menu areas for adjusting how the thermostat will operate the heating output:



### **INSTALLER SETTINGS MENU:**

**TO ACCESS THE INSTALLER SETTINGS MENU:** Place the thermostat into STANDBY mode. Hold both the SET and UP buttons for at least 5 seconds, until the screen changes. The menu starts with item #01 below, and is advanced to each following item pressing the OK/INFO button. The options for each item are changed using the UP or DOWN buttons. To exit, keep pressing the OK/INFO button until the thermostat returns back to the normal STANDBY mode screen.

**ITEM #01 (fixed value, not adjustable):** on-screen display indication = “ENG” flashing.

**ITEM #02 (TEMPERATURE SCALE):** [F° Degrees, default] Shows all temperature values in Fahrenheit. [C° Degrees] Shows all temperature values in Celsius.

**ITEM #03 (fixed value, not adjustable):** on-screen display indication = “AIR” flashing.

**ITEM #04 (fixed value, not adjustable):** on-screen display indication = “CO”, with “OF” flashing.

**ITEM #05 (OUTPUT CONFIGURATION):** [“TA” (valve), “NC” (normally closed) default] This commands the hydronic zone valve or thermal actuator into the CLOSED (OFF) state when the thermostat is not calling for heating to run. [“NO” (normally open)] This commands the hydronic zone valve or thermal actuator into the OPEN (ON) state when the thermostat is not calling for heating to run.

**ITEM #06 (fixed value, not adjustable):** on-screen display indication = “NA” flashing.

**ITEM #07 (ROOM/AIR TEMPERATURE “MAX” VALUE):** [86°F (30°C) Degrees, default]

The available range for this Maximum setting value is between 40°F (5°C) and 86°F (30°C) degrees.

**ITEM #08 (ROOM/AIR TEMPERATURE “MIN” VALUE):** [40°F (5°C) Degrees, default]

The available range for this Minimum setting value is between 40°F (5°C) and 86°F (30°C) degrees.

*NOTE: if both ITEM #07 and #08 are set to the same value, this will produce a fixed target Room/Air Temperature setpoint value that will be non-adjustable by the user.*

**ITEM #09 (FLOOR/SLAB TEMPERATURE [#2] “MAX” VALUE):** [99°F (38°C) Degrees, default]

The available range for this Maximum setting value is between 68°F (20°C) and 99°F (38°C) degrees.

**ITEM #10 (FLOOR/SLAB TEMPERATURE [#2] “MIN” VALUE):** [86°F (30°C) Degrees, default]

The available range for this Minimum setting value is between 40°F (5°C) and 95°F (35°C) degrees.

*NOTE: if both ITEM #09 and #10 are set to the same value, this will produce a fixed target Floor/Slab Temperature setpoint value that will be non-adjustable by the user.*



## **EXPERT SETTINGS MENU:**

**TO ACCESS THE EXPERT SETTINGS MENU:** Place the thermostat into STANDBY mode. Hold both the SET and UP buttons for approximately 10 seconds until the screen changes for a second time, after the INSTALLER menu content appears. The menu starts with item #01 below, and is advanced to each following item pressing the OK/INFO button. The options for each item are changed using the UP or DOWN buttons. To exit, keep pressing the OK/INFO button until the thermostat returns back to the normal STANDBY mode screen.

**ITEM #01 (ROOM/AIR TEMPERATURE SENSOR CALIBRATION):** [0°F (0°C) Degrees, default] This setting directly offsets the measurement value for the Room/Air temperature sensor. The available range for this calibration adjustment is from MINUS 5°F (3°C) degrees, to PLUS 5°F (3°C) degrees, above or below the actual perceived temperature measurement.

**ITEM #02 (FLOOR/SLAB TEMPERATURE [#2] SENSOR CALIBRATION):** [0°F (0°C) Degrees, default] This setting directly offsets the measurement value for the Floor/Slab temperature sensor. The available range for this calibration adjustment is from MINUS 5°F (3°C) degrees, to PLUS 5°F (3°C) degrees, above or below the actual perceived temperature measurement.

**ITEM #03 (DEFAULT DISPLAY TEMPERATURE SOURCE):** [T1-ROOM/AIR, default] This uses the internal Room/Air temperature as the ambient temperature displayed on the screen. [T2-FLOOR/SLAB] This uses the remote Floor/Slab temperature [#2] sensor as the temperature displayed on the screen.

**ITEM #04 (TEMPERATURE REGULATION TYPE):** [PID Algorithm, default] This setting uses a complex learning algorithm that anticipates when to turn the heating output on and off, well in advance of the actual floor/slab temperature input to minimize overshoot and undershoot. [ON/OFF 2-POINT] This control type uses fixed on/off conditions for heating output commands, and is not recommended for use with a hot water based floor/slab heating system.

### **WARNING:**

When in STANDBY MODE, the thermostat does not provide freeze protection. There is no low-temperature limit for the Floor/Slab temperature. If the system has not been adequately prepared for low temperatures, damage from freezing can result.

## **KEYPAD LOCKOUT:**

The Keypad Lockout feature prevents accidental setting changes, and helps to deter unauthorized users from tampering with the temperature settings.

**TO LOCK THE FRONT PANEL BUTTONS:** Hold both the UP and DOWN buttons together for at least 3 seconds, and a padlock icon will appear in the lower right corner of the display screen.

**TO UNLOCK THE FRONT PANEL BUTTONS:** Hold both the UP and DOWN buttons together for at least 3 seconds, and a padlock icon should disappear from the display screen.

## **INSTALLER MANUAL OUTPUT CONTROL - SYSTEM TEST:**

This thermostat has a manual system test mode that can be used during installation or system diagnosis, to force the output ON/OFF in real time with no delays.

**TO ACCESS THE MANUAL TEST MODE:** First place the System Mode into STANDBY, and then press both the SET and OK/INFO buttons together at the same time. While in Test Mode, the display will show "TEST". The heating output command can be toggled "ON" with the UP button, and "OFF" with the DOWN button.

**TO EXIT THE MANUAL TEST MODE:** Press the OK/INFO button and the thermostat will return back to the normal STANDBY mode screen.

## **TECHNICAL ASSISTANCE:**

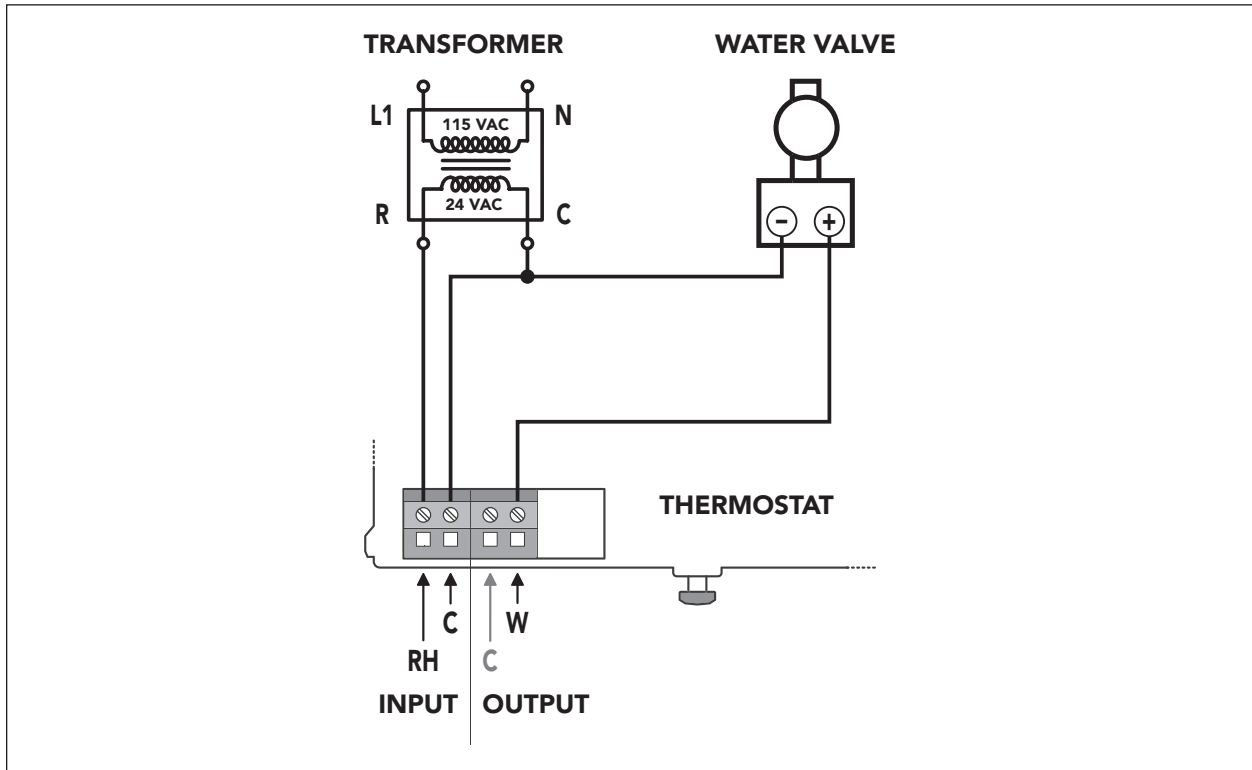
If you have any problems installing or using this thermostat, please carefully and thoroughly review the instruction manual. If you require assistance, please contact our Technical Assistance department at 856-234-8803 during regular business hours between 8:00AM and 4:30PM Eastern Standard Time, Monday through Friday. You can also receive technical assistance online anytime day or night at <http://www.luxproproducts.com>. Our web site offers you answers to the most common technical questions, and also permits you to email your questions to our technical support staff at your convenience.

## **LIMITED WARRANTY:**

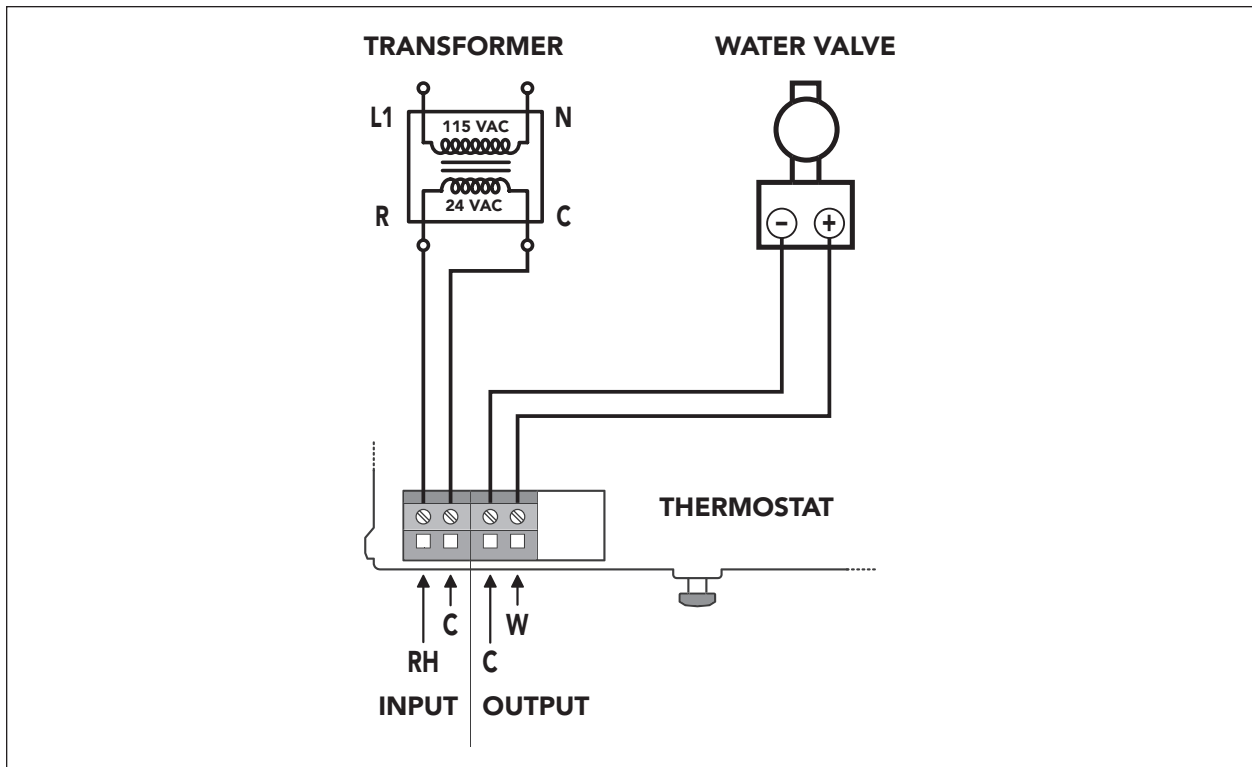
If this unit fails because of defects in materials or workmanship within three years of the date of original purchase, LUX will, at its option, repair or replace it. This warranty does not cover damage by accident, misuse, or failure to follow installation instructions. Implied warranties are limited in duration to three years from the date of original purchase. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Please return malfunctioning or defective units to the location from which the purchase was made, along with proof of purchase. Please refer to "TECHNICAL ASSISTANCE" before returning thermostat. Purchaser assumes all risks and liability for incidental and consequential damage resulting from installation and use of this unit. Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights, which vary from state to state. Applicable in the U.S.A. and Canada only.

# WIRING DIAGRAMS:

## WATER VALVE RECEIVES COMMON POWER FROM TRANSFORMER



## WATER VALVE RECEIVES COMMON POWER FROM THERMOSTAT





FLOOR/SLAB SENSOR TO THERMOSTAT (ORDER DOES NOT MATTER)

