



ECOMAT™ Underfloor Heating Elements

Installation Guide

Please read the following instructions carefully to ensure ease of installation. Remember that the final electrical connections must be made by a qualified electrician and also that the guarantee certificate must be filled in and signed by the electrician to ensure that you are covered by our ten year guarantee.

1. Wood / laminate floor
2. Polyester vapour barrier
3. **ECOMAT™** elements
4. Depron insulation
5. Suspended timber floor

1. Wood / laminate floor
2. Polyester vapour barrier
3. **ECOMAT™** elements
4. Depron insulation
5. Concrete sub-floor

ECOMAT™ underfloor heating systems are designed to be used under laminate, engineered board and solid wood flooring with a maximum thickness of 15mm (or thickness equivalent to a maximum thermal resistance of $0.15\text{m} \cdot \text{K/W}$). When underlay is specified by the manufacturer this may reduce the thickness of flooring permitted. Always check to ensure the flooring is suitable for use with underfloor heating systems.

ECOMAT™ underfloor heating systems operate on a standard 230 volts mains electrical supply. Please check all elements are the correct voltage and power rating.

ECOMAT™ underfloor heating systems are designed for simple “do it yourself” installation. However, all electrical connections must be done by a qualified electrician and the complete installation must comply with BS 7671 : 2001 (IEE Wiring Regulations) and Part P of The Building Regulations.

ECOMAT™ underfloor heating systems must be protected by a 30mA RCD (residual current device) and a suitably rated fuse or MCB (miniature circuit breaker).

ECOMAT™ must only be installed in dry locations.

ECOMAT™ underfloor heating elements must not be installed below fixed pieces of solid furniture, cupboards, wardrobes, etc. as this could lead to a local increase in temperature.

Thick rugs, dog beds, bean bags, etc. must not be laid on the heated floor as this may cause localized overheating and damage the floor covering.

Care must be taken to ensure the **ECOMAT™** heating elements are not damaged during installation. It is advisable to lay the floor immediately after installation.

ECOMAT™ elements must be protected by polyester vapour barrier.

ECOMAT™ underfloor heating systems are designed to be controlled by the approved range of thermostats. EB100 (maximum power 2740W), TH132F and TH132AF (both rated at 3450W). If the installed load exceeds these figures then a suitable contactor must be installed by the electrician.

Fixing tape must be used for installation of the Depron thermal insulation, **ECOMAT™** heating elements and Polyester Vapour Barrier.

Temperature controller

Temperature controllers should be positioned (Fig 1) at a height approximately 1.5m from the floor in an area free from draughts, out of direct sunlight and close to the electrical supply. All temperatures have a floor sensor which is placed in the supplied protective plastic conduit and positioned centrally below one of the heating elements at a distance of approximately 0.5m from the wall. A single gang flush fitting minimum 25mm deep back box (35mm preferred) will be required for the controller.

Junction box installation

A junction box (fig 1, preferably 2 gang x 25mm deep) is required for commoning up the heating element 5m long connection leads. This should be sited close to the thermostat and in a position to enable all connection leads and the temperature controller sensor conduit to reach the box comfortably.

Floor sensor installation

Cut a 13mm wide x 6-7mm channel in the sub floor (fig 2) to accommodate the sensor conduit so that the top of the conduit will be level with the Depron thermal insulation surface when installed (see fig 2). Tape over the end of the conduit using a small piece of fixing tape. Place the conduit in the channel and feed to the junction box. The conduit can now be cut to length leaving approx 5cm inside the junction box. Slide the sensor into the conduit until the sensor bulb reaches the taped end. Wrap a piece of tape around the conduit and sensor cable to prevent the sensor being accidentally pulled out. Use fixing tape to hold the conduit in place in the channel.

Laying the Depron thermal insulation

Thoroughly clean the existing floor taking care to remove any sharp objects.

Lay the Depron sheets in 'brick work' fashion as illustrated in the drawing (fig 3). Always remember to cover the total floor area with Depron even unheated areas. Tape along the edges using fixing tape (20m of Depron will require approximately 35m of fixing tape). Carefully cut a channel in the Depron at the position of the sensor conduit channel using a sharp knife and straight edge. Tape over the conduit using fixing tape.

Laying the ECOMAT™ heating elements

Before commencing check the labels on each of the **ECOMAT™** element carbons to ensure they are the correct sizes and power rating.

Working from one side, roll out the first element copper side down with the connection leads closest to the thermostat wall and leaving a minimum 50mm gap from the walls. Apply light finger pressure on the cable connection covers to leave an imprint on the Depron, move the element to avoid damage and using a sharp knife remove the Depron to allow the cable connection cover to sit flush with the Depron surface (fig 4).

Adjusting the ECOMAT™ heating elements

ECOMAT™ heating elements are available in standard lengths from 2.0m to 8.0m in 0.5 increments. Should the elements require to be shortened this can easily be done by cutting along the cutting line using a sharp knife and straight edge or scissors and insulating the copper strips using the insulating green polyester tape discs (4 off

supplied with each heating element) as shown in the diagram (fig 5). Care should be taken not to cut closer than 3mm from the edge of the black heated area. Repeat the procedure for the remaining elements, butting adjacent elements edge to edge.

Taping the ECOMAT™ heating elements

Tape along the edges of the heating elements taking care not to damage them (20m of heating element will require approximately 40m of tape).

Using a sharp knife cut a channel in the Depron along the connection lead / thermostat wall side to accommodate the connection leads (fig 5). Run the leads in the channel to the junction box and tape over.

Laying polyester vapour barrier

The installed **ECOMAT™** heating elements must be covered with polyester vapour barrier to provide optimum moisture and additional mechanical protection.

To install, roll out the vapour barrier, cut to length and overlap adjacent pieces by a minimum of 100mm (fig 7). Tape along the entire length of the overlap. Always remember to cover the entire floor with the vapour barrier, even unheated areas.

Making the connections

Please note the following steps must only be carried out by a qualified electrician.

Using the graph paper supplied, draw a sketch showing the position, width and length of each **ECOMAT™** heating element together with the temperature controller sensor position and number each of the elements of the drawing.

Cut the element cables inside the junction box to approximately 100mm. Carefully strip back 12mm of the cable insulation taking care to completely remove the clear inner insulation. Tin the copper strands using a soldering iron.

Measure and record on the test sheet the resistance of each element and carefully insert all brown and blue cables in separate commoning blocks (2 off supplied with the **ECOMAT™** kit) as shown in the diagram (fig 8). A suitable cable (maximum 2.5mm solid) will be required to connect the commoning blocks to the output of the temperature controller.

Please note: If the installed load exceeds the temperature controller power rating then a suitable contactor must be used.

Measure and record the total installed load resistance and carry out an insulation check to ensure no damage to the elements has occurred during installation. A second insulation resistance measurement should be taken once the flooring has been laid. Both measurements should be at least 10MΩ.

Install the temperature controller following the manufacturers instructions and carry out an operational test, taking time to check and adjust the floor sensor limiting temperature if required.

Finally, complete the test report and guarantee certificate ensuring all measurements are correctly recorded and leave all documentation including the temperature controller instructions next to the electrical supply distribution board.