

Electric Heating System

TECHNICAL HELPLINE
1 800 937 429
WWW.WARMUP.IE



Intertek



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WARNING

Your Warmup heating system has been designed so that installation is quick and straight forward, but as with all electrical systems, certain procedures must be strictly followed. Please ensure that you have the correct heater(s) for the area you wish to heat. Warmup plc, the manufacturer of the Warmup PVC Mat, accepts no liability, expressed or implied, for any loss or consequential damage suffered as a result of installations which in any way contravene the instructions that follow.

It is important that before, during and after installation that all requirements are met and understood. If the instructions are followed, you should have no problems. If you require help at any stage, please contact our helpline.

You may also find a copy of this manual, wiring instructions and other helpful information on our website:

www.warmup.ie



Quick Install Guide - The full installation instructions in this manual must be followed.



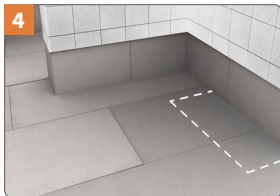
- Make electrical provision for the heater (30 mA RCD, 35mm deep electrical back boxes, trunking).



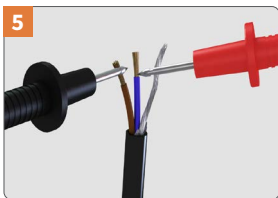
- Ensure the subfloor is smooth, dry and free from dust.



- We recommend installing Warmup insulation boards for optimum performance.



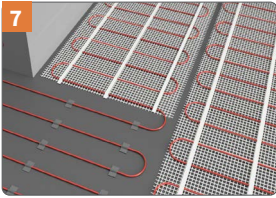
- Mark on the subfloor where fixed objects, kitchen units etc. are likely to be.



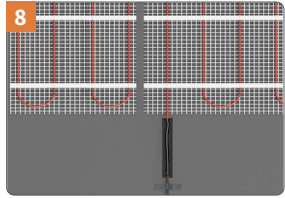
- Test the resistance of the heater ensuring it is within the range set out in the Reference Resistance Band Table.



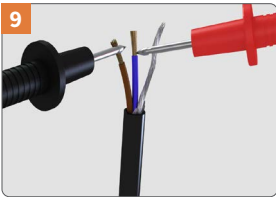
- The cable should be installed 40 mm in from the edge of the heated area or penetrations through the floor.



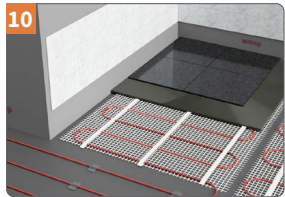
- Cut, turn and affix the mat to the subfloor using the self-adhesive mesh.
- Any loose heating cable removed from the mesh must be installed at no less than 50 mm intervals and tab taped in place.



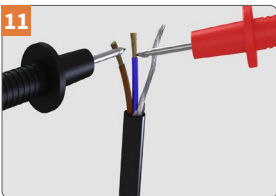
- Channel a groove in the subfloor for the coldtail & termination joints, enabling them to fit flush with the top of the heater. **DO NOT** tape over these joints!
- Install the floor sensor centrally between two runs of the heater.



- Test the resistance of the heating cable after installation and check against the previous value to ensure no damage has occurred.



- Lay tiles or levelling compound over the system.
- The heater, including its joints, must be wholly within the adhesive or levelling compound and not exposed.
- Use flexible grout when grouting.



- Test the resistance of the heating cable after tiling and check against previous values to ensure no damage has occurred.



- Connect your Warmup thermostat.



Components available from Warmup



Warmup PVC Mat



Warmup Insulation Boards



Warmup Thermostat & Floor Sensor

Additional components needed as part of your Warmup heating installation:

- 30 mA Residual Current Device (RCD), required as part of all installations.
- Digital Multi-meter required for testing the resistance of the heater and sensor probe.
- Electrical tape to secure the sensor probe.
- Electrical housing, back boxes and junction boxes.
- Electrical trunking/conduit for housing the power leads.
- Flexible tile adhesive and flexible grout.

 **DO**

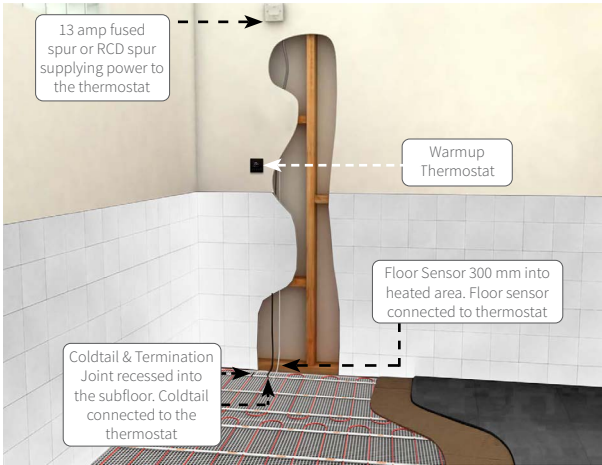
- Ensure that the control card at the back of the manual is completed and fixed at the consumer unit along with any plans and electrical test records as per the current edition of National Wiring Regulations.
- Ensure the termination and coldtail joints are within a full bed of adhesive directly beneath the heated floor.
- Ensure the heat output of the floor meets your requirements.
- Install the floor sensor centrally between two parallel runs of heating cable and away from other heat sources such as hot water pipes, lighting fixtures etc.
- Use adhesives and grouts suitable for use with underfloor heating.
- Ensure all furniture installed over underfloor heating has feet, creating a minimum 50 mm ventilated space beneath it to allow heat flow into the room.
- Ensure that during the course of the installation no damage is caused to the heater by falling or sharp objects.
- Ensure the subfloor is fully cured and stable before commencing installation of the heater.

 **DON'T**

- Cut or shorten the heating element at any time.
- Leave surplus heater rolled up under units or fixtures, use the correct size heater.
- Connect two heaters in series, only connect heaters in parallel.
- Attempt a DIY repair if you damage the heater, contact Warmup for assistance.
- Tape over manufactured joints or the floor sensor tip.
- Install items above the underfloor heating system which have a combined resistance of more than 1.5 tog, as this may cause overheating.
- Bend the heating cable under 25 mm radius.



IMPORTANT: The diagrams in Step 1 are specific to British Wiring Regulations. Please refer to National Wiring Regulations for country specific information.



Install the RCD

Install a dedicated 30 mA RCD or use an existing RCD. No more than 7.5 kW of heating should be connected to each 30 milliamp RCD. For larger loads, use multiple RCD's.

NOTE: It is possible to run the heater(s) from an existing circuit protected by a 30 mA RCD. It should be calculated whether or not the circuit can handle the additional load.

NOTE: A junction box is required if more than two heaters are being connected to a single Warmup thermostat.

NOTE: When conducting an insulation resistance test on the supply to the thermostat the thermostat and heaters must be isolated or disconnected.

Zone Chart



NOTE: In the case of bathroom installations, electrical regulations prohibit the installation of mains voltage products such as thermostats, contactors, fused spurs, isolators or junction boxes, within Zones 0 or 1.

Any mains voltage product fitted within Zone 2 must have a degree of protection at least of IPX4 or IPX5 if water jets are present.

It is common to install the thermostat outside of wet rooms in the adjacent connected room in circumstances where it is not practicable to install the thermostat within the wet room.

When installed in this way, using only the sensor probe to control the heating, it is not possible to directly control the air temperature, only the surface temperature.

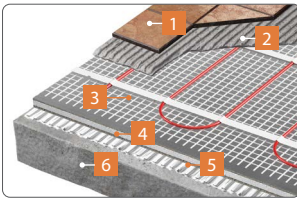
All electrical connections must conform to the current National Wiring Regulations. Final connections to the main electricity supply MUST be completed by a qualified electrician. Please refer to National Wiring Regulations for country specific information.



Subfloor Preparation

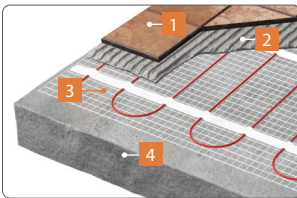
Subfloors previously covered in vinyl, cork or carpeting: all old flooring and adhesive must be removed. Any materials on or within the subfloor must be suitable for supporting eUFH systems. If using temperature sensitive materials beneath the eUFH system, such as damp proofing or tanking systems, contact the manufacturer for advice.

For optimum performance it is recommended that you use Warmup® Insulation Boards beneath the PVC Mat. The insulation will improve the systems response to heating demand, saving energy and reducing running costs.



RECOMMENDED BUILD-UP

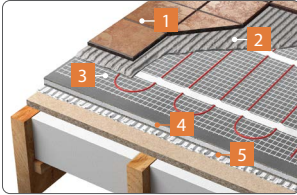
- 1 Floor Finish
- 2 Flexible tile adhesive or levelling compound
- 3 PVC Mat
- 4 Warmup Insulation Board
- 5 Flexible Tile Adhesive
- 6 Subfloor



LOW PROFILE BUILD-UP

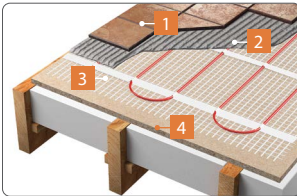
- 1 Floor Finish
- 2 Flexible tile adhesive or levelling compound
- 3 PVC Mat
- 4 Subfloor

In addition to the general subfloor preparation instructions on the previous page Timber subfloors should be prepared for tiling in accordance with local tiling standards such as BS 5385-3, ANSI A108 Series.



RECOMMENDED BUILD-UP

- 1 Floor Finish
- 2 Flexible tile adhesive or levelling compound
- 3 PVC Mat
- 4 Warmup Insulation Board
- 5 Flexible Tile Adhesive
- 6 Subfloor



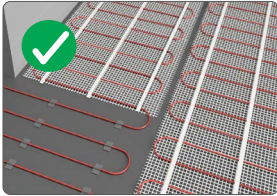
LOW PROFILE BUILD-UP

- 1 Floor Finish
- 2 Flexible tile adhesive or levelling compound
- 3 PVC Mat
- 4 Subfloor

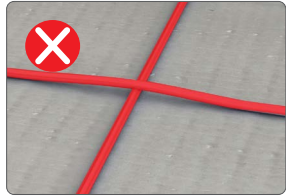


A plan of the heater layout is required as part of the control card so that any cutting or drilling after tiling will not result in injury or damage to the heater.

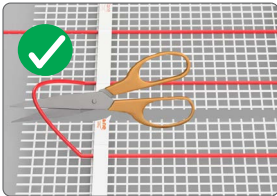
Before you begin



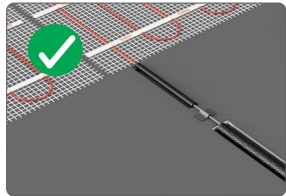
- For floor applications, ensure that there is a minimum of 50 mm between any heating cable removed from the mat and that the cable is away from the influence of other heat sources, such as heating and hot water pipes, lighting fixtures or chimneys at all times.



- When installing the mat **DO NOT** cross the cable over another run, over coldtails or the sensor probe. This will cause overheating and will damage the cable.



- The heating cable must not be cut, shortened, extended or left in a void, it must be fully installed within the layer of tile adhesive.



- Heating cables cannot be installed across expansion joints within the floor. Where a heated floor is divided by expansion joints, individual cables should be used to heat each area. The cold tail may cross the expansion joint within a 300 mm long conduit as shown.

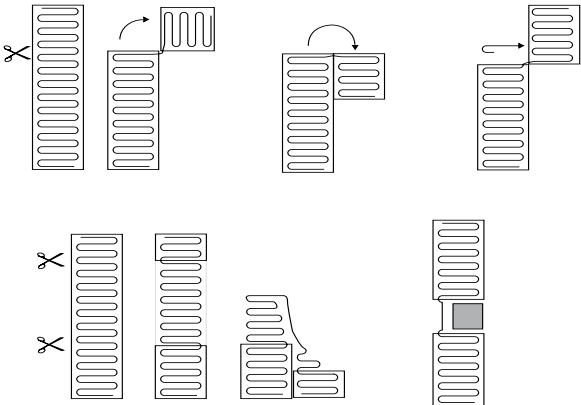
NOTE: The heater should not be installed on irregular surfaces such as on stairs or walls.

NOTE: When installing the mat, maintain a spacing of 40 mm between the heater and the perimeter of the room or any unheated areas.

Modifying the Mat

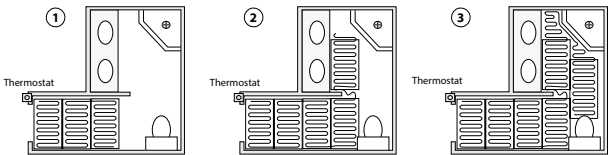
In order to fit your mat into a specific area, it may be necessary to cut and turn the mat (examples below).

IMPORTANT: NEVER cut the heating element. When cutting and turning the mat take care not to cut or damage the heating cable.



Example installation diagrams

Floor layout



Please take a moment to double-check that your plan has the proper room dimensions and that you have the correct size and proper number of mats. Mats should run backwards and forwards between walls and obstructions as shown in the examples.

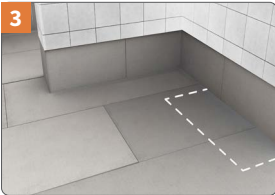
NOTE: When laying two or more heaters, ensure all coldtails reach the thermostat.



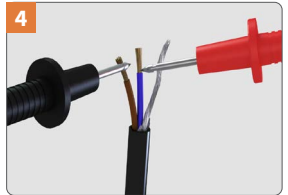
- Ensure the subfloor is dry and smooth. If necessary an appropriate smoothing or levelling compound should be applied.



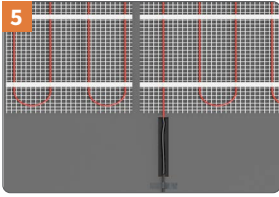
- **Recommended Step** - Install Warmup Insulation Boards over the subfloor referring to their installation instructions. Ensure that the top surface is smooth and clean.



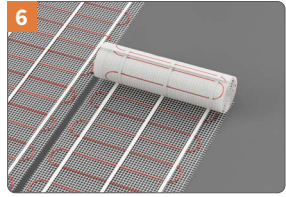
- Mark out the floor with a permanent marker showing where fixtures and other unheated areas are going to be.



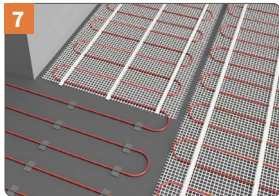
- Measure and record the resistance of the heating cable in the “Resistance Before” column of the control card, supplied as part of this installation guide.
- Stop installation immediately and contact Warmup if its resistance falls outside the range set out in the Reference Resistance Band table.



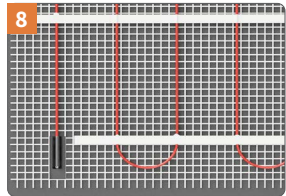
- Place the coldtail on the floor. Cut a section in the subfloor for the manufactured joint so that it sits at the same height as the heater.
- Secure the cold tail using tabs of electrical tape as necessary. **DO NOT** tape over the manufactured joint. It must be fully embedded within the tile adhesive or levelling compound being laid over.



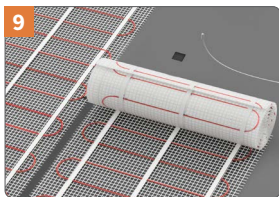
- Begin laying the mat, cutting the mesh and turning the mat to fit the floor area. Secure the mat to the subfloor using the self adhesive mesh or double sided tape.
- Follow the installation layout as in Step 3 to complete the heater placement.
- **DO NOT** install the heating cable in temperatures less than -10 °C.



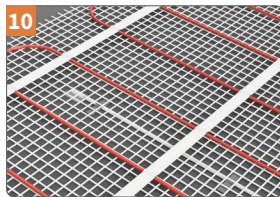
- To install the mat in awkward areas the heating cable can be removed from the mesh and fixed in place with tabs of tape, taking care to remove air cavities. Maintain the minimum 50 mm spacing between parallel heating cables.



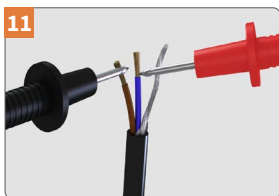
- At the end of the heating cable, you will find a termination joint. As with the manufactured joint at the beginning of the heating cable, this joint will have to be cut into the subfloor so that it sits at the same height as the heater.
- **DO NOT** tape over the termination joint, it must be in direct contact and fully embedded within the tile adhesive or levelling compound being laid over.



- Install the floor sensor at least 300 mm into the heated area it will be controlling. It should be located centrally between parallel runs of heating cable and not in an area influenced by other heat sources.



- Measure the resistance of the floor sensor and record it on the control card. If it's resistance is outside the prescribed range contact Warmup.
- **DO NOT** tape over the floor sensor tip it must be in full contact with the heated tile adhesive or levelling compound.

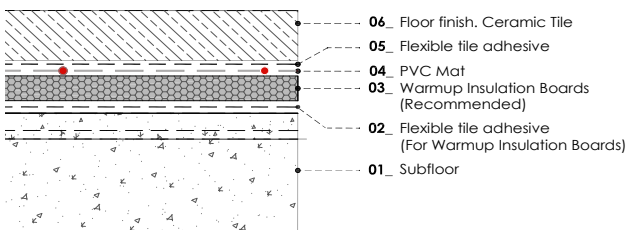


- Measure the resistance of the heating cable and verify it is still in line with the Resistance Before reading previously taken.
- Stop installation immediately and contact Warmup if its resistance has changed significantly or if it falls outside the range set out in the Reference Resistance Band table.

Underfloor heating performs the most efficiently with conductive, low resistance floor finishes such as stone and tiles. It is recommended that the combined thermal resistance of the floor covering must not exceed 0.15 m²K/W.

NOTE: Before installing the floor finish, its suitability for use with underfloor heating and its maximum operating temperature should be checked against required operating conditions.

Tiled Floor Finish - For tiles greater than 90 mm



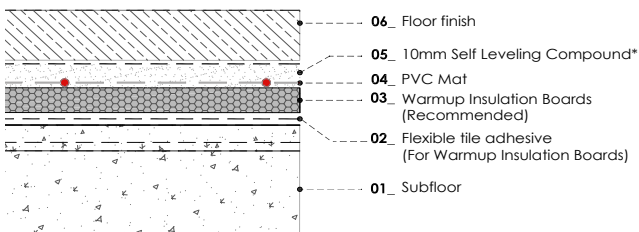
NOTE: It is possible to tile directly onto the PVC Mat taking care not to damage or knock the cable. Tiling directly onto the heater will provide a thinner, more responsive construction.

All Floor Finishes - With 10 mm Self Levelling Compound

Once the mat has been installed we recommend laying a 10 mm layer of self levelling compound over the heater which is suitable for use with underfloor heating. You must ensure the entire heater, including manufactured joints are encased in the levelling compound.

The self levelling layer will:

- Allow a variety of floor finishes to be laid on top such as tile, vinyl, wood and carpet.
- Provide protection for the heater until the final floor is laid.
- Give a smooth surface to lay your chosen floor covering over.
- Provide a more uniform temperature distribution.

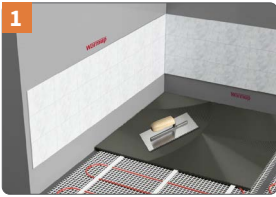


* This method can be used to create a finished floor surface suitable for most floor finishes. When forming a drainage slope within a Wetroom installation, ensure the minimum 10mm thickness of the levelling compound is maintained in the heated areas.

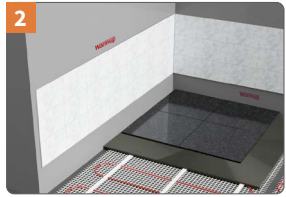
NOTE: If using tiles smaller than 90 mm you **MUST** cover the installation with levelling compound first.



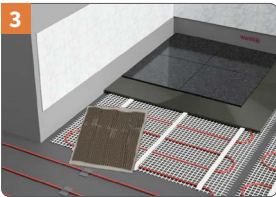
Tiled Floors



- Cover the installation with a full bed of flexible tile adhesive using a notched trowel. Take care not to damage or dislodge the heating cable. If using tiles smaller than 90 mm cover the installation with levelling compound first.



- Carefully lay the tiles and press into the adhesive bed.



- After laying the first tile, remove and ensure the tile is getting a full coverage of adhesive from your application.
- Ensure the width of the grout line is in line with the manufacturer's instructions for the size and type of tile being used. Tiles must not be removed once the adhesive has set, doing so will damage the heater.



- Grout the floor as soon as possible as per the adhesive manufacturer's instructions. **DO NOT** switch on the heater until the tile adhesive and grout has fully cured. **DO NOT** use the heater to accelerate the drying process of the adhesive or levelling compound.

NOTE: Please ensure that the tile adhesive used is compatible with underfloor heating.

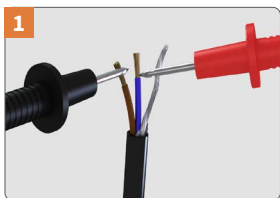
Other Floor Coverings



NOTE: Before installing the floor finish its suitability for use with underfloor heating and its maximum operating temperature should be checked against required operating conditions.

- If you are planning to install wood, carpet or vinyl over the heater you **MUST** lay a minimum 10mm levelling compound over the heater. You must ensure that all heating cables are completely covered. It is important that the levelling compound is suitable for use with underfloor heating.

Final Steps



- When the tiles or levelling compound have been installed, conduct another resistance test to ensure the sensor and heater have not been damaged and record in the control card.

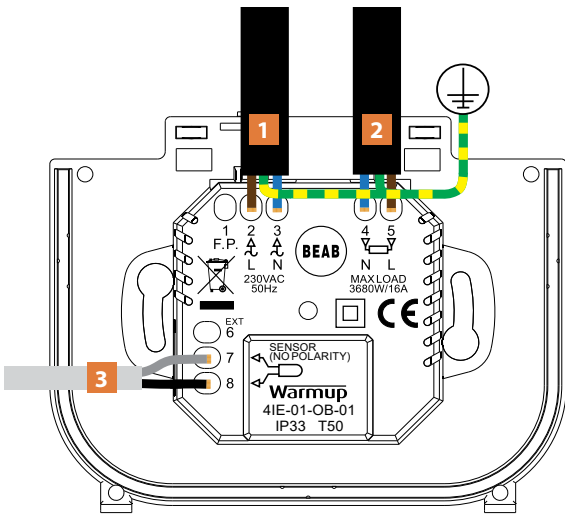


Install the thermostat in accordance with its installation instructions

Instructions for fitting Warmup® Thermostats can be found inside the thermostat box. The thermostat must be connected to the main electrical supply via a fuse, circuit breaker or 'double pole isolator' in accordance with National Wiring Regulations.

The heater power cable consists of conductors coloured brown (live), blue (neutral) and earth braid. If you are installing more than two heaters on a single Warmup thermostat a junction box will be required. These should be connected in accordance with current wiring regulations by a qualified electrician.

Typical Warmup Thermostat Wiring Diagram

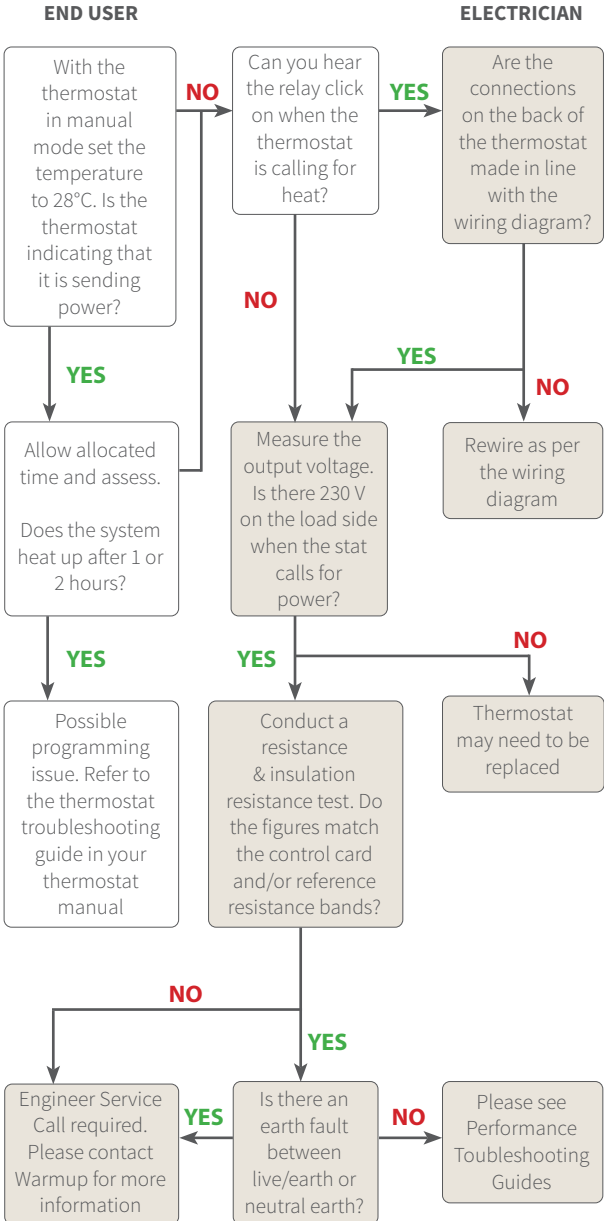


THERMOSTAT WIRING

- 1 Power Supply Cable 230 V AC**
Wired via 30 mA RCD spur supplying power to thermostat
- 2 Heaters (16 amp 3,680 W max.)**
Over 16 amps a contactor will have to be installed
- 3 Floor Sensor (No Polarity)**

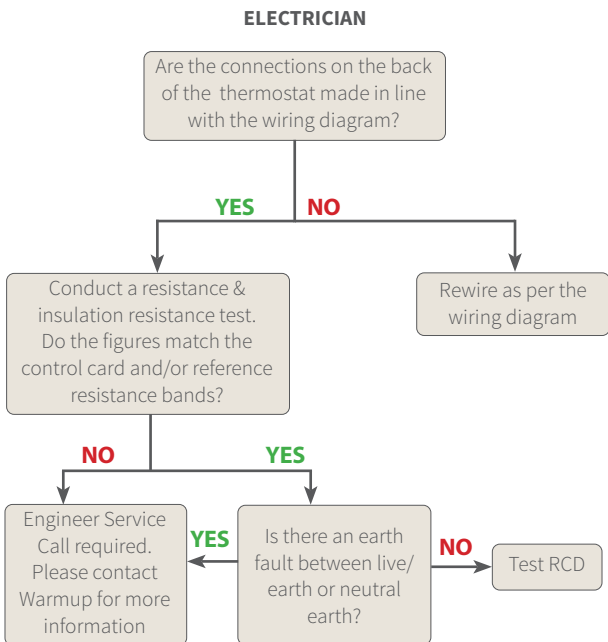
HEATING ISSUE 1 - The floor does not heat up

Instructions which are shaded must be completed by a qualified electrician.



**HEATING ISSUE 2 - The heater trips the RCD**

Instructions which are shaded must be completed by a qualified electrician.



My floor is getting too hot

1. The temperature settings on the thermostat may be incorrect.

Check the thermostat settings ensuring that it is controlling the correct surface temperature and that the set target and limiting temperatures are correct.

2. The sensor probe may be poorly positioned, if so the thermostat will be displaying a temperature that is not indicative of the surface temperature.

Recalibrate the sensor probe in the thermostat settings.

3. The thermostat may be set in regulator mode with the duty cycle set too high.

If the thermostat cannot be set to reference a sensor probe, reduce the regulation value to its minimum selectable value. With the heating active, incrementally increase the setting at an hourly interval until the required floor surface temperature is achieved.

My floor does not get up to temperature

1. Underfloor heating is normally designed to heat floors up to 9 °C above the design room air temperature, which is typically 29 °C.

Delicate floor finishes, such as vinyl and some timbers, may be limited to 27 °C. Our hand and foot temperature is normally similar to this, at around 29 - 32 °C, so the heated floor will feel slightly cooler than touching your own hands together.

If you wish to raise the temperature, such that it feels warm, it is permissible to set it up to 15 °C higher than the design room air temperature. The higher heat output of the floor may overheat the room, making it uncomfortable. The manufacturer of the floor finish should be consulted to ensure compatibility with the chosen temperature before making any changes to the thermostat settings.

2. Refer to points 1, 2 & 3 in the “My floor is getting too hot” above, as each issue can also be the cause of under heating a floor.

3. If the thermostat is controlling the heating using the air temperature, with a sensor probe temperature limit then the floor may be turned off before it reaches its limit.

This is normal as the thermostat is preventing the room air temperature from becoming overheated.



My floor does not get up to temperature

4. The heating system may be uninsulated. If the heater has not been installed over a layer of Warmup Insulation Boards, it will be actively heating the substrate as well as the floor finish. The warm up period of the floor will therefore be slower as the system is heating a much greater mass. It could take several hours if it is installed directly on a thick layer of uninsulated concrete.

If your thermostat has an optimised start feature, ensure it is enabled so that the thermostat can compensate for the mass of the floor. If your thermostat does not have an optimised start feature, measure the time taken for the floor to warm up and adjust the heating start time to compensate.

5. The heat output of the installed system may not be sufficient. The system will require a power output of approximately 10 W/m² for every degree warmer you require the floor to be than the air. This is in addition to any heat loss through the substrate.

If the room air temperature is also lower than desired, supplementary heating may be required to overcome the room heat losses.

If access is available to the substrate, installing insulation within the floor will reduce the amount of heat lost through the floor.

6. Floor coverings such as carpets, underlays and timber are thermally resistive and will reduce the achievable floor surface temperature. They may also require the floor sensor to be recalibrated.

Floor finish combinations with a thermal resistance of more than 0.15 m²K/W or 1.5 tog are not permitted.

I am getting patchy heat across my floor

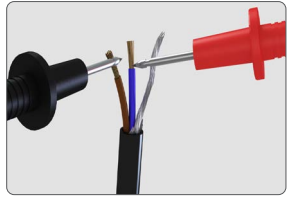
1. If the subfloor varies, the amount of heat absorbed by it and lost through it will affect the floor surface temperatures differently above each case.

2. If the floor covering over the heating changes, each floor finish characteristic will affect the warm up period and the achievable surface temperature.

3. Hot water pipes under the floor could cause parts of the floor to seem warmer than others.

4. Irregularly spaced cables will cause the floor to be warmer above the closer cables and cooler where the cables are spaced further apart.

The heaters and floor sensors must be tested before they are laid, once they have been laid but before the tiles, levelling compound has been laid and again before they are connected to the thermostat. The resistance (ohms) of each heater should be measured. You should carry out the following tests and should expect the results detailed below:



• Heating Cable Resistance Test

Set a multimeter or ohmmeter to record resistance in the range of 0-500 Ω . Measure the resistance across the live (brown) and neutral (blue) wires. Ensure the measured resistance is within the Reference Resistance Band for the cable size being tested.

Record the readings on the control card in line with the installation procedure.

• Earth Fault Check

Set a multimeter or ohmmeter to record resistance in the range of 1 M Ω or greater if available. Measure the resistance across the live (brown) and neutral (blue) wires to the earth braid wire.

Ensure the measured resistance is showing as greater than 500 M Ω or infinite if the meter cannot read this high.

Insulation resistance test

Set an insulation resistance tester to 500 V DC. Measure the resistance across the live (brown) and neutral (blue) wires to the earth braid wire. Ensure the measured resistance is showing greater than 500 M Ω to indicate a pass.

NOTE: Due to the high resistance of the heating element, it may not be possible to get a continuity reading from the heating cable and as such, continuity testers are not an acceptable substitution for the heater tests. When checking resistance, make sure your hands do not touch the meter's probes as the measurement will include your internal body resistance and render the measurement inaccurate. If you do not get the expected results or at any time you believe there may be a problem, please contact Warmup's Technical Team for guidance.

Floor Sensor

Ensure that the sensor probe is tested before the final finish has been fitted. The sensor values can be found in the thermostat instructions. When testing the sensor ensure that the meter can read up to 20 k Ω . Warmup thermostats typically use a 10 k Ω sensor. The expected resistance is: 10 k Ω at 25°C, 12.1 k Ω at 20°C, 14.7 k Ω at 15°C.

WARNING

Radiant Floor Heating Systems - Risk of electric shock



Electric-wiring and heating panels contained within the floor. DO NOT penetrate with nails, screws, or similar devices. DO NOT restrict the thermal emission of the heated floor.

Heater Location

.....

Total Wattage

.....

Heater Location

.....

Total Wattage

.....

Heater Location

.....

Total Wattage

.....

ATTENTION:

DO NOT cut or shorten the heating element. Ensure that the entire heating element(s) including the joints are installed within the layer of tile adhesive, levelling compound. DO NOT tape over the joints or heating cable as this may insulate them, causing them to fail. The heating element must be used in conjunction with a 30 mA RCD.

Heater Model	Resistance Before	Resistance After	Insulation Resistance (Pass)	Sensor probe resistance

Date

Signed

Company stamp/name

This form must be completed as part of the Warmup Guarantee. Ensure that the values are as per the instruction manual.

This card along with a plan showing the heater layout must be situated close to the consumer unit in a visible place.

Warmup Plc 702 & 704 Tudor Estate Abbey Road
 London NW10 7UW

1 800 937 429 www.warmup.ie ie@warmup.com





The Warmup PVC Mat is guaranteed by Warmup plc (“Warmup”) to be free from defects in materials and workmanship under normal use and maintenance, and is guaranteed to remain so subject to the limitations and conditions described below. The PVC Mat is guaranteed for 10 years for the floor covering which it is fitted except as provided below (and your attention is drawn to the exclusions listed at the end of this guarantee).

This lifetime guarantee applies:

1. Only if the unit is registered with Warmup within 30 days after purchase. Registration can be completed online at www.warmup.ie. In the event of a claim, proof of purchase is required, so keep your invoice and receipt - such invoice and receipt should state the exact model that has been purchased;

&

2. Only if the heater has been earthed and protected by a Residual Current Device (RCD) at all times.

The guarantee is void if the floor covering over the heater(s) is damaged, lifted, replaced, repaired or covered with additional layers. The guarantee period begins on the date of purchase. During the period of the guarantee Warmup will arrange for the heater to be repaired or (at its discretion) have parts replaced free of charge or issue a refund for the product only. The cost of the repair or replacement is your only remedy under this guarantee which does not affect your statutory rights.

Such cost does not extend to any cost other than direct cost of repair or replacement by Warmup and does not extend to costs of relaying, replacing or repairing any floor covering or floor. If the heater fails due to damage caused during installation or tiling, this guarantee does not apply. It is therefore important to check that the heater is working (as specified in the installation manual) prior to tiling.

WARMUP PLC SHALL IN NO EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO EXTRA UTILITY EXPENSES OR DAMAGES TO PROPERTY.

WARMUP PLC is not responsible for:

1. Damage or repairs required as a consequence of faulty installation or application.
2. Damage as a result of floods, fires, winds, lightning, accidents, corrosive atmosphere or other conditions beyond the control of Warmup plc.
3. Use of components or accessories not compatible with this unit.
4. Products installed outside the United Kingdom.
5. Normal maintenance as described in the installation and operating manual, such as cleaning thermostat.
6. Parts not supplied or designated by Warmup.
7. Damage or repairs required as a result of any improper use, maintenance, operation or servicing.
8. Failure to start due to interruption and/or inadequate electrical service.
9. Any damage caused by frozen or broken water pipes in the event of equipment failure.
10. Changes in the appearance of the product that does not affect its performance.



SafetyNet™ Installation Guidelines: If you make a mistake and damage the new heater before laying the floor covering, return the damaged heater to Warmup within in 30 days along with your original dated sales receipt. WARMUP WILL REPLACE ANY PRE-TILED HEATER (MAXIMUM 1 HEATER) WITH ANOTHER HEATER OF THE SAME MAKE AND MODEL - FREE.

- (i) Repaired heaters carry a 5 year warranty only. Under no circumstances is Warmup responsible for the repair or replacement of any tiles / floor covering which may be removed or damaged in order to affect the repair.
- (ii) The SafetyNet™ Installation Guarantee does not cover any other type of damage, misuse or improper installation due to improper adhesive or subfloor conditions. Limit of one free replacement heater per customer or installer.
- (iii) Damage to the heater that occurs after tiling, such as lifting a damaged tile once it has set, or subfloor movement causing floor damage, is not covered by the SafetyNet™ Guarantee.

**Register your Warmup® warranty online at
www.warmup.ie**



TECHNICAL SPECIFICATIONS - PVC MAT	
OPERATING VOLTAGE	230 V AC : 50 Hz
IP RATING	IPX7
MAT WIDTH	500 mm (0.5 m)
MAT THICKNESS	3 mm
OUTPUT RATING	150 & 200 W/m ²
COLOUR	Blue (150 W/m ²), Red (200 W/m ²)
INNER INSULATION	ETFE
OUTER INSULATION	PVC
MIN. TEMPERATURE INSTALLATION	-10 °C
CONNECTION	3 m Coldtail Connection

Mat size guide

PVC 150 W/m ²					REFERENCE RESISTANCE BANDS (Ω)
PRODUCT CODE	HEATED AREA (m ²)	POWER (W)	LOAD (A)	RESISTANCE (Ω)	
PVC1	1	150	0.65	352.7	335.1 - 370.3
PVC1.5	1.5	225	0.98	235.1	223.3 - 246.9
PVC2	2	300	1.30	176.3	167.5 - 185.1
PVC2.5	2.5	375	1.63	141.1	134.0 - 148.2
PVC3	3	450	1.96	117.6	111.7 - 123.5
PVC3.5	3.5	525	2.28	100.8	95.8 - 105.8
PVC4	4	600	2.61	88.2	83.8 - 92.6
PVC4.5	4.5	675	2.93	78.4	74.5 - 82.3
PVC5	5	750	3.26	70.5	67.0 - 74
PVC6	6	900	3.91	58.8	55.9 - 61.7
PVC7	7	1050	4.57	50.4	47.9 - 52.9
PVC8	8	1200	5.22	44.1	41.9 - 46.3
PVC9	9	1350	5.87	39.2	37.2 - 41.2
PVC10	10	1500	6.52	35.3	33.5 - 37.1
PVC12	12	1800	7.83	29.4	27.9 - 30.9
PVC15	15	2250	9.78	23.5	22.3 - 24.7

PVC 200 W/m ²					REFERENCE RESISTANCE BANDS (Ω)
PRODUCT CODE	HEATED AREA (m ²)	POWER (W)	LOAD (A)	RESISTANCE (Ω)	
2PVCM1R	1	200	0.87	264.5	251.3 - 277.7
2PVCM1.5R	1.5	300	1.30	176.3	167.5 - 185.1
2PVCM2R	2	400	1.74	132.3	125.7 - 138.9
2PVCM2.5R	2.5	500	2.17	105.8	100.5 - 111.1
2PVCM3R	3	600	2.61	88.2	83.8 - 92.6
2PVCM3.5R	3.5	700	3.04	75.6	71.8 - 79.4
2PVCM4R	4	800	3.48	66.1	62.8 - 69.4
2PVCM4.5R	4.5	900	3.91	58.8	55.9 - 61.7
2PVCM5R	5	1000	4.35	52.9	50.3 - 55.5
2PVCM6R	6	1200	5.22	44.1	41.9 - 46.3
2PVCM7R	7	1400	6.09	37.8	35.9 - 39.7
2PVCM8R	8	1600	6.96	33.1	31.4 - 34.8
2PVCM9R	9	1800	7.83	29.4	27.9 - 30.9
2PVCM10R	10	2000	8.70	26.5	25.2 - 27.8
2PVCM15R	15	3000	13.04	17.6	16.7 - 18.5

Warmup plc

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Electric
Heating System

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