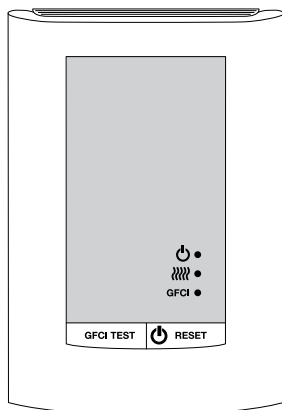


Owner's Manual

SunStat® Relay II

Model 500810



(For use only with Models 500750 and 500775)

The SunStat Relay II model 500810 is designed to operate either a 120 VAC or 240 VAC resistance floor heating system in conjunction with a thermostat Model 500750 or 500775. It comes with a GFCI inside to meet safety needs.

Please follow this manual for installation and operating instructions. Leave these instructions with the homeowner.

Installation

Cautions to Follow

You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product. FAILURE TO COMPLY WITH PROPER INSTALLATION AND MAINTENANCE INSTRUCTIONS COULD RESULT IN DAMAGE TO THE SYSTEM OR ELECTRIC SHOCK CAUSING PROPERTY DAMAGE, PERSONAL INJURY AND/OR DEATH. Watts is not responsible for damages resulting from improper installation and/or maintenance.

Local building or plumbing codes may require modifications to the information provided. You are required to consult the local building and plumbing codes prior to installation. If this information is not consistent with local building or plumbing codes, the local codes should be followed.

CAUTION: This product requires electrical wiring. It is recommended that this product be installed by a qualified technician. Local codes may require this product be installed by an electrician. Prior to installation, consult your local codes for what is acceptable in your area. To the extent this information is not consistent with local codes, the local codes should be followed.

ALWAYS: Wire all circuits as Class 1, Electric Light and Power Circuits

ALWAYS: Wire all circuits with insulation rated 600V minimum.

ALWAYS: Mount this control only to a grounded metallic box or a nonmetallic box.

ALWAYS: Use power supply wires suitable for at least 90°C.

WARNING: High voltage – disconnect power supply before servicing.

WARNING: The GFCI (ground-fault circuit interrupter) in this thermostat control does not protect against shock if both bare conductors are touched at the same time.

WARNING: Do not exceed 15 amps on this thermostat control. Doing so will cause risk of fire hazard and damage.

WARNING: Make sure the house power supply voltage matches the voltage rating of the floor heating system. Do not apply 240 VAC to a 120 VAC rated system. Connecting the wrong voltage may cause overheating and damage to the system, the control, floor coverings, etc.

Parts Needed

Contents of package:

Unpack the control and make sure everything is in good condition. Do not use a damaged control or part. The package comes with these items:

- (1) Relay control
- (4) Wire nuts (Marettes®)
- (2) Mounting screws
- (1) Screwdriver

Tools and supplies needed:

- No. 2 Phillips screwdriver
- Hole saw (if installing in an existing wall)
- Wire strippers, wire cutters, and other electrical tools
- Electrical wall box (plastic or metal)*

***NOTE:** A single-gang extra-deep box allows sufficient space to connect 1 or 2 heating mats or cables. For 3 heating mats or cables, a 4-inch square extra-deep electrical box with a single-gang "mud ring" is necessary. Alternately, a junction box may be installed to connect multiple heating mats or cables, then run power supply wire from the junction box to the control electrical box. See the Installation Instructions provided with the floor heating system for more details.

Locating the Control

Find a suitable location for the control. It is designed for indoor dry location only. It may be placed on an insulated or uninsulated wall, preferably an interior wall to avoid overheating from outside sun heat. Keep it away from all water sources such as sinks, showers, and bathtubs as well as heat sources such as hot water piping, heat ducting, wall-mount lighting, and direct sunlight. Locate it at a suitable height, normally about 4-1/2' to 5' (1.4 m to 1.5 m) from the floor.

Mounting the Electrical Box

When mounting on an existing wall, cut the opening for the electrical box for the control. To make it easier to pull the wiring, wait to install the electrical box until after all wiring is drawn into this opening.

When mounting on an open wall, secure the electrical box for the control to the wall stud.

When mounting on an open wall, conduit from the electrical box to the floor is recommended (check local codes for requirements) for additional protection. Refer to the Installation Instructions supplied with the floor heating system for additional installation details.

Wiring

WARNING: Turn off power at the circuit breaker before doing any electrical work.

House Wiring

A qualified person should run a dedicated circuit from the main circuit breaker panel to the control location. If a dedicated circuit is not possible, it is acceptable to tap into an existing circuit. However, there must be enough capacity to handle the load (amps) of the floor heating system being installed and any possible appliance, such as a hair dryer or vacuum cleaner. Avoid circuits that have ballasted lighting, motors, exhaust fans, or hot tub pumps due to possible interference.

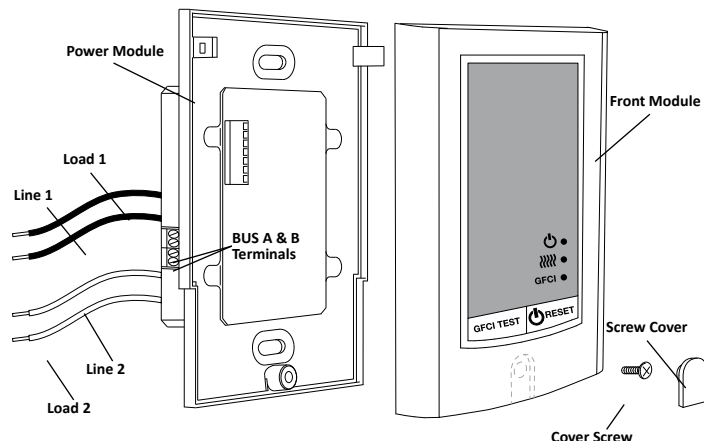
The circuit breaker should be rated 20 amps for total circuit loads up to 15 amps. A 15 amp circuit breaker may be used for total circuit loads up to 12 amps. A GFCI (ground-fault circuit interrupter) or AFCI (arc-fault circuit interrupter) type circuit breaker may be used if desired, but is not necessary.

WARNING: Do not exceed 15 amps on this control. Doing so will cause risk of fire hazard and damage.

Pull power supply wiring to the control location. Leave about 6 to 8 inches (15 to 20 cm) of wire for connections later. This wiring should be size 12 or 14 AWG following appropriate local code requirements.

Mat or Cable Power Leads

Pull the power lead wires from the floor heating system into the control location. Leave about 6 to 8 inches (15 to 20 cm) of wire for connections later.



Wire Connections

Match and connect the two wires marked "LINE1(L)" and "LINE2(N)" to the house power supply wires using the wire nuts provided. Gently tug on the wires to make sure they are secure, otherwise a wire could come loose and cause failure. For added security, overwrap the connections with electrical tape.

Match and connect the two wires marked "LOAD1" and "LOAD2" to the power lead wires from the floor heating system. Secure these wire connections the same way.

Connect the house ground wire to the ground wire(s) from the floor heating system. If the electrical box is metal, a short length of wire must be secured to the electrical box from this ground connection.

CAUTION: Make sure the house power supply voltage matches the voltage rating of the floor heating system. Do not apply 240 VAC to a 120 VAC rated system. Connecting the wrong voltage may cause overheating and damage to the system, the control, floor coverings, etc.

Signal Wire From Thermostat

Read and follow the instructions provided with the SunStat thermostat model 500750 or 500775 for connecting to its terminals A and B.

Pull 18 AWG to 24 AWG 2-conductor shielded wire through the wall from the SunStat Relay location to this control location. This wire may be up 100 feet (30 m) in length (for 18 AWG shielded wire). Strip the wire ends 1/8" to 3/16" (3 mm to 4.5 mm) long. If the ends are stripped longer than this they may short-circuit.

Connect the wire ends into the "BUS" A and B terminals. Make sure the wire in "A" terminal is connected to an "A" terminal in the SunStat thermostat.

Mounting the Control

Carefully press the wires back into the electrical box. Do not use the control to push them in, as this may cause connections to loosen and possible failure.

Loosen the screw and remove the front module from the power module. Secure the power module into the electrical box with the mounting screws provided.

Snap the front module onto the power module and tighten the screw. Press the Screw Cover in place to cover screw.

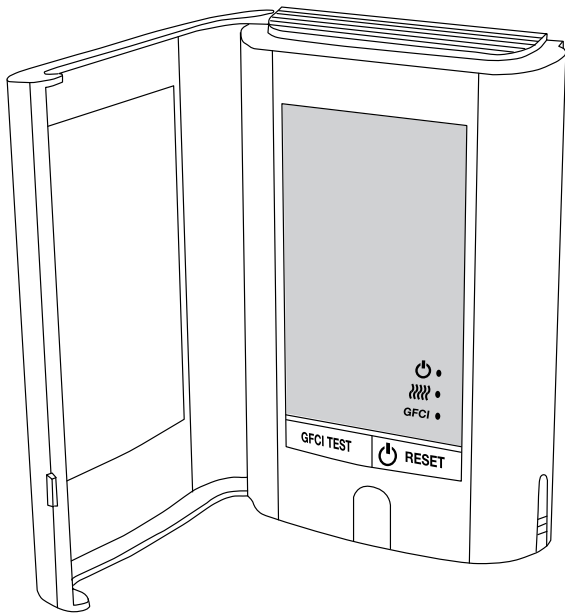
Customizing the Control

The door may be removed and painted to match a room color or special color. Use a plastic primer to prepare the surface of the door. Use only paints that are acceptable for this type surface and follow the paint manufacturer instructions.

CAUTION: Do not paint the door while it is attached to the control and do not paint any other part of the control. Doing so will cause risk of fire and damage.


Operation

Overview of Features and Display



On/Off and GFCI


On/Off and Reset

Pressing  for 1 second will turn the control on or off. This also Resets the control to clear an error or GFCI fault. See "GFCI Testing" and "Troubleshooting".

The Power LED will show green when the control has power.

GFCI Testing

The GFCI (Ground Fault Circuit Interrupter) in this control must be tested when installation is finished and once each month.

- Make sure the control shows it is Heating. This may require temporarily increasing the setpoint temperature on the thermostat.
- Press the GFCI TEST button. GFCI TRIP should be indicated on the control by the red LED. There will also be a click sound, indicating power has been removed from the floor heating system. If either of these indications fail, turn off the control and replace it. Do not continue to use.
- To reset the GFCI TRIP, press the  off and back on.

Heating

The Heating LED will show amber when the control is sending power to the floor heating system. There may be a delay of up to 3 minutes from any changes at the thermostat.

Troubleshooting

Problem	Solution
Relay works but no heat from the system	<ol style="list-style-type: none"> 1. Check wiring connections. 2. If GFCI is tripped, reset with on/off switch. 3. Check resistances on floor heating system. See manual for system.
No lights showing	<ol style="list-style-type: none"> 1. Check wiring connections. 2. Check circuit breaker or other protection "upstream" of thermostat.
GFCI is tripped	<ol style="list-style-type: none"> 1. Check wiring connections. 2. Reset by switching off/on. 3. Check resistances on floor heating system. See manual for system.
Green light blinking	No signal or incorrect signal from thermostat. Check wire connections and polarity of wires (A to A, B to B).
Green and Amber lights blinking	"End-of-life" indication. GFCI will no longer function correctly or safely. Reset the circuit breaker or replace control.

Specifications

Power Supply	120/240 VAC, 50/60 Hz
Maximum Load	15 amps, resistive
Maximum Power	1800 watts at 120 VAC 3600 watts at 240 VAC
GFCI	Class A (5 milliamp trip nominal)
Environment	Indoor dry location only
Storage Temperature	0°F to 120°F (-17°C to 49°C)
ETL Listing	Control No. 3037530 Conforms to UL 873, UL 943, CSA C22.2 No. 24, CSA/CAN C22.2 No. 144



Limited Warranty

Watts Radiant warrants this control (the product) to be free from defect in material and workmanship for a period of (3) years from the date of original purchase from authorized dealers. During this period, Watts Radiant will replace the product or refund the original cost of the product at Watts Radiant's option, without charge, if the product is proven defective in normal use. Please return the control to your distributor to begin the warranty process.

This limited warranty does not cover shipping costs. Nor does it cover a product subjected to misuse or accidental damage. This warranty does not cover the cost of installation, diagnosis, removal or reinstallation, or any material costs or loss of use.

This limited warranty is in lieu of all other warranties, obligations, or liabilities expressed or implied by the company. In no event shall Watts Radiant be liable for consequential or incidental damages resulting from installation of this product. Some states or provinces do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above exclusions or limitations may not apply to you. This warranty gives you specific legal rights and you may also have other rights that vary from state to state.

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