

Underfloor Heating Instructions



02 Electric Underfloor Heating

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General information

This electric underfloor heating mat is manufactured to the highest standard. For your guarantee to be valid the mat must be fully installed in accordance with the installation manual. Carefully read the instructions prior to installation and ensure that you have the correct tools and materials. **Final connection to the mains must be undertaken by a qualified electrician.**

- Check that the heating mat is the correct size for the floor area to be heated and that there is sufficient power available. The mat should not be positioned over expansion joints.
- If multiple mats are installed please ensure that the maximum capacity of the thermostat is not exceeded. The thermostat should be installed by a qualified electrician. The power supply must be turned off during installation.
- Each mat is tested at the factory and has a unique inspection card. Every mat is tested at 4000 volt. **You must check the mat after each installation phase**, in order to know at which phase any defect occurs.
- The heating cable, attached to the glass fibre net, must NOT be broken. The mats must NOT be laid over each other and the heating cables must NEVER cross each other. The cable junction (where the power supply cable joins the heating cable) is just within the heating mat.
- The mat has 1 connecting cable, which is 5 metres in length. The connector cable MUST NOT be shortened by more than 3 metres. The power supply must be turned off during installation.
- The heating mat is 3 - 4 mm thick and must be incorporated in an adhesive or screed suitable for floor heating. Check the manufacturer's data.
- A distance from the wall of 10 cm is recommended. The mat should never be installed under fixed objects like kitchen units, baths or showers and must be able to give off its warmth freely.
- The mat should only be incorporated into the free floor/wall areas. Please contact your heating engineer who will advise the heating requirement of the room.
- The sensor must be installed in the middle of a cable loop for efficient operation. Ensure that the sensor is installed at least min. 50 cm from hidden radiator and water pipes, drains and electrical wiring.
- The sensor MUST be installed in the sensor pipe, with the end cap fitted to avoid the sensor becoming stuck. If the sensor ever needs to be replaced it can then easily be removed.
- A sufficiently strong and thick compression resistant floor, with or without reinforcing, must be applied on wood and insulation. Please ensure the floor is suitably stabilized.
- The electric heating mat is guaranteed for 10 years. The thermostat is guaranteed for 2 years. The guarantee does not apply to damage caused by external factors and/or incorrect installation.



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Preparation

Check the contents of the box before starting. A complete set will consist of:

- Heating mat with connecting wire.
- Control card.
- Digital clock thermostat incl. floor sensor.
- Flexible sensor pipe.
- Multimeter.
- Installation manual.



Materials Needed

- Electric Underfloor Heating kit.
- Flexible tile adhesive or levelling / screed and grout suitable for floor heating.
- Flexible cement and cement gun for expansion joints along the walls.
- Approx. 2 m flexible electrical piping (16mm).
- Plastic glue comb with approx. 6mm teeth.
- Electrical junction box (min 40mm deep).
- Power outlet with RCD 30mA.
- Adhesive or double sided tape (for screeded floors).

Position of Thermostat

Determine where the thermostat is to be placed for ease of operation. A standard electrical junction box with a minimum depth of 40mm will be needed. Mount as in (fig 1) with suitable sheathing/conduit to allow plastering after installation.

Cut a groove in the floor for the floor sensor pipe 2 cm deep (fig 2), and feed the sensor through the flexible pipe capping the end to avoid the sensor becoming stuck (fig 3). The sensor must always remain in the flexible pipe. If the sensor ever needs to be replaced it can then easily be removed.

Ensure that all work surfaces are flat, clean, and free of dust and grease.



Fig. 1



Fig. 2



Fig. 3

Installation

Tile Cement

Lay the heating mat with the heating cable facing down so that only the glass fibre netting is visible (fig 4).

Screed

Lay the heating mat with the heating cable facing up, to prevent the glass fibre netting 'floating' on the levelling screed. If necessary, the mat can also be attached using double sided adhesive tape.

General

Determine how the matting must be laid. The glass fibre netting can be cut between the cable loops and folded over. Avoid damaging the cable. There are many possible variations when installing, please see page 8.

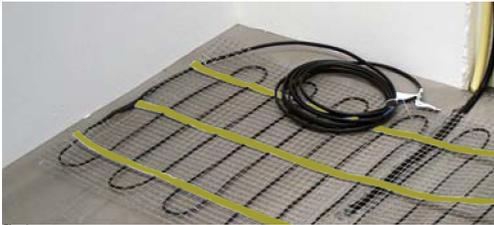


Fig. 4

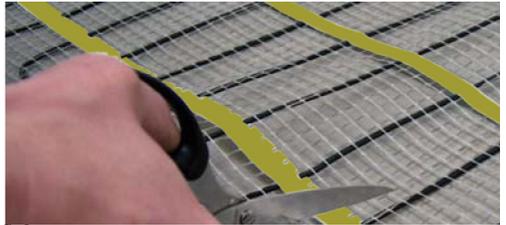


Fig. 5

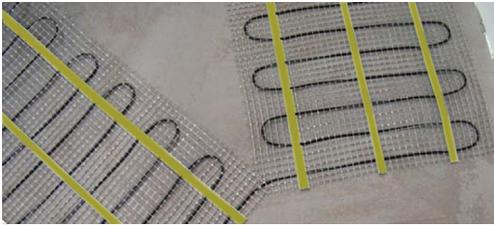


Fig. 6

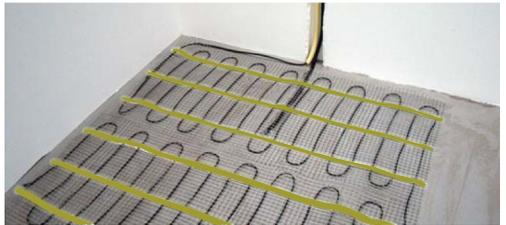


Fig. 7

Measuring out the Mat

Test mat before commencing installation to ensure that the values recorded agree with the manufactures figures on the control card. This will show there are no faults. Allow a distance from the wall of 10 cm when rolling out the matting. If the mat is too long it can be folded by cutting through the fibre netting without damaging the heating cable (Fig 5,6&7). This can be repeated a number of times to suit the requirements of the room (examples are shown on page 8). If the mat is still too long the cable can be cut loose from the fibre netting and installed in loose strips as shown. The loose cables must be looped at least 4 cm from each other, and should not touch or cross. Retest the mat when it has been laid.

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Installing in Tile Cement

- Apply a first layer of cement of 0.5 to 1 cm thick and approximately 55 cm wide (fig 8).
- Feed the end of the connecting cable through the electrical piping to the thermostat (fig 9).
- Roll the mat over the tile cement with the cable facing downwards (fig 10).
- Softly push the mat down with a wooden spatula or gloves and spread the tile cement that oozes through the mat (fig 11).
- Smooth it over and allow it to dry.
- Test the mat again with a multimeter (see page 9) and write down the readings on the control card.
- Then apply a second layer of tile cement taking care to avoid air bubbles. Use a plastic tile cement comb to avoid damaging the heating mat (fig 12).
- Fix tiles to the adhesive (fig 13).



Fig. 8



Fig. 9



Fig. 10



Fig. 11



Fig. 12

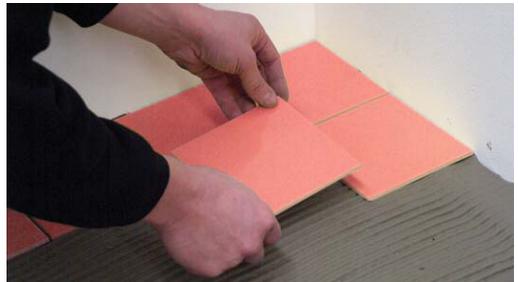


Fig. 13

Installing in Screed

Position the mat as described on page 5. Attach the mat to the floor with adhesive or double sided tape (as shown).

Test the mat again with a multimeter (see page 9) and write down the readings on the control card.

Please check that the screed is suitable for floor heating and follow the laying instructions of the manufacturer, observing drying times.

PLEASE NOTE: Applying 2 separate levelling layers, one on top of the other, is NOT RECOMMENDED as it can cause unnecessary tension in the floor.



Fig. 14



Fig. 15

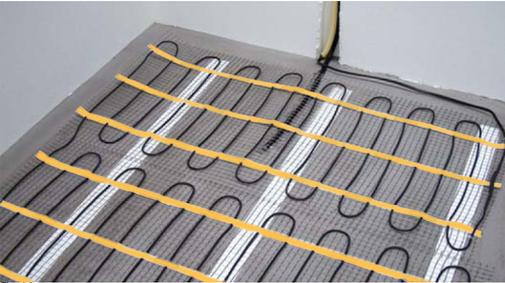


Fig. 16

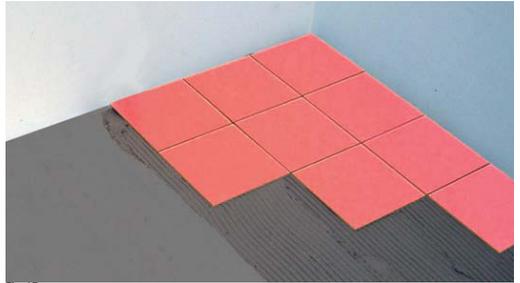
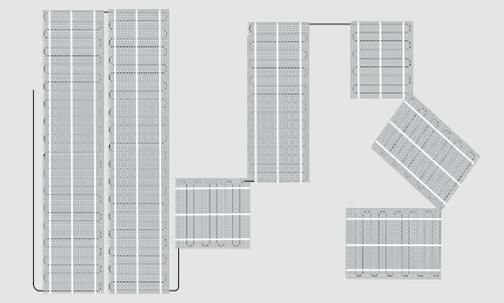


Fig. 17

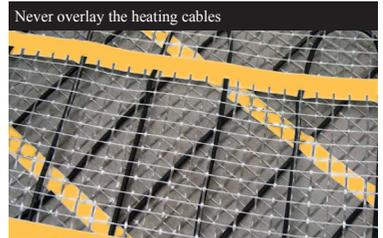
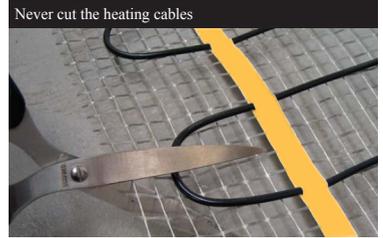
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Installation: Laying Variations

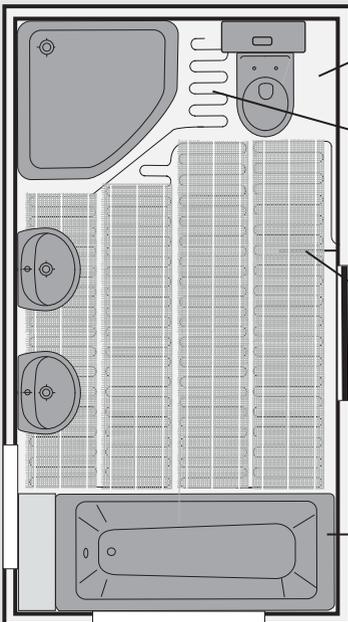
The mat can be laid in several ways, as illustrated in diagram below:



PLEASE NOTE: Heating will only occur where the mat has been installed.



Installation: Laying Example



Please note that where there is no matting installed the floor will not be heated.

If the mat is too long the cable can be cut loose from the fibre netting and installed in loose strips. The loose cables must be looped at least 4 cm from each other. They must not touch or cross each other. See above.

The sensor must be installed in the middle of a cable loop for optimal temperature registration. Ensure that the sensor is installed well clear (min. 50 cm) of hidden radiator and water pipes, drains and electrical wiring.

The mat must never be installed under fixed objects like wall units, kitchen units, baths, or showers and must be able to give off its warmth without being unimpeded.

Testing with Multimeter

- Connect the wires to the multimeter (fig 18).
- Turn the knob of the multimeter to the Ohm 2000 position. (fig 19).
- Connect the red and black probe to the connection wires (fig 20). The connection wires (Phase and Neutral) have a clear insulation sheath.
- Do not touch the wires when measuring. Check readings according the control card which was attached to the heating mat. If readings are not within the limits shown please call 01902 387000 and stop installation.
- Connect the RED probe to one of the connection wires and the BLACK probe to the Earth wire (fig 21). Earth wire has no sheath. Repeat this step with the RED probe to the other connection and BLACK probe to the Earth wire.
- Reading on the multimeter now should be '1'. If you read any resistance there is a possible break in the wires. Please check again. Please call 01902 387000 and stop installation if reading still shows resistance.

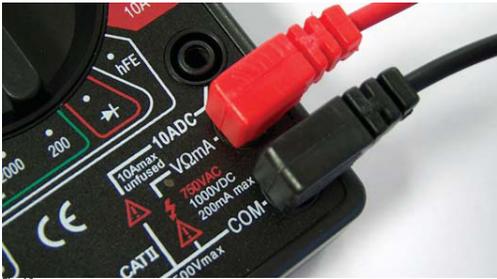


Fig. 18



Fig. 19

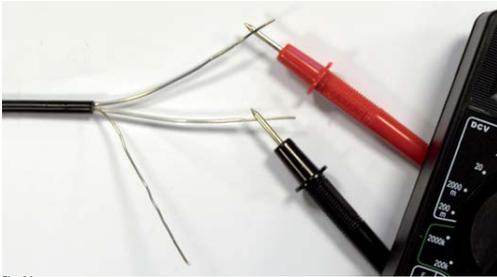


Fig. 20

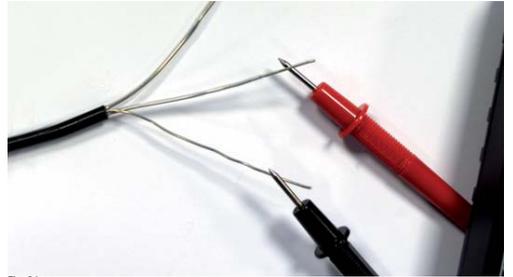


Fig. 21

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Connecting the Thermostat

During installation/de-installation of the thermostat the electricity should always be turned off at the mains. **Installation must be carried out by a qualified electrician in accordance with the IEE regulations.**

Cover:

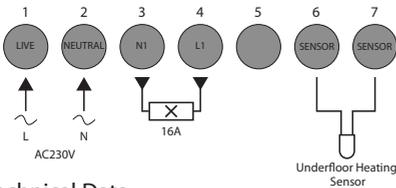
Check that the electricity is turned off. Remove the display housing by inserting a blunt, suitable instrument into the square hole at the bottom of the thermostat and exerting pressure (fig 22), Then once again using a blunt, suitable instrument exerting pressure in a upward motion disengage retaining bar (fig 23). Both the display housing and the cover plate can then be removed.

Wiring (see wiring diagram below fig 24):

- 3, 4 are used for the connection wires from the heating cable. The connection wires (Phase and Neutral) have a white insulation sheath, and it does not matter which one goes into terminal 3 and which into terminal 4.
- 1 (Phase-Brown/Red), 2 (Neutral-Blue/Black) are for the power supply.
- The earth wire from the matting is unsheathed and needs to be sheathed before connection to the mains earth.
- 6 and 7 are for connecting the sensor.

Installation:

Place the thermostat mounting plate in the right position and fasten this with two screws. Replace the display unit fixing the retaining bar back into the locked position (fig 23) then gently replace the display housing. As soon as the power is turned back on the screen will illuminate and the thermostat can be used. In case of a newly installed floor, allow at least three weeks drying out period.



6.0 Technical Data

Type m ²	Wattage	Heat outputs	
		Amps	Ohms
1m ²	150W	.65	353
1.5m ²	225W	.97	237
2m ²	300W	1.30	177
2.5m ²	375W	1.63	141
3m ²	450W	1.96	117
3.5m ²	525W	2.28	101
4m ²	600W	2.61	88
4.5m ²	675W	2.93	78
5m ²	750W	3.26	71
6m ²	900W	3.91	59
7m ²	1050W	4.56	50
8m ²	1200W	5.22	44
9m ²	1350W	5.86	39
10m ²	1500W	6.52	35
11m ²	1650W	7.17	32
12m ²	1800W	7.83	29



Thermostat



Fig. 22



Fig. 23



Fig. 24

Power Supply	230V - 16Amp
Max. Capacity	3000W
Temp Range	5°C ~ 90°C
Protection Rating	IP20
Warranty	2 Years
Examination	CE

Installation: Programming thermostatic timer

General information

This thermostat is designed specially for electrical floor heating. The floor sensor is supplied standard with the system. Please study these guidelines carefully before installation and use. Save these instructions for possible later use.

Direction for use

Turn on the power after having checked the installation instructions carefully. The screen will light up for the first time and will display OFF (OFF).

First activate the floor sensor and day off mode :

This can be done from the first activation screen while OFF is displayed on the screen. Press in conjunction with to enter the sensor setting menu, press once again to enter setting 2SEN sensor mode using the or keys select the **out** mode for the under floor sensor, then press the key until you reach 6PRG to select from 5/2,6/1 or 7 day mode, using the or to choose, to exit menu press .

Set the time:

From the ON position press and hold the key for 5 seconds to enter the time and day settings*:

- & to select the minutes “flashing” press
- & to select the hours “flashing” press
- & to select the day “flashing” press to complete

*There is limited time to set the time, if it times out start the operation from the beginning.

Programming the on/off cycle:

From the ON position press and hold the key for 5 seconds to enter the programming section (The programming section will disengage after 25 seconds if there are no other key strokes). The days will be displayed and the time setting for the first part of cycle 1:

- & to select the on time press
- & to select operating temperature press
- & to select the off time press
- & to select the set back* temperature press

*Set back recommended to be 5°C below operating temperature. This will prevent the floor having to be heated up from cold, and will help response time's.

Repeat the steps above for cycles 2&3 pressing at the end of cycle 3 the day off* settings will now be displayed.

- & to select the on time press
- & to select operating temperature press
- & to select the off time press
- & to select the set back temperature press

To exit the programming menu press . This completes the setting of the daily operating.

*Day off setting will only be displayed if you have chosen 5/2 or 6/1 from the day off mode (6PRG).

Daily use of the thermostat:

Clock controlled programme mode

The week has been split into 3 cycles, the thermostat will operate automatically according to the programmed temperature and time. Clock controlled programme mode is activated by pressing the key.

& Manual clock controlled

The temperature can be temporarily changed for a single period, this mode temperature is reset at the next cycle, and the thermostat will return to scheduled program. This mode is entered by adjusting the temperature using the & keys during Clock controlled programme mode.

Manual mode

The scheduled program is overridden, set the temperature according to your individual requirements and the thermostat will operate at this temperature until you alter the setting manually. Manual mode is activated by pressing the key.

Key-lock Function

Press both the & keys for 5 seconds to engage/disengage the “Key-lock” function(symbol appears meaning “Key-lock” function is activated, symbol disappears when “Key-lock” function is deactivated)

Programming the on/off cycle (quick reference)

Factory set defaults							
Key	Cycle	Symbol	Time		Temperature		
	Day 1-5	On		06:00	Set the start & end time	20°C	Set operating temperature
		Off		08:00		15°C	
		On		11:30		15°C	
		Off		12:30		15°C	
		On		17:00		22°C	
		Off		22:00		15°C	
	Day 6-7	On		08:00		22°C	
		Off		23:00		15°C	

Key

- On, cycle 1
- Off, cycle 1
- On, cycle 2
- Off, cycle 2
- On, cycle 3
- Off, cycle 3
- Heating On
- Key-Lock function activated
- Set sensor mode
- Set day off mode
- On & Off



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