Manuals+ — User Manuals Simplified.
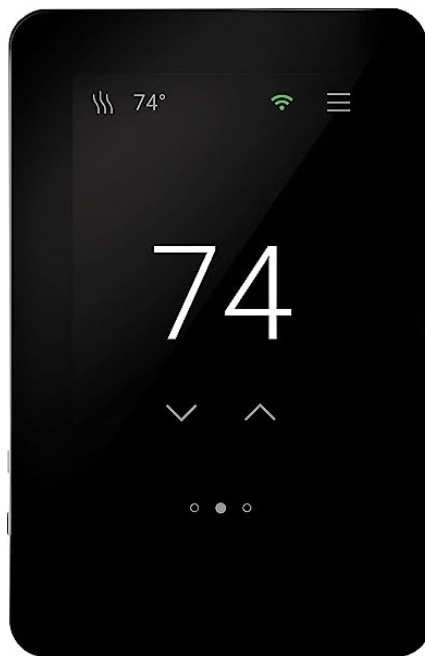
SunTouch R4 Relay Instruction Manual

Contents

SunTouch R4 Relay

Engineering Specification

- Job Name
- Contractor
- Job Location
- Approval
- Engine
- Approval
- Contractor's P.O. No
- Specified Source – WarmYourFloor.com 1-866-558-3369
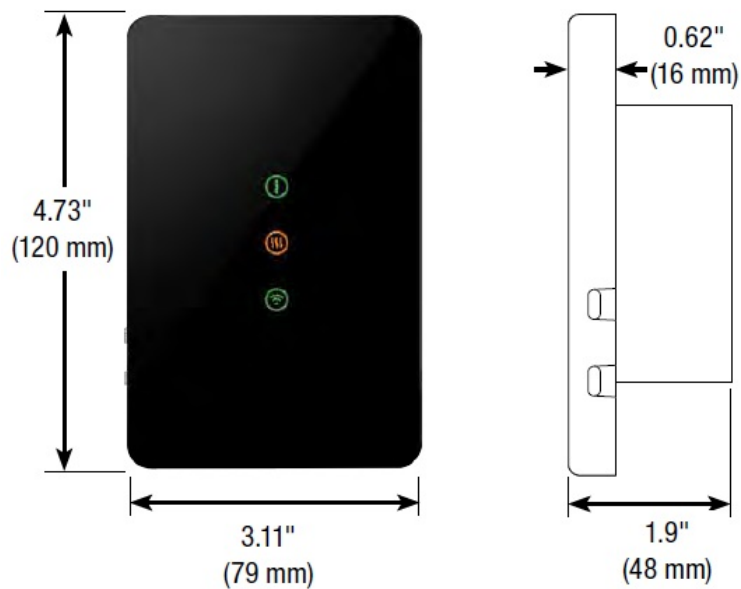
120 or 240 VAC

The SunStat® R4 Relay is designed to control the voltage of SunTouch® electric floor heating systems that require more than 15 amps. Up to 10 SunStat Relays may be connected to one SunStat ConnectPlus™ Thermostat for 120 VAC systems as large as 1650 ft2 or 240 VAC systems as large as 3300 ft2. Each SunStat R4 Relay requires an additional 20-amp circuit and individual circuit breaker.

Specifications

- **Literature** IOM-ST-R4Relay, ES-ST-R4Relay
- **Operation Voltage** 120/240 VAC, 60 Hz, 3 watts
- **Maximum Load** 15 amps resistive
- **Maximum Power** 1800 watts at 120 VAC 3600 watts at 240 VAC
- **GFCI** Class A (5 mA trip)
- **Dimensions** 4.73″ H x 3.11″ W x 1.9″ D (120 x 79 x 48 mm)
- **Ambient conditions** 32 to 86°F (0 to 30°C), <90% RH non-condensing

notice

The R4 Relay is only compatible with the SunStat ConnectPlus, Connect, and Command models. Do not connect to older model SunStat thermostats or relays.

Features

- Built-in GFCI
- Status indicators
- Dual Voltage 120V or 240V
- Wired and wireless connections to thermostat
- Up to 10 wired R4 Relays per thermostat
- Up to 6 wireless R4 Relays per thermostat
- Wireless R4 Relays report energy usage to the thermostat
- 3 Year warranty

UL Listed under UL 943, UL/CSA 60730, UL 991 Listing file number E365015.

caution

This Engineering Sheet is not intended to provide full installation instructions and safety information. In order to avoid property damage or injury, please refer to the complete installation manual and product safety information provided with the product.

PRODUCT OPTIONS			
Qty	Description	Model#	Order#
	SunStat R4 Relay	500980	81020608

SunTouch product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact SunTouch Technical Service. Suntouch reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on SunTouch products previously or subsequently sold. Refer to the owner's manual for warranty information.

Installation and Operation Manual

Features

- Extends the area controlled by a SunStat® ConnectPlus™ thermostat
- Built-in GFCI
- Status indicators
- Wired and wireless connections to thermostat
- Up to 10 wired R4 Relays per thermostat
- Up to 6 wireless R4 Relays per thermostat
- Wireless R4 Relays report energy usage to thermostat
- 3 Year warranty

Model# 1140-01, 500980

Specifications

- Power supply 120/240 VAC, 60 Hz, 3 W
- Maximum load 15 A, resistive
- Maximum power 1800 W at 120 VAC 3600 W at 240 VAC
- GFCI Class A (5 mA trip)
- Approvals UL 943, UL/CSA 60730, UL 991
- Ambient conditions 32°F to 86°F (0°C to 30°C) < 90% RH non-condensing

warning

- Read this manual BEFORE using this equipment.
- Failure to read and follow all safety and use information can result in death, serious personal injury, property damage, or damage to the equipment. Keep this manual for future reference.

FCC STATEMENT

The antenna used for this radio must be properly installed and maintained and must provide a separation distance of at least 7.9 inches (20 cm) from all persons. This device complies with Part 15 of the FCC Rules and with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult the dealer or an experienced radio/TV technician for help.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Box Contents

- SunStat® R4 Relay
- Screwdriver
- Installation manual
- Machine screws (2), 6-32

Items Needed

- Electrical box (must be UL listed and proper size)
  - Vertical 1-gang box
- Conduit, flexible or rigid (if required, must be UL listed and proper size)
- Electrical wiring cable (UL listed)
  - Minimum 14 AWG to 12 A
  - 12 AWG to 15 A
- Nail plate
- Hot glue gun and hot glue 15 A, resistive

Location

- Indoor location only
- Do not install where there is electrical interference from equipment, appliances, or other sources
- Install away from all water sources such as sinks and at least 4 ft (1.2 m) away from showers and bathtubs
- Consider easy access for wiring

NOICE
The R4 Relay is compatible with the SunStat® ConnectPlus thermostat. Do not connect to other models.

Important Safety Information

This is a safety-alert symbol. The safety-alert symbol is shown alone or used with a signal word (DANGER, WARNING, or CAUTION), a pictorial and/or a safety message to identify hazards. When you see this symbol alone or with a signal word on your equipment or in this manual, be alert to the potential for death or serious personal injury.

This pictorial alerts you to electricity, electrocution, and shock hazards.

WARNING
This symbol identifies hazards which, if not avoided, could result in death or serious injury.

NOTICE
This symbol identifies practices, actions, or failure to act, which could result in property damage or damage to the equipment.

Installation

WARNING

Installation must be performed by qualified persons, in accordance with local codes, ANSI/NFPA 70 (NEC Article 424) and CEC Part 1 Section 62 where applicable. Prior to installation, please consult the local codes in order to understand what is acceptable. To the extent this information is not consistent with local codes, the local codes should be followed. Regardless, electrical wiring is required from a circuit breaker or other electrical circuit to the control. It is recommended that an electrician perform these installation steps. Please be aware local codes may require this product to be installed by an electrician.

The following cautions must be observed:

- NEVER put the system into full operation until the tile or flooring installer verifies all cement materials are fully cured (typically two to four weeks after installation).
- ALWAYS use insulated copper wires rated for 90°C (194°F) and 600 V minimum. Do not use aluminum.
- ALWAYS wire all circuits as Class 1, electric light & power circuits.
- ALWAYS mount the thermostat to a grounded electrical box.
- ALWAYS seek help if a problem arises. If ever in doubt about the correct installation procedure, or if the product appears to be damaged, the factory must be contacted before proceeding with the installation.

WARNING

To prevent the risk of personal injury and/or death, make sure power is not applied to the product until it is fully installed and ready for final testing. All work must be done with power turned off to the circuit being worked on. To reduce the risk of electric shock, do not connect to a circuit operating at more than 150 V to ground.

Power Supply
Pull power supply wiring to the control location.

- Leave about 6 to 8″ (15 to 20 cm) of wire for connections.
- This wiring should be size 12 or 14 AWG, in compliance with local code requirements.
- 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 appliance likely to be used on the circuit such as a hair dryer or vacuum cleaner.
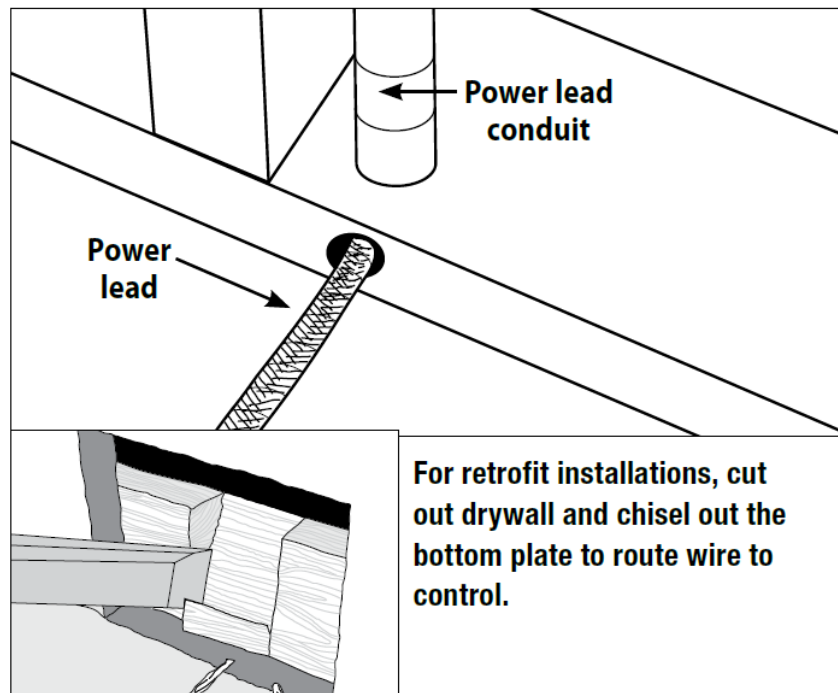
- Avoid circuits that have ballasted lighting, motors, exhaust fans, or hot tub pumps to reduce the likelihood of interference.
- The circuit breaker should be rated 20 amps for total circuit loads up to 15 amps. A 15-amp circuit breaker may be used for total circuit loads up to 12 amps.
- A GFCI (ground-fault circuit interrupter) or AFCI (arc-fault circuit interrupter) type circuit breaker may be used, but is not necessary.

WARNING
Make sure 120 VAC is supplied to 120 VAC cables and 240 VAC is supplied to 240 VAC mat or wire. Otherwise, dangerous overheating and a fire hazard could result. Do not exceed 15-amps on this control.

Bottom Plate Work

- Drill or chisel hole for routing the power lead conduit at the bottom plate as indicated. This hole should be directly below the electrical box.

For retrofit installations, cut out drywall and chisel out the bottom plate to route wire to control.

Floor Heating Mat or Cable Power Lead Installation

- The shielded power lead can be installed with or without an electrical conduit (recommended for added protection against nails or screws), depending on code requirements.
- Remove one of the knock-outs in the electrical box to route the power lead. If an electrical conduit is not required by code, install a wire collar to secure the power leads where they enter the box. If conduit is required by code, install 1/2″ (minimum) conduit from the bottom plate up to the electrical box. For multiple power leads (multiple cables), install 3/4″ conduit.
- Secure a steel nail plate over the cutout in the bottom plate to protect the wires against baseboard nails later.

Communication Rough-in Wiring

The ConnectPlus can connect wirelessly to the R4 Relay (see Operation > Wireless Pairing). If a wired connection is desired, follow these steps.
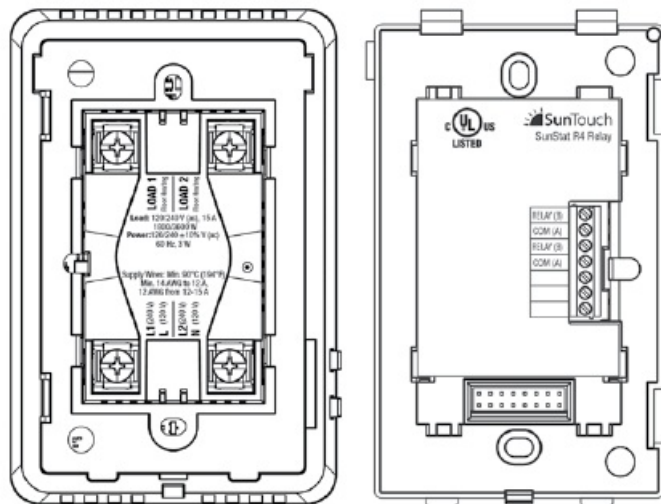
- Pull 18 AWG to 24 AWG 2-conductor wire from the ConnectPlus location to the R4 Relay location
- The wire may be up to 100 ft (30 m) long
- For additional R4 Relays, pull additional wire between R4 Relay locations
- Strip the wire ends to 1⁄8″ long

R4 Relay Wiring

Before connecting the wires to the back of the relay, detach the display front from the base. While holding the base section in one hand, with the other pull gently up holding the sides of the thermostat towards the bottom (near RESET button), pivoting away from the base.

Power Wiring

- Connect the ground wire from the power supply to the ground wire from the floor heating power lead
- If the electrical box is metal, use a short length of wire to connect the ground wires to the bonding screw
- Connect the floor heating power lead conductors to the LOAD 1 and LOAD 2 terminals
- For 120 VAC connections, connect the power supply black (L) wire to the L terminal and the white (N) wire to the N terminal
- For 240 VAC connections, connect one of the power supply wires to the L1 terminal and the other to the L2 terminal

Low Voltage Wiring

ConnectPlus and additional R4 Relay connections are made to the terminal block by inserting the wires into the openings and tightening the screws. Three holes are provided for wire access from the back. Wires must be routed in the channel to the right of the terminal block so that the display front can be re-attached. Any low voltage wiring that passes through the inside of the electrical box must be rated at least 90°C 300 V.

- ConnectPlus—connect to RELAY and COM terminals, matching connections on the ConnectPlus
- R4 Relay—connect to RELAY and COM terminals, matching connections on the other R4 Relay

WARNING

Make sure the wire connections are secure by gently tugging on them. Otherwise, arcing could occur, causing dangerous overheating and a possible fire hazard.

Finish ConnectPlus™ Installation

- Ensure all connections are secure
- Carefully press the wires into the electrical box
- Do not use the thermostat to push the wires
- Secure the thermostat base to the electrical box with the screws included
- Do not overtighten
- Re-attach the display front
  - Line up the top edge with the base
  - Rotate the bottom towards the base and snap it into position

NOTICE

Make sure the mortar has had time to fully cure before operating the system for more than a brief test.

- **Top Icon:** Power Indicator is on when power is supplied to the R4 Relay
- **Middle Icon:** Heating Indicator is on when the R4 Relay is heating
- **Bottom Icon:** Wireless Indicator
  - On when paired with ConnectPlus
  - Blinking when paired connection is lost

Operation

Power Up

- Switch on the circuit power supply at the breaker
- The Power Indicator will illuminate

Heating Operation
The R4 Relay provides additional capacity for spaces that are larger than a SunStat® ConnectPlus thermostat can control. The R4 Relay energizes the connected mat or cable any time the thermostat determines that heat is required. When the thermostat signals the relay to operate, the Heating Indicator is illuminated.

GFCI Testing and GFCI Light Operation

- Press the TEST button on the GFCI monthly to verify that it is operational. The GFCI RESET light will flash red. To resume normal operation, press the RESET button.
- If pressing TEST does not display a flashing red GFCI RESET light, protection is lost, and the unit will need replacement.
- If the GFCI RESET light continues to flash after pressing the RESET button, protection is lost, and the unit will need replacement.
- If the GFCI trips during normal operation, press the RESET button to resume operation. If it trips again, the floor heating system should be inspected and tested by a qualified electrician.
- If the GFCI TEST light stays on solid, a welded relay has occurred, and the unit will need replacement.

Power Off

- Suspend R4 Relay operation by turning off the connected or paired ConnectPlus

Wireless Pairing

- Put the ConnectPlus into pairing mode: Menu > Settings > Paired Devices > Pair Device
- Press and hold RESET button on the R4 Relay for 3 seconds
- To unpair the R4 Relay and reboot, press and hold the RESET button on the R4 Relay for 10 seconds

Troubleshooting Guide

It is strongly recommended that a qualified, licensed electrician install the heating cables and related electrical components. If problems with the system arise, please consult the troubleshooting guide below.

WARNING
Any electrical troubleshooting work should be performed with the power removed from the circuit, unless otherwise noted.
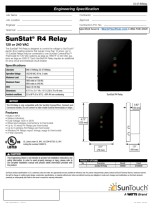
Problem	Possible Cause	Solution
Heating Indicator is on, but floors do not feel warm	Setpoint too low to feel warm to the touch	Increase the setpoint
	Faulty wiring	Have the sensor and power lead wiring checked by a certified electrician
Heating Indicator does not follow thermostat heating	Faulty wiring	Have the communication wiring checked by a certified electrician
	Lost connection (Wireless Indicator blinking)	The wireless signal from the ConnectPlus is getting blocked or interfered with
Power Indicator is off	Power off at the breaker	Check the breaker or fuse in the electrical panel supplying power to the relay
	Faulty Wiring	Have the power supply wiring checked by a certified electrician

Limited 3-Year Warranty

SunTouch warrants this control (the product) to be free from defects in material and workmanship for a period of (3) years from the date of original purchase from authorized dealers. During this period, SunTouch will replace the product or refund the original cost of the product at SunTouch'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 SunTouch be liable for consequential or incidental damages resulting from the 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.

- **USA:** T: (888) 432-8932
- **SunTouch.com**
- **Canada:** T: (888) 208-8927
- **Latin America:** T: (52) 55-4122-0138
- **SunTouch.com**

Documents / Resources

SunTouch R4 Relay [pdf] Instruction Manual
R4 Relay, R4, Relay

References

- ☀ **SunTouch | Radiant Floor Heating & Snow Melting Systems**