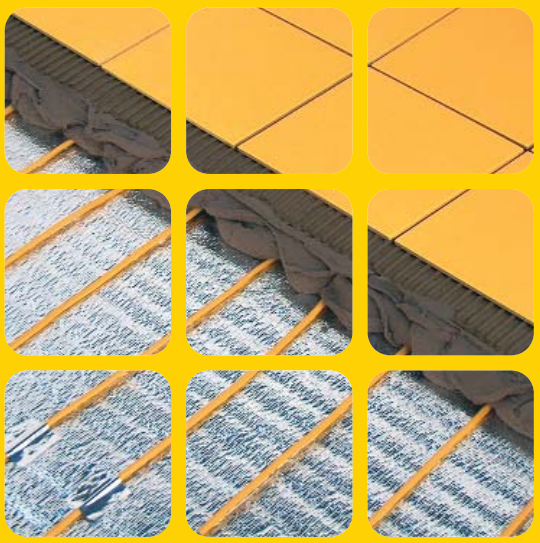
MAGNUM®

Specialist in electrical heating



EnerCable

Installation Instructions

EnerCable

Congratulations on the purchase of this MAGNUM product. The ENERcable is manufactured from high quality, durable materials. To guarantee that your product functions optimally there are a few points of attention which are described in the Installation Instructions. We can only offer you the full guarantee if the Enermat is correctly installed in accordance with the Installation Instructions. Carefully read the instructions prior to installation, do not forget the yellow centre page when doing so, and ensure that you have the correct tools and materials. The electrical installation must be carried out by a qualified electrician in accordance with IEE Regulations.

If you have any questions or require more information then you can:
contact the Support Line Monday to Friday from 9 am to 5 pm

01887 822999

send an E-mail with your question to:

technical@enerfoil.com or technical@magnumheating.co.uk

or visit our website for more information and other products at:

www.enerfoil.com or www.magnumheating.co.uk

1. Check:

Check the contents of the box before starting. A complete set consists of:

- **A heating cable equipped with connecting wire**
- **A digital MAGNUM F-Control incl. floor sensor**
- **Spacer Strip Pack**
- **The Installation Instructions**

2. Points of attention:

The cable is insulated and watertight and can be installed on Foil finished insulation (Kingspan or Celotex) or existing concrete bases. The construction of the cable also allows installation in wet spaces.
The heating cable may never be installed under fixed objects like wall units, kitchen units, baths, or showers and must be able to give off its warmth unimpeded.

The power supply must be disconnected during installation. All installations must be wired through a suitably rated MCB or RCCD when applicable. All installations in wet areas must be wired through a dedicated RCCD in line with the thermostat. All connections must be made by an approved Electrician in accordance with current IEE regulations. The electrical heating cable is patented worldwide and fully conforms to the European IEC 800 standards.

The cables capacity is 17W per meter at 230V. The invisible transition of the resistance cable (heating section of the cable) to the power cable (cold connection part of the cable) is indicated by the word "SPLICE" between two arrows. The 2 meter power cable marked with stars: ******, may be extended.

The heating cable CANNOT be shortened!
The end seal CANNOT be broken.

This Enercable is a twin conductor (built in return cable) and has an extra aluminium earth cladding to neutralise magnetic fields.

If multiple cables are installed in a space, they must be wired in parallel and a suitably rated junction box may be incorporated so that only one power cable runs to the thermostat. Maximum capacity of the thermostat is 16 Amperes. If fitting more than one cable set and the combined area length exceeds194 meters (3400 watts), a suitably rated Contactor will have to be fitted. The thermostat may only be installed by a qualified electrician.

The Enercable can be used under various floor finishes - Tile, Marble, Slate, Wood, Laminate, Vinyl and Carpet. (Tog rate of carpet and underlay should not exceed 2.5). If using underneath a wooden floor or carpet please contact your flooring supplier.

Guarantee:
The electro technical part of the floor heating is guaranteed for a lifetime!
(Please check: www.magnumheating.co.uk).
The thermostat is guaranteed for 2 years.
The guarantee does not apply to damage caused by external factors and/or incorrect installation.

3. Measurements:

Type	Wattage	Ampére	Ohm	meter length
Set 300	300Watt	1,3	177	17m
Set 500	500Watt	2,1	109	30m
Set 700	700Watt	3,0	76	42m
Set 1000	1000Watt	4,3	53	59m
Set 1250	1250Watt	5,4	42	73m
Set 1700	1700Watt	7,4	31	100m
Set 2100	2100Watt	9,1	25	124m
Set 2600	2600Watt	11,3	20	153m
Set 2900	2900Watt	12,9	18	171m
Set 3300	3300Watt	14,3	16	194m

4. Necessary materials:

Required for installation:

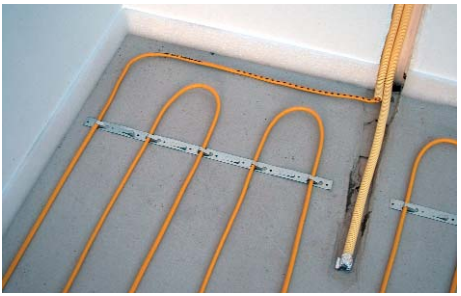
- Standard junction box (min 35mm deep, preferably 50mm) for the thermostat.
- Mounting material: Tie wraps, alu-tape, MAGNUM Spacerstrips or smooth Weld Mesh.
- Electrical conduit for the connecting cable for the thermostat.
- Flexible mortar or sand/cement screed(dependent on the mounting height).

5. Preparation:

- Check that the cable length/wattage is correct for the area of free floor surface that must be heated.
- Check the available electrical connection and mains voltage in the space for installation.
- Test the cable with a multimeter and check if the resistance (Ohms) coincide with the test data in Section 2. Measure both between the resistance wires themselves and between the resistance wire and the earth cladding, whereby the latter should give a reading of 0 and not swing.
- 1 or 2 grooves must be cut/ground in the wall for electrical conduits, 1 for the power cable and 1 for the floor sensor.

TAKE CARE:
Do NOT run the power cable and sensor cable through the same pipe. Do NOT place the sensor in the vicinity of a (hidden) radiator or water pipe!

- Ensure that the base floor is clean and level.
- Always apply insulation to the base floor if possible. Uninsulated floors will have down ward heatloss.
- Place expansion strips around the perimeter of the area (for coping with the contraction and expansion of the floor).

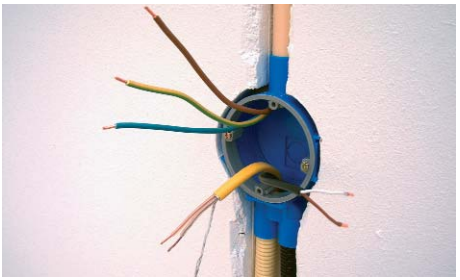


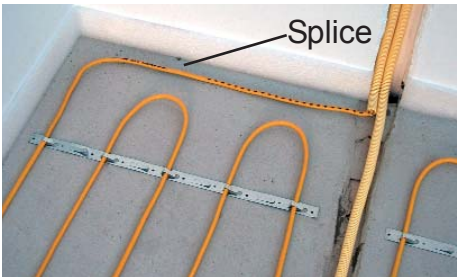
6. Calculations for Heat Requirements:

150 + watts/m² for prime heating of normal rooms cable spacing 100 mm

100/125 Watt sq. m for comfort heating of normal rooms cable spacing 125/150 mm

Example: for a conservatory of 20 sq. m floor surface multiply the total floor surface with the above mentioned capacities (20 x 150 Watt = 3000 Watt) Choose set 3300 - 3300 watt. Cable can be sized (or checked) by measuring the linear length i.e. Heat required 150 watts/m². Room size 4mx3m =12m² Cable spacing = 100mm Therefore 4mx30 = 120 linear mts.
Use 2100 Watt set (124 linear mts).
If there is any excess cable left after installation, you can space a few runs at 50mm at the window & door areas of the room to lose it in the floor.
NEVER SHORTERN THE ENERCABLE.





7. Fitting the cable to the floor:

Feed the cable end (marked with *******) through the electrical pipe to the back box for the thermostat. The word "splice" must stay visible. Splice must be covered by screed. Fix the spacer strips at 500 - 600 mm centres with masonary or Hilti nails. Attach the cable in a zigzag fashion with a distance between the cable as required. If reinforcing is used (Smooth Weld mesh at 100mm square) plastic tie wraps can be used for attaching the cable directly to the reinforcing. Extend the 2nd electrical pipe to about 50 cm from the wall and have it end in the middle of a cable loop. Pull the sensor cable to the back box and ensure that the sensor is in the conduit. Ensure the cap is placed on the end of the conduit so that replacing the sensor is always possible. Please contact the Magnum heating ltd. Technical Department (01887 822022) if you require assistance on the spacing of the cable.

8. Applying the mortar:

A: Applied directly to a concrete subfloor:

1. Lay the spacer strips at 500 -600mm centres. Attach the cable at the desired/ specified spacing.

2. Ensure a good bond and by brushing the subfloor with cement powder or PVC glue.

3. Then apply a thin layer of sand/cement screed (5/6:1) of 3.5 to 5.0 cm. Allow it to cure before the tiles can be laid or other types of floor coverings applied.

4. This method of application is also suitable for applying pourable liquid screeds in thicknesses of between 3 and at most 6 cm.

5. Protect the cables when bringing in the cement or grout by using duckboards. Never use wheelbarrows with unprotected footrests.

NB: For large spaces it is necessary to create or observe expansion joints in multiples of approx. 40/50 m2. The cables may not cross the expansion joints to avoid damaging the cables.

6. Remember to take the resistance readings throughout this installation process and mark below.

Resistance readings **Date:**
Electrician's Signature:
Readings
Initial Reading
Cable Laid
Completion

B:Applied Directly on top of Insulation:

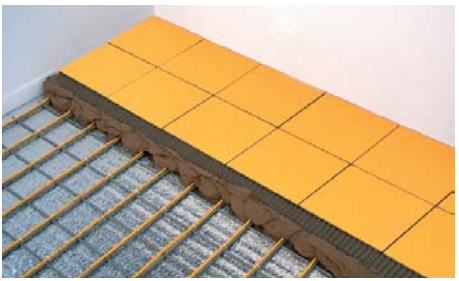
When laying the Enercable onto the insulation the Enercable must be laid and secured onto a steel mesh. Do not install the cable directly onto the insulation. The cable is laid on to a smooth reinforcing mesh (approximately 100mm square), and secured with tie wraps. When using insulation, the top surface of the insulation must be aluminium covered and coated appropriately to resist reaction with screed. Kingspan and Celotex manufacture insulation boards for the sole purpose of underfloor heating. The Enercable must not come into contact with the insulation. Contact the insulation manufacturer for compatibility with cable floor heating systems and fitting instructions.

The minimum depth of screed is 75mm. It is very important that the bedding is applied free of air bubbles. Air bubbles form insulating, non-conductive areas where the cable cannot release its heat and a danger of overheating arises which can cause damage to the cable.

To avoid this first of all wetter screed must initially be used to enclose the cable in the screed. Following this drier cement can be used for levelling the final bedding. In this case a pourable liquid screed is also a good option.

Protect the cables when bringing in the cement or grout by using duckboards. Never use wheelbarrows with unprotected footrests.

Remember to take the resistance readings throughout this installation process and mark opposite.

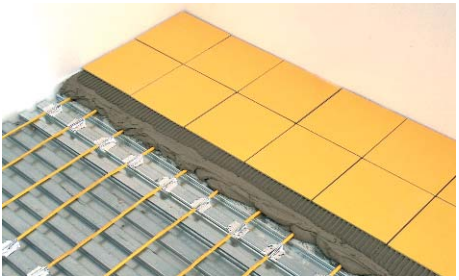


C: On dovetailed sheeting:

Always allow for expansion. Dovetailed subfloors offer very poor insulation.

It is recommended the dovetailed sheeting is insulated from below. Then fill in the grooves with mortar before installing the cables. Then install as indicated in Chapter 8A. In the latter case pourable liquid screed method can also be applied.

Protect the cables when bringing in the cement or grout by using duckboards. Never use wheelbarrows with unprotected footrests.



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9. Using the system for the first time:

Depending on the drying time specified for the cement or grout, however not sooner than 30 days after installation due to the natural expulsion of moisture from the floor. Turning on the system sooner can damage the floor.

12. Connecting the F-Control:

During installation/de-installation of the thermostat the electricity should always be turned off at the mains. Installation must be carried out by a qualified electrician in accordance with the IEE Regulations. The F-Control thermostat is equipped with an intelligent guide function that leads the user through the programme and is extremely user friendly. Still carefully read this manual nevertheless and keep it with your other guarantees.

12.1 Instructions for the electrician:

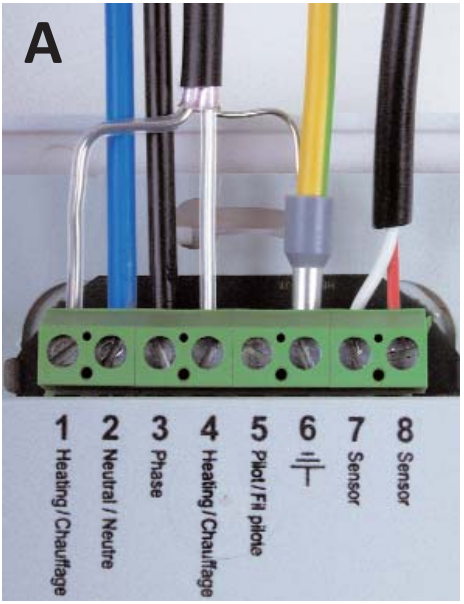
Check that the electricity is turned off. Remove the display housing by inserting a blunt, suitable instrument, e.g. a coin or point of a ballpoint carefully into the square hole on bottom of the thermostat and exerting a light pressure. Both the display housing and the cover plate can then be removed.

12.2 Wiring diagram:

Installation is done as follows:
- 1, 4 and 5 (earth) are used for the connection wire from the heating cable.
- 2 (Neutral), 3 (Live) and 5 (Earth) are for the power supply.
- 6 is the pilotwire connection.
- 7 and 8 (earth) are for connecting the sensor.

12.3 Installation:

Position the thermostat and mount and secure it in the back box with two screws. Replace the cover plate and position the display housing back in place and softly press it into position. When the power is turned on the first question will be displayed on the start up menu. Follow the start up menu carefully.



PLEASE READ CAREFULLY:

IMPORTANT POINTS OF ATTENTION FROM THE GENERAL INSTALLATION INSTRUCTIONS WE RECOMMEND ALL FLOORS ARE INSULATED BEFORE UNDERFLOOR HEATING INSTALLATION

INSTALLING FLOOR HEATING:

Enercable:
The connecting cable **CANNOT** be shortened. The part of the cable with the word **SPLICE*** must be installed in the floor screed.

Shortening the connecting cable for the Enermat:
The connecting cable may be shortened **AT MOST** by 3 meters (no less than 2 meters). All cables that are attached to the mat must be installed in the floor.

Extending connecting cables:
The connecting cables can be extended as required. Take however the Amperage of the floor heating into account and adjust the capacity of the extension cables accordingly.

FLOOR SENSOR:

Installation:
Ensure that the sensor is installed well clear (min. 50 cm) of central heating pipes, water pipes, drains and electrical wiring. Install the sensor as closely as possible in the middle of 2 loops. Ensure that the heating cables do not make direct contact with the conduit in which the floor sensor is mounted. The end of the sensor pipe must be closed. Check that the sensor cable is free to move to the end of the pipe.

Extending the floor sensor:
The floor sensor may be extended as required up to a maximum of 10 meters. Use a signal cable for extending the sensor. Ensure that the sensor can always be replaced in case it fails. The simplest way of doing so is installing a hidden junction box in which the signal cable is connected to the sensor.

INSTALLING ENERCABLE ON WELD MESH:

If using a porous floor finish such as limestone etc. on top of the screed, we recommend that the weld mesh is galvanised otherwise the rust off the mesh can rise to the top of your finished floor surface during time.

USING FLOOR HEATING FOR THE FIRST TIME:

Allow the floor sufficient drying time before you turn on the floor heating. For tiled floors a drying time of 3/4 weeks after installation should generally be observed. Consult the supplier/manufacturer regarding the applicable drying time for the product.

For sand/cement screed floors a drying time of 1 week per applied cm with a minimum of 4-5 weeks is generally observed.

Consult the supplier/manufacturer regarding the applicable drying time for your situation.

ADJUSTING THE THERMOSTAT:

Timer function:
If you have a thermostat with a timer function and want to use it to set the floor drying time make sure you set a low comfort temperature. (15°C for example). When the thermostat automatically goes on (after the required drying time) then the comfort temperature may be slowly raised (1°C per day) until the desired comfort temperature is reached.

Other thermostat / settings:
If you have a different thermostat or if you do not want to use the timer function ensure that you then set the comfort temperature low (15°C for example). After taking the required drying time into account you can then manually raise the floor temperature with approx. 1°C per day until the desired comfort temperature is reached.