



Remember...

**If you have any questions at all,
just call the**

Technical Support helpline on:

01444 247020

Heat Mat Limited,
Ashwyn Business Centre,
Marchants Way,
Burgess Hill. RH15 8QY
www.heatmat.co.uk



**High Quality,
Ultra-Thin
Heating Cable**

Fitting Guide

Call 01444 247020 for Technical Support

Underfloor Heating – made easy...

Please ensure you read this guide completely before commencing installation of the underfloor heating. If you are unsure of any aspect of the installation please call Heat Mat's Technical Support helpline on 01444 247020.

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Before commencing your installation please check that you have the right heater or combination of heaters for your chosen area. (see page 6 for details)

Heat Mat Limited accept no liability, either express or implied, for any consequential losses incurred as a result of a Heat Mat system installation that does not conform to the following installation instructions.

Do's and Don'ts

- Do thoroughly read this guide before commencing installation
- Do provide adequate ventilation when applying and whilst drying primer
- Do space the cables evenly across the floor to produce a uniform heat output
- Do ensure that all yellow heating wire (including joints) is fitted beneath the floor covering
- Do use a multimeter to test the cable
- Do connect multiple cables in parallel
- Do consider additionally insulating your sub-floor before installing the underfloor heating system
- Do use a Heat Mat thermostat to control your system. HT10 or TPS30
- Do ensure that all electrical works conform to Part 'P' of the Building Regulations and current IEE Wiring Regulations
- Do ensure the system is protected by a suitable RCD device (min 30mA)
- Do ensure that the cable is more than 30mm away from conductive parts such as water pipes
- Don't cut, shorten, strain or cross the heating cables.
- Don't bend the joint between the element and cold tail
- Don't supply power to the heater until the cable has been fully encased and the wet trade has been allowed to fully dry out
- Don't lay cables closer than 30mm to each other
- Don't lay cables closer than 9cm if covering with wood, vinyl or carpet
- Don't lay cables more than 11cm apart from each other if you wish to achieve even heating on your floor
- Don't install cables if the ambient temperature is below 5°C as they can become less flexible
- Don't install the cables in walls or ceilings unless this suitability has been confirmed with Heat Mat
- Don't install the floor sensor close to other heat sources such as hot water pipes

3mm Heating Cable 14 W/m technical specification

Product Code	Length in Metres	Resistance	Wattage
PUR200/PRO200	15.0m	272 Ω	200W
PUR300/PRO300	23.0m	182 Ω	300W
PUR400/PRO400	30.0m	142 Ω	400W
PUR600/PRO600	41.0m	100 Ω	600W
PUR1500/PRO1500	108.0m	38 Ω	1500W

Test your heating cable with a multimeter before unwrapping to confirm you have received it in working order.

The black coldtail is double insulated and carries an earth screen (silver braid), live and neutral wires.

Exposing these wires will allow the continuity tests to be carried out with a multimeter.

This test should also be done before, during and after tiling.

At no point should any cable be connected to a power supply to test it.

Tests

- Live to neutral = ohms value as listed above
- Live to earth and neutral to earth = both infinity.

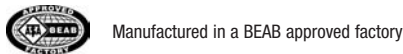
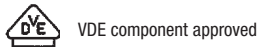
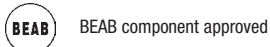
If your tests do not conform to the expected results please contact Heat Mat's Technical Support Team.

Technical Data:

General Construction:	Dual conductor wire with earth
Voltage:	230 Vac – 50Hz
Maximum Load:	15 W/m
Maximum Cable Temperature:	90°C
Approvals:	BEAB, VDE and CE marked
Wire Thickness:	2.7mm to 3.2mm depending on Ohm Value
Cable Flexibility:	Minimum allowable cable radius is 30mm
Power Range:	200W to 1500W
Approved in accordance with:	EN 60335-1:1998, EN60335-2-17:1999, IEC 60730

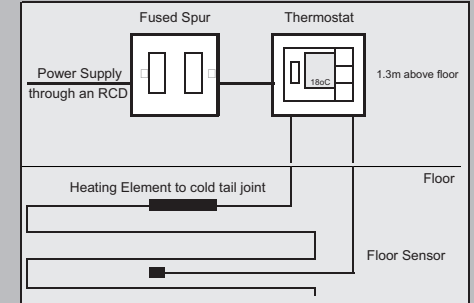
Construction:

Thermal Conductor:	2 x resistance wire insulated with Teflon (FEP 7Y) tested to 200°C
Outer Insulation:	PVC (Y) tested to 90°C
Reinforcement Materials:	Fibreglass wire
Insulation Shield:	Tinned copper screen, 24 x 0.2mm S-Z spiral and 100% aluminium earth screen
Fixing Materials:	Supplied with Thermal Primer, double-sided tape and masking tape



Basic wiring diagram and warning label

Typical Wiring System



- All electrical works must be carried out by a certified electrician.
- A suitable RCD protection must be incorporated in this system.
- If the ampage of the thermostat is exceeded by your chosen system, a contactor or similar device will be required. 16Amp, 3600Watts maximum for TPS30 and HT10.
- The heating cables must not be cut or cross each other or other wiring.
- The cold tail joint must be kept straight and located beneath the final floor covering and must be thoroughly encased in tile adhesive or levelling compound.
- Please consult your electrician to discuss your individual requirements.

Please complete, cut out and display at your distribution board.

<p>Warning</p> <p>This building is fitted with Heat Mat Underfloor Heating</p> <p>Do NOT pierce the floors with nails, screws or other fasteners</p> <p>Do NOT expose the floor to thermal blocking or reduce the size of the floor which has floor heating installed</p> <p>In the event of flooding or when carrying out any repairs or alterations disconnect the Underfloor Heating and contact your electrician or Heat Mat for advice</p>	<p>Details of Installation:</p> <p>Electrician Name: _____</p> <p>Company Name & Address: _____</p> <p>Date: _____</p> <p>Room Installed: _____</p>	<p>Signature:</p> <p>_____</p>	<p>Product Code</p> <p>_____</p>	<p>Resistance Rating</p> <p>_____</p>	<p>Insulation Test Passed</p> <p>_____</p>
	<p>Heat Mat Ltd - Tel No: 01444 247020</p> <p>see www.heatmat.co.uk for more underfloor heating solutions</p>				

Choosing the correct cable spacing

Calculate the total m² of floor area you have in your room, and then deduct any areas where underfloor heating can not be laid such as any floor fixed furniture including baths, shower trays, kitchen units, central islands etc. This will give you your free floor area. Find the free floor area in the tables on the top of your cable box and use these to confirm that you have the correct cables for your requirements.

To calculate the wattage output per m² you will have, divided the wattage listed for your cable/s by the m² free floor area that you have to heat i.e

$$\frac{1,500W}{10m^2} = \text{an output of } 150W/m^2$$

Now you must calculate the cable to cable (c-c) distance you will lay your heating cable at. Divide the free floor area by the total length of the cables you have to lay i.e

$$\frac{10m^2}{108m} = 9.25cm$$

You should therefore, in this circumstance, lay all of the cables in runs roughly 9.25cm apart.

As a guide to confirming the wattage per square metre (W/m²) that you require, please use the following advice in conjunction with the tables on top of the cable box.

Table 1 – Standard rooms:

When using any suitable floor covering including tiles, carpet, vinyl or wood. (please note a levelling compound will be required for use with any floor covering other than tiles). These cables can be laid straight onto wooden or insulated concrete bases. They can provide primary heating in well insulated areas and secondary heating in other circumstances.

Table 2 – High heat loss rooms:

When using beneath tiles on insulated concrete bases and when primary heating is a priority. If the system is being installed to provide the only source of heating, you would normally evenly space the cables in rows between 6.0 – 9.5cm apart to achieve this. Speak to your electrician or builder to confirm that the system output meets your individual requirements.

Although 100% coverage is achievable, a border of 2 – 4cm is recommended around the perimeter of the room as the heating cables should not touch the walls, kickboards etc.

We would recommend planning your installation before starting to lay your cable, and also that you photograph your cable layout before tiling for future reference.

Installation instructions

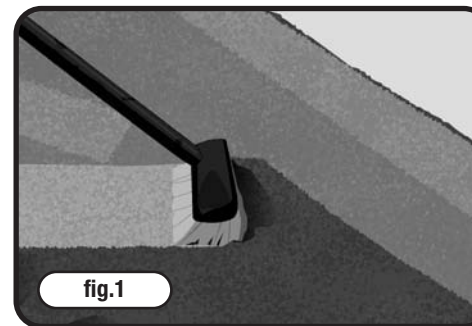


fig.1

Floor Preparation

Ensure the sub-floor is solid, level and dust free. Wooden floors can be reinforced using 18mm WPB plyboard, Marmox Insulation boards or suitable Tilebacker boards.

The sub-floor should be insulated to current building regulations, however if you are unsure how well insulated your sub-floor is, Heat Mat can supply 10 or 20mm Marmox Insulation boards. Insulation improves the performance and efficiency of your system therefore reducing running costs. If there is little or no insulation within the sub-floor we would recommend using a suitable additional layer of insulation as well as our thermal primer.

If installing Marmox boards, these should be secured with flexible tile adhesive onto concrete sub-floors, or with galvanised screws and washers onto timber bases. Reinforcement tape should be used across the joints. See www.heatmat.co.uk for further details.

Apply the thermal primer to your sub-floor ensuring the room is well ventilated during application and drying. 0.5L will cover up to 8m² of floor space. The thermal primer can reduce heat loss through the base by up to 20%. (fig.1)

The thermal primer is acrylic based and should be compatible with all flexible tile adhesives. If in doubt please confirm compatibility with the tile adhesive manufacturer.

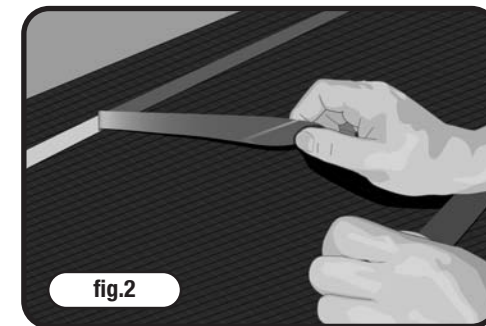


fig.2

Installing the Ultra-Thin Heating Cable System

Lay out runs of the double-sided tape the opposite way to the direction you wish to lay the cable. The runs of tape should be about 50cm apart and you must ensure a run of tape is positioned at either end of the room. (fig.2)

Measure and mark out your chosen cable to cable (c-c) distance across either side of your floor area. (fig.3)

Remove the protection from the double-sided tape.

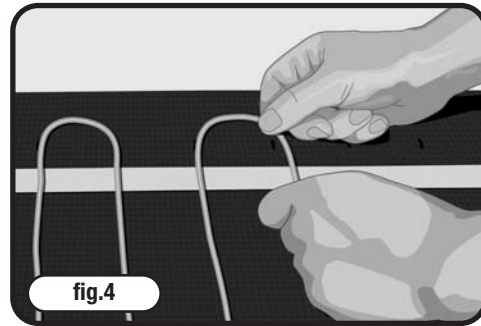
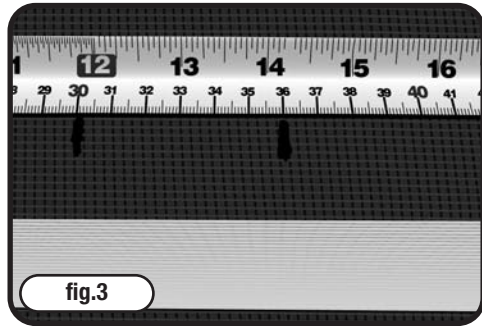
Lay out your cable to your chosen spacing, going across your lines of tape and pressing the cable down onto the tape. Never let the cables touch or cross. (fig.4)

Adjust the spacing between the cable if required to ensure that your cable/s fit your room.

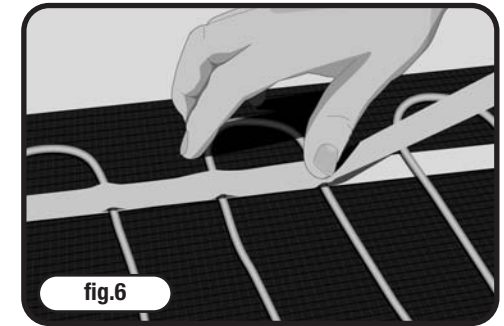
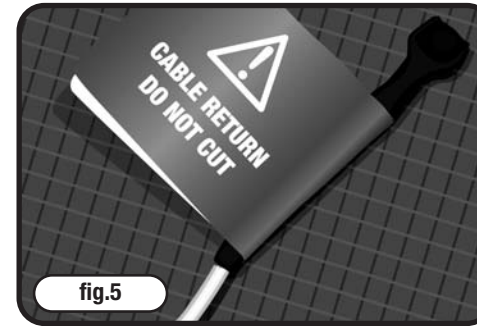
Remember to maintain even spacing wherever possible to ensure a constant output across the floor area.

The cable runs must never be less than 30mm apart and if you find that your rows have to be 30mm or less to fit your room, STOP, as the cable is too big for your area. The heating cable can not be cut to shorten its length without being destroyed.

Installation instructions



Installation instructions



Ensure that the return joint at the end of the cable and the connection between the heating cable and the cold tail are kept straight and laid within the floor area beneath your tiles or chosen floor covering. These will have to be chased into the sub-floor to ensure they rest at the same height as the top of the heating cable. These must not be covered with tape, but do have to be fully encased in tile adhesive. (fig.5)

The masking tape should be used to ensure your cable is secured before tiling begins. You should not cover the entire length of the cable, simply place tape over the runs of double-sided tape and at any points where the cable is not lying flat on the floor. Any tape should be nipped around the cable to ensure no air pockets are created. (fig.6)

Position the floor sensor (contained inside the thermostat box), halfway between two runs of the heating elements. The floor sensor should not cross the heating cable and should be placed approx 40cm into the heated floor space. The floor sensor at the end of the cable should also be chased into the sub-floor so it lies level with the top of the heating cables. The sensor cable can be extended if required up to 50m using a 2 core flex.

You should not cover the floor sensor in areas affected by other heat sources, such as hot water pipes and radiators.

Multiple cables can be installed in one room but must be connected in parallel (they do not join together). Up to 2 heating cables can be wired directly into the back of the thermostat. More than two cables will require a

connection box. If your chosen system exceeds 16amp (approximately 3,600 watts), additional thermostats can be used or your electrician can install a contactor or similar device to allow the heating system to operate safely through a single thermostat.

Test the heating system with a multimeter again prior to covering.

If covering is not going to happen straight away, protect the heating system by covering with cardboard or carpet and restrict any traffic above the cable to a minimum.

Covering the Heating Cable System

Wear soft soled shoes and cover the system with carpet/cardboard to protect it where you are working during installation. Do not allow any unnecessary traffic across the cabled area until the floor covering is completed. Do not stack or cut tiles across the cabled area and take care to avoid dropping sharp objects or tiles onto the cables as this can crush or cut into them.

Check the resistance and continuity of the cable with a multimeter regularly during installation. If the resistance changes, or the cable goes to open circuit, the cable has been damaged. In this case, please contact Heat Mat's Technical Support line on 01444 247020. Even a small nick in or scratch to the outer insulation can lead to system failure when powered up over a period of time.

Heat Mat can supply Mira Thermoplan levelling compound to encapsulate the heating cable. (Mosaic tiles, carpets, vinyl and wood coverings require a layer 10 – 12mm from base level). Using a suitable flexible levelling compound reduces the risk of damage to the cables caused by using tile trowels and should a tile need to be replaced in the future, the heating cable is less likely to be damaged. Air pockets around the cables are also less likely with this method of installation.

If using tile adhesive and grout to complete your installation they must be suitable for underfloor heating, the main requirement being that they are 'flexible' adhesives and grouts. Please refer to the manufacturers instructions to confirm suitability.

If using flexible tile adhesive, a plastic notched trowel should be used to push the adhesive along the cable rather than against it. Care should be exercised to prevent damage to or dislodging of the heating cables. Ideally, lay carpet or cardboard on top of the exposed cable and use this as a crawl board to avoid damaging the system. Although the cable is protected by an armoured sleeve, it is ideal if the trowel does not make contact with the cable itself.

If a tile needs to be moved after placement this must be done carefully to avoid damaging the heating cable. Once the tile adhesive is dry it is very difficult to replace a tile without damaging the cable.

The floor should be grouted with a flexible grout, and particular care should be taken not to damage the cable when cleaning out any grout lines. The underfloor heating must never be used to 'dry out' the tile adhesive. The system must not be turned on until the adhesive, grout and/or levelling compound is completely dry. This would normally take at least seven days, but please refer to the appropriate manufacturers instructions for confirmation.

Once the floor covering is laid, test the resistance and continuity of the cable again to ensure system is still intact.

Installation instructions

Electrical Connections

Wiring can now be completed but no power should be applied to the system until the adhesive, grout and/or levelling compound is completely dry.

All work must comply with current IEE wiring regulations and installations must comply with Part 'P' of the Building Regulations. Consult your Local Authority Building Control department regarding their requirements for certification or check with an electrician qualified to issue Part 'P' certification regarding your individual installation.

The heating cable has to be wired into a thermostat with floor sensor limitation. Please see the separate instructions in your Heat Mat thermostat box.

Run the coldtail connection and floor sensor cable in separate plastic conduit or trunking from your heated floor to the thermostat position.

Up to 2 heating cables can be wired straight into the thermostat. More than 3 heating cables will require a connection box to house these wires and always ensure multiple heating cables are laid in parallel, not in series.

The mains power supply must be protected by a suitable RCD (30mA and up to 4.8kW).

The thermostat should be connected to the power supply via a suitably rated fused spur or circuit breaker.

Heat Mat's thermostats are rated 16 Amp and if the total loading from a combination of heating cables exceeds this, the system will require multiple thermostats or we would recommend the installation of a suitable rated contactor which would allow the heating system to be run through a single thermostat for ease of control.

Heat Mat's thermostats are IP21 rated, which means that they can be installed within a wet area in Zone 3 if it is available.

If the thermostat is placed outside the room to be heated, or inside a cupboard, the thermostat will have to be reprogrammed (when first switched on) to only monitor the floor sensor that has been placed into the heated floor space.

**Remember:
If you are unsure
how to proceed
at any stage of
the installation
process, please
contact Heat Mat
Technical Support
on 01444 247020
for guidance.**

Heat Mat Lifetime Warranty



Congratulations on your purchase of a Heat Mat electric underfloor heating system.

The ultra-thin heating cable has been manufactured and supplied in the European Union by Heat-Com a/s/Heat Mat Limited, and the following Warranty is supplied in accordance with the general product liability rules, as stated in Directive 85/374/CEE, and all relevant national laws. You are provided with a fifteen year warranty on the ultra-thin heating cable for eventual defects in material. Eventual defects have to be presented to Heat-Com, Heat Mat or an authorised UK or Ireland distributor for approval.

When your warranty is released, your damaged product will either be repaired or replaced free of charge to yourself.

Your warranty does not cover the following:

- Any faults caused by misuse.
- A system which has not been installed in accordance with the manufacturer's guidelines.
- Any other subsequential or consequential damages.
- Any system that had not been paid for in full.

Heat-Com a/s/Heat Mat Limited are covered by an international insurance covering warranty payments.

In addition to the above warranty, Heat Mat offer a lifetime extension to the above warranty on your ultra-thin heating cable. To be covered by this extra warranty in addition to the above stipulations you must also:

- Register your product at www.heatmat.co.uk/warrantyregistration within 31 days of purchase.
- Be able to provide your proof of purchase of the system, a normal retail invoice/receipt is sufficient for this purpose.
- Ensure the system has been installed in accordance with Heat Mat's installation guidelines and it must be protected by a suitable RCD.
- Ensure that all installation work is compliant with current IEE wiring regulations and installations must comply with Part 'P' of the Building Regulations. You should retain your Part 'P' certificate as proof of this .

If the above stipulations have been followed, Heat Mat will provide a lifetime warranty once the original fifteen year warranty expires for the ultra-thin heating cable. This warranty runs for the life of the floor covering above the original installation. This warranty covers manufacturing defects in the ultra-thin heating cable supplied. Eventual defects have to be presented to Heat Mat or an authorised UK or Ireland distributor for approval. When your warranty is released, your damaged product will either be repaired or replaced free of charge to yourself.

The repair or replacement of your system is the only remedy available to you under these warranties. None of the above warranties affect your statutory rights. Heat-Com a/s and Heat Mat Limited will in no event be liable for consequential losses or secondary charges including but not excluding the cost of replacing or repairing floor coverings, any costs associated with utility expenses or running costs, professional fees relating to trades peoples' subsequent work or any other damage caused to material items.

**Heat Mat Limited,
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www.heatmat.co.uk