VPS Trading Ltd.
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enquiries@vpsunderfloorheating.co.uk

## BEFORE YOU BEGIN:

The Thermopads under wood foil heating mat system is the ultra thin underfloor heating system primarily for use under laminate and engineered wooden floors. 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 foil systems are installed directly under laminate or engineered wooden floors, on top of the underlay. The underlay must be applied to the floor before the underfloor heating. The underlay (floor insulation) shall be a minimum 6mm layer of cross linked closed cell polyethylene, designed specifically for underfloor heating. This type of material has excellent fire retardant properties, compression strength, thermal conductivity and a working temperature range of -60 to +90oC.

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 cold tail on the mat is a twin core and earth cable. The Thermopad UFH heating element includes a built-in return that means it only has to be connected to the thermostat from one end.
- Generally, for larger areas covering over 12m², 2 separate mats will be supplied (for example, for a total area equalling 24m², then 2 x 12m², mats will be supplied)
- 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.

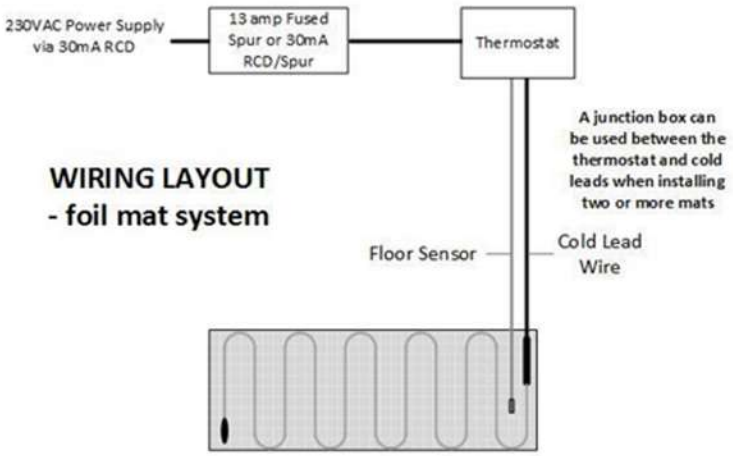
Only a qualified electrician should connect the Thermopads UFH mats to the thermostat or to the electrical supply circuit.

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.

When installing Bathroom Thermopads UFH mats, 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.




*NB: Always run the cold lead wire & floor sensor cable in separate conduit*

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| Part Number | Heated Floor Area (m²) | Heating Mat(s) Required | Total Watts | Amps | Total Mat(s) Resistance (ohms) |
|---|---|---|---|---|---|
| FOIL140 | 1 | 1 x FOIL140 | 140 | 0.6 | 378 |
| FOIL210 | 1.5 | 1 x FOIL210 | 210 | 0.9 | 252 |
| FOIL280 | 2 | 1 x FOIL280 | 280 | 1.22 | 189 |
| FOIL350 | 2.5 | 1 x FOIL350 | 350 | 1.52 | 151.14 |
| FOIL420 | 3 | 1 x FOIL420 | 420 | 1.83 | 125.95 |
| FOIL490 | 3.5 | 1 x FOIL490 | 490 | 2.13 | 107.95 |
| FOIL560 | 4 | 1 x FOIL560 | 560 | 2.43 | 94.46 |
| FOIL630 | 4.5 | 1 x FOIL630 | 630 | 2.74 | 83.96 |
| FOIL700 | 5 | 1 x FOIL700 | 700 | 3.04 | 75.57 |
| FOIL840 | 6 | 1 x FOIL840 | 840 | 3.65 | 62.98 |
| FOIL980 | 7 | 1 x FOIL980 | 980 | 4.26 | 53.98 |
| FOIL1120 | 8 | 1 x FOIL1120 | 1120 | 4.87 | 47.23 |
| FOIL1260 | 9 | 1 x FOIL1260 | 1260 | 5.48 | 41.98 |
| FOIL1400 | 10 | 1 x FOIL1400 | 1400 | 6.09 | 37.79 |
| FOIL1540 | 11 | 1 x FOIL1540 | 1540 | 6.70 | 34.30 |
| FOIL1680 | 12 | 1 x FOIL1680 | 1680 | 7.30 | 31.48 |

**THE HEATING CABLE MUST NEVER BE CUT.**
To facilitate installation the cold lead wire can be cut shorter to suit

# Thermopads Installation Instructions

## Sub-floor Preparation

- 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.

- 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.

## Concrete Sub-Floors:

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

## Wooden & Concrete Floors:

- Clean the floor surface so that it is free from dust, dirt, grease etc.

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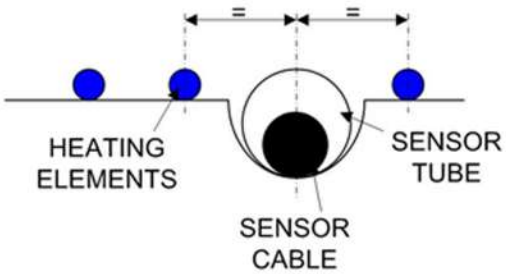
# Plan the Installation

Draw a general view of the room and mark the area which will be covered with heating mats showing the placement of the mats, thermostat, floor sensor and any junction boxes. Avoid heating under units and sanitary ware as this can cause heat blockage and it is unnecessary to heat these areas anyway.
Plan to use the larger heating mat sizes as much as possible to cover the heated area and to use the smaller mats only as gap fillers.
Mark the position of 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 insulation and/or floor to accommodate the protective floor sensor tube (conduit).
The cold lead joint is slightly thicker than the rest of the mat. Ensure the cold lead joint and end seal are embedded in the floor insulation / floor so that they are level with the rest of the mat.
When positioning the sensor, it need only project into the room by 300mm. Make sure the sensor is placed at the opposite end of a heating wire loop. The sensor and sensor cable must not touch or be crossed by the heating element.
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 when installing the sensor.
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 and seal the end of the sensor tube (conduit) with tape.




**Floor Insulation**
Underlay must be applied to the floor before installing the foil underfloor heating.

**Testing**
All Thermopads UFH mats 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.

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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.

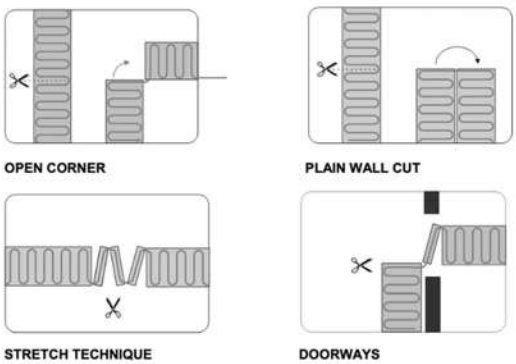
- Live to earth and neutral to earth should show infinity.

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.

## Mat Layout & Fixing

Thermopads foil mats must be fitted directly on top of the underlay (floor insulation), and directly under the laminate flooring – no screeds or additional materials are required.
Planning is important and when calculating the heated floor area, plan to leave a gap unheated around the room perimeter of at least 100mm. The heated floor area must be free, avoid heating under kitchen cabinets, sanitary ware and appliances. To estimate the mat size a good guide is to measure the total floor area of the room, take away 10%, then take away the area of any fixed objects.
Make sure the Thermopads system can fit the floor area to be heated. It is better to have just too little than too much over. Remember, NEVER cut the heating element. Cut only the element carrier when needed, and turn / flip the mat to meet your requirements as shown in the small illustrations below. Lift the heating cable out of the way when cutting. Once the mat has been cut and positioned on the floor, use the aluminium strips provided to cover the exposed cable and link the pieces of mat.

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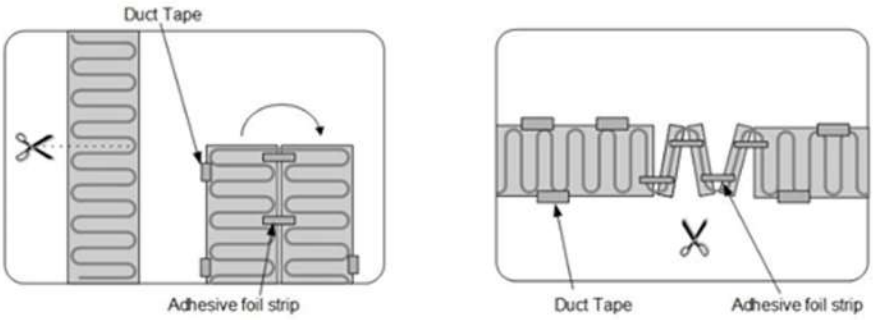
The position for the thermostat should be decided at the initial planning stage.
Check that the cold lead wire for the mat(s) will reach the connection – this is the connection with the junction box (depending on the number of mats) OR direct to the thermostat. When installing more than two mats the use of a junction box is recommended.
Arrange the mat on the floor, roll out and make the appropriate cuts. Avoid any folds or creases in the mat during installation.
The Thermopads foil system is supplied complete with aluminium foil adhesive strips.
When the mat is installed in strips side by side they must not overlap. Leave a gap of approximately 20mm between each mat. Apply the aluminium foil adhesive strip, so that you bridge the gap between sections of mat. **This is required to ensure the mat maintains its ground (earth) circuit throughout the mat.**
When a mat has been cut and turned, or cut as in the stretch technique shown, the mat must be secured to the underlay with duct tape.
Electrical cold leads must not cross each other or cross over the mats.




**FIXING WITH ALUMINIUM FOIL ADHESIVE STRIPS & DUCT TAPE**

## Floor Installation

Floors must be fitted floating and not glued down. Tongue and groove wooden floors that are not click together must be glued along the joints. No metal fixings are permitted.
Most wood floor manufacturers have approved flooring products suitable for underfloor heating systems. Always check with the manufacturer.

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**Do** – read the instructions
**Do** - use the right size of mat(s) and only apply the mat to the area to be heated
**Do** - consult a certified / 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** - Test the heating before, during and after installation and record the results in the Guarantee Certificate
**Do** - operate the heating with a thermostat set in floor sensor mode, with the sensor correctly positioned to prevent the laminate floor exceeding the maximum recommended temperature of 27oC
**Do** - check with the flooring manufacturer that the product is suitable with underfloor heating
**Do** - make sure the heating is connected and protected by an RCD rated 30mA maximum.
**Do** - make sure the cold lead joint and end seal is in the floor beneath the laminate / wooden flooring.
**Do** - keep a record of where the floor probe/sensor is positioned and the general layout of the heating mats for future reference.
**Do** – use the recommended underlay / floor insulation
**Do** - ensure the earth leads are connected to the earth circuit
**Do** - use the foil strips provided to bridge the gaps between strips of the mat after cutting and turning the mat. This is important for earth / ground continuity
**Do** - ensure that the total current (amps) of all mats when connected together in parallel is not more than 80% of the capacity (amperage) of any junctions box, power supply wiring and breaker. Seek advise from your qualified electrician.

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**Do Not** - overload circuits – consult your Electrician
**Do Not** - cut the heating element
**Do Not** - cross or touch heating elements
**Do Not** - install FOIL140 on steps
**Do Not** - install FOIL140 anywhere except inside buildings
**Do Not** - cross cold leads, electrical supply cables or sensor cable over the mats
**Do Not** - install FOIL140 foil mats within 50mm of any heat conductive building component, such as cold water pipes.
**Do Not** - drop sharp tools or heavy objects on top of the mats
**Do Not** - heat under obstructions in the room such as units, toilets, heavy furniture, sinks etc.
**Do Not** - install foil mats closer than 20mm of one another, 100mm of a fireplace or hot water pipe or 50mm of any wall
**Do Not** - put any other form of underlay (acoustic) between the foil heating mats and the wooden floor. Avoid laminates with an under pad or cushion material pre-attached to its underside.
**Do Not** - use wooden floors that have metallic clips as part of their locking system as these metallic strips may damage the FOIL140 mat.
**Do Not** - connect any other electrical appliance on the same fused spur or RCD of the heating system
**Do Not** – install FOIL140 mats when the room temperature is below -5oC
**Do Not** - overlap heating mats
**Do Not** - crease or fold the FOIL140 heating mats
**Do Not** - Create a heat blockage on the floor with bean bags or similar furniture.
**Do Not** - FOIL140 must NOT be installed in screeds, or in direct contact with the sub floor. Approved underlay must always be used with FOIL140 mats.
**Do Not** - use FOIL140 under any floor covering other than laminate or engineered wood.
**Do Not** - use FOIL140 under floors with a thickness greater than 18mm
**Do Not** - walk unnecessarily on the FOIL140 mats.
**WARNING:** once the mats are installed it is important to avoid traffic over the mats until the floor has been laid. If the floor is not being installed immediately, FOIL140 mats should be protected with layers of cardboard or hardboard to prevent damage.
**Do Not** – place FOIL140 on top of other in-floor radiant heating systems (i.e. hydronic or in- screed systems), unless the other system is permanently disconnected

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## Safety Guidelines

This manual has been designed for your own safety – ensure you have read and understood all instructions.

**Important** – Do not place flat based furniture, mattresses, bean bags, animal beds, rugs over where the heating mat/cable is installed. This includes any item with a tog value greater than 2.5. Doing so can restrict airflow, cause thermal blocking and in some cases overheating leading to a potential fire hazard.

## Lifetime Warranty

Thermopads floor heating mats and cables are guaranteed to be free from defects in materials and construction when used for the purpose intended and maintained in accordance with normal electrical practice, subject to the conditions outlined in this Guarantee.

This Guarantee does not affect your Statutory Rights.

All mats and cables are individually tested prior to packing and are not random batch tested, each product having its resistance reading and serial number recorded at the time of manufacture for reference and record purposes. The CE marked products are covered by Worldwide Approvals and meet the test requirements of International Standards IEC 60335 & IEC 60800.

The heater is guaranteed for the lifetime of the floor covering over the heater, with the following exclusions to be noted by the Buyer.

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# Guidance Notes

To be covered by the Lifetime Guarantee the product must be registered with the distributor / supplier within 30 days of purchase.

In the event of a claim proof of purchase will be required. A retail invoice or receipt will be acceptable for this purpose.

The heater must have been earthed and protected by a Residual Current Device (RCD) at all times.

The cost of replacement is the only remedy under this guarantee that does not affect your statutory rights. Any costs are limited to the direct cost of a replacement, and does not extend to the repair or replacement of the floor covering or floor.

The electrical installation shall be in accordance with the current IEE wiring regulations and the installation must be compliant with Part P of the Building Regulations and the completed Part P certificate retained as proof.

We are not in any event liable for incidental or consequential losses, including but not limited to costs associated with utility expenses, trades people or damage to property.

# We are not responsible for:

Damage or faults caused by faulty installation, product abuse, the tiling / flooring installation, incorrect application or incorrect design by others.

Systems that are not installed in accordance with the manufacturers Recommendations.

Systems without a Warranty Certificate completed at the time of the installation and returned to the distributor / supplier within 30 days of purchase.

Systems where floor coverings have been damaged, replaced or repaired.

Acts of God or other conditions beyond our control.

Failure to operate and delays in operation, due to the standard of the electrical installation provided for the underfloor heating.

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# WARRANTY CERTIFACTE

Thermopads Under Wood Foil Heating Mat System – FOIL140
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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