



eFlex Installation Manual



www.electricunderfloorheating.co.uk

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

Introduction

Important notes, please read carefully before proceeding with installation

The eLine Brand

Congratulations on choosing your eFlex underfloor heating product from the eLine range of underfloor heating solutions.

The eLine range has been manufactured to exceed all relevant standards and expectations considering ease of installation and usability through the lifetime of the product.

The eFlex Product

The eFlex is a thin (4mm) twin conductor, 10w per linear metre constant wattage heating cable, with a pre-terminated 2.5m cold tail (power cable) attached.

Twin conductor product design ensures a simple installation for either a warm floor or total heating solution.

The fixing strip provided with the eFlex kit, allows installation of the eFlex at variable spaces (minimum 50mm) consequently altering the heat output to your own requirements.

Tools needed for installation

You will require the following items to install and test the eFlex system:

- Tape measure drawing pad and pencil
- Cable strippers and screw driver
- Resistance tester (multimeter)

The complete eFlex system

- Heating cable
- Sensor tube
- Installation instructions
- Warranty
- eGauge measuring tape
- eFix double sided tape
- eMesh

The following pages contain all the information you will need about the eFlex. Please take time to study this information thoroughly before you attempt to install this product.



Do's & Don'ts

Do

Carefully read this instruction manual before starting your installation and follow the testing procedure as detailed on page 6. Throughout your installation:

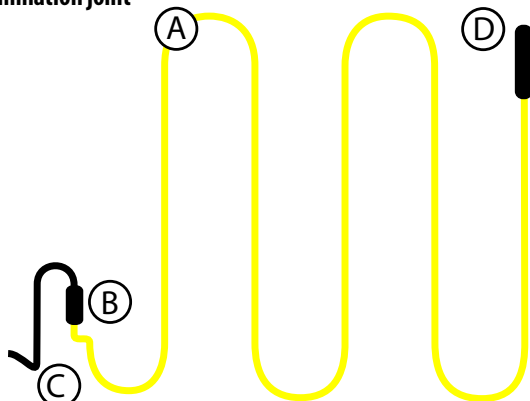
- Take some time to plan your cable layout considering all obstacles e.g. drain covers, kitchen units, bathroom sinks etc.
- Ensure the floor sensor thermostat is inserted within the flexible tube provided, with the floor end of the flexible tube properly sealed (to ensure easy removal of the floor sensor after installation if required).
- Maintain a minimum of 50mm spacing between the heating element runs at all times.
- Take care not to damage the heating cable and cold tail (power cable) whilst screeding the floor area.
- Ensure all the yellow heating element is covered with the tile adhesive or flexible self levelling compound.
- Ensure the floor surface is correctly prepared before installation (see page 4).
- Ensure the entire yellow heating element is installed within the floor.
- When using more than one eFlex from a single supply, cold tails must be connected in parallel.
- When using foil faced insulation ensure all insulation joints are properly taped to prevent the eFlex from slipping in-between insulation panels.
- Ensure the eFlex is evenly spaced across your complete free floor area.

Don't

- Cut or shorten the yellow heating cable.
- Cross or touch the yellow heating cables together.
- Switch your under floor heating system on for a minimum of 7 days after tiling to allow correct curing of tile adhesives and grouts.
- Connect the heating element to the power supply whilst still rolled up.
- Leave rolled up surplus cable under kitchen units or bath spaces.
- Commence installation of your floor surface before testing your eFlex. See page 7.
- Tile over damaged or twisted cables.
- Install heating cables closer than 50mm.

Glossary of Terms

- A – Heating element**
- B – Factory made cold tail joint**
- C – Cold tail power lead**
- D – End termination joint**



Electrical Requirements

Please follow these instructions carefully. If you require assistance prior to or during your installation please call our helpline on 08714 740 818

Electrical Requirements

Before installing the eFlex you should make allowance for the electrical connections.

The eFlex system requires a mains voltage 230/240V and must be connected in accordance with the current IEE regulations and building regulations part 'P' approved document.

For areas up to 3450W power connection can be provided through a 13A switched spur outlet/combined RCD spur outlet. For larger areas a dedicated circuit should be installed from the local consumer unit.

Confirm your thermostat is suitable to switch the appropriate electrical load e.g. 16A thermostat is suitable to switch up to 3450W total load.

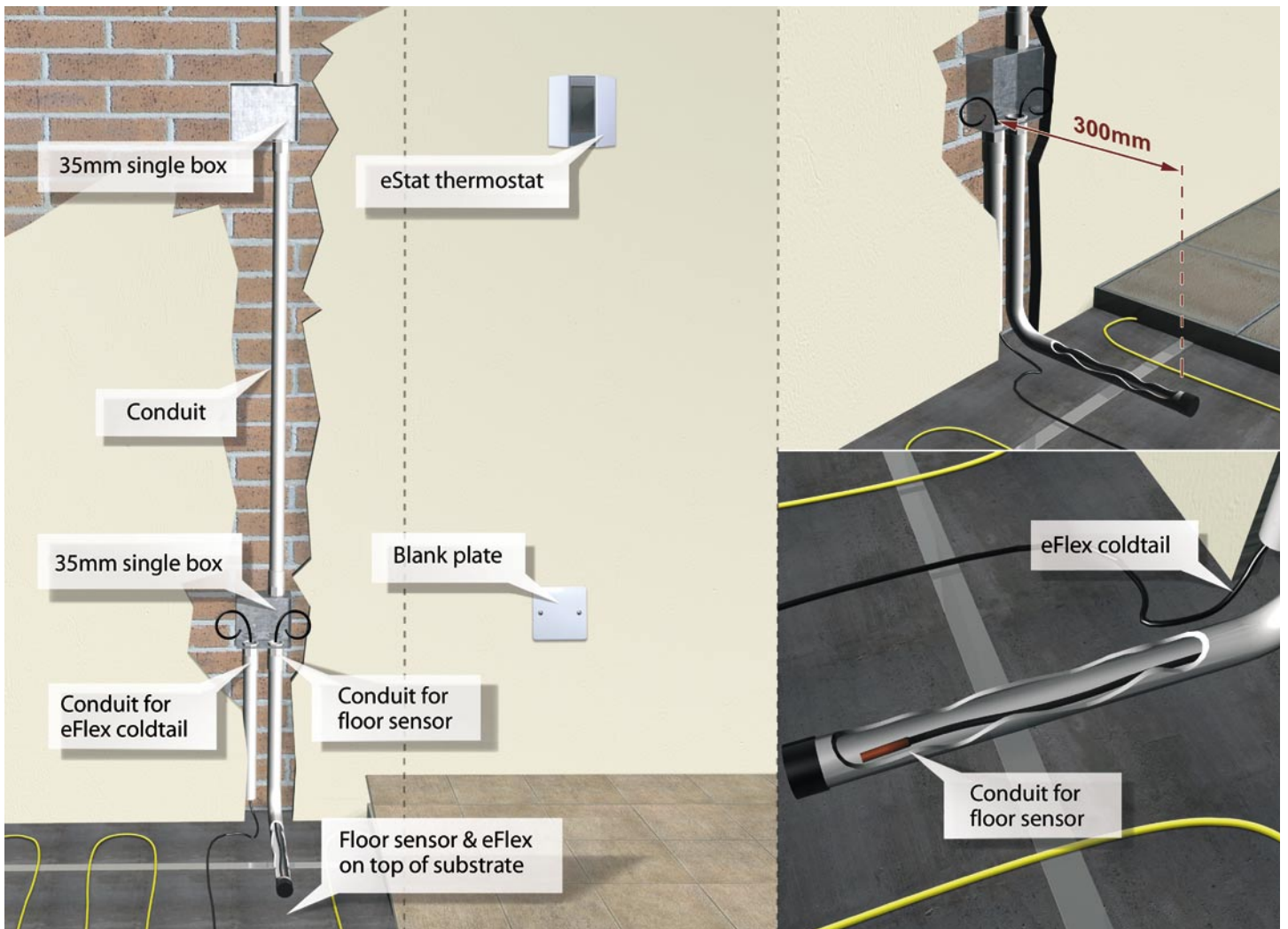
If you are required to switch greater electrical load than 16A a suitably sized thermostat or electrical contactor MUST BE INSTALLED. Please consult our Help Line if in doubt 08714 740 818.

We recommend that all eFlex systems are protected by a 30ma RCD earth trip either at the consumer unit or by a combined RCD spur outlet.

When installing in a bathroom or other wet areas the thermostat must be located outside Zone 2 (600mm from any wet appliance e.g. shower sink etc) or outside of the wet area ideally on the opposite face of the wall. The eFlex must be earth bonded in accordance with the current IEE regulations.

Important. When designing your electrical installation you should always consult an electrician concerning your requirements.

eMat and Floor Sensor



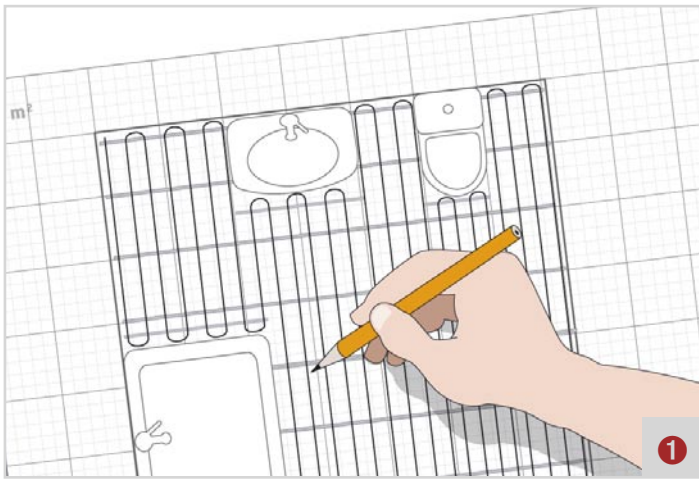
Installation Instructions

Step 1

Draw a layout of your room (see page 6) including all obstacles e.g. Drain covers, toilets, sinks etc, then determine the required floor area to be heated.

Decide a suitable position for the thermostat (start point) then refer to page 6 to calculate your cable spacing and layout.

**Ensure your eFlex is correctly sized before you unpack the product.
Call 08714 740 818 with any questions.**



Step 2

The floor should now be prepared ready for the eFlex installation. All loose particles should be removed and the floor thoroughly cleaned and treated with any proprietary sealants as normally required.

If your existing floor has a bitumen or asphalt surface it must either be removed or covered with a thin flexible self levelling compound, sand cement mix or insulation panels.

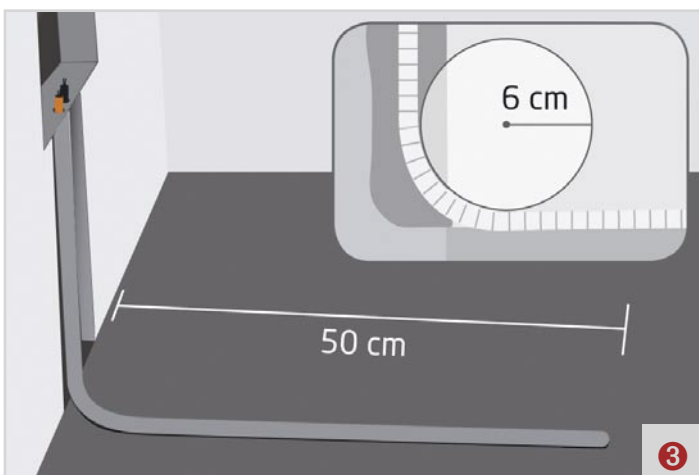
When installing insulation panels ensure all joints are properly taped and sealed to prevent the eFlex from slipping in-between any panels used.



Step 3

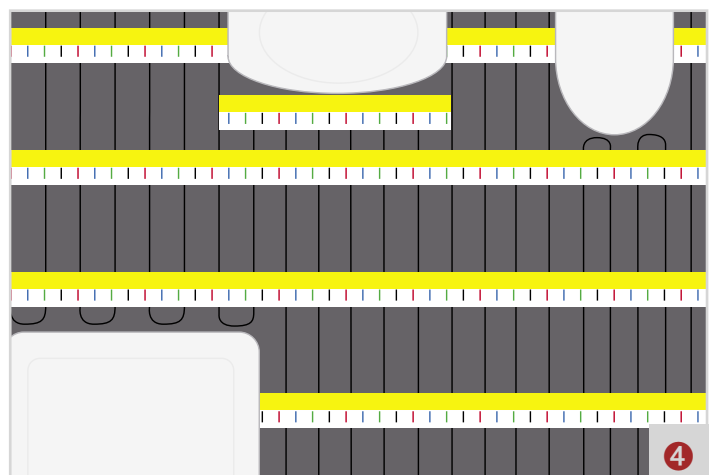
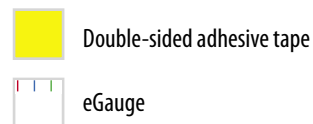
Directly below the electrical connection point install the 10mm flexible tube, the flexible tube must be situated in-between two cable runs (see step 6). The floor sensing probe is installed into the flexible tube to monitor the floor temperature and may need to be replaced if the sensor fails. Ensure the tube is installed to allow easy replacement of the sensor probe.

The flexible tube in the floor should be sealed to prevent tile adhesive or self levelling compound entering the tube. Secure the flexible tube in position with a section of robust utility tape.



Step 4

Lay the eFix double-sided adhesive tape across the floor, perpendicular to your proposed heating cable layout, ensuring there is tape at either end of the cable loops and in between, spaced at a maximum of every 600mm. Then lay the eGauge measuring tape in line with the eFix tape.

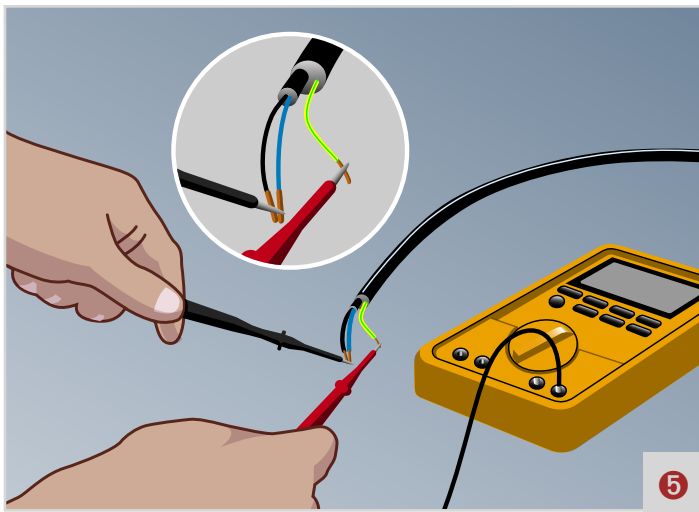


Installation Instructions

Step 5

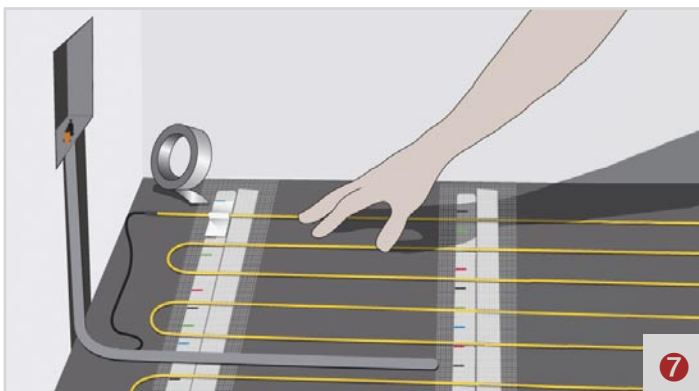
Perform the following tests: insulation resistance test, a heating cable resistance test and a floor sensor resistance test (see page 7), record your findings in the test & commission form enclosed in the box.

Remove the securing tape from your eFlex roll and position at the start of your eFlex plan with cold tail (power cable) at the electrical back box. Ensure the separate thermostat floor sensor cable is inserted in to the pre-installed 10mm flexible tube and returned to the low level electrical back box. The cold tail joint must be positioned in the floor area.



Step 7

Lay the eMesh onto the double sided tape to secure the heating cables. Further lengths of eMesh can be used to secure the heating cable between the double-sided tapes, if required.



Note

After the finished floor covering has been laid perform the following tests:

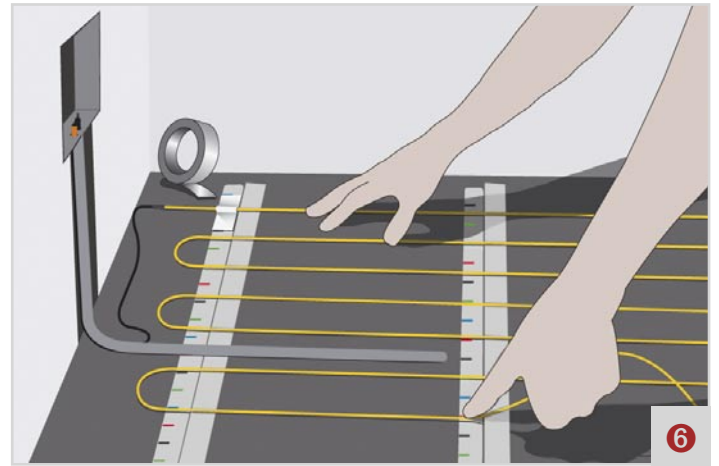
- Insulation resistance test
- Heating cable resistance test
- Floor sensor resistance test

Record your findings in the test & commission form enclosed in the box.

Step 6

Once the eFlex cold tail (power cable) and thermostat floor sensor probe have been positioned you can now start to lay your heating cable. Following your previously drawn layout and spacing, continue to lay and secure your eFlex heating cable onto the double-sided adhesive tape using the eGauge for guidance. Continue laying cable until total floor area is covered. All heating cable must be used, any excess heating cable must be reconfigured into the floor area by adjusting your cable spacing. Ensure all heating cables are evenly spaced across the floor area.

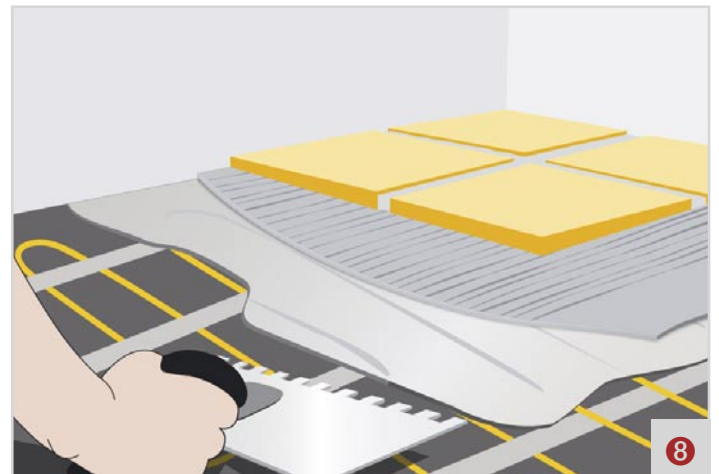
- Do not cut any surplus heating cable.
- Do not leave any excess heating cable spooled or coiled in the floor area.
- Ensure all heating cable is used and spaced evenly across the floor.



Step 8

With the eFlex laid and secure, it can now be covered with either a flexible tile adhesive or flexible self levelling compound.

Ensuring there are no air pockets, carefully spread the flexible tile adhesive or self levelling compound until all heating cables are covered. You may tile directly over the eFlex, carefully applying your flexible tile adhesive with a notched trowel ensuring each tile is securely fixed and all cable areas are completely covered with flexible tile adhesive.



Register your warranty online at: www.electricunderfloorheating.co.uk/warranty

Cable Spacing and Layout Instructions

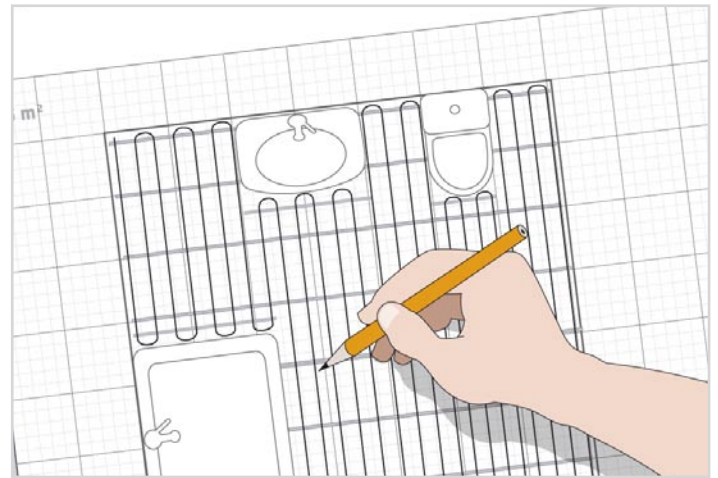
Cable Spacing and Layout Instructions

It is important when calculating your eFlex spacing to accurately draw your room area as this will help to save time and ensure a smooth installation.

1. Draw your total room area including all fixed furniture such as kitchen units, toilets and sink areas. Mark your drawing with all relevant dimensions.
2. Calculate the total floor area of your room.
3. Calculate the area taken by all the floor obstructions.
4. Calculate the free floor area by subtracting the border area from the total area.
5. Calculate the watts per m² of your installation by dividing the rated power of your eFlex cable by the free floor area. For example, if you have 3.6m² of free floor and you have a 600W heating cable:

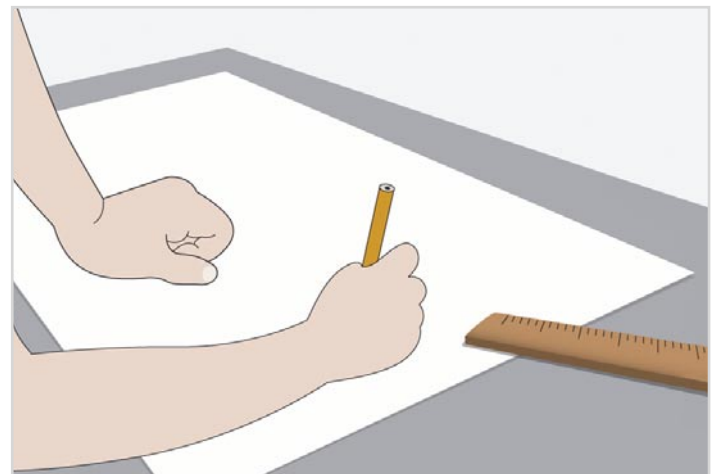
$$600W \div 3.6 \text{ m}^2 = 167W/m^2$$

6. Using the calculated watts per m² of your room refer to the lookup table below for an indication of the required cable spacing to ensure even cable spacing across the floor and therefore an even heat.



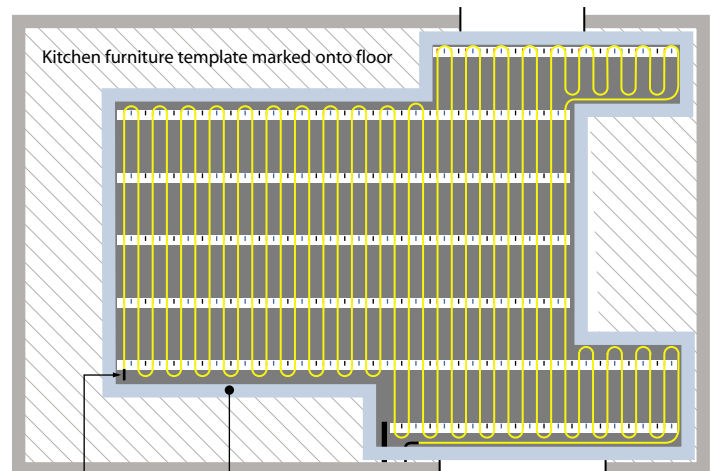
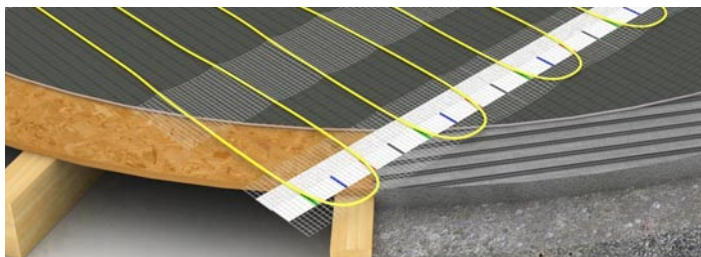
eGauge Measuring Tape

The eGauge tape is set out to give you a guide to evenly space your heating cable across the floor. The coloured marks (green, blue and red) are spaced 25mm apart and indicate one full space, the thin black lines between the coloured spacing indicate a half spacing.



Cable space and wattage per m²

W/m ² of Room	Cable Spacing	eGauge Spacing Guide
80W/m ²	125mm	5.5 spaces
89W/m ²	112.5mm	4.5 spaces
100W/m ²	100mm	4.0 spaces
114W/m ²	87.5mm	3.5 spaces
133W/m ²	75mm	3.0 spaces
160W/m ²	62.5mm	2.5 spaces
200W/m ²	50mm	2.0 spaces



Product Specifications

Description	Wattage	Resistance +10% / -5% Ohm
eFlex 300	300	176.30
eFlex 400	400	132.30
eFlex 600	600	88.17
eFlex 800	800	66.13
eFlex 1000	1000	52.90
eFlex 1200	1200	42.32
eFlex 1400	1400	37.79

Testing & Commissioning

Floor Construction Examples

Warranty Validation

To validate your 15 year online warranty registration you must perform the insulation resistance test, the heating cable resistance test, and the sensor resistance test three times during the installation process.

1. Before you lay the eFlex.
2. After you have laid your eFlex and before you cover your eFlex.
3. After your finished floor has been laid.

This information must then be recorded on your commissioning record (enclosed within the box).

Insulation Resistance Test

This test is performed to measure the insulation resistance between conductors and ensures the cable insulation is not damaged. A low resistance reading indicates a damaged cable and must be repaired or replaced.

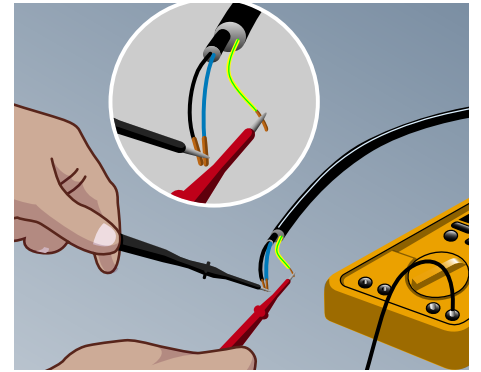
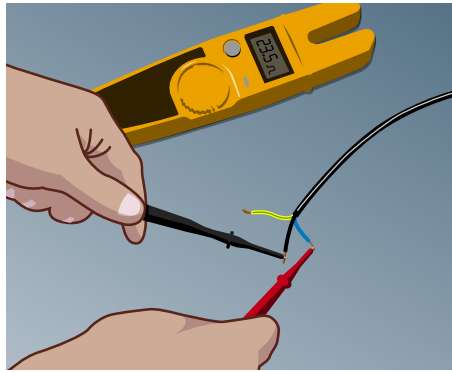
The insulation resistance tester should be connected between the conductors (blue and black cables) and the earth cable. The meter should record a high resistance value e.g. above 100 Meg ohms.

Heating Cable Resistance Test

This test is carried out to prove continuity of the heating element. A low resistance ohm meter should be used (ie Multimeter on ohm setting), connect your meter on to the black and blue mains lead and confirm resistance value matches that quoted on your specification label on the eFlex Cold Lead joint.

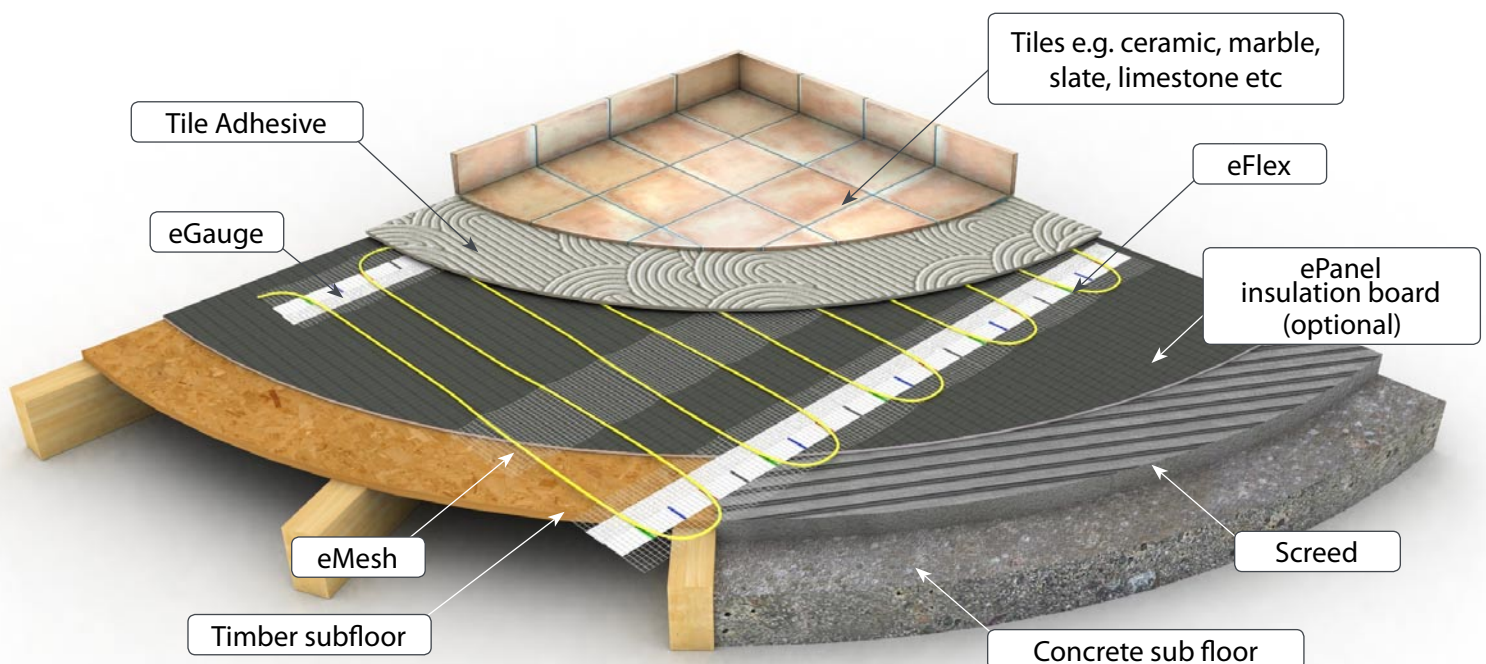
Floor Cable Resistance Test

See Heating Cable Resistance Test and repeat with floor sensor cable.



Floor Construction Examples

The eFlex is a loose laid cable which can be installed beneath most ceramic, porcelain/slate and natural stone tiles. When using laminate, engineered timber or vinyl floors a flexible self levelling compound should be used.



Commissioning Record and Troubleshooting

Troubleshooting

Symptom	Probable Causes	Corrective action
Floor does not heat	No power at controller	Check Power supply
	MCB Tripped	Check the circuit is not overloaded
	Thermostat not set correctly	Refer to thermostat Instructions
	eFlex not correctly connected with thermostat	Refer to thermostat Instructions
	Floor temperature sensor not connected	Refer to thermostat Instructions
	Faulty sensor / thermostat	Contact the eLine Helpdesk 08714 74 08 18
	Heating element cut or damaged	Contact the eLine Helpdesk 08714 74 08 18
Floor warming all the time	Thermostat not set correctly	Refer to thermostat Instructions
	Floor temperature sensor not connected	Refer to thermostat Instructions
Floor not getting warm enough	Thermostat not set correctly	Refer to thermostat Instructions
	Floor sensor too close to heating element	Contact the eLine Helpdesk 08714 74 08 18

Contact the eLine Helpdesk with any questions on 08714 74 08 18

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eCentral

An easy to use touch screen panel which offers complete control over your entire heating system wirelessly from one central control – devilink™.



eStat

Provides total control and flexibility when using your underfloor heating system. With the options of both manual and fully programmable controls.



eDemist

An ultra thin self-adhesive heating pad that fits inconspicuously behind virtually any mirror keeping the mirror completely mist free.



eGuard Monitor

Monitors mats and cables for faults during installation.

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eFlex

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