Installation Manual

For Ezewarm Loose Wire Heating Systems (ezecable)

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Ezecable Technical Specifications.

TECHNICAL SPECIFICATIONS:	
Cable Type	Dual conductor.
Voltage	230VAC @ 12.5W/lm
Thickness	2.1mm
Cold Tails	(Earth Braided) 3 core black Blue – Neutral Brown – Live Geen/Yellow – earth

Before you begin the installation please read these important points:

- You should over as much of the floor surface as possible (we recommend up to 90%) so that there is sufficient warmth underfoot without cold spots.
- The heating element is a continuous wire that can **never** be shortened or lengthened.
- Even spacing of the wire will ensure an even temperature.
- Ensure that you use a spacer bar or measure to keep even spacing between the wires when laying out the installation.
- **Never** cut the heating element wire.
- Heating elements must be protected by an **R.C.D** at all times.
- **Never** leave excess heating mat rolled up under units or fixtures (if the mat is too long, return it to your place of purchase and replace it with a smaller size).
- Never run the cold leads (connection leads) underneath or across the heating element wires.
- Never cross or overlap the heating wires.
- Do not switch the system on for at least 2 weeks after fitting the floor finish; you need to wait for the adhesives/latex/grout to dry naturally.
- Do not cut or prepare tiles on top of the fitted heating system. When other work is going on in the room, avoid damage by keeping the heating covered until you are ready for the final floor finish to be put down.
- The cables should never be spaced at intervals closer than 5cm or further than 10cm apart.
- Only a qualified electrician should connect the heating element to the mains.

To select the correct underfloor heating cable for your project:

1. Measure the ***square meters of the floor surface*** in the room,
   Length x width = $m^{2.}$ Remember to leave a 10cm border around the edge.

2. To ***ensure that there is sufficient heat*** in the room ***cover as much of the floor surface as possible*** (we recommend up to 90%).

3. Experience has shown that ***150W/m2 of room area provides a nice level of floor heating*** for most domestic installations. To determine the heating required for the room multiply your floor area in m^2 by 150W. ***In extremely cold areas,*** and rooms with double volume ceilings, multiply the total floor area by 200 ***watts for extra heat.*** Then round this wattage up to the nearest heating cable wattage size.

4. Using the Wattage/ sizing guide, select the heating wire, or a combination of heating wires closest to the size of the floor surface you need. E.g. in a room measuring 2m x 3m = $6m^2$. Take 6m2 and multiply by 150w = 900w. Here you can buy a 300w and a 600w kit. Or if you only want one kit buy the 800w kit and the wattage will drop to 133watts/m2 or move up to the 1000w for 166watts/m2. Remember if using more than one kit both connections must go back to the thermostat.

5. ***Wire spacing's should never be greater than 100mm*** as this may result in "***streaky "heat*** – noticeable differences in temperature on a tiled surface.

This table should be used for you to accurately plan the heat output and space you require between the cables for your project:

As a guide we would recommend the following:

200w/m2 = Used for maximum heat and in the correct circumstances can be used as a standalone heating system. Good in small un-insulated sub-floors especially concrete.
165w/m2 = Used for very warm floor heating can be used as a standalone heating system in kitchens & living rooms in the correct circumstances.
150w/m2 = Excellent for tile heating.
125w/m2 = Fine on a wooden sub-floors or insulation boards.

Power of kit – Length of cable	Area covered @ 200w/m2	Area covered @ 165w/m2	Area covered @ 150w/m2	Area covered @ 125w/m2
200w (16m)	1.0m2	1.2m2	1.4m2	1.6m2
300w (24m)	1.5m2	1.8m2	2.0m2	2.4m2
400w (32m)	2.0m2	2.4m2	2.7m2	3.2m2
600w (48m)	3.0m2	3.6m2	4.0 m2	4.8m2
800w (64m)	4.0m2	4.8m2	5.3m2	6.4m2
1000w (80m)	5.0m2	6.0m2	6.7m2	8.0m2
Correct space required between cables.	62mm	75mm	85mm	100mm

Insulated tile backer boards:

The perfect (green) sub-floor for your underfloor heating system

Insulation boards provide a perfect subfloor for tiling and are highly recommended for underfloor heating, especially when installing on old concrete sub-floors.

Insulation boards are available in 1200mm x 600mm & 6mm and 10mm thickness and can be used instead of ply-wood.

The boards have an insulating polystyrene core, which is protected by a strong outer cement type coating.

In tests with our under floor heating products, the floor warming time on an un-insulated floor was cut from over one hour to less than 30 minutes.

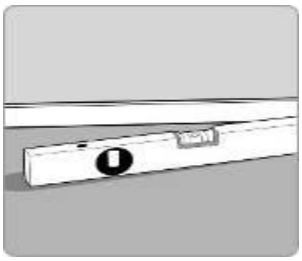
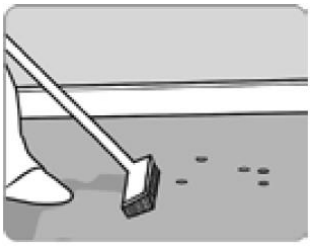
Simply fix the boards to the concrete floor with tile adhesive or washers & screws.

See our web-site for more information.

Now you can start the installation of your ezecable system.

1. **Preparation (A)** before you install: **SUB-FLOOR**

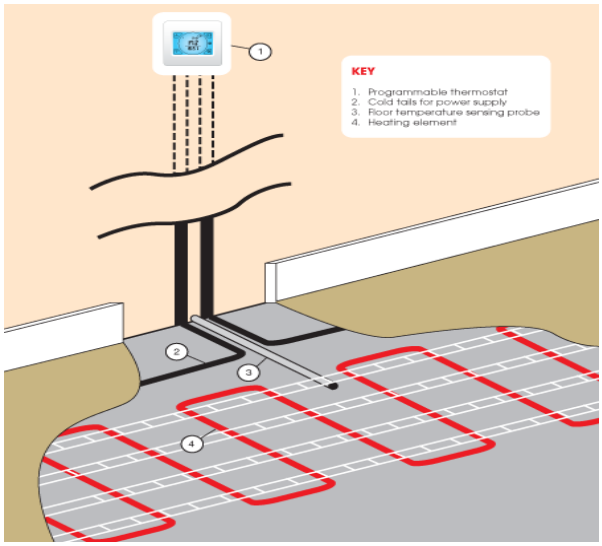
<u>The sub-floor (your floor prepared for tiling)</u>.
Make sure you prepare the floor the same as you would for tiling:

- Smooth, clean, level and dry before beginning the installation.
- If installing on a wooden or dusty concrete sub-floor use a tillers acrylic primer (available in any good tile store).
- Loose floorboards should be repaired and usually a layer of plywood or insulation board should be installed.
- You will need to make a groove in the sub floor for the cold lead connection joint, as this is slightly thicker than the heating cables and the floor sensor (2 & 3 in picture).
- The floor sensor needs to lie in a central position at least 5mm from a heating cable (see 3. in pic).

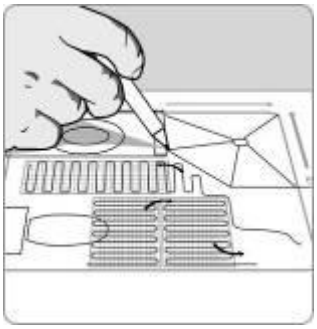
Preparation (B) before you install: **Electrical**

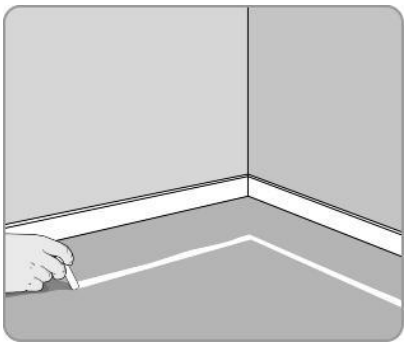
- A **dedicated circuit** is recommended for the ezewarm heating installation.
- The installation must comply with the requirements of the national wiring regulations (Code of practice for the wiring of premises).
- A flush mounted deep single (35mm) electrical box should be installed; this is where the cold leads and the wiring from the controls will be connected. (1 in pic)
- Electrical boxes are typically placed 1.2m-1.6m off the floor.
- If installing the system in a bathroom, we recommend that the connections/controls should not be sited within the room. Usually it is possible to place them on a wall outside the room (as with a light switch).
- Wiring should be chased into the wall and protected by conduit or trunking. (See pic below)
- Connections for all heating systems in bathrooms are to be made outside the bathroom.
- Thermostat or must be connected in accordance with the manufacturer's instructions. Ensure they are not overloaded (over the 16amp set amount unless a relay is provided)

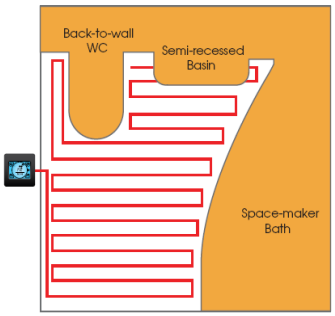


Preparation (c) before you install: **Plan where the cables go and the space between the cables**

Remember cables are never installed under fixed furniture like baths/ W.Cs or kitchen units.
Take these items out of your calculations, leave a 10cm border and then calculate the m2 you need to install.





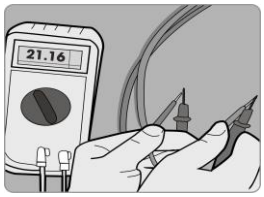


Now use the install table to work out the cable spacing you require. If you are having any trouble please email or call our office for assistance. We want you to get this right first time so call for advice.

Now plan where the wires will go on your sub-floor using chalk or a marker pen. Remember the connection cable needs to start at the thermostat and if you are using more than one cable, plan where each cable will start. Now use a tape measure to mark the distance between the heating cables to ensure the heat is sufficient and evenly spread.

Your floor should now be prepared and marked with a plan of where your cables will go.

Now open your box and make sure all of the contents are in-side.



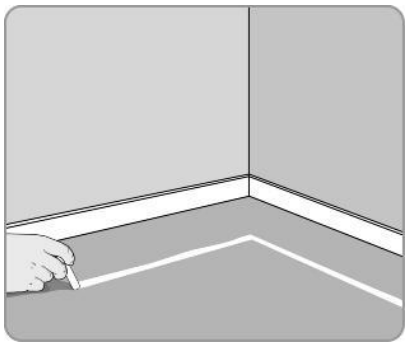
Our heating cables are tested extensively in our factory and they all pass the relevant safety standards. However we always recommend that you test the system before you install it with an electric meter.
Please do not just plug your cable in to test, if it's still on the reel it will melt!

We recommend that you test the system resistance before you start the installation, then as you finish the installation/before the tiles are put down. To make a reading set your meter to the lowest ohms (Ω) setting (normally 200 or 2000). Hold one of the probes on the blue centre cable and one on the black centre cable. You have now completed the continuity test and should have a reading that matched the Ω reading on the system. There is a possibility of a degree of variance in the readings that you may take in the course of the installation, as long as this is not more than 5% you should not worry too much as it can be affected by moisture and other factors.
In the unlikely event that accidental damage has occurred during the installation of the mat this will show up when you put the meter at its highest ohms setting (20 or 200 million ohms), place one probe on either the black or blue centre cable and the other probe on the earth screen, making sure that the cables at the other end of the system are not touching each other. Do not hold the probes on with your fingers during this test, as this could affect the result. The reading for this test should be infinity or a blank screen.
Always keep a note of your test readings with your manual.

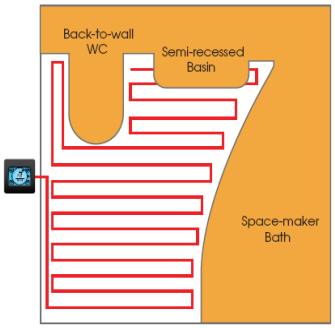
Now you have tested your cable you are ready to install.

2. **Install your heating cable:**
   Where you have chiseled out your short channel in the subfloor for the wider cold lead is the start point for your system (See 2 in pic above).
   Unroll the power supply cable from the spool until you reach the heating wire (red wire).
   Place the power supply cable in the start point channel and begin planning the laying out the heating cable.
   When happy with your plan, adhere your heating cable to the floor:

   Where you have marked on the floor to begin your installation, lay a row of the double sided adhesive tape onto the subfloor across the top of your run, in the middle and at the bottom of your plan (if a very large area you may need to add another line of tape).
   Now bed your heating cable into the tape by pushing it down to make sure it is secure. If you have any worry about the adherence please use any remaining tape on-top of the cables for a belt and braces installation. If any ends are sticking up, again use the tape to adhere them to the floor.
   The heating cable has only one connection cable so there is no worry about getting the end back to where you have started.



Plan and lay tape



Stick the cable in place

Damage alarm (not included)

   Now your cables should be secured to the sub-floor ready for tiling or a protective layer of self leveling compound.

3. **Install the floor sensor:**
   You will have already prepared a groove for the floor sensor to lie in, so now secure using tape.
   Only the end of the sensor reads the temperature and ideally it reads the temperature of the tile (installed above) to give you accurate readings.
   Never place the sensor too close to a heating cable or across one.
   The connections of the sensor cable are then connected to the thermostat. *If the sensor cable is too long it can be shortened.*
   We would recommend one final test of the cable with the meter before the floor is leveled or tiled and the electrician makes the final connections. Draw a picture on the last page and copy your test readings and leave for future owners of the property.

   Damage Alarm/ Cable monitor
   If you have bought a damage alarm connect it now. Make sure that the batteries are correctly installed. Test it by turning the switch to the on position and ensure that the alarm sounds.
   Turn to the off position during connection to the power supply cords and then turn it on.
   When the heating element is connected to the cable monitor and turned on, there should be no alarm sound audible. If the alarm sounds someone has damaged the cable so stop and order a repair kit from your supplier.
   Feed the connection cables up the conduit to the connection box using the draw wire in the conduit or a fish tape.
   If no conduit is provided, secure the cold tails to the wall with adhesive tape to keep them out of the way for the tiler.

4. Covering the underfloor heating:

Any underfloor heating system can be tiled directly onto; however it is now considered good practice to protect the cable with a thin layer of flexible self leveling compound. This has a few benefits - it protects the system during tiling, if a tile is accidently damaged in the future you can gently lift and replace with a spare and it eradicates air pockets should a tiler only dab adhesive on.

If covering Ezecable with a protective layer of self leveling compound:

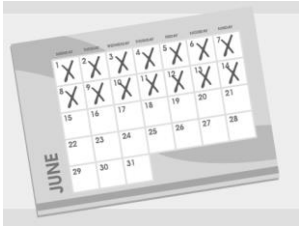
Pour the flexible leveling mixture over the heating system, mixing and applying only as much as can be spread and worked at a reasonable time i.e. 10-15 minutes spread.
Using a plastic trowel spread the screed over the cables starting from the centre and working outwards. Remember to work towards the exit so you are not stuck in the room!
Take care not to lean on the screed bucket as the pressure of the bucket could cause damage to the heating wires. Bury the connections and leave a level floor.
If installed Leave the cable monitor (Damage alarm) connected until the tiler has completed tiling as it is a warning device to detect accidental damage to the cable.
Allow the screed to cure (approx 5 hours) and install the floor-covering.

If tiling directly onto Ezecable -
If you wish to tile directly onto the system use a non toothed plastic trowel and liberally spread a good quality flexible tile adhesive.

5. **Install and connect your thermostat.**

We recommend you install a programmable thermostat.
Once the floor covering has been installed, install and connect your thermostat.
Before connecting the thermostat check the resistance across the power supply wires again.
Each thermostat comes with comprehensive instructions and wiring diagrams.
Please view our web-site for easy programming videos.
www.ezewarm.co.uk

<u>Wait for at least 14 days before you turn your heating on:</u>



- Although adhesives and leveling compounds are rapid set, they still take about 14 days to go off (dry) properly, depending on the thickness of the screed, bonding additive and prevailing temperature.
- The heating system may not be used to aid drying of the floor.
- Wait for at least 14 days before you turn your heating on as the artificial drying will weaken adhesive.

Congratulations you have now installed your Ezecable system and can look forward to a lifetime of warm tiles!

Notes:
The first time you turn the heating on it may take 24 hours before the heat is fully coming through especially if the tiles are installed onto an un-insulated concrete sub-floor.

If you have any problems please see the box below. If you still have a problem please give us a call. 0800 644 0181

Problem	**Solution**
The thermostat is not working	• It is incorrectly connected. • Check that there is a power supply to the thermostat. • It is faulty.
I haven't used my heating system for the summer and now it isn't switching on.	• Check that there is power supply to the thermostat. • The thermostat may need re-programming.
Why is it tripping the electricity?	• Thermostat has been wired incorrectly. • Unit is damaged.
Why is only part of the floor warm?	• Damage to the heating cable during installation.

Draw a diagram of the floor you have installed and write down your test Ω readings.

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