VPS Trading Ltd.
Unit 16 Whitegates Business Park
Lenzie Road
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G66 3BQ
0141 459 3141
enquiries@vpsunderfloorheating.co.uk

BEFORE YOU BEGIN:

The Thermopads under tile loose cable heating system is suitable for a wide range of floor coverings – ceramic, stone, limestone, slate, terracotta, porcelain or marble. The system is designed for installation directly below tiles and stone flooring, and the following instructions should be read carefully before you begin your installation.

Please read these instructions and complete your Guarantee and return it to the Distributor after installation. It is important to carry out and record the electrical tests as required by law to conform with the current IEE Electrical Regulations and Part P of the Building Regulations.

Thermopads systems can be applied to insulation construction boards, concrete, and existing old tile surfaces. Insulation construction board is already primed, comprising a cement polymer mortar finish on both sides of the board.

Styrofoam XPS insulation boards can also be used. Cross linked closed cell polyethylene board will provide the following three benefits:

a) Insulation / thermal barrier
b) Act as underlay for the wooden floor
c) Closed cell polyethylene has cushioning properties offering a sound proof effect

Choose a floor insulation with the best R value possible. This is especially important where the foil heating will be used as the primary source of heat. In these cases, ALWAYS carry out a heat loss calculation to ensure there will be enough heat for the room.

Styrofoam XPS board is still suitable but has not got the same cushioning properties of closed cell polyethylene.

Underlayment papers are not compatible with Thermopads foil mats!
Never install foil mats in a screed or in direct contact with a cement or concrete floor.
No vapour barriers or additional materials are required.

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Installation Notes:

- The system requires a mains voltage 230v 50Hz and must be connected by a suitably qualified person. All wiring must conform to IEE 17th Edition Part P regulations.

- Installations require a 30mA RCD (residual current device) for safe operation and a dedicated RCD must always be installed if not already existing.

- It is possible to run the heating from an existing circuit – always consult your electrician to check if the circuit can handle the load (amperage) and the circuit is RCD protected. Make sure the total current (amps) of your Thermopads system and other appliances connected to the circuit do not exceed the current capacity of the circuit.

- Normal ring main circuits are rated at 13A and the electrical feed can be taken from a 30mA RCD via a 13A fused spur.

- A thermostat has a 16A maximum rating. When the total load of your Thermopads system exceeds 3600 watts a contactor must be used to switch the electrical load. Alternatively, split the heating into more than one heating zone, each operated by its own thermostat – always consult your electrician.

- The underfloor heating must be controlled via a floor sensor thermostat at all times.

- In bathrooms the thermostat control should be mounted outside the bathroom as close to the underfloor heating as possible.

- The Thermopad UFH system is suitable for most types of sub-floor suitable for tiling. Generally, this means concrete, plywood or cement faced tile-backer boards. Some water-resistant composite boards are also suitable, but it is not recommended to tile directly onto hardboard, MDF or chipboard as these substances absorb moisture and any swelling could cause the tiles to crack or be dislodged.

- Please note that if installing on a newly finished concrete screed, then the required minimum drying period of 1mm per day should be adhered to.

- Thermopad UFH mats must not overlap and the heating cable MUST NOT be cut or cross at any point.

- The joint between the heating cable, cold tail and end joint MUST be located under the floor and encapsulated in self levelling or tile adhesive and MUST NOT be taped over.

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Professional Electrical Installation

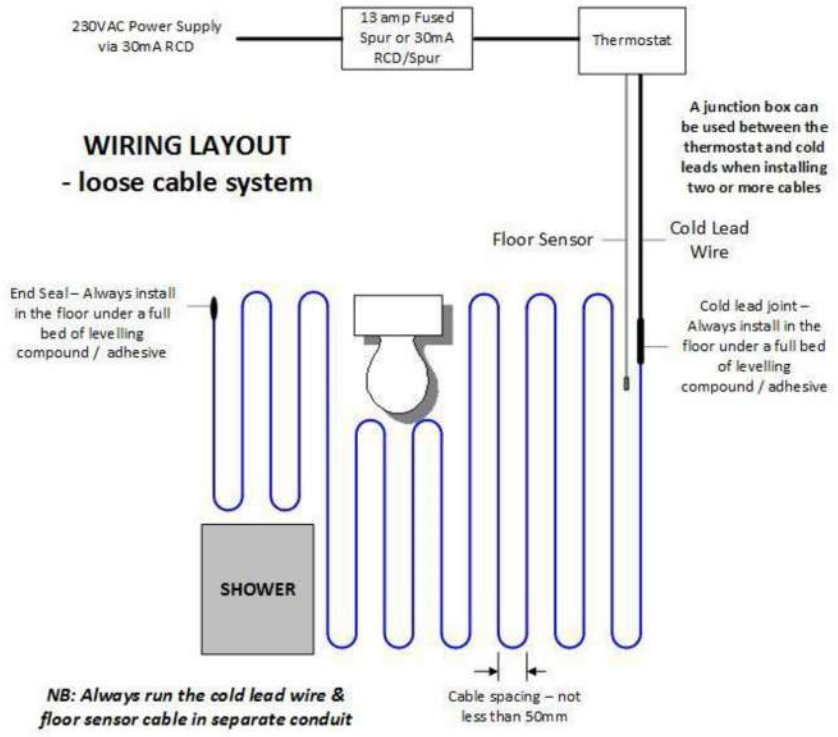
The installation of electrical systems presents risks of fire and electrical shock which can result in personal injury. Caution should always be taken to guard against each such risk.
Only a qualified electrician should connect the Thermopads UFH mats to the thermostat or to the electrical supply circuit.
Please ensure all electrical works conform to the current regulations.

NOTE:

Due to the new requirements of the BS7671 17th Edition Part P Regulations, only a qualified person who is familiar with the construction and operation of the apparatus and the hazards involved shall make the final connections to the electricity supply and test the installation.

Note for Bathroom Installations

When installing a Loose Cable kit in a bathroom, please ensure that the thermostat is always located outside the room and use the floor probe supplied. If in doubt,
always check with a qualified electrician that all electrics are in safe and suitable zones.



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The heating cable must never be cut.
To facilitate installation the cold lead wire can be cut shorter to suit

Part Number	Cable Length (m)	Total Watts	Floor Coverage @ 100 w/m²	Floor Coverage @ 150 w/m²	Floor Coverage @ 200 w/m²	Amps	Cable Resistance (ohms)
			Cable spacing c-c 100mm	Cable spacing c-c 65mm	Cable spacing c-c 50mm		
CAB10-140	14	140	1.4m²	0.9m²	0.7m²	0.6	378
CAB10-170	17	170	1.7m²	1.1m²	0.8m²	0.74	311
CAB10-210	21	210	2.1m²	1.4m²	1.1m²	0.9	252
CAB10-290	29	290	2.9m²	1.9m²	1.45m²	1.26	182
CAB10-350	35	350	3.5m²	2.3m²	1.75m²	1.52	151
CAB10-400	40	400	4.0m²	2.6m²	2.0m²	1.74	132
CAB10-480	48	480	4.8m²	3.2m²	2.4m²	2.09	110
CAB10-560	56	560	5.6m²	3.7m²	2.8m²	2.43	94
CAB10-640	64	640	6.4m²	4.2m²	3.2m²	2.8	83
CAB10-700	70	700	7.0m²	4.6m²	3.5m²	3.04	75
CAB10-820	82	820	8.2m²	5.4m²	4.1m²	3.56	64

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Thermopads UFH Installation Instructions

Sub-Floor Preparation

Wooden Sub-Floors:

- For Wooden subfloors, timber floorboards and chipboard. Make sure any loose boards are firmly fixed and reinforce the floor if necessary. This will prevent any movement in the floor that could cause tiles to crack. The floor must be level.

- A rigid base floor is essential. Fixing reinforcements direct to joists will not provide a suitable floor finish for tiles. Reinforcement can be applied to the rigid base floor by covering the complete floor with 18mm WBP plywood (weather & boil proof plywood), or alternatively 10mm thick insulated tile backer board (construction board).

- Reinforcements to be applied in accordance with the manufacturer's instructions.

- Before applying a Thermopads system rated at 200w/m2 to any wooden sub-floors, a thermal barrier must be installed, such as insulation construction board. This will add the benefit of improving the insulation properties and only a 10mm maximum thickness is required to obtain good results and the necessary thermal barrier.

Concrete Sub-Floors:

- Before proceeding repair any imperfections in the floor and level the floor with approved building materials.

- When practical, use XPS or tile backer insulation boards if installing the mat directly onto a concrete floor.

- Fixing the board should be per the manufacturer's instructions

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Wooden & Concrete Floors:

- Clean the floor surface so that it is free from dust, dirt, grease etc.
- When it is practical, tile backer insulation construction board can be applied overall to both wooden and concrete sub floors.
- Prime subfloors with a suitable primer to improve bonding between tile adhesives and the subfloor. A primer with a flexible admix is recommended. This is used to prepare and stabilise porous and dusting surfaces prior to tiling and to improve adhesion on difficult substrates, such as timber, concrete and terrazzo.
- When installing insulation construction boards use tile adhesive to fix the boards to concrete floors and galvanised screws/washers on wooden subfloors.
- NOTE: Insulation construction board is already primed, comprising a cement polymer mortar finish on both sides of the board.

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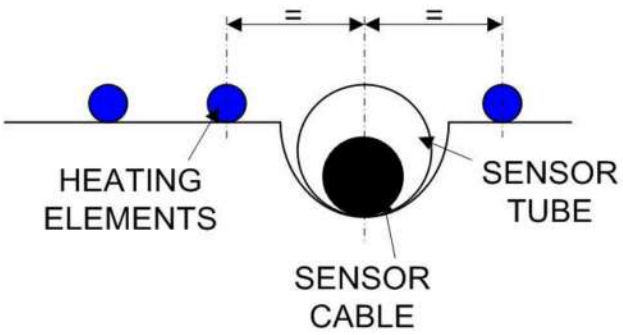
FIRST STEP:

Plan the installation

Draw a general view of the room and mark the area which will be covered with heating elements. Avoid heating under units and sanitary ware as this can cause heat blockage and it is unnecessary to heat these areas anyway.

Mark the position of the supply lead(s) – the cold lead wire(s), at floor level. In most cases this will be close to and below the thermostat position.

When decided on this position you can cut a groove in the floor to accommodate the protective floor sensor tube. The sensor must run centrally (in the middle) between two runs of heating element so it is important to note where the elements will be positioned. Make the sensor tube level with the heating element as shown below.



The black cable joint between heating element (blue cable) and cold lead wire (black cable) must be located on the floor. This joint should be level with the heating system – another small groove in the floor may be necessary.

Do not tape over manufactured cable joints, cable end seals and the thermostat floor sensor. Taping over the tip of the sensor when securing the sensor in place may result in inaccurate temperature readings.

When possible, always use the sensor tube when installing the thermostat sensor cable. Seal the end of the tubing (conduit) with tape to prevent adhesive or screed from entering the conduit.

Make sure the sensor tube has a gradual bend when it enters the floor coming down from the wall, this will ensure the sensor cable can be easily inserted or withdrawn.

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Floor Insulation

On wood or concrete subfloors, a thermal barrier between the heating element and subfloor will increase performance and heat up time. This will add the benefit of improving the insulation properties, and only a 10mm maximum thickness is required to obtain good results and the necessary thermal barrier.
When installing a Thermopads 200w/m2 under tile system directly onto a wooden floor surface a thermal barrier is always essential.
To maximise the efficiency of the installed heat energy it is also good practice to have insulation installed below the sub-floor, but on renovation projects this is sometimes not practical due to the age of the property.

Testing

All Thermopads Loose Cable kits are tested before leaving the factory, however damage can happen during storing or transit and we strongly recommend that you test your mats:

- After unpacking but before any installation takes place
- After installation but before the floor covering takes place
- Finally, after the floor covering is installed but before the thermostat is connected.

We recommend you use a digital multi-meter set to a range of 0-2k ohms. The subsequent resistance (ohms) of each mat should be measured and recorded.
The digital multimeter is ideal for testing cable continuity and its resistance (ohms), as well as the resistance of the sensor cable. Check the sensor cable resistance with the digital multimeter. The reading should be between 9 – 23 ohms depending on room temperature.

All test results to be recorded on the Guarantee sheet.
- Live to neutral will show the ohms values listed in the product table.

+/- 5% ohm reading is allowed under manufacturing guidelines.
- Live to earth and neutral to earth should show infinity.

Insulation resistance readings should also be carried out as required by IEE Regulations.
Due to the high resistance of the heating element, continuity testers are not recommended. When checking resistance, make sure your hands do not touch the meter's probes as the measurement will include your body resistance making the measurement inaccurate.

If the measured values are not as expected, please give us a call on 0141 459 3141 for guidance or call a qualified electrician to check before proceeding any further.

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CABLE SPACE CALCULATION

All the cable must be used on the free floor area. The cable cannot be cut, crossed over, or any excess cable bunched together.

Work out the total free area where you will be applying the heat, allowing for a gap of approximately 100mm around the perimeter.... It is not necessary to apply the heat too close to the edge.

The free floor area in the shower room above is 3.6m2, after allowing for a small gap around the room perimeter of approximately 100mm.

To calculate the cable spacing multiply the area available to heat by 1000 and divide by the cable length.

The above example would be ideal for Part Number CAB10-560, a 56 metre cable rated at 10w/m and a total loading of 560 watts

3.6 x 1000 divided by 56 = 64mm spacing

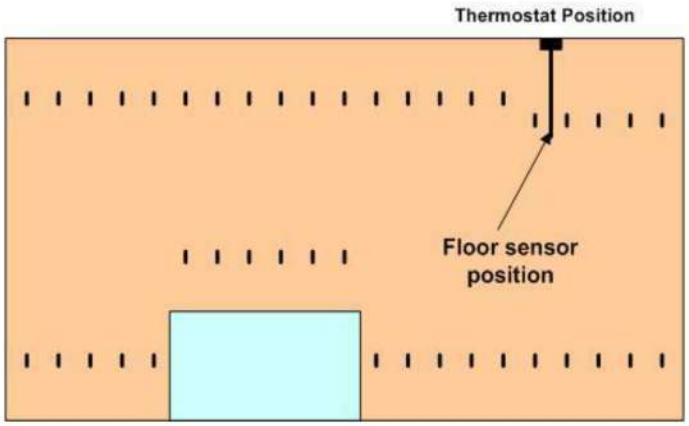
IMPORTANT: Should the spacing calculated be less than 50mm select another cable size.

Cable can be dispensed from the reel with ease. Do not remove all the cable from the reel before fixing, as this will make the installation difficult.

Cable Layout & Fixing

Planning is important and when calculating the heated floor area leave a gap unheated around the room perimeter of approximately 100mm. The heated floor area must be free, avoid heating under kitchen cabinets, sanitary ware and appliances.

Mark the floor with marker pen at intervals equal to the calculated spacing. Position the floor sensor.



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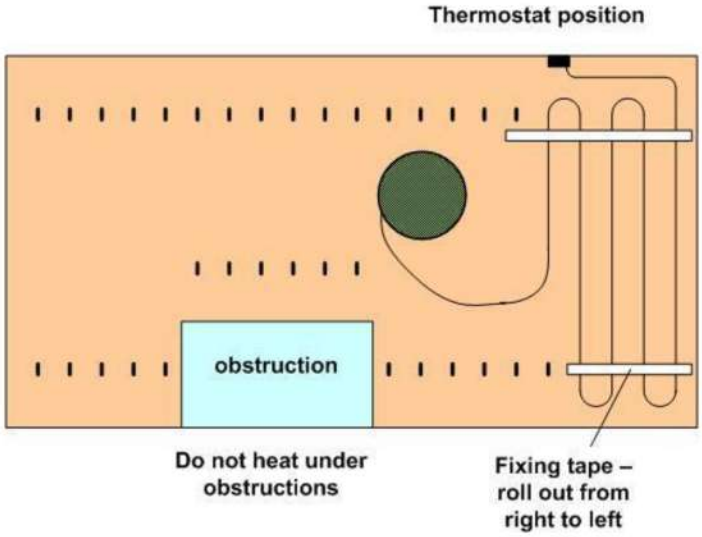
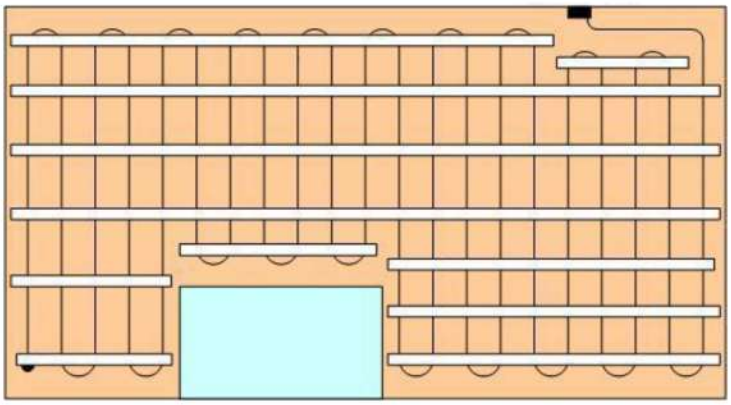
Fix the cable to the sub-floor with fixing tape.
Initially, draw the cable from the reel and secure the cable with fixing tape in the corners of the room only, gradually working across the room and rolling the fixing tape out to hold the cable in position – see below. This enables the spacing to be adjusted where necessary to achieve even spacing prior to final fixing.
The position for the thermostat should have been decided at the initial planning stage.
Check that the cold lead wire for the cable(s) will reach the connection – (this is the connection with the junction box or direct to the thermostat).





Tiling
To fix tiles select a single step or two step method. Latex, acrylic or polymer based adhesives are acceptable.
Single Step: Using a flexible adhesive the tiling can be carried out as a single operation directly on top of the heating cable. Allow a depth of adhesive sufficient to lay the tile and to encapsulate the heating element with no air gaps
Two Steps: Apply a thin layer of flexible self levelling compound just sufficient to cover the cable and encapsulate the heating elements with no air gaps. Allow to cure in accordance with the manufacturer's instructions. This will provide protection to the heating cable prior to tiling. Next apply the tiles in flexible tile adhesive in the normal manner.
Both steps are approved for under tile heating.
All adhesives must be flexible and suitable for underfloor heating.

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Do's and Don'ts

Do – read the instructions

Do – ensure the floor is smooth, clean and dry before priming with a suitable floor primer

Do – apply the cable when the primer is only part dry to obtain the best adhesion

Do - Use approved adhesives and floor screeds – consult your local tile or builders merchant outlet

Do - use the right size of cable(s) and only apply the cable to the area to be heated

Do - Test the heating before, during and after installation and record the results in the Guarantee Certificate

Do - consult a qualified electrician and ensure the installation is carried out to comply with the latest IEE Wiring Regulations and Part P of the Building Regulations

Do – make sure you plan the cable layout to avoid any damage to the cable caused by drilling after tiling

Do - make sure the heating is connected to an RCD rated 30mA maximum.

Do – Connect heaters in parallel, not in series

Do – Ensure the gap between the runs of heating cable is not less than 50mm at all times

Do – Install the thermostat floor sensor centrally between two runs of heating cable

Do – Ensure all heating cable, manufactured joints and end seal are in a full bed of adhesive or levelling compound and covered by tiles

Do - keep a record of where the floor probe is positioned and the general layout of the heating mat for future reference.

Do - Ensure that a heat loss calculation has been carried out to meet the heating requirements if the system is being used as a primary source of heat.

Don't - Use sharp tools or objects to clean excess group from between tiles

Don't - overload circuits – consult your Electrician

Don't - cut the heating element to shorten or alter in any way

Don't - cross or touch heating elements

Don't - cut or prepare tiles on top of the cable

Don't - tape over the end joint or manufactured joint

Don't - Use the heating system to dry out the tile adhesive or levelling compound

Don't - Bend the heating cable under 25mm radius

Don't - Start tiling before testing the mat

Don't - Switch on the installed mat until 8 days after fitting to allow the tile adhesive to dry. Don't - Connect two mats in series, only connect mats in parallel

Don't - Leave surplus matting rolled up under units or fixtures – always use the right size Don't - Run the floor sensor or power lead over or under the heating element or close to other heat sources such as hot water pipes

Don't - Commence installation on a concrete floor that has not been fully cured

Don't - Use staples to fix the heating element to the floor

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WARRANTY CERTIFACTE

Thermopads Underfloor Heating System
Please complete and return this installation certificate to your distributor / supplier within 30 days and keep a copy

Name: .....
Address: .....
.....
Phone No.: .....
Type of room: .....
Part Number(s) .....
.....
Purchased from: .....
Date of Purchase: .....
Customers Invoice Number: .....
Initial Resistance test (continuity) ..... (ohms)
Insulation Resistance: .....
Signed by electrician / installer: .....
Date: .....
Resistance test (continuity) prior to laying tiles .....(ohms)
Insulation Resistance – prior to laying tiles.....
Signed by electrician / installer: .....
Date: .....
Final Resistance test (continuity) .....(ohms)
Insulation Resistance: .....
Signed by electrician / installer: .....
Date of completion: .....

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