

# TEMPSON INTELLIGENT FLOOR HEATING SYSTEM INSTALLATION MANUAL

## 1. Floor Heating System Description

It's designed for comfort heating of ceramic tile or natural stone floors. The preassembled mats can be installed over wood, with or without a backer-board, or on concrete. The mat is embedded in mortar and covered with tile or stone.

**But it CAN'T be installed beneath wooden, carpeted, linoleum, or any other type floors.**

The system includes the following components,

\*Heating mat, with 10ft cold lead each

\*Thermostat: UL/cUL listed

\*Temperature sensor, 10ft length

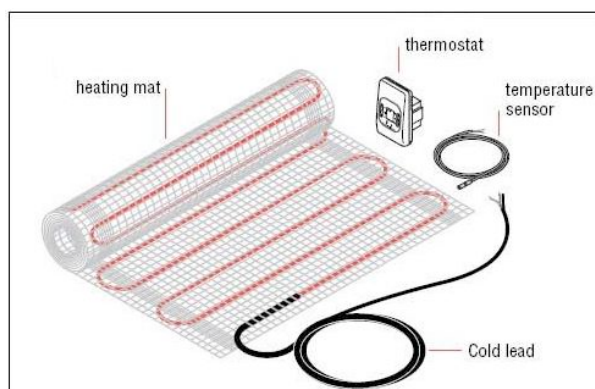


Image 1: Floor Warming Kit

## 2. System specifications

Approved by CUL

### Heating mat

Rating voltage: 120V AC

Power unit: 12W/ft<sup>2</sup> (130W/m<sup>2</sup>) +/-10%

Min. bending radius: 1.25inch (30mm)

Min. cable space: 3inches (80mm)

Max. ambient temperature: 85F (30°C)

Min. Installing temperature: 40F (5°C)

Heating Cable: 2 wires, grounded, insulation jacket by fluoropolymer plastic

Cold lead: 2 wires 17 AWG with ground braid, length 10ft (3m)

### TP 150 Thermostat

Function: On/off controlling by digital display,

7 day programmable, class A, 5mA GFCI

Rating voltage: 120V/240V AC +/-10%

Max. switch current: 16A

Temperature controlling range: 40~122F (5~50°C)

Ambient temperature range: 23~122F (-5~50℃)

Temperature sensor: 2 wires, lead wire 10ft (3m)

### **3. Installation your floor heating system**

#### **Tools and materials needed**

You need following items to install and test your floor warming system,

\*Scissor

\*Utility knife

\*Wire stripper

\*Tape measure

\*Screwdriver

\*Multimeter

Also you will need the appropriate tools and materials to install the particular floor, include products like self-leveling mortar, thin-set mortar, backer board, tile, notched trowel, and any others for your specific floor.

#### **3.2 Installation steps**

Please follow below steps to ensure a successful installation.

##### **3.2.1 Preparing the subfloor**

Make sure that the floor area to be heated is clean, flat and free of debris what can damage the mat, like nails, staples or protruding objects.

Drill or cut a hole through the wall sill plate under the electrical junction box location. You will use this hole to route the cold lead and the temperature sensor wire to the box.

##### **3.2.2 Orient the floor heating mat**

Lay out the mat according to your original design, using as few turns as possible and ensuring that the cold lead is near the electrical junction box. Remove the clear plastic lining and roll out the mat with adhesive side down to temporarily hold it in place. If it's necessary to change directions, please refer step 3.2.3

If it's necessary to remove the heating cable from the mesh to route around an obstacle, be sure to maintain at least 3 inches space between heating cables.

##### **3.2.3 Changing direction of heating mat to fit the floor design**

To make a turn in the direction the mat is being installed, cut the mesh with scissor being not to damage the heating cable.

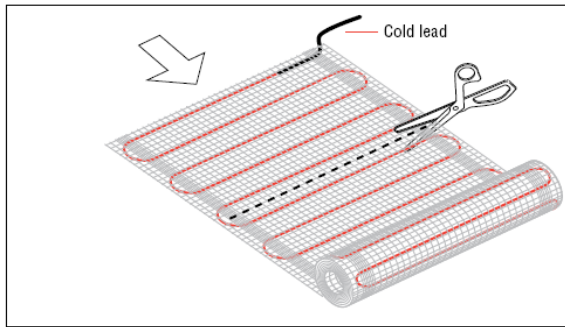


Image 2: How to cut mesh

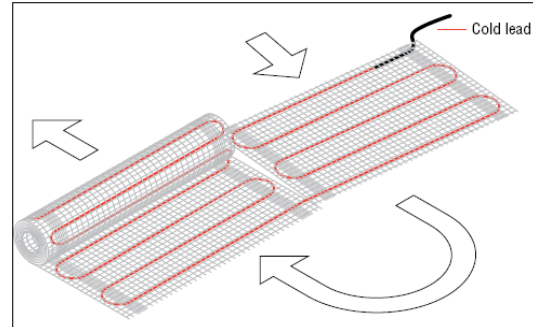


Image 3: Changing direction

The align the mat in the desired direction ensuring that the adhesive side of mat is down to roll it into the position.

### 3.2.4 Route the cold lead

Position the cold lead close as possible to the wall near the electrical junction box, the cold lead must be routed outside of heating mat, never under or over the heating cable and must not protrude higher than the heating mat.

**If the splice is higher than the mat, you must gouge out the sub floor to allow the splice to lay flat under the tile.**

Run the cold lead inside the wall to the electrical junction box location.

**Note:** Put the cord label on the cold lead inside the box. If it's necessary to shorten the cold lead, be sure to store the cord label in the junction box.

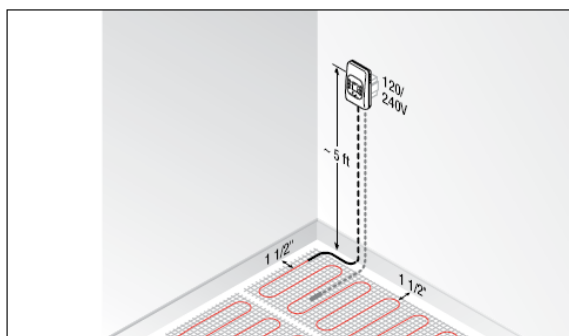


Image 4: Routing the cold lead

### 3.2.5 Place the temperature sensor

Center the sensor between two runs of the heating cable, 4 inches from the end of heating cable loop (see image 4). Run the sensor inside the wall to the electrical junction box location.

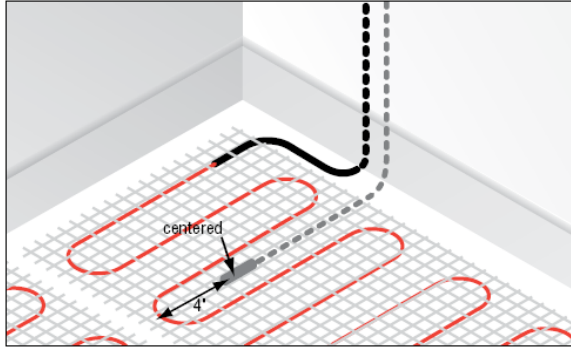


Image 5: Placing the temperature sensor

**Note:** Don't allow heating cable, cold lead or temperature sensor to cross themselves or each other.

### 3.2.6 Perform insulation resistance test, heating cable resistance test, and the sensor resistance test before embedding in mortar.

**Note:** You must perform the above 3 test before embed the mat in mortar to confirm that the heating cable and temperature sensor haven't been damaged.

### 3.2.7 Embed the heating mat in mortar

After laying out the heating mat and routing the cold lead and the temperature sensor to the electrical junction box, apply a thin coat of self-leveling mortar over the mat. Please be sure to use the flat side of the trowel to avoid any damage to the mat. Spread the mortar evenly over the mat filling in all voids between the floor, mesh and heating cable. Once the surface is smooth and even, allow it to cure to hard surface before installing the tile or stone.

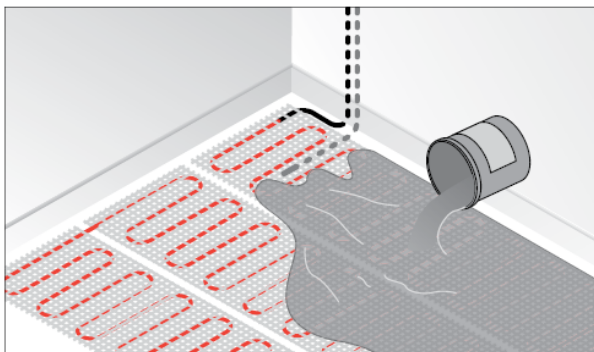


Image 5: Applying self-leveling mortar

### 3.2.8 Repeat the insulation resistance test, heating cable resistance test and the sensor resistance test after embedding in mortar.

**Note:** You MUST repeat the above 3 test to ensure that the heating cable and temperature sensor have not been damaged.

### 3.2.9 Install tile or stone

To install tile or stone, apply a layer of acrylic or latex modified thin-set using the ridged side of your trowel. Tile and grout the floor using best industry practices and in accordance with instructions provided by the manufacturer of the tile or stone.

Don't power the floor warming system until the thin-set and grout are fully cured.

### 3.2.10 Again repeat the 3 test after floor covering.

**Note:** You MUST repeat the above 3 test to ensure that the heating cable and temperature sensor have not been damaged.

### 3.2.11 Install the thermostat

Please refer the document of thermostat installation manual, included in the thermostat box for instructions on how to install it.

### 3.2.12 Program the thermostat

Please refer the document of thermostat installation manual, included in the thermostat box for instructions on how to program it.



## 4. Additional important warnings

\*Must observe this installation manual. It must conform the floor warming system requirement of construction and floor's structure, and electric condition.

\*After laying out heating mat, no penetrating and drilling holes allowed to damage heating cables and cold lead.

\*Never cut down heating lead of cables (except cold lead per installation requirement.)

\*The enclosed warranty and using instruction is to be completed by the electrician and keeping properly.

**\*Observe above installation instructions basically, product quality warranty certificate is valid.**

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**Any technical issues, please consult your local distributor, or contact us directly with following info,**

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