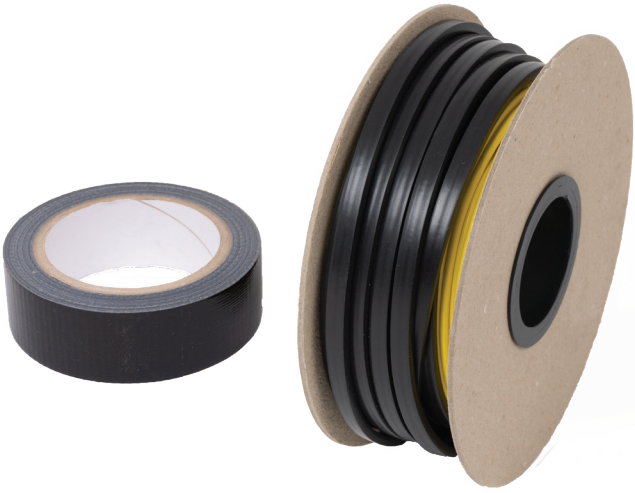
thermo SphereO

Cable Kits

Variable cable spacing to achieve your desired heating output



Thank you for your purchase...

This document will provide a step-by-step guide to a perfect installation as well as details on the warranty and how to get Technical Support should you need it.

To ensure a safe, hassle-free installation to be proud of please take the time to read this guide in full before you start. We've taken the time to highlight any potential pitfalls and common errors so you can avoid them and get the job done!

This product is covered by a Lifetime warranty, subject to terms and conditions. Be sure to keep the receipt as proof of purchase, this will be required to validate your Lifetime warranty.

Please complete the Customer Handover section on page 15 in full so that the customer has all the information they need to complete the online warranty form and register their ThermoSphere Lifetime Warranty.

If you have any questions about your ThermoSphere Underfloor Heating or any of our other products call our Technical Support team on the freephone number below.

Warranty terms & conditions

The ThermoSphere Lifetime Warranty guarantees ThermoSphere Cable Kits to remain free from defects in workmanship and materials under normal use and maintenance, and is guaranteed to remain in full working order subject to the conditions and limitations below:

ThermoSphere Underfloor Heating cables are guaranteed for the Lifetime of the floor covering under which it is originally fitted subject to the following conditions. Please pay attention to the exclusions listed at the end of this guarantee.

ThermoSphere Lifetime Guarantee applies:

1. Only if the product is registered, and the registration information is received and documented by ThermoSphere, within 60 Days after purchase. You can register your product by completing the form online at www.thermosphere.com. Proof of purchase must be presented to make a claim, so please ensure that you keep a copy of both your invoice and purchase receipt in a safe place. Such invoice/receipt should clearly state the model that has been purchased and be in legible condition so as to aid in identifying the system; and

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

This guarantee does not cover any thermostats as these are covered by a separate 3 year warranty from the date of purchase, except as provided below.

All Thermogroup Ltd warranties become void if the floor covering under which the ThermoSphere Cable is originally fitted is damaged, lifted, replaced, repaired or covered with additional layers of flooring. The ThermoSphere Lifetime Warranty does not cover accidental damage, including but not limited to damage caused by lifting, replacing, repairing the original covering laid after installation.

The guarantee period starts on the date of purchase but the registration is only confirmed only when a letter or email of confirmation is sent by Thermogroup Ltd.

Should it be required, ThermoSphere will arrange for the cable element to be repaired or (at the discretion of TGLTD) have parts replaced free of charge. The cost of repair will only cover the cost of replacement TGLTD parts and/or repair to damaged TGLTD parts and products. Any damage to floor coverings or floors, costs of re-laying or repairing floors or floor coverings are not covered by The ThermoSphere Lifetime guarantee.

Please Note: Full Terms and Conditions are available on request.

Email hello@thermosphere.com to request your copy or give us a call.

Contents

IMPORTANT SAFETY REGULATIONS

ALL WIRING MUST CONFORM TO IEE 18TH EDITION REGULATIONS

Do

- Ensure electrical circuit is protected by a suitably rated RCD and complies with local regulations
- Take care to ensure all electrical work complies with IEE 18th edition Part P regulations
- Locate the thermostat in accordance with current guidelines
- Read this document in conjunction with instructions for associated accessories (eg thermostats)
- Ensure test procedures a, b & c are carried out, this is essential for completion of the warranty
- Install conduit in accordance with the instructions to facilitate replacement of the sensor probe
- Use primer before self levelling compound or tile adhesive if the manufacturer recommends it
- Protect the cable during installation, as this is when it is most prone to damage
- Ensure sensor conduit is positioned between 2 runs of heating cable in a representative area of the floor
- Make sure all heating cable and cold tail connections are fully covered in a layer of tile adhesive or leveller and not held in position with tape

Do not

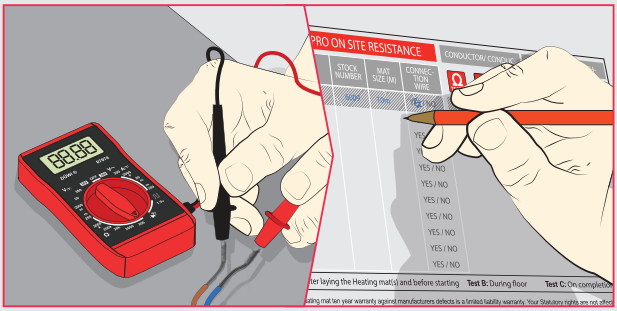
- Place the cold tail connection or end termination in a recess in the floor or insulation boards and cover with tape. This causes an air pocket and leads to cable failure
- Position temperature sensor near pipes or external doorways
- Lay insulation on top of underfloor heating (ufh) or a dusty substrate. Insulation on top of UFH will reflect all the heat emitted back into the substrate
- Position temperature sensor near hot pipes or temperature influences
- Cross or overlap any heating cables
- Turn on system before adhesive or levelling compound is fully cured
- Leave boxes or furniture on heated flooring
- Strain or bend the cold tail end connections

Performing a resistance test

Three test symbols

Be sure to check the electrical resistance reading on the cable three times; before, during and after the installation process. These test symbols throughout this guide are a reminder:

Ω TEST A Ω TEST B Ω TEST C



Ω TEST A Perform Test A now and record the results on p15

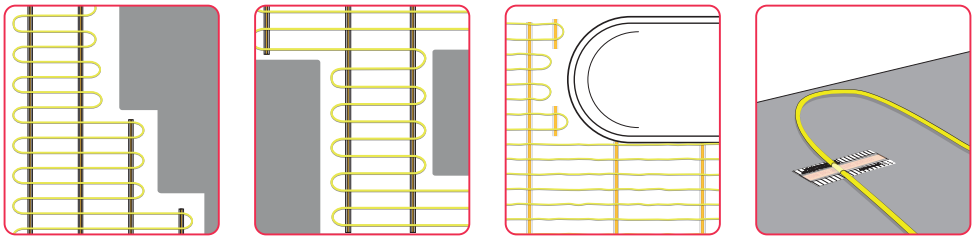
Resistance test

Test Live and Neutral, conducting the test in this way ensures total accuracy.

Record results

Write each resistance value on the customer handover form (P15) to ensure your customer can complete the warranty form online.

Irregular areas



Arrange the cable loops to cover irregular areas. Use a minimum cable spacing of 50mm and fix in place using a small section of the included fixing tape. We recommend using 10mm thin strips of tape. Take extra care to expel all air gaps from between the tape and the heating cable. Failing to do so can result in overheating and cable failure.

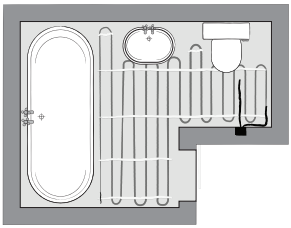
Preparation checklist

- ☐ Fully understand resistance tests as they are required for warranty application
- ☐ Carry out test a and record results (p15)
- ☐ Fully read and understand irregular areas

Important safety precautions

- ⚠ Do not cut cable
- ⚠ No electricity is necessary for a resistance test
- ⚠ Do not connect cable to a mains supply whilst rolled up

Layout and calculations



Available floor space = _____m^2

Planning avoids costly mistakes

Use the grid above to plan your installation this will help you to produce the safest, quickest and cleanest result. Include thermostat and sensor positions.

Planning: System requirements

- Cable kit
- Thermostat
- Single back box kit
- Insulation
- Sensor probe and conduit

Cable spacing calculation

Now is a good time to think about cable spacing. Use the calculation below to calculate ideal cable spacing.

$$\frac{\text{Available floor space } (m^2) \times 100}{\text{Cable kit length (m)}} = \text{Spacing (cm)}$$

Floor Area (m^2) _____ Cable space (m) _____

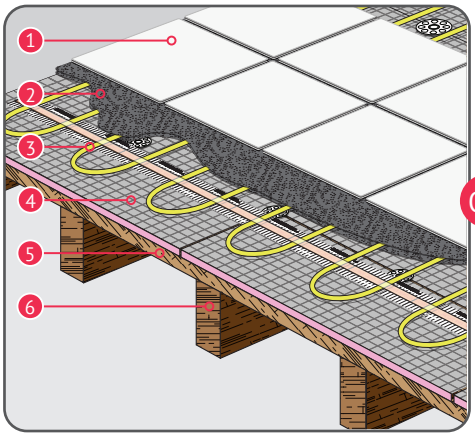
Planning checklist

- ☐ Plan for all the items shown in system requirements
- ☐ Calculate cable spacing
- ☐ Fully plan your installation

Important safety precautions

- Failure to plan your installation could result in system faults or lack of materials
- Cable should have a minimum spacing of 50mm between each cable
- Do not lay heating cables near or on top of any heat influences such as hot pipes

Insulation, substrate build up and compatibility



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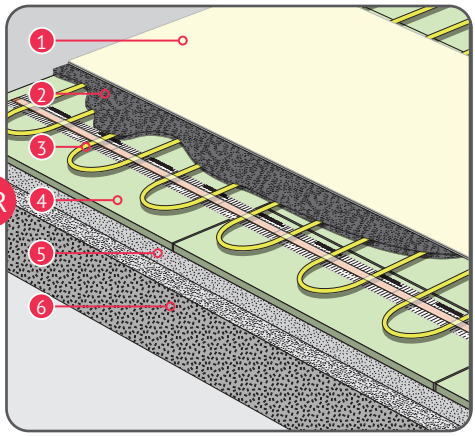


1. Floor finish
2. Flexible tile adhesive
3. Cable kit
4. Timber Insulation board
5. Floor boards
6. Floor joints

1. Floor finish
2. Self levelling
3. Cable kit
4. Concrete Insulation board
5. Screed
6. Polystyrene insulation and concrete ground slab

Insulating a timber substrate

Step 1: Measure and plan your layout

First measure the floor space and calculate how many boards you'll need using the calculation below.

Step 2: Cut your boards to size

If required, cut the boards to size to suit your room layout. Insulation boards can be cut very easily using a sharp blade or wood saw.

Step 3: Lay and fix boards

Ensure your substrate is secure, clean and free of dust and loose particles. Set out your boards onto the floor space and fix in place using appropriate fixings. We recommend 32mm fixing screws.

Number of boards required

Timber insulation board Area = 0.78m^2

Concrete insulation board Area = 0.72m^2

$$\frac{\text{Floor space (m}^2\text{)}}{\text{Board Area (m}^2\text{)}} = \text{Number of boards}$$

Insulating a concrete substrate

Step 1: Measure and plan your layout

Measure your floor space and calculate how many boards you'll need using the simple formula.

Step 2: Cut your boards

If required, cut the boards to size to suit your room layout. Insulation can be cut very easily using a sharp blade or wood saw. Please take appropriate care when using sharp tools.

Step 3: Spread adhesive

Ensure your substrate is secure, clean and free of dust and loose particles. Mix flexible adhesive in accordance with instructions and spread using a notched trowel creating a full bed of adhesive large enough for one board.

Step 4: Lay the Insulation boards

Lay the boards onto the adhesive taking care to squeeze out any air pockets in the adhesive. For a high quality finish make sure all boards are flush and tape over the seams using reinforcing tape.

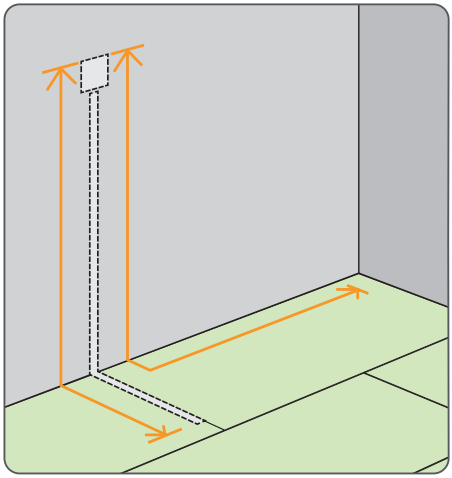
Insulation checklist

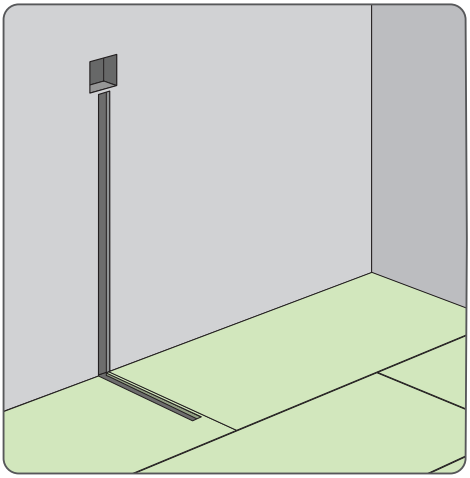
- ☐ Read and fully understand the use of Timber insulation board and Concrete insulation board
- ☐ Identify which substrate applies to you
- ☐ Lay adequate insulation

Important safety precautions

- ⚠ Do not lay insulation on top of heating cables.
- ⚠ Timber insulation board will compress or puncture under low surface area impact

Installing insulation and chase conduit





Step 1: Plan back box and conduit positions

Referring to your plan (p6) measure and mark your back box and conduits in the required position. Trace a line vertically from your back box to the floor and mark the conduit position on the floor.

Even temperature reading: It is important to position your sensor between two runs of heating cable. A channel must be chased into the insulation or substrate to house the senosr condiut. Do not position the sensor conduit near any temperature influence or where furniture and rugs might be placed over the sensor.

The cold tail is 3m in length. It needs to reach from your back box, down through your conduit and along to your cable start position.

Step 2: Install back box

Timber substrate and cavity wall: Fit an extra deep single gang back box at the desired level. Chase from the back box to the floor level, allowing for a 20mm conduit and an 11mm sensor conduit.

Power for the thermostat will come from an RCD protected fused spur.

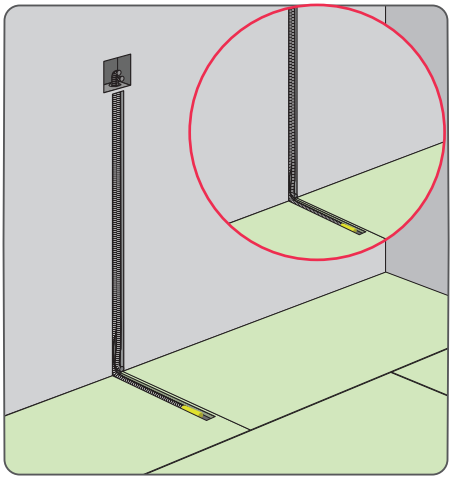
Planning checklist:

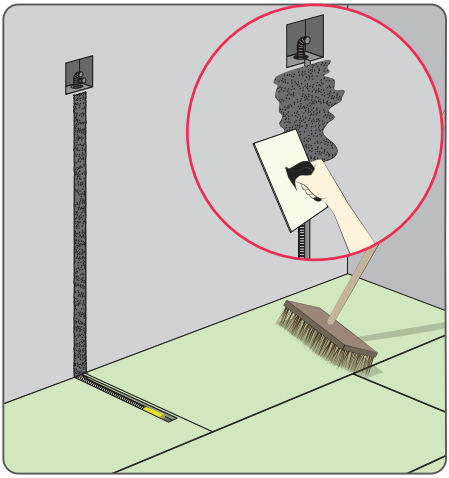
- ☐ Measure and mark out for a back box and two conduits
- ☐ Plan the installation of the sensor conduit between two runs of cable

Important safety precautions

- ⚠ The sensor probe is 2m in length. Ensure it reaches the heating cables for an accurate temperature reading
- ⚠ Sensor probe must not be positioned between 2 runs of heating cable

Skim and clean substrate thoroughly





Step 3: Install two conduits

Sensor conduit: Install a conduit for the sensor probe (laid centrally between two runs of cable).

Cold tail conduit: Install another conduit for the cold tail.

Step 4: Make good and clean your substrate

When your two conduits are in place fill the wall channel (not the substrate) with plaster, if required, and smooth out.

After all fillers are fully cured take the time to thoroughly clean your substrate. This is exceedingly important to ensure the patented fixing strips adhere fully to your substrate. Any dust could jeopardise adhesion.

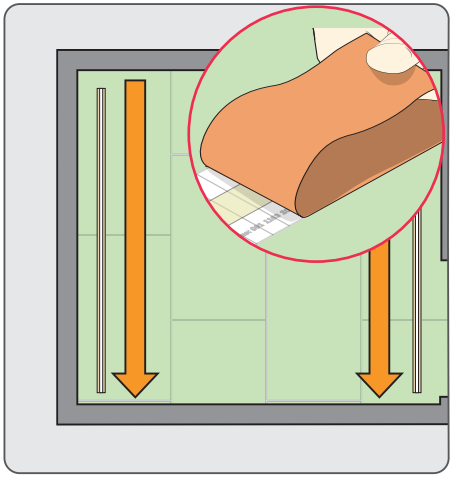
Planning checklist:

- ☐ Install the sensor conduit and the cold tail conduit
- ☐ Skim the cavity and thoroughly clean your substrate before continuing

Important safety precautions

- ⚠ Do not lay the cable on an unclean or uncured substrate
- ⚠ Ensure all fillers are fully cured before continuing with this installation

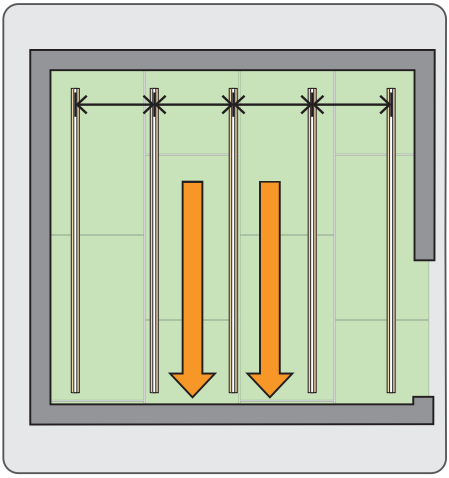
The patented fixing strip



Step 5: Lay your first and last fixing strips

Firstly you need to lay the patented fixing strip at either end of the room. Roll a length of the patented fixing strip out across the length of the room ensuring to leave a 200mm space around the perimeter of the room.

Cut fixing strip to size and peel off an inch of the brown paper protecting the adhesive layer on the underside of the fixing strip. Stick adhesive side down pulling off the bottom protective layer as you go. Repeat this for the other end of your room.



Step 6: Lay remaining fixing strips

Measure in between the two fixing strips you laid in step 1. Use this measurement to evenly distribute more runs of the fixing strip.

It is important these strips are no further than 500mm apart.

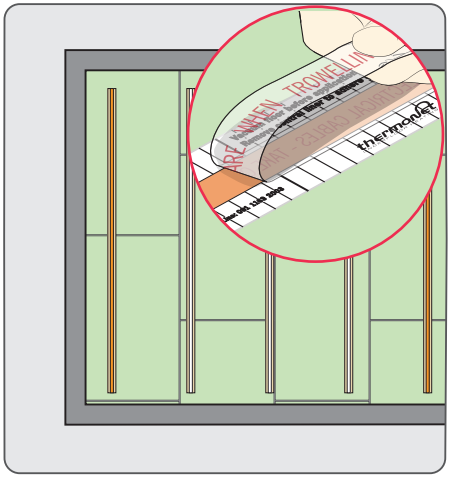
Planning checklist:

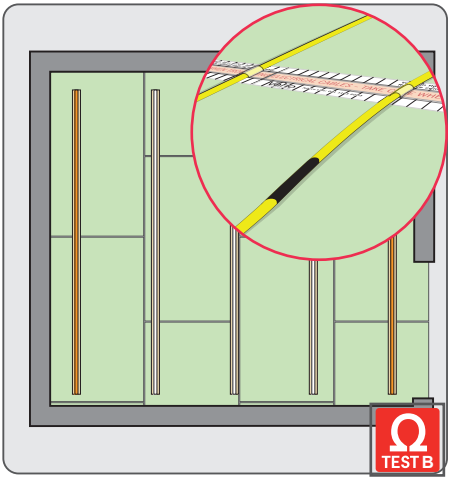
- ☐ Lay first and last fixing strip leaving a 200mm space around the perimeter
- ☐ Install remaining fixing strips and press firmly onto substrate

Important safety precautions

- ⚠ Ensure the substrate is clean and dust free before applying any patented fixing strips
- ⚠ Fixing strips should be no further than 500mm apart

Lay the cable





Step 7: Peel off adhesive cover strip

Now peel off the adhesive cover from the first and last Fixing Strips. Put these top strips to one side for use later.

PRO TIP:

Use the markings on the patented fixing strip to aid your cable spacing. (minimum spacing between cable: 50mm).

Step 8: Lay the heating cable

Pull the cold tail (black cable) fully out of the cable dispenser and ensure it reaches from your back box to your start position.

Lay the cable across the width of the room at spacing calculated on p14 and gently apply pressure when crossing exposed adhesive bands on the fixing strips. Meander the cable across the room as shown above.

PRO TIP:

You will notice a mark half way along the length of your cable. This half way mark should meet up with the middle point of your installation. Use this to ensure you have enough cable to reach the end of your installation.

TEST B

Perform Test B now and record the results on p15

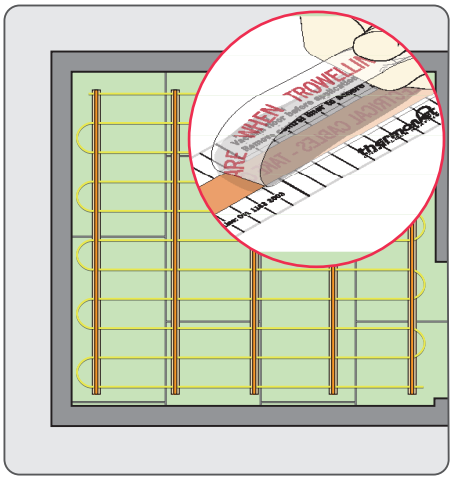
Planning checklist:

- ☐ Peel off the adhesive cover from the first and last runs. Retain the adhesive covers as these will be reapplied at a later stage
- ☐ Check the cold tail reaches the back box and lay the cable

Important safety precautions

- Under no circumstances should the heating cable be cut or joined in series to another heater
- The minimum spacing for heating cable is 50mm Do not lay any closer together than this

Peel and reapply final strips



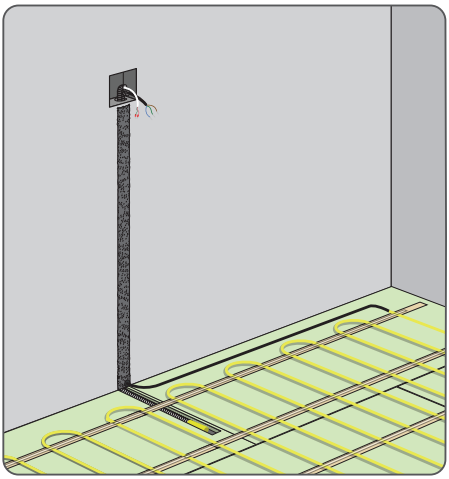
Step 9: Peel off and reapply adhesive covers

Reverse and re-apply the adhesive cover to the first and last run of the patented fixing strip, securing the cable as you go.

Now, one-by-one take off the adhesive cover from your remaining fixing strips. Apply a small amount of pressure to the cable where it crosses over the exposed adhesive band.

Re-apply the top protective layer sealing the cable in place.

PRO TIP:
When reapplying the adhesive cover, ensure the warning message is facing the correct way to allow the alert to be displayed clearly. This will help to prevent damage to the cable on site.



Step 10: Cold tail and sensor probe

Feed the black Vario cold tail up through the cold tail conduit and into the back box.

Also feed the thermostat sensor probe into the back box, down and through the sensor conduit ensuring it goes right to the end.

These will later be wired into the thermostat (5259 touch screen thermostat used in this installation guide).

IMPORTANT INFORMATION

Do not place the cold tail connection or end termination in the wall/ floor cavity or in a recess in the floor/insulation boards covered with tape. This causes an air pocket and leads to cable failure which voids the warranty.

Ensure 100% of the heating cable, cold tail connection and end termination is fully embedded in a layer of flexible tile adhesive or levelling compound.

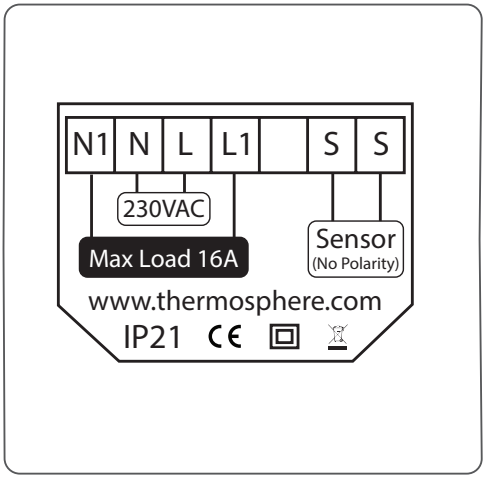
Planning checklist:

- ☐ Reapply all adhesive covers over the heating cable ensuring the warning message can be read
- ☐ Feed the cold tail up the conduit to the back box and feed the sensor probe down to the end of the conduit in the floor

Important safety precautions

- Ensure sensor probe reaches right to the end of the sensor conduit
- Ensure all mains electricity is off before continuing with this installation

Wiring connections



Step 11: Thermostat installation

Your thermostat may require a different wiring diagram. Please consult the relevant installation guide for full details.

1. Connect sensor probe - No polarity
2. Connect heating cable cold tail
3. Connect mains supply
4. Fix thermostat to back box
5. Fit the face plate

PRO TIP

Use automatic wire strippers to bare the wires. This will ensure a good amount of wire is exposed to ensure a safe connection.

ThermoSphere thermostat sensor probes are not polarity sensitive. Either colour wire can be connected to either of the sensor probe ports on the back of your thermostat.

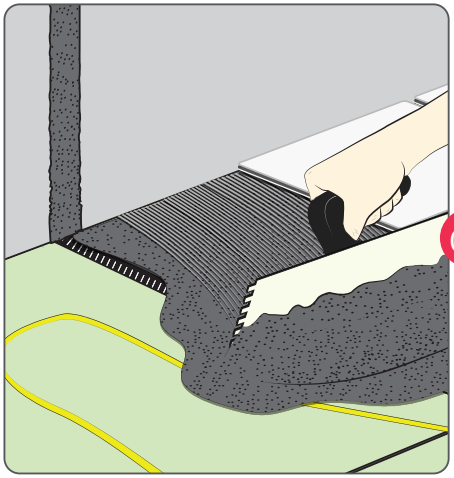
Step 8 & 9 checklist:

- ☐ Wire thermostat to an RCD
- ☐ Connect wiring in accordance with relevant wiring diagram
- ☐ Install thermostat securely to back box and earth

Important safety precautions

- Diagrams and installation steps above are for illustrative purposes only
- Consult wiring diagram in relevant thermostat installation guide before installation

Flooring options



Step 12: Flooring with tile adhesive

You can simply tile directly over ThermoSphere underfloor heating but take extra care not to damage the yellow cable in any way.

Tile the floor using a flexible tile adhesive, we recommend ThermoSphere tile adhesive and grout in accordance with industry standards and manufacturer guidelines. (Plastic trowel recommended). To allow the flexible tile adhesive to fully cure, you must wait two weeks, unless otherwise stated by the manufacturer. You can now switch your new ThermoSphere system on.

PRO TIP

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 approx 18°C and build up by 1°C per day until the desired temperature is reached.

Other compatible floor finishes:

- Ceramic tiles
- Porcelain tiles
- Natural stone tiles
- Marble and slate tiles

OR

Step 13: Flooring with self levelling compound

If you plan to install carpet, vinyl or wood flooring over a ThermoSphere installation you must first lay a bed of at least 10mm self levelling compound. Please refer to the relevant installation guide for details.

Lay the flooring according to the manufacturer's instructions. Please refer to manufacturer's guidelines for drying times before turning on the heating system, this is usually around 2 weeks. You can now switch your new ThermoSphere system on.

Other compatible floor finishes:

- Engineered laminate floor
- Carpet
- Vinyl & cork
- Karndean and Amtico
- Resin safety floors

TEST C Perform Test C now and record the results on p15

IMPORTANT INFORMATION

Do not place the cold tail connection or end termination in the wall/floor cavity or in a recess in the floor/insulation boards covered with tape. This causes an air pocket and leads to cable failure which voids the warranty.

Ensure 100% of the heating cable, cold tail connection and end termination is fully embedded in a layer of flexible tile adhesive or levelling compound.

Step 12 checklist:

- ☐ Use a solid bed of flexible adhesive used for tiling
- ☐ Lay self levelling compound prior to floor finishes

Important safety precautions

- Take care not to snag yellow cables. Use a plastic trowel
- Use a suitable flexible tiling adhesive or self levelling compound

Resistance test results record and customer handover

INSTALLER: The installer must complete the full test procedure and complete this page in full and give it to the home owner to keep in case of a warranty claim.

HOME OWNER: Use this information to register your Lifetime Warranty at www.thermosphere.com.
You must also keep this document for your records in case of a warranty claim.

Stock No	Manufacturer's Values	Before installation	After cable installation	After tile installation
Resistance measurement of the electric heating cable				
Two conductors and earth braid continuity test				
	Infinity (I) or Overload (OL)			
Floor temperature sensor test				

Manufacturer's test log	Installer details
To the installer: Fix manufacturer test results label from inside the product box here. Staple multiples.	Name:
	Company:
	Email:
	Phone:
	Address:
	Postcode:
	Part P number:
	Date:
	Signature:

Stock Code	Length (m)	Area 150W/m² (m²)	Area 100W/m² (m²)	Output (W)	Resistance (Ohms)
TCK-014-0185	14	1	2	185	286
TCK-022-0300	22	2	3	300	176
TCK-033-0450	33	3	4	450	118
TCK-044-0600	44	4	5	600	88
TCK-055-0750	55	5	6	750	71
TCK-066-0900	66	6	8	900	59
TCK-086-1200	86	8	10	1200	44

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