

Submittal and Specification

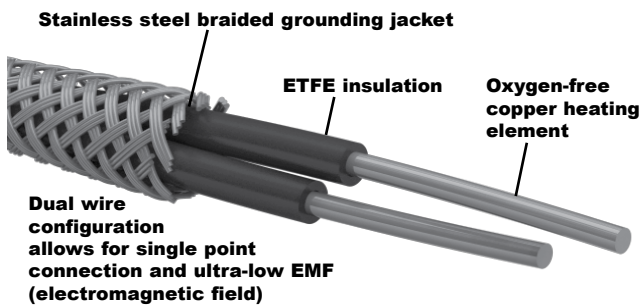
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Project Name: _____
 SunTouch Representative: _____
 Unit Tag #: _____ Order #: _____ Date: _____
 Designer: _____ Submitted By: _____ Date: _____
 Contractor: _____ Approved By: _____ Date: _____

SunTouch® UnderFloor Mat



The Wire



PRODUCT DESCRIPTION

General

The SunTouch UnderFloor mat is a series resistance type heating element assembled into a foil "radiator" surface. It is installed indoors under a wood subfloor between the joists in residential and light commercial applications. Floor coverings above may be any type, with a maximum of R-11 total insulation for all layers.

An EMF field monitor, held at 1/2" above operating heating elements and set to milligauss scale, must indicate less than one milligauss across the entire heating element and mat assembly. This is the field added to the ambient while the heating element is operating.

Heating mat shall be tested by manufacturer for correct resistance and insulation integrity before leaving the factory. Compliance with this quality criteria shall be certified on the label of each mat.

All heating mats furnished under this section shall be supplied by a single manufacturer. Manufacturer shall have at least 20 years experience manufacturing floor-warming systems. The product shall have a limited 25-year warranty.

Heating mat made with self-regulating wire or a wire not assembled into a foil surface mat construction is not acceptable for this application.

The Heating Mat

The resistance heating wire for the heating mat shall be series resistance type that cannot be cut to length on jobsite. It shall be UL

Recognized for the U.S. and Canada for this application. Insulation shall be rated for continuous duty at 194 °F (90 °C). The mat can produce up to 10 watts/sq. ft. (108 watts/sq. meter).

The heating cable assembly shall be made of two individual heating wires twisted around each other to reduce the EMF to nearly zero. Each wire shall be made of oxygen-free copper or Nickel-Copper conductor shall be encapsulated in an inner layer of ETFE fluoropolymer. This insulation shall be surrounded by a stainless steel braid to provide a ground path.

Factory applied end termination splice shall have a diameter of 3/16" and shall be crimped, soldered, and environmentally sealed. Power leads shall be of sufficient length to reach junction boxes as shown on detailed drawings. The finished mat shall have only one power lead at one end of the mat. Power leads shall be minimum 10' long, made of stranded wire recognized by Underwriters Laboratories Inc. (UL®), and color-coded to match the standard NEC wire color scheme. This power lead assembly shall be shielded with a tin-coated copper braid bonded to the ground wire and the heating wire ground braid. A polymer coated foil shall be adhered to the cable, on the top and bottom, providing conductive and radiant heat transfer.

CONTROL/OPERATION

The control system shall include a SunTouch SunStat Pro thermostat. This control shall have the following attributes as a minimum: dual-voltage capability (120V/240V); floor, air, or air/floor sensing; Regulator (no-sensor) capability; SmartStart (early start) technology; temperature set-back and related programming; home automation remote control; 15-ft long Class 2 double insulated floor sensor; and master control capability with direct connection to SunStat Relays.

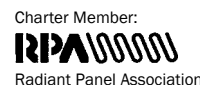
The SunStat shall have an integral Ground Fault Circuit Interrupter (GFCI) Class A (5mA) and integral 16-amp Relays. If the system requires more than 15 amps, SunStat Relay(s) shall be used as needed. SunStat Relays shall be capable of connecting directly to the main SunStat thermostat.

If an alternate control is used, the power supply circuit shall have a Class A GFCI. All controls shall be installed according to local codes and manufacturer recommendations.

CODE LISTINGS/SPECIFICATIONS

The heating mat shall be Listed by UL® for the U.S. and Canada.

The manufacturer shall be a member of the Radiant Panel Association, TCNA, WFCA, NTCA, USGBC, and other industry associations.



Success By Association®

PRODUCT INSTALLATION

Examination

Installer must

- verify that the area below the subfloor is clear and clean of sharp objects such as nails from above, and is ready to receive work.
- verify field measurements are as shown on drawings.
- verify mats and control are correct size and voltage for area.
- verify that required utilities are available, in proper locations, and ready for use.
- using a digital ohm meter, verify the cable resistance with the manufacturers values printed on the UL tag.

Beginning of installation signifies that installer accepts conditions.

UnderFloor Mat Installation

Follow the detailed instructions in the SunTouch UnderFloor Installation Manual. In brief, these are:

Use a digital ohmmeter to measure and certify the correct wire resistance (ohm) value for the mat. Check this resistance value regularly during and after the installation. Record these readings in the chart provided in the installation manual.

Use of manufacturer's LoudMouth™ monitor is recommended for continuous monitoring of the mat during installation. The LoudMouth shall monitor ground, line, and neutral wires of the mat, and shall sound an alarm if there is a break in the circuit or a short to ground. LoudMouth shall have integral test button/light to verify proper battery power.

Install the floor sensor in the heated floor area, according to installation manual. This can be done in the floor surface above or in the subfloor below.

Completely unroll the mat to make sure it fits between joists and obstructions. Use finish staples to secure the mesh edging to the joists, 2" below the subfloor.

CAUTION: Never allow nails or staples to touch the heating elements. Never use metallic fasteners to secure the blue heating elements. Metal fasteners may damage the heating elements.

Mount a junction box(es) below the floor to receive the UnderFloor mat power leads and power wiring to the control. Insulate with R-11 to R-19 fiberglass batt below the mats and in adjacent joist areas.

Do not cut, damage, or staple the heating elements. Do not cut the mats to make them shorter. Do not overlap the mat on itself or install one mat over another. Do not roll or bunch the mat to fit. Do not install the mat closer than 2" from the subfloor. Remember to measure and record mat resistance readings. Use licensed electrical installers and follow all building and electrical codes.

Control Options

Qty.	Model No.	Volts	Description
	500670	120/240	SunStat Pro (digital programmable)
	500675	120/240	SunStat (digital non-programmable)
	500710	120/240	SunStat Dial (non-programmable)
	500680	120/240	SunStat Relay
	423250	NA	LoudMouth Monitor

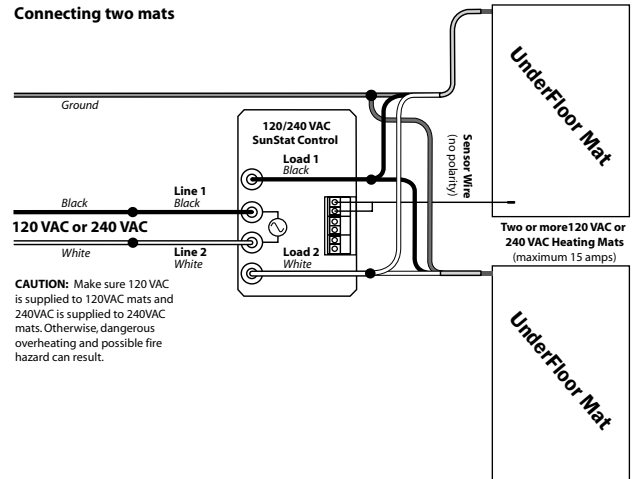
Control Installation

Test the supply to ensure voltage at each unit and verify the correct voltage is available, as per UL Listing label attached to heating mat.

Properly choose correct SunStat control(s) and protection devices for the heating area. A SunStat can control up to about 190 sq.ft. at 120 VAC (15 amps), and about 350 sq.ft. at 240 VAC (15 amps). If amperage draw is greater than this for one zone, SunStat Relay(s) are required for safe mat operation.

Install all controls according to all applicable local and national codes, and to manufacturer's guidelines.

Typical Electrical Wiring Diagram with SunStat Controller (120V or 240V)



All electrical work must be done by a qualified, licensed electrician in accordance with local building and electrical codes, and the National Electrical Code (NEC), especially Article 424, Part IX of the NEC, ANSI/NFPA 70 and Section 62 of CEC Part I.

SunTouch UnderFloor Mat Sizes

120 VAC			240 VAC		
Mat Size	Amp Draw	Resistance (ohms)	Mat Size	Amp Draw	Resistance (ohms)
12" x 5.5'	0.4	247-302	12" x 10.5'	0.4	500-611
12" x 8'	0.6	167-204	12" x 16'	0.6	336-411
12" x 10.5'	0.9	121-148	16" x 8'	0.4	521-636
12" x 13'	1.1	97-119	16" x 12'	0.6	362-443
12" x 16'	1.3	80-98	16" x 16'	0.8	253-310
12" x 19'	1.5	67-82	16" x 19.5'	1.0	207-253
16" x 4'	0.4	258-315	19.2" x 6.5'	0.4	526-643
16" x 6'	0.6	173-211	19.2" x 9.5'	0.6	359-439
16" x 8'	0.8	126-154	19.2" x 13'	0.9	256-313
16" x 9.5'	1.0	101-123	19.2" x 16'	1.0	207-253
16" x 12'	1.3	82-101	19.2" x 19'	1.3	167-204
16" x 14'	1.5	69-85			
16" x 16'	1.7	63-78			
16" x 18'	1.9	53-65			
16" x 19.5'	2.1	45-56			
19.2" x 4.5'	0.7	170-207			
19.2" x 6.5'	0.9	127-155			
19.2" x 8'	1.0	103-126			
19.2" x 9.5'	1.3	83-102			
19.2" x 11.5'	1.5	71-87			
19.2" x 13'	1.7	63-78			
19.2" x 14.5'	1.8	54-66			
19.2" x 16'	2.1	45-56			