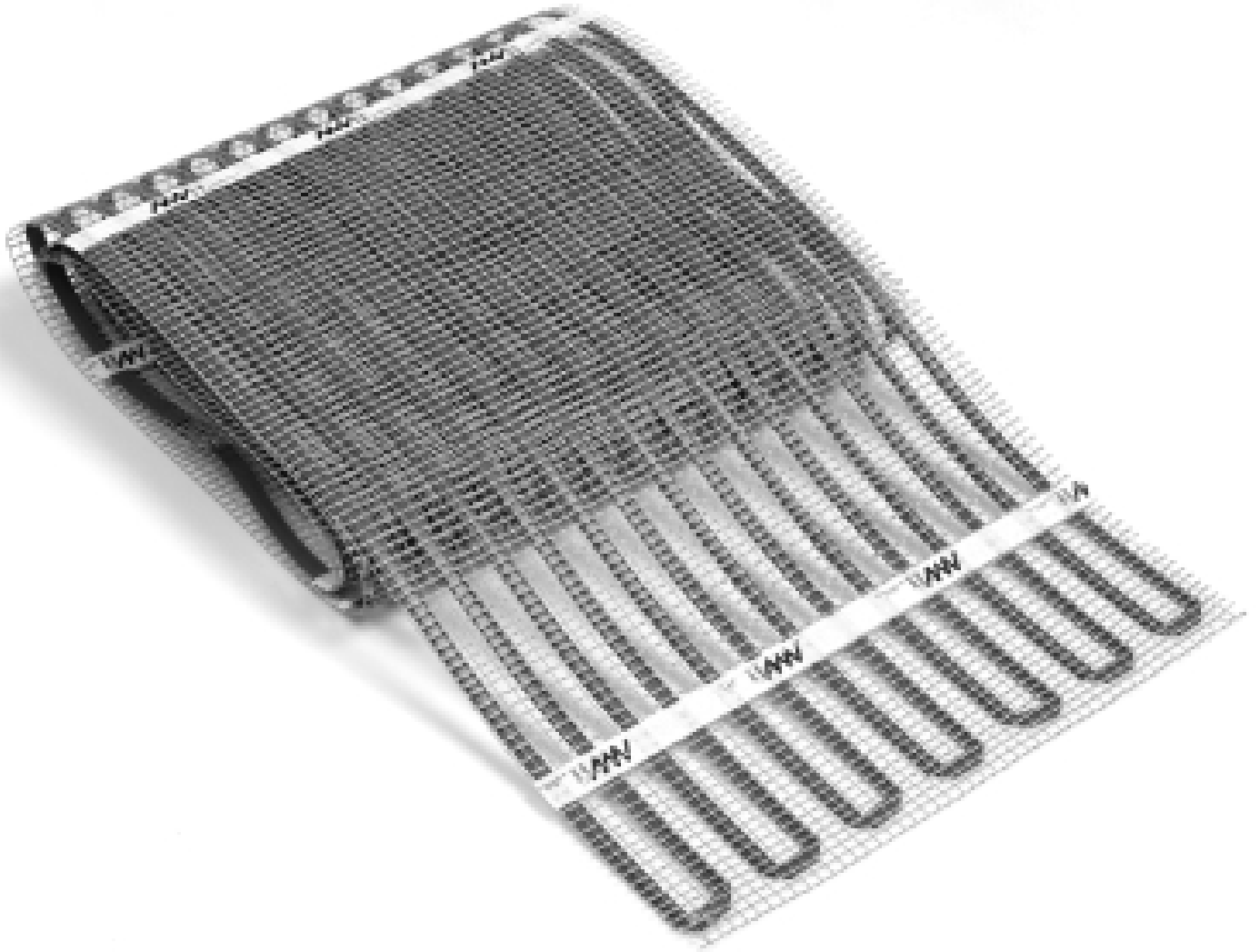


# Installation Guide



Dear Allbrite Customer,

Thank you for choosing the AHT underfloor heating system. It is designed to be simple to install and cost efficient to operate.

This guide provides the information you need for a successful installation. Please follow all instructions carefully for the best possible installation results and for the long-term effectiveness of the product.

We wish you years of safe, comfortable, cost-efficient heating!

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# Table of Contents

<b>Important!</b> .....	<b>2</b>
<b>Getting Started</b> .....	<b>4</b>
<b>Step 1: Planning Your Installation</b> .....	<b>5</b>
<b>Step 2: Laying Out Your Heating Mats</b> .....	<b>6</b>
<b>Step 3: Making the Electrical Connections</b> .....	<b>8</b>
<b>Installation Examples</b> .....	<b>11</b>
<b>Typical Wiring Diagram</b> .....	<b>12</b>
<b>List of Recommended Material</b> .....	<b>13</b>
<b>Standard sizes of heating mats and their values</b> .....	<b>15</b>

# Important!

Please read carefully before installing your Allbrite underfloor heating mats.

## Do not:

- Do not** overlap heating mats.
- Do not** fold or wrinkle AHT heating mats.
- Do not** place heavy/sharp tools (or any other potentially damaging object) on top of the heating mats.
- Do not** walk unnecessarily on the heating mats.
- Do not** install electrical cables or pipes under the floor together with the heating mats.
- Do not** use cellulose insulation.
- Do not** install mats when the room temperature is below 23°F (-5°C).
- Do not** install underfloor heating mats anywhere except inside buildings.

**Note:** AHT's outdoor snow melting products are the perfect solution for roof and gutter de-icing, or snow melting. Contact AHT or our authorized distributor for more information.

- Do not** install mats under walls or partitions, or in areas under heavy cabinets, closets, or fixtures (toilets, sinks, tubs, etc.).
- Do not** install mats within 1 inch (3 cm) of any heat conductive building part, such as cold water pipes.
- Do not** install mats within 2 inches (5 cm) of one another, 4 inches (10 cm) of any wall, or 6 inches (15 cm) of a fireplace or hot water pipe.
- Do not** connect any other electrical appliance on the same electric fused spur or GFCI unit of the heating system.

## **Always:**

- Always** cover mats with grounding net in wet areas. Wet areas include saunas, bathrooms, and kitchen areas within 20 inches (50 cm) of sinks or any metallic kitchen appliance.
- Always** ensure that the electric circuit that supplies electricity to the AHT heating system is equipped with a 30 mA Residual Current Device (RCD). For wet areas ensure that the electric circuit that supplies electricity to the AHT heating system is equipped with a 5 mA Residual Current Device (RCD). See page for a list of recommended thermostats in your country.
- Always** connect all cold wire leads from the AHT heating mats in parallel inside an electrical junction box or boxes.
- Always** ensure that the total current needed for all mats connected in parallel is not more than 80% of the listed amperage capacity of the electrical junction box and its power supply line and breaker (For advice consult your recommended installer / supplier).
- Always** provide each room with an AHT heating system with its own electrical junction box and control thermostat. Each Allbrite thermostat has a maximum capacity of 15 Amps but you can add an Allbrite thermostat expansion kit If the amount of Amps in the room is greater than 15 Amps,. (To calculate the amount of Amps in the room see tables in page )
- Always** use insulation under the mats to reduce running costs and warm-up time. Check with your installer to determine the R value of the sub floor Insulation layer. If there is no insulation, or if the R value of the insulation layer is lower than 0.57 ft<sup>2</sup>\*h\*°F/Btu (0.1 m<sup>2</sup>\*°C/W or 1 Tog), please read the insulation instructions on pages and and act accordingly.

Note: All electrical connections must be performed by a fully qualified electrician.

Note: The installer must verify the conformance to all applicable codes or standards.

# Getting Started

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Before installing your new AHT underfloor heating mats, be sure you have the following additional parts:

- £ **Electrical junction box** – used as the connecting junction for the cold leads of the heating mats.
- £ **Grounding net** – needed only when installing heating mats in wet areas such as bathrooms, kitchens, saunas, etc.

**Note:** Allbrite recommend the use of it self adhesive grounding tapes

**Control thermostat** – allows you to control the temperature of the room. The control thermostat must also have a two terminal manual on/off switch. Control thermostats have one or two of the following sensors:

- Ambient air temperature safety sensor.
- Floor temperature safety sensor.

In bathrooms, use thermostat with only floor temperature sensor. Use thermostat with air and floor temperature sensors for all other installations.

**Note:** Allbrite recommends Allbrite's digital fully programmable thermostat, which enables you maximum flexibility in creating your weekly heating plans.

## Residual Current Device

**Note:** Consult your local dealer regarding the applicable RCD. See page for a list of recommended thermostats in your country.

Feel free to contact your Allbrite representative for additional details regarding the appropriate controls.

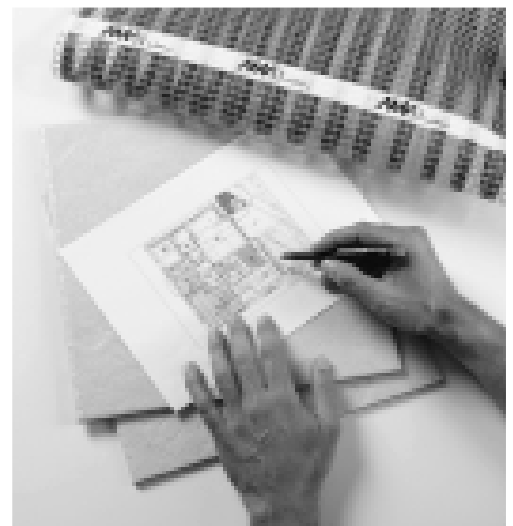
- £ **Hard insulation materials** – used as heat insulator under the heating mats in stone type floors for efficient heating. The material comes in plates, usually made from foamed Polyurethane and should have Compressive Strength of more than 28 PSI (2 Kg/cm<sup>2</sup>). The R value of the material should be in the range of .57 - 1.7 ft<sup>2</sup>\*h\*°F/Btu (0.1 - 0.3 m<sup>2</sup>\*°C/W or 1 -3 Tog). Allbrite recommends the use of Easy-Heat rigid insulation.
- £ **Soft insulation material** – used as heat insulator under the heating mats in all non-stone type floors for efficient heating. The material comes in rolls and should have Compressive Strength of more than 0.28 PSI (0.02 Kg/cm<sup>2</sup>). The R value of the material should be in the range of .57 - 1.7 ft<sup>2</sup>\*h\*°F/Btu (0.1 - 0.3 m<sup>2</sup>\*°C/W or 1 - 3 Tog). Allbrite recommends the use of Therm-All insulation for floors like wood, laminate, carpet and engineered board.

(\*) Remark: It is common to find insulation materials that are at least 1/4 inch (6mm) in thickness and have Thermal Conductivity of 0.035-0.1 Btu/h\*ft\*°F (0.02-0.06 W/m\*°C), but you can use other thickness and Thermal conductivity as long as the R Value of the material is in the range of .57 - 1.7 ft<sup>2</sup>\*h\*°F/Btu (0.1 - 0.3 m<sup>2</sup>\*°C/W or 1 - 3 Tog).

## Planning Your Installation

Before installing, draw an installation plan showing the placement of the mats, floor sensor, and connection box or boxes.

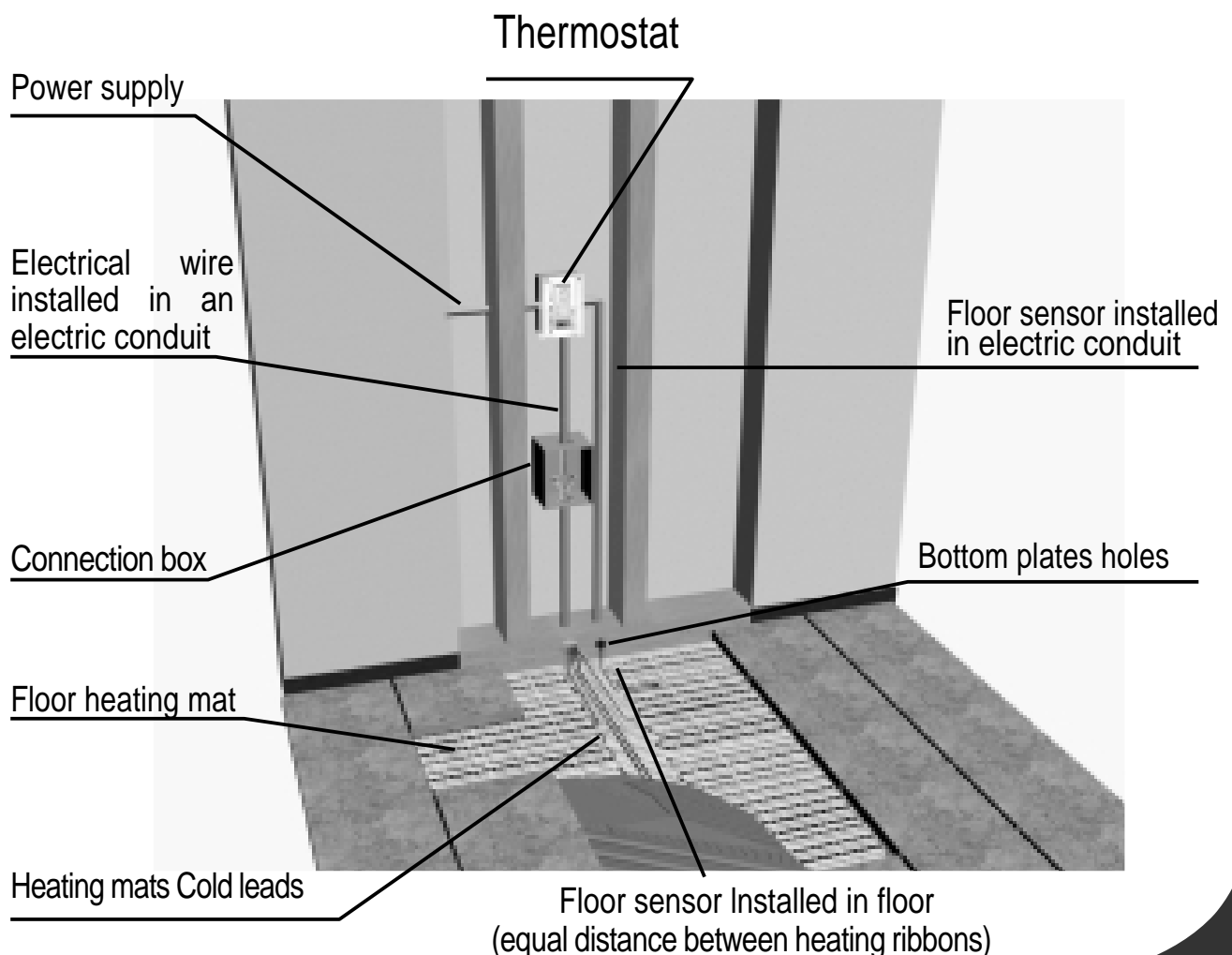
The AHT heating mats should cover at least 80% of the floor area of your room to be used as a primary heat source. AHT's heating mats are available in several convenient sizes. Choose the combination of heating mats that best enables you to cover the recommended 80% of your room. Plan to use the larger heating mats as much as possible and to use smaller mats only as gap fillers.



**Note:** The mats are supplied with 5 meters of electrical cold leads. If this is not enough, you will need to purchase an extension kit.

# Laying Out Your Heating Mats

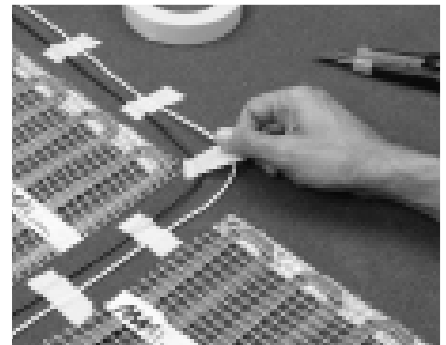
1. Clean all debris from the floor base.
2. If installing the heating mats under:
  - Stone type floors** – use a flexible tile adhesive to secure a hard insulation material on top of the floor base. (See page for a list of recommended hard insulation materials in your country.)
  - All other flooring types** – use a soft insulating material which can simply be placed on the floor or secured with tape or carpet adhesive. (See page for a list of recommended soft insulation materials in your country.)
3. Clean all debris from the surface of the grout or insulating material.
4. Roll out heating mats on top of the insulating material with the heating ribbon facing down and the fiberglass net facing up. Leave a gap of about 4 inches (10 cm) from the wall to the heating mats. Ensure that each heating mat is completely flat. Make sure that the cold leads of the mats are on the side of the mat that is closest to the location of the electrical junction box (See step 3 - Making the Electrical Connection).



- 5.** Your mats have double-sided adhesive tape on the mat edges. Stretch the mats and secure the mats to the floor with the tape. Where required additional tape can be used, We recommend Allbrite's High adhesion tape.

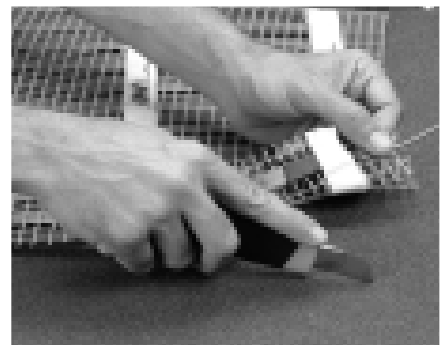


- 6.** Place the cold leads of the mats between the mats toward the connection box. Try to place the cold leads so that they do not cross each other.



**Important!** Ensure that the cold leads of the mats do not cross over the mats.

- 7.** Since the cold lead connector is slightly thicker than the rest of the mat, create a slight groove in the insulation board under the connector to ensure that the heating mat lays flat. If any cold leads cross, create a groove for the cold leads at the point at which they cross.



- 8.** Mark each pair of cold leads coming from the same mat with a number. Place a small sticker with the number of each pair of leads close to the end of the lead (You can use the stickers supplied by AHT as part of the package of the mat).



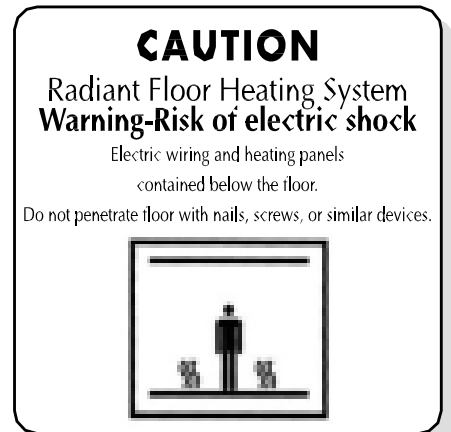


# Making the Electrical Connections

**Note:** All electrical connections must be performed by a fully qualified electrician.

**Important!** Tightly screw all connections to ensure good electrical contacts.

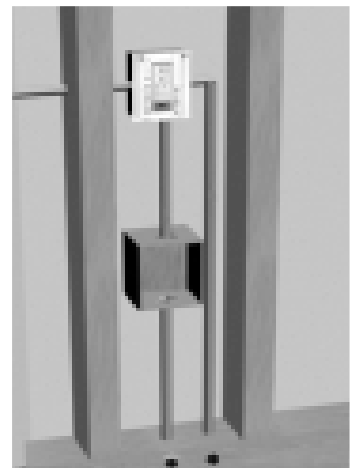
1. Install the electrical junction box or boxes above floor level according to local safety and building regulations and codes. Place the following label on the electrical junction box or boxes indicating that an underfloor heating system is installed in the room.
2. Install the control thermostat as far as possible from any heat sources or heat sinks such as fireplaces, direct sunlight, windows, doors, or anything that could possibly affect proper temperature readings. The suggested placement is 5 feet (1.5 m) above floor level.



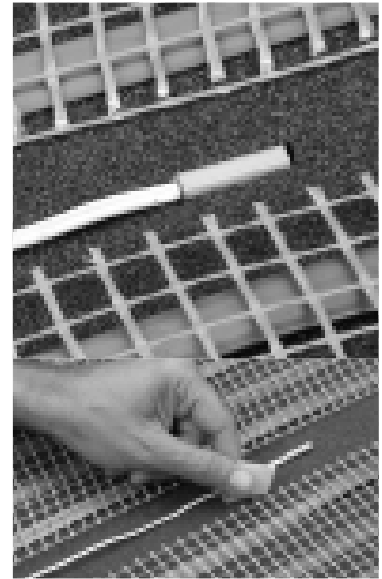
**Note:**

In bathrooms only, use a thermostat with only a floor temperature safety sensor. For all other installations, use a thermostat with both an ambient air temperature sensor and floor temperature safety sensor. See page 15 for a list of recommended thermostats in your country.

3. Install an electric conduit to the connection box and thermostat as in the following diagram.

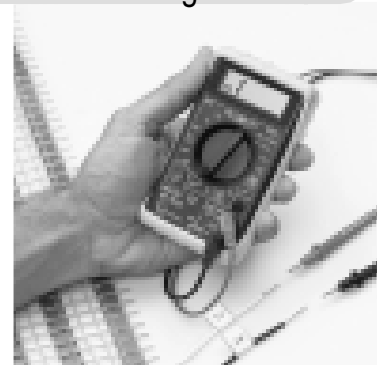


4. Connect the floor temperature safety sensor to the thermostat through a conduit, and install between two heating ribbons, at least 20 inches (50 cm) from the wall.



**Note:** Make sure that the sensor does not touch any of the heating ribbons.

5. Measure the resistance of the heating system and record the value.

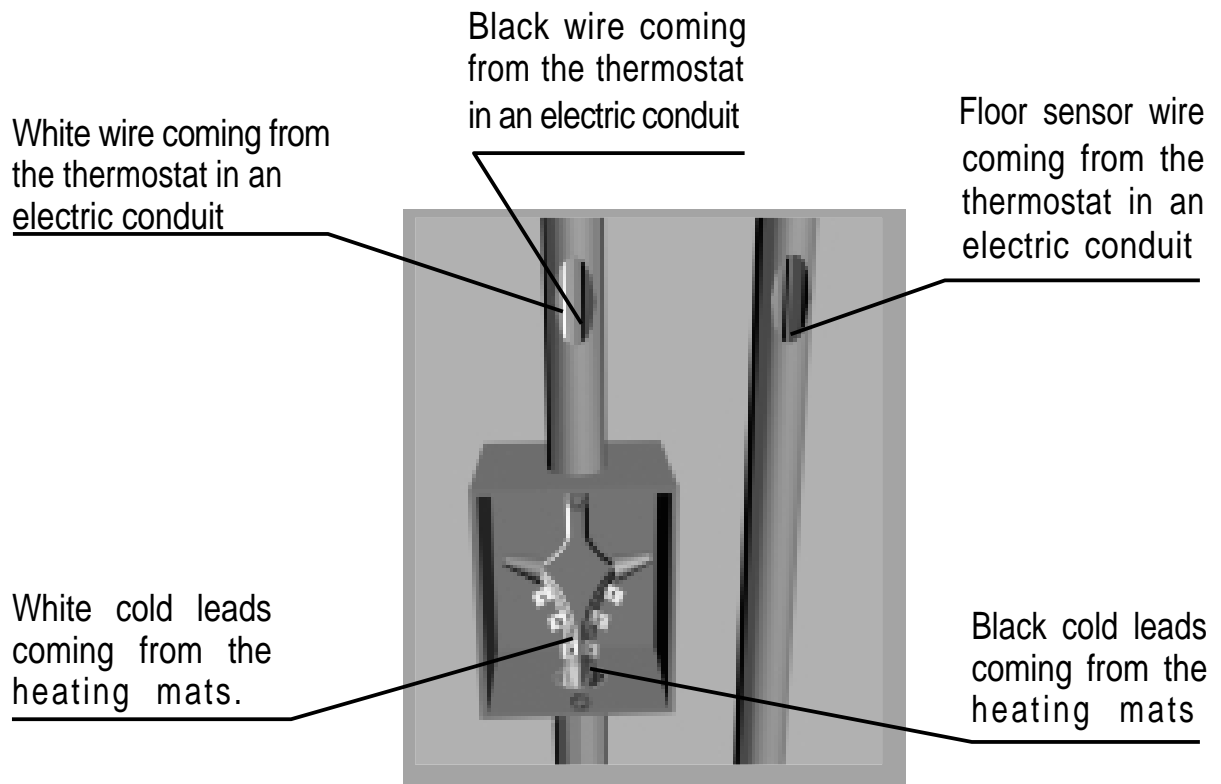


6. Measure the insulation values with a Megger tester and record the value.



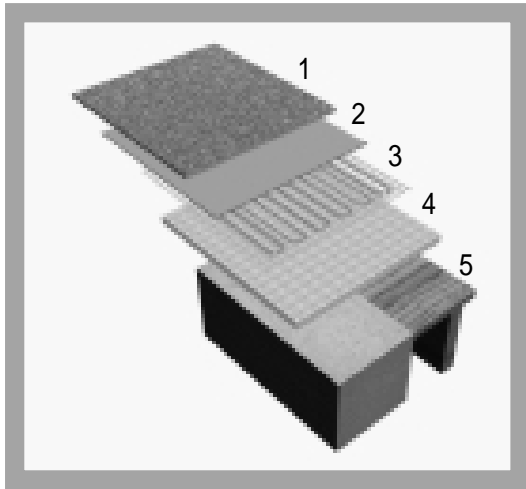
7. If you are installing the heating mats in wet areas:
  - a. Spread the grounding tap on top of the heating mat. The electrical wire of the grounding net should coincide with the heating mat cold lead.
  - b. Route the electrical wire of the grounding tape to the same electrical connection box as the cold leads of the heating mats.
  - c. In the electrical connection box, connect the electrical wires of the grounding to the ground lead (green/yellow) of the power supply of the house.
8. In parallel, feed the cold leads of each mat to the electrical junction box. Make sure that you can see the sticker with the numbers of the leads. If necessary, shorten the leads, but make sure the sticker with the leads' numbers are affixed to the shortened lead.

9. Expose the conductor in each lead.
10. Connect all leads of the same colour.
11. Insert each coloured lead to one connector in the connection box.
12. Connect the same colour cold lead between the thermostat and the connector in the connection box.



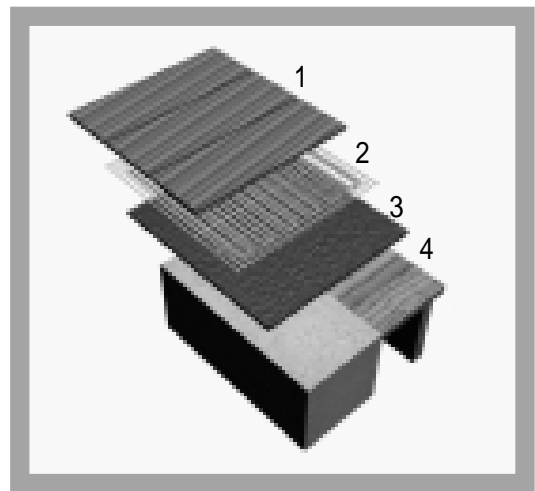
13. Connect the wires to the control thermostat according to the Typical Wiring Diagram
14. Switch on the heating system (see the directions in your thermostat manual) for half an hour to ensure that the system is working properly. It is important to check each entire system to ensure each mat is heating.
15. Switch off the heating system (see the directions in your thermostat manual).
16. When the mats are cool, lay down your floor covering. If you are installing a glued type of floor covering (carpet, vinyl or linoleum), first cover the mats with at least 1/4 inch (6mm) latex based self level flooring cement.
17. If you are installing a glued type of floor covering, or using thin-set or grout, do not switch on the heating system again until the glue, thin-set, or grout is dry. Consult the manufacturer of the material used to determine the amount of drying time needed.

# Installation Examples



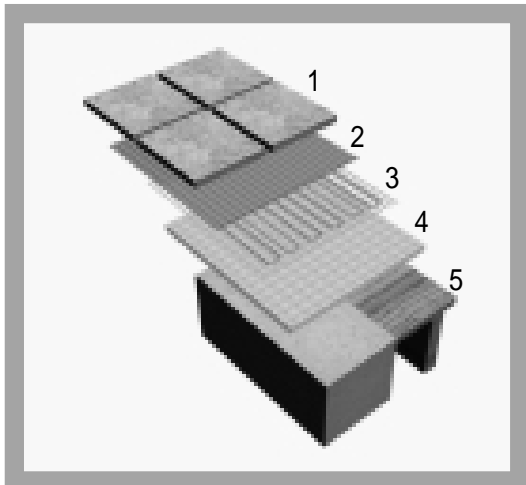
## Under carpet, vinyl or linoleum in dry surroundings

1. Carpet, vinyl or linoleum (with adhesive)
2. Self levelling flooring cement of at least 1/4 inch (6mm) thickness
3. Heating mat
4. Insulation material
5. Floor slab (wood or concrete)



## Under wood, laminate, parquet flooring

1. Wood flooring material
2. Heating mat
3. Insulation material
4. Floor slab (wood or concrete)

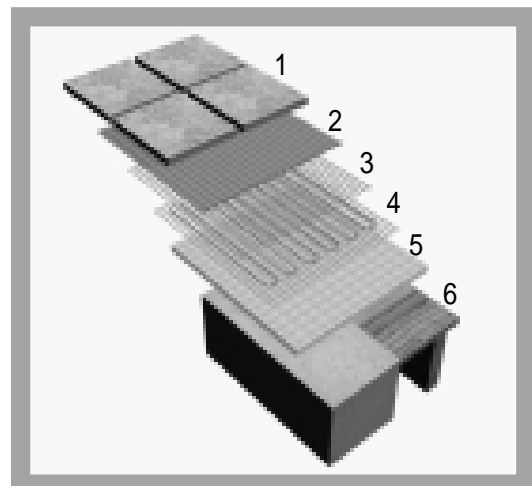


## Under tiles in dry surroundings

1. Tiles or carpet
2. Thin-set/Grout
3. Heating mat
4. Insulation material
5. Floor slab (wood or concrete)

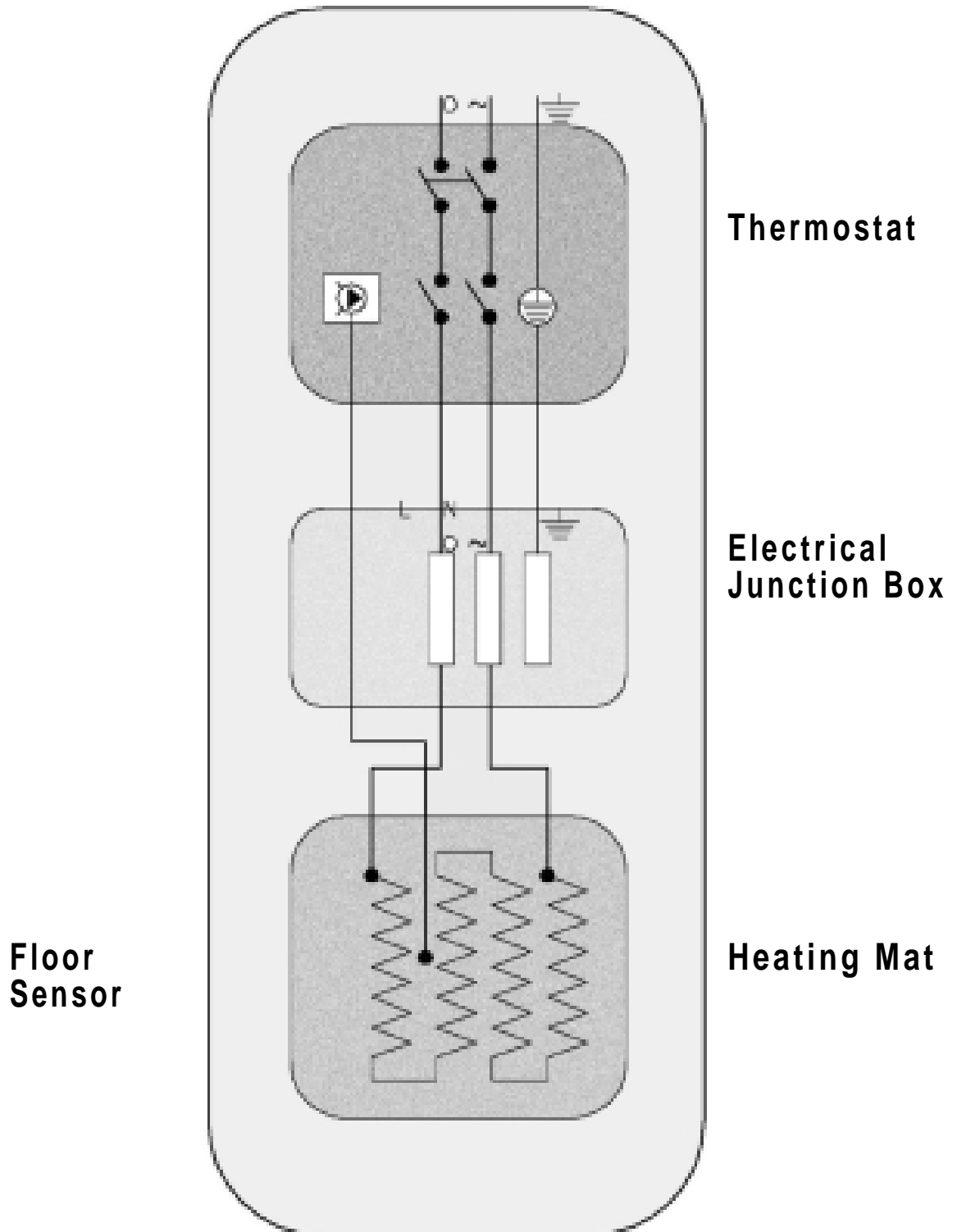
## Under tiles in wet surroundings

1. Tiles
2. Thin-set/Grout
3. Grounding net
4. Heating mat
5. Insulation material
6. Floor slab (wood or concrete)



# Typical Wiring Diagram

For circuits less than 15 amps



# List of Recommended Materials

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## **Recommended Thermostats**

All of Allbrite's thermostats are fully programmable and able to switch upto 16A. Our thermostats have many features compared to others on the market and can be either Air only, Floor only or Air and Floor sensing combined.

- Switches up to 16A (24m<sup>2</sup> of heating elements)\_
- Combination of Air/floor/Air & floor sensors
- Each day can be programmed separately (4 set points per day)
- Stylish slim line design
- Energy efficient (comfort, economy and vacation mode)
- Has full manual override facility.
- Large illuminated LCD screen (blue backlight)
- Remote control option
- Choice of colours (silver, brass, white, black)
- 2 Year manufacturer warranty

## **Recommended Hard Insulation Material**

Allbrite recommends the use of Easy-Heat rigid insulation which has a greater density and compressive strength than others on the marketplace.

Easy-Heat is available sheets 1200mm x 600mm and various depths, 10mm, 20mm, 30mm, 40mm, 50mm. Easy-heat is adhered to the floor using a rapid set flexible tile adhesive.

## **Recommended Soft Insulation Material**

Allbrite recommends the use of Therm-All which is a strong but flexible insulation that is available in either 1m x 5m rolls or 1m x 10m rolls.

Therm-all is 6mm in thickness and suitable for use with wood, laminate and engineered board floors.

For conservatories & high heat loss rooms allbrite recommend 2 layers of therm-All.