

# Instructions for Installation of Electric Underfloor Heating – In Screed *Cable*

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

This system is designed for installation with new concrete screeds or directly below thick stone floors. When installed in new screed any floor finish suitable for use with underfloor heating can be used (always check with flooring supplier/manufacturer concerning suitability). If used as the sole heat source for the building, we recommend that a heat loss calculation is carried out prior to installing to ensure that you have the correct system for your requirements.

## **Contents of heating kit**

- 6mm twin-core heating cable
- Digital thermostat & separate floor sensor
- (Optional cable fixing strip)
- Ten Year Guarantee Certificate



## **Installation Notes:**

- *The system requires a mains voltage 230/240v & must be connected by a suitably qualified person. **All wiring must conform to IEE 16<sup>th</sup> edition regulations.***
- *The system is intended for installation in new insulated screed floors. The recommended output is dependent upon the application, but is typically up to 150watts per sqm in a new construction & between 150-200 watts in a conservatory or other area of high heat loss.*
- *The cable is double insulated & inside the first outer sheath (coloured black) there is an earth screen (the silver 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 earth screen there are 2 wires, the live & neutral. It does not matter which way round they are connected.*
- *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.*
- *The system is suitable for installing onto an existing insulated concrete sub-floor, or directly onto either foil backed or cement coated insulation boards, such as **Kingspan, Celotex or Marmox**. It may also be installed over standard polystyrene, but in this case the cable must be fixed to a mesh grid to ensure that the cable does not come into direct contact with the polystyrene.*
- *The screed should be allowed to fully cure before turning on the system, this could take up to 1 day per mm (a 75mm screed therefore should be left 75 days).*
- *The electrical & electromagnetic fields generated are negligible & well within all recommended European & International guidelines.*
- *The orange heater cable **MUST NOT** be cut or cross at any point.*

## Heating Guidelines:

Installation of the heating cable will vary depending on the application, but the following can be taken as a general guide:

New concrete floors of new well-insulated buildings: **100-170watts per sqm**

Conservatories or areas of high heat loss: **160-200 watts per sqm**

Outdoor defrosting of drives & pathways: **200-250watts per sqm**

Please note these values are meant as a general guide, actual requirements will depend on insulation levels, floor construction & type of floor coverings. When installing as a primary heating source we strongly recommend that a full heat-loss calculation is undertaken prior to commencing the project in order to determine the requirement for the building.

## Electrical Provision:

Before starting the installation you should make provision for the electrical connections. For smaller areas this should be possible by means of a fused spur or combined RCD spur from an existing circuit – see Fig 1. However, for larger areas a separate circuit from the distribution board is recommended – you should **always consult with your electrician concerning your requirements**.

**Note – if installing in a bathroom or other ‘wet’ room the thermostat must be located OUTSIDE of the room on the opposite side of the wall, for example in a bedroom or hallway/landing.**

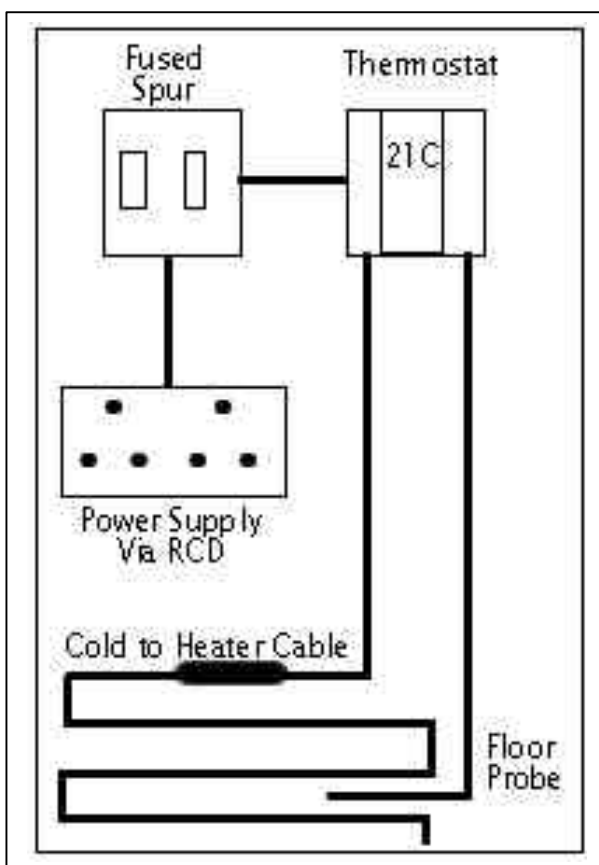


Fig 1

### Important Notes:

The system **MUST** incorporate a 30mA RCD protection either at the distribution board or by replacing the fused spur with a combined fused spur/RCD.

The orange heater cable **MUST NOT** be cut or cross at any point – only the black 'cold' cable & the white probe can be cut or lengthened.

The joint between the orange heater cable & the black cold cable **MUST** be located under the floor.

For larger areas a separate circuit will be required – always consult your electrician concerning your individual 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.

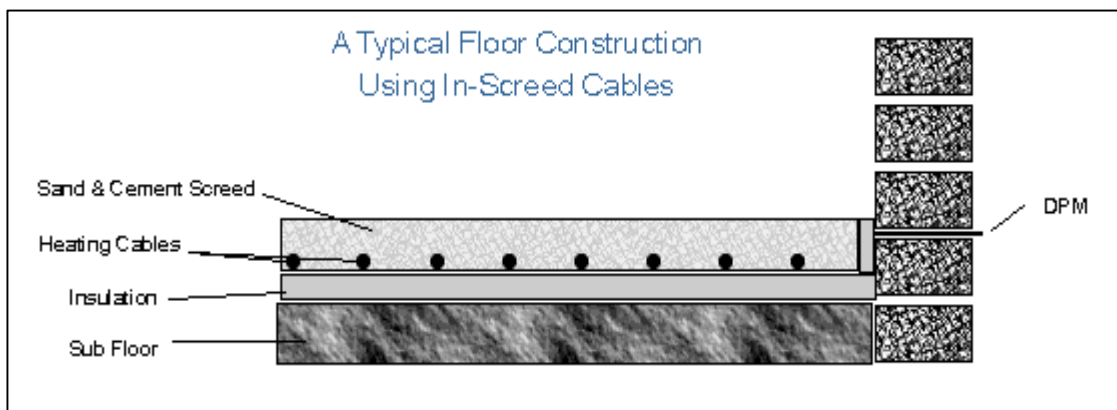
The thermostat **MUST NOT** be located in a bathroom.

## Insulation:

The insulation levels of a floor will affect both the performance & running costs of an underfloor heating system. Suitable insulation boards are available from your underfloor heating retailer/supplier or from your local builders' merchant. Note – if using a non-construction strength insulation board such as Celotex or Kingspan a minimum screed depth of 50-75mm is recommended. Always consult with your supplier or industry standards concerning specifications of floor construction.

## Typical floor cross-section:

Installation directly over foil backed insulation board with 50mm sand & cement screed:



## Insulation boards:

If installing over foil-backed insulation, install the insulation board in accordance with the manufacturer's instructions. All new floors must also incorporate a DPM (damp proof membrane) as per building regulations

## Installation

### Step 1

Before laying the cable you must mark out any areas where the cable is not being installed, e.g. where the floor is likely to be drilled or the areas of any fixed units etc.

This should be done clearly with bright coloured paint.





## Step 2

If using the metal cable fixing strips these should be laid out over the area to be heated at intervals of approx 1 metre. The fixing should be laid at right angles to the direction of the cable & can be fixed down with masonry nails or double-sided tape.

## Step 3

### 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 sqm (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 20 watts per linear metre so a 2400 watt kit contains 120 metres of heating cable.

**The spacing is calculated by dividing the total sqm of the area to be heated by the cable length in metres** (see example opposite)

**When planning the layout the cable loops should be no closer than 5cms from the rooms perimeter.**

Example room: **4m x 3.0m (12sqm)**

The recommended cable for this area would be a **2400watt cable** giving 200w/sqm

The calculation would therefore be  $12\text{sqm} \div 120\text{m} = 0.117$ . The spacing guide is therefore **117mm** apart.

## Step 4



Before laying, test the cable using a multi-meter to ensure that the resistance is as per that given on the drum/label & on the cable.

If you do not have a multi-meter you may proceed & lay the cable but **DO NOT** screed over the cable without first testing it. (See Step 10)

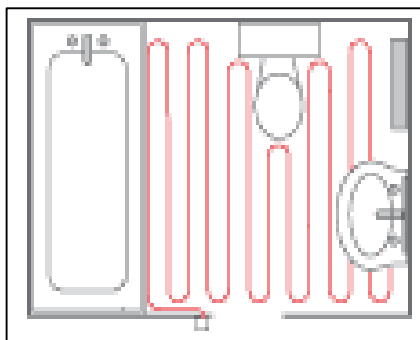
## Step 5

Starting at the thermostat or point where the cables are to be joined, lay out the cable across the floor area, fixing into position as you go. As the cable has a built in return you do not have to bring it back to the starting point, you simply finish laying at the opposite corner of the room ensuring that the black 'crimped seal' on the end remains under the floor.



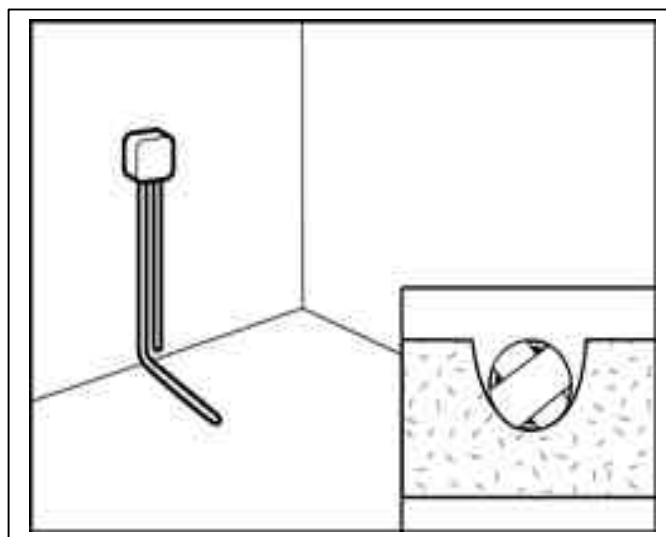
## Step 6

Document the position of the cables by taking photographs or making sketches – include the location of the orange/black cable joints and the cable ends.



## Step 7

Locate the floor sensor (included with the thermostat) in a piece of conduit between two of the cable loops, ensuring that the end has been sealed as per the drawing. Its position should be at least 50cms from the edge of the room.



## Step 8

Test the cables resistance again using a multi-meter & record the readings on the guarantee certificate. 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 in when the cable is still on the drum or partly coiled up.**

### Before turning on the heating

Wait for the screed to fully cure before turning the heating on – the usual recommendation is 1day per mm of screed. If the heating is turned on before the screed is cured, the integrity of the floor could be compromised.

**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 & build up by 1 degree per day until your desired temperature is reached. **Please see separate instructions for connection & operation of the digital thermostat.**

## **DO'S & DONT'S**

- DO** – Read through these instructions carefully before beginning work
- DO** – Use flexible adhesives & grouts if tiling
- DO** – Test the cable BEFORE & after screeding
- DO** – Be careful not to damage or dislodge the cable during screeding
- DO** – Ensure the cable is spaced no closer than 50mm between loops
- DO** – Try to protect the cable with boards during screeding
- DO** – Wait the required time before turning the system on
- DO** – Read the separate installation & operating instructions for the thermostat
- DO** – Ensure that the joint between the black & orange cable is beneath the floor

- DON'T** – Attempt to cut the orange heater cable at any point
- DON'T** – Allow the wires to cross or touch
- DON'T** – Allow excessive foot traffic over the wire before screeding
- DON'T** – Place tools or heavy objects on the cables at any time.

### **For Further Assistance**

Please call us on 0800 234 6354 & ask for technical department