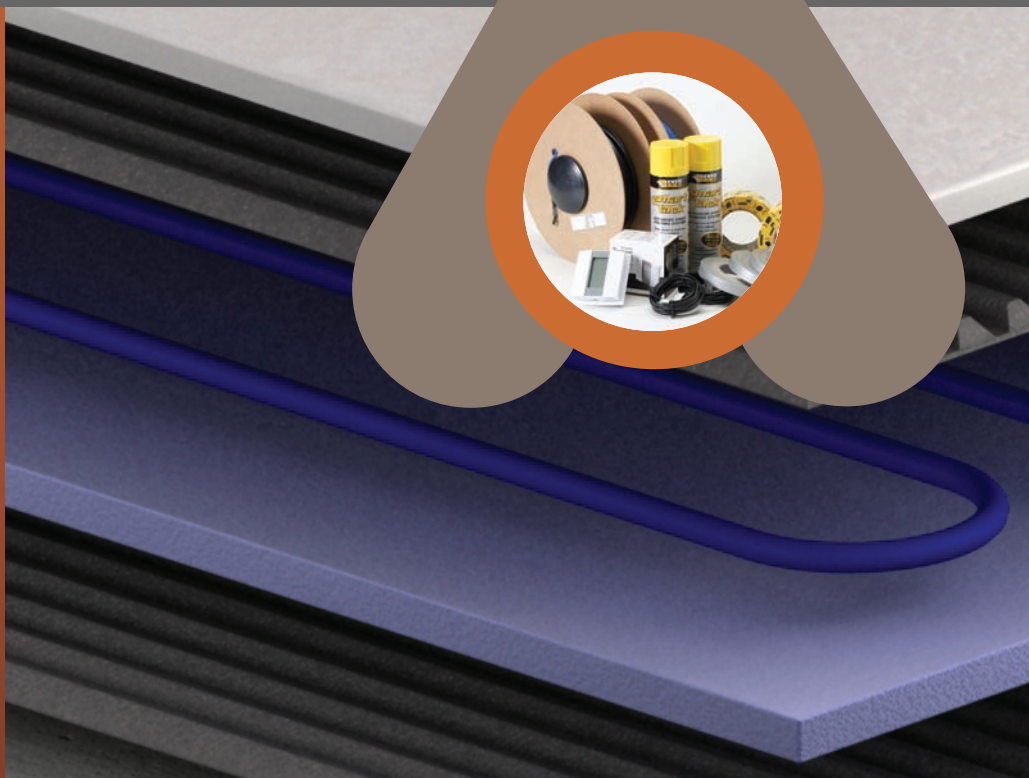
ambient
ELECTRIC UNDERFLOOR HEATING

Cable kit (TPP) Installation Instructions



Cables (BLUE) ambi-Heat brand manufactured by Thermopads

Before you begin installing please read through these instructions carefully & check that you have all the components required.

The system is designed for installation below tiles, stone or marble flooring, it may also be installed below vinyl, laminate & thin carpets but in these cases must first be covered with a suitable fibre reinforced levelling compound.

CONTENTS OF HEATING KIT:

- 3mm twin-core, earth screened heating cable on drum(s)
- Smart tack spray adhesives
- Double sided edge tapes
- High adhesion fixing tapes
- Digital thermostat with 2 x floor temperature sensors
- Guarantee Certificate *(page 10 of this booklet)*

Installation Notes

- The system requires a mains voltage 230/240v & must be connected by a suitably qualified person in accordance with part P building regulations. All wiring must conform to current IEE wiring regulations.

- The system is intended for heating tiled or stone floors, typical recommended outputs are:

  130watts per sqm, achieved by **spacing the cable at around 7.0cms between the loops**.

  150watts per sqm, achieved by **spacing the cable at around 6.5cms between the loops.**

  165watts per sqm, achieved by **spacing the cable at around 6.0cms between the loops**

See supplementary instructions when calculating your actual cable spacing.

- The cable is double insulated & inside the first outer sheath (coloured black) there is an earth screen (the copper coloured braid).

- The cable also contains a built in return meaning that the cable only has to be connected to the thermostat from one end. Within the cable core there are 2 wires - one brown, one blue - these are the live & neutral.

- For larger areas, if two or more cables are supplied, these can usually be connected together at the thermostat or by using a small blank fronted connection box. Cables must be connected in parallel.

- The system is suitable for installing on any sub-floor which is sound and suitable for tiling, In general this will be concrete, plywood or cement faced tile-backer boards – some water resistant composite boards may also be suitable, but it is not recommended to tile directly onto hardboard MDF or standard grade chipboard as these substances absorb moisture & subsequent swelling could cause tiles to crack

or dislodge. Note - if installing on a newly finished concrete screed the required minimum drying out or 'curing' period should be followed before installing your heating.

- The electrical & electromagnetic fields generated are negligible & well within all recommended European & International guidelines.
- The Blue heater cable **MUST NOT** be cut, shortened or joined at any point.

Electrical Provision

Before starting the installation you should make provision for the electrical connections, for smaller areas this may be possible by means of a switched fused spur with an appropriately sized fuse or a combined RCD spur from an existing circuit - **see above**. However for larger areas a dedicated circuit from the consumer unit will be required – you should always consult with your electrician concerning your specific requirements.

Note - if installing in a bathroom or other 'wet' room the thermostat must be located OUTSIDE of the room, for example in a bedroom or hallway/ landing.

Preparation

Ensure that the sub-floor is solid & suitable for tiling, free from dust & debris. Wood flooring with more than 30cms between the joists should ideally be reinforced to prevent flexing & the possibility of tiles dislodging. Wood flooring can be reinforced using WBP plywood or a reinforced cement coated tile-backer board.

Insulation

The insulation levels of a floor will affect both the performance & running costs of an underfloor heating system & adequate insulation is recommended wherever possible. It would not generally be considered necessary to insulate small areas where the requirement is simply to 'take the chill off the floor', however in cases where the heating is being installed over large areas, particularly as the primary heating source in a ground floor room or conservatory, insulation boards will greatly reduce warm-up times & running costs. Always use a reinforced cement coated insulation board where possible.

Important Notes: The system MUST incorporate a 30ma RCD protectioneither at the distribution board or by replacing the fused spur with a combined fused spur/RCD. The blue heater cable **MUST NOT** be cut or joined at any point – only the black 'cold' cable & floor probe can be cut or lengthened.

The joint between the blue heater cable & the black cold cable **MUST** be located under the floor, **do not bend this connection.**

For larger areas a separate circuit will be required – always consult your electrician conce rning your specific requirements. The thermostat has a rating of 16amps – loads in excess of 16 amps (3.6kw approx) will need to be connected via a suitable switched contactor – consult your electrician on this. The thermostat **MUST NOT** be located in a bathroom.

Installation

First prepare the sub-floor ensuring that it is clean & free from grease, dirt or debris. Note - if installing on a bitumen base, this must either be removed or covered with a suitable insulation board (Marmox) before proceeding.

The most suitable sub-floors are: concrete, tile-backer boards, existing tiles, water-resistant timber e.g. WBP Ply.

Supplementary instructions for Pro-installer cable packs (TPP) and (SC)

Pro-installer pack contents.

Heavy duty double sided tape, Smart tack spray adhesive, strapping tapes and additional (back up) floor temperature probe.

Prior to installation of your heating cable system please ensure that correct size heating system has been ordered.

Cable Spacing - Measure the physical floor area to be heated (m^2) and divide by total length(s) of cable to determine spacing between cable loops. Target Range 60mm – 70mm (6.0cm – 7.0cm)

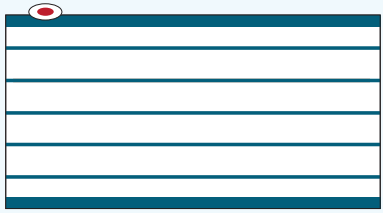
Do not attempt to lay cables if calculated spacing is below 50mm.

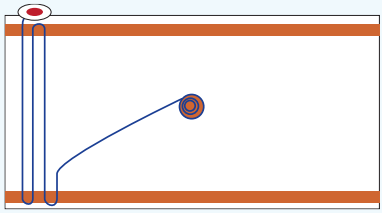
1. Vacuum the floor area thoroughly to remove dust and debris.

2. Apply **Smart Tack Spray** adhesive as shown below, it is generally best to run heating cables at 90° to te thermostate wall.

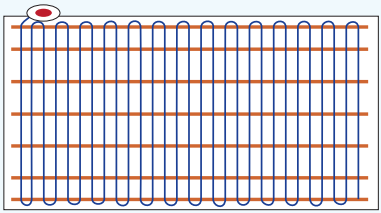
3. **Double sided adhesive tapes** are bonded to spray adhesive coating after a few minutes drying time. Tapes are fixed in twin parallel lines starting approimately 6 cm out from the adjacent wall.

4. Cables are run between the taped lines at the pre-calculate intervals, loops are positiones on the double sided tape and then secured with strapping tape, ensure that cables are pulled taught to keep them as flat as possible to the floor.





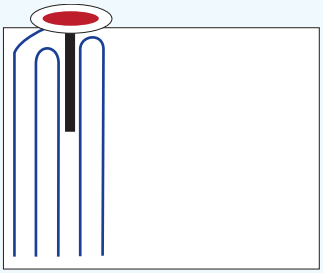
5. Once cables are laid out and held securely in place across the loop ends additional strapping tapes are applied across the heating cables to run along the spray adhesive trails applied in step 1.

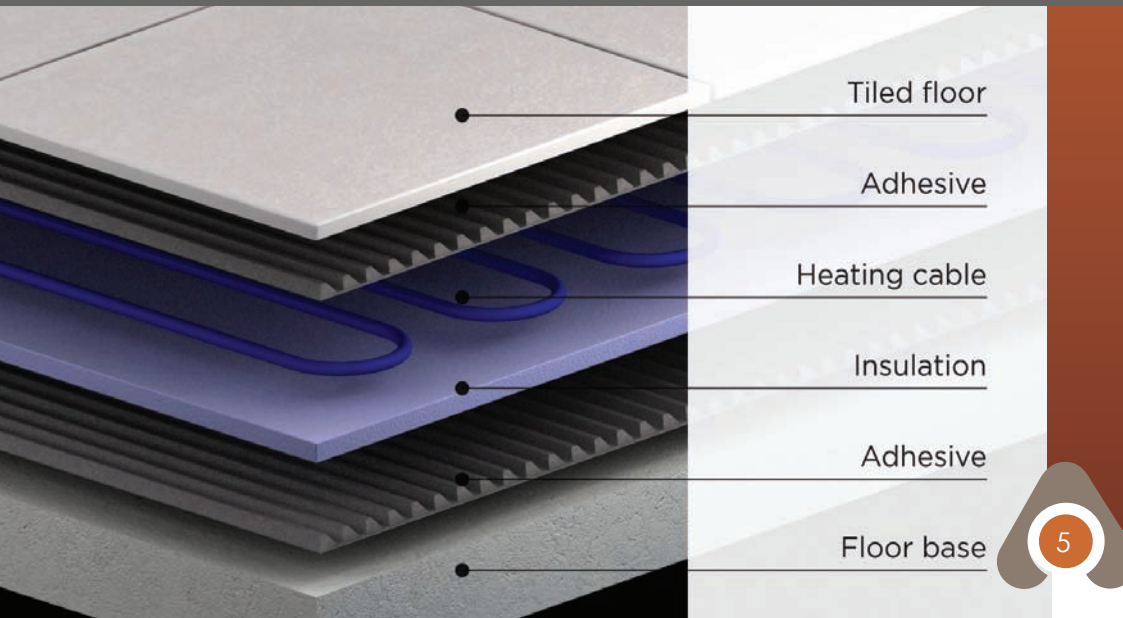


6. Primary and **secondary** floor probes are sited adjacent to each other between cable loops approx 300mm in the the heated area. Spray adhesive and double sided tapes are used to hold probes securely in place.

Only the primary probe is connected to the thermostat, the secondary or reserve probe is left disconnected and coiled up behind the thermostat.

In the unlikely event of probe failure the secondary unit can be connected in place of the faulty unit.





Step 5

Calculate the cable spacing, this is a very important step & **MUST** be done correctly to ensure all the cable is used up & avoid extra work later.

First measure the area to be heated in m² (do not include the area taken up by fixed objects such as baths/showers & kitchen units), then divide this area by the length of the cable shown on the drum. The cable is 10 watts per linear metre so for example a 350 watt kit contains 35 metres of heating cable.

The spacing is calculated by dividing the total m² of the area actual to be heated by the cable length in metres (cable length on side of packaging)

Step 6

Once the spacing has been determined, leaving a perimeter of 5cms around the edge of the room, mark out the floor at the calculated intervals.
This will usually be between 6 & 8cms – if your calculated spacing is less than 5cms **STOP** & do not install – the kit size is too large for the room.
A spacing of 8cms will in many cases only take the chill off the floor – to use as a heating source in most domestic situations the spacing would be between 6-7cms (this is always dependent on insulation levels & type of construction).

Step 7

Once marked out, position one roll of tape in each corner of the room (Fig 3) & then begin to loop out the cable as shown (Fig 4). At this stage only use a single line of tape at each edge in case you have to adjust the spacing slightly later. You must ensure that the cable is only installed in the 'free floor area' & is **NOT** routed below any fixed objects or drains. Note – the joint between the black 'cold' cable & the Blue 'heater' cable MUST be located under the floor tiles.

DO NOT BEND THE COLD TAIL CONNECTION.

Step 8

Adjust the spacing if necessary to ensure all the cable is used up & the floor has an even covering then tape over the cable at regular intervals, ensuring that it is well secured to the floor.

Step 9

Position the sensor between two runs of cable & tape into position within a conduit. The conduit housing will need to be channelled in to your subfloor to remain flush with the heating cable.

The sensor wire can be shortened or lengthened, but if you need to cut it only cut the end containing the wires. **DO NOT** cut the end which contains the plastic sensor.

The connections to the thermostat can now be made – but **DO NOT** turn the system on until it has been tiled. (See separate instructions with thermostat).

Step 10

Test the cables resistance again using a multi-meter. If you do not have access to a multi-meter, you may fit a fused plug & plug the system into a socket 'for a few minutes' to ensure that the cable starts to heat up. **DO NOT** leave the cable plugged in for more than 5 minutes & **UNDER NO CIRCUMSTANCES** should you plug the system in when the cable is still on the drum or partly coiled up.

Step 11

If desirable cover the cables with a thin layer of latex based levelling screed (4-5mm), this will help protect the cables when tiling. There are many suitable products available. Details of manufacturers can be found later on. If you do not wish to use a latex levelling screed, you may tile directly over the cables in a single operation, however extra care must be taken not to damage or dislodge the cables. If you are using a suitable vinyl or thin carpet as the final flooring, we recommend a minimum 8mm (5+3) screed over the cables to ensure even heat distribution.

Step 12

Tile the floor using a flexible tile adhesive & grout as per industry standards & the manufacturer's instructions. Entire heating cable must be fully embeded. Finally wait at least **ONE WEEK** before turning the heating system on to allow time to dry.

NOTE – The heating may be slow to react at first, especially if installed on a new screed floor or in a new building – start by setting the floor temperature at around 20-22° C and build up by 2 degrees per day until your desired temperature is reached (usually 25 - 28° C) . Please see separate instructions for connection & operation of the digital thermostat.

Testing your Cables

All Ambient / Thermopads heating cables and mats are tested prior to leaving the factory, however, it is important to carry out the resistance checks detailed on the guarantee card to ensure correct operation of the heating system and to ensure full compliance with the guarantee.

Test the cables resistance again using a multi-meter. If you do not have access to a multi-meter, you may fit a fused plug & plug the system into a socket 'for a few minutes' to ensure that the cable starts to heat up. **DO NOT** leave the cable plugged in for more than 5 minutes & **UNDER NO CIRCUMSTANCES** should you plug the system in when the cable is still on the drum or partly coiled up.

The connections to the thermostat can now be made – but **DO NOT** turn the system on until it has been tiled. (See separate instructions with thermostat)

Do's & Dont's

DO

Fully embed the Heating cable

Read through these instructions carefully before beginning work

Use flexible adhesives & grouts

Test the cable **BEFORE** and **AFTER** tiling

Be careful not to damage or dislodge the cable during tiling

Ensure the cable is spaced no closer than 50mm between loops

Try to protect the cable with cardboard or carpet during tiling

Wait at least 7 days before turning on the system

Read the separate installation & operating instructions for the thermostat

Ensure that the joint between the Black & Blue cable is fully embeded beneath the tiles

DON'T

Attempt to cut the blue heater cable at any point

Allow the wires to cross or touch

Allow foot traffic over the wire before tiling

Cut tiles directly over the cable

Place tools or stacks of tiles on top of the cable

DO

Ring your supplier for advice if in doubt regarding any aspects of your heating installation. **Technical Support: 01799 524730**

Resistance Tables – 3mm Twin Wire Cables

UNDER TILE CABLES BY THERMOPADS

Watts (power)	Length (Meters)	Resistance (ohms)
115	11.5	460
140	14	378
170	17	311
225	22.5	235
290	29	182
350	35	151
400	40	132
480	48	110
560	56	95
640	64	83
700	70	76
760	76	70
820	82	65
920	92	57
1040	104	51
1140	114	46
1250	125	42
1450	145	36
1600	160	33
1800	180	29

FLOOR TEMPERATURE PROBE

Resistance (ohms)
15k @ 15°C - to - 12k @ 20°C

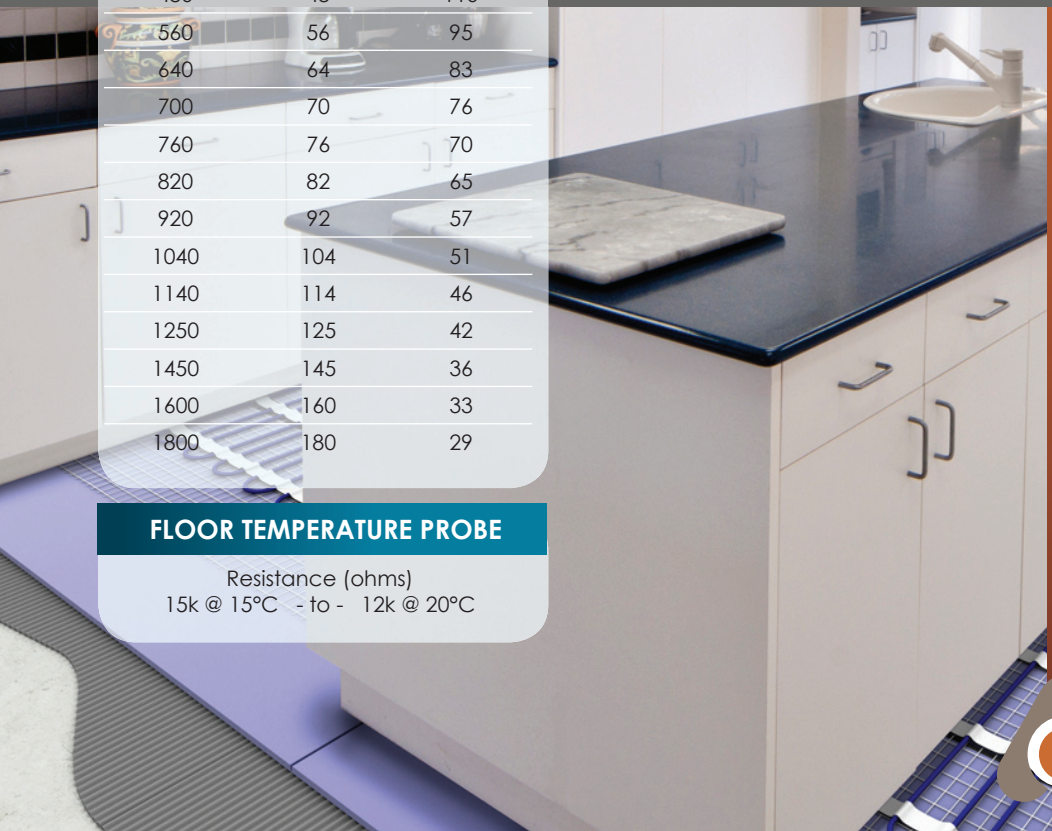
Resistance readings tolerance = +10 / -6%

All cables are resistance tested post production, a specific reading for each cable will be shown on the side of the cable box.

Insulation resistance L+N to Earth should be greater than 500mΩ

Technical Support

Tel: 01799 524730
Email: info@ambient-ufh.co.uk



Guarantee Certificate – Ambient Electrical Ltd.

Under Tile Cables, Mats, in Screed Systems & Thermolam

This guarantee is only valid if installed by a qualified electrician/electrical contractor. This installation must conform to Part P of the building regulations 2005 and be carried out in accordance with current IEE wiring regulations.

In order to validate the guarantee the resistance values & signature of the installer must be completed. A currently calibrated piece of test equipment must be used.

The guarantee covers reported manufacturing defects within the heating cable for the life time of your floor finish or 15 years whichever is the sooner; programmable thermostats and floor sensors are covered for a period of two years from date of original invoice.

Faulty components covered by this guarantee are repaired or replaced at our discretion, where repair or replacement is not practical a refund of original purchase price may be offered. Other costs such as replacement or repair of flooring materials are not covered by this guarantee.

The guarantee is not invalid if faults are caused by damage attributable to incorrect installation, misuse or mechanical damage such as drilling or puncturing the floor.

Please retain this guarantee along with your original purchase invoice.

Test Report

PRODUCT	WATTAGE	RESISTANCE BEFORE FITTING	RESISITANCE AFTER FITTING	INSULATION RESISTANCE 500v PN-E
Mat / Cable 1.				
Mat / Cable 2.				
Mat / Cable 3.				
Mat / Cable 4.				
Mat / Cable 5.				
Mat / Cable 6.				

Customer Name:.....

Customer Address:.....

.....

Electrical installation by:.....

Serial number of calibrated test equipment:.....

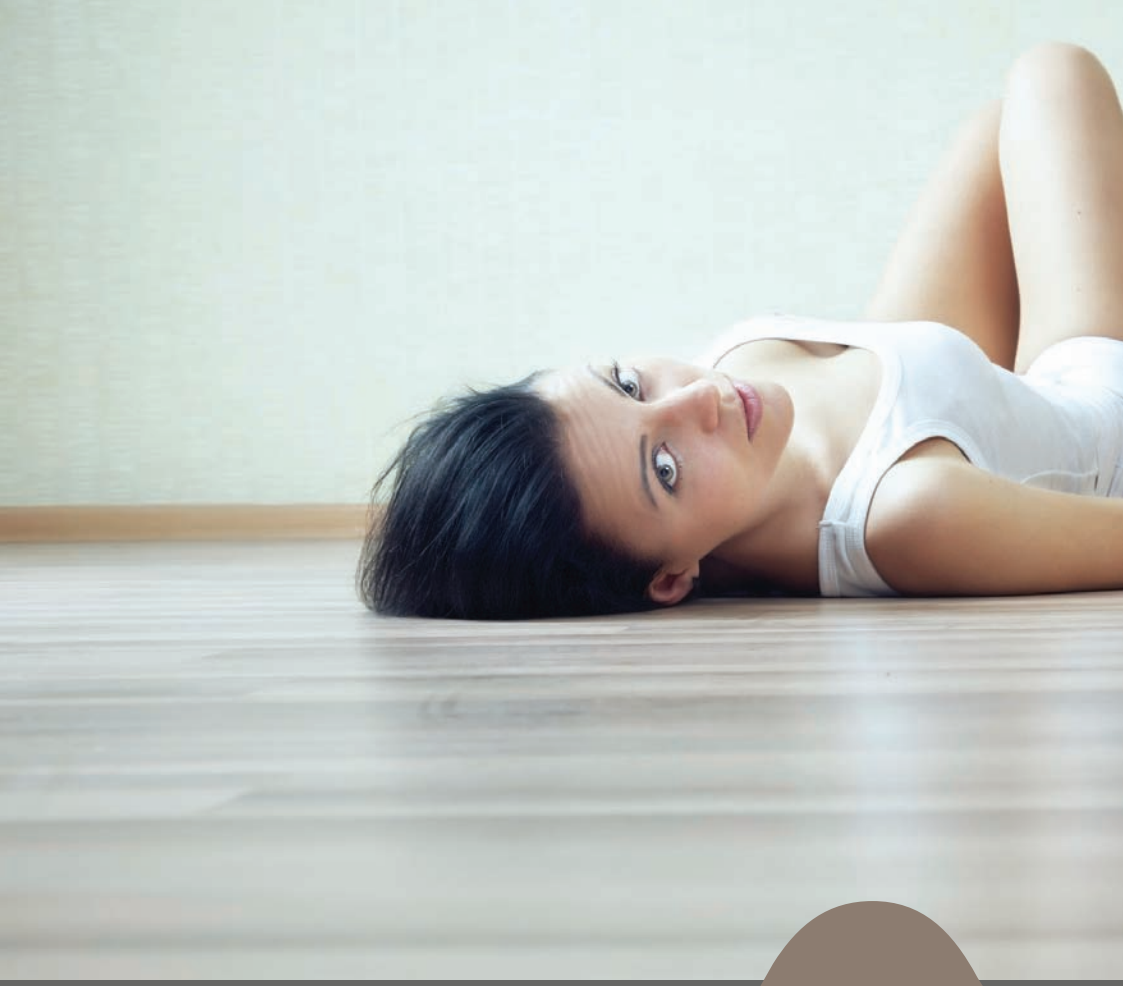
Underfloor Heating installation by:.....

Date..... Signature .....

Professional Cable Kits (TPP)

All TPP kits include: twin wire earth screened Thermopads heating cable, programmable digital thermostat with 2 x floor temp probe, adhesive strapping tapes, smart tack spray adhesive and double sided edge tapes.

Part Number (W)	Cable length(s)	Coverage (M^2)	System Used (Please Tick)	Invoice Number
TPP115	11.5m	0.7 - 0.9		
TPP140	14m	0.8 - 1.1		
TPP170	17m	1.0 - 1.3		
TPP225	22.5m	1.4 - 1.7		
TPP290	29m	1.7 - 2.2		
TPP350	35m	2.1 - 2.7		
TPP400	40m	2.4 - 3.1		
TPP480	48m	2.9 - 3.7		
TPP560	56m	3.4 - 4.3		
TPP640	64m	3.9 - 5.0		
TPP700	70m	4.3 - 5.4		
TPP760	76m	4.6 - 5.8		
TPP820	82m	4.9 - 6.3		
TPP920	92m	5.4 - 6.9		
TPP1040	104m	6.3 - 8.0		
TPP1140	114m	6.9 - 8.8		
TPP1250	125m	7.6 - 9.6		
TPP1450	145m	8.8 - 11.2		
TPP1600	160m	9.7 - 12.3		
TPP1800	180m	10.9 - 13.8		
TPP2080	104m+104m	12.6 - 16.0		
TPP2280	114m+114m	13.9 - 17.6		
TPP2500	125m+125m	15.2 - 19.3		
TPP2700	145m+125m	16.4 - 20.8		
TPP2900	145m+145m	17.5 - 22.3		
TPP3050	160m+145m	18.2 - 23.1		
TPP3200	160m+160m	19.5 - 24.5		
TPP3400	180m+160m	20.0 - 25.4		
TPP3600	180m+180m	21.8 - 27.7		
TPP3950	125+125+145	24.0 - 30.0		
TPP4350	145+145+145	26.0 – 33.0		
TPP4800	160+160+160	29.0 – 36.0		



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Ambient Electrical Ltd
01799 524730
info@ambient-elec.co.uk

www.ambient-elec.co.uk