nuwarm
underfloor heating

Floor Heating System



Installation Manual

Purpose

The nuwarm heating mats are designed to provide heating of floors made of laminated floorboards and/or engineered wood. They can be used as a supplementary heating system to achieve the warm floor

In very well insulated buildings they may be installed as the primary heating system.

Specification

The nuwarm heating mats are produced as pre-assembled installation units with dimensions of 50 cm (width) x 4.0 to 26.0 m (length). These are heating cables attached to a fiberglass mesh and covered with aluminium foil on the reverse side. The aluminum foil provides a protective shielding for the heating cables. It is possible to install multiple mats in one room. In such a case, the mats should be electrically connected in parallel.

The nuwarm heating mats are 2 .8mm trick and have a 4.0m cold tail at one end, and a joint at the other.



1. Heating cable
2. Fiberglass mesh
3. Heating cable joint to cold tail
4. Shielded (PE) twin conductor cold tail (L – black or brown, N - blue)
5. Aluminium shield

Note:

The power output of the heating mats can var y +5%, -10% from the provided nominal specifications.

The heating mats suitable for use with a 230V/50Hz power supply.

Following symbols are used on rating labels of the nuwarm heating mats:



Single-sided power supply
(nuwarm)



Heating mat with foil facing up



Direct in-floor heating

Caution

Never cut heating cables. Only the plastic mesh and aluminum foil may be cut.

Never shorten the mats. Only cold tails may be made shorter, if necessary.

Never attempt to repair the heating cables. If damage occurs to the heating cables, contact an authorized installer.

Never apply excessive tension to the heating mat. Do not hammer the mat with sharp tools.

Never bend the joint and end seal.

Never install the heating mat if the ambient temperature drops below -5°C.

Never install the mats in places where fixed furniture items are planned to be placed (such as wardrobes without feet).

Never use installation materials other than those specified in the installation manual.

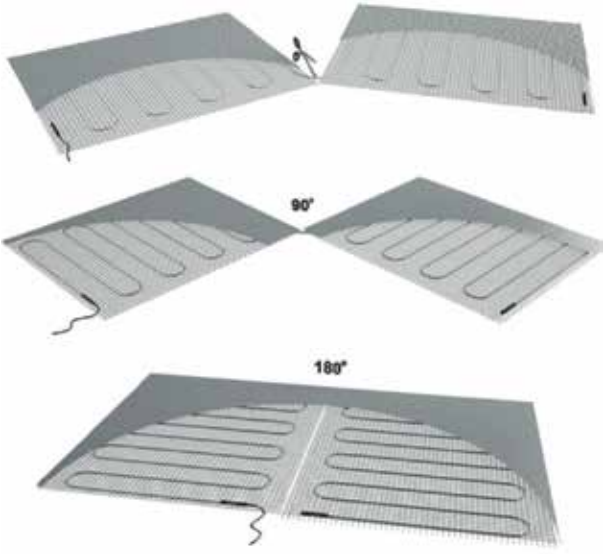
Never use nails or screws for installation. Always install the heating mat according to the installation manual.

Electrical connection of the mat must be performed by a certified electrician.

The heating mat should be placed at least 50mm away fom other heat sources (e.g. hot water pipes).

Choosing the right heating mat

Before choosing the heating mat(s) for a room (the heating mats come with a fixed width of 50 cm), plan their arrangement on the floor or on the selected floor areas. The heating mats must not be laid in places where fixed pieces of furniture will later stand. The heating mats can be cut to a desired shape and than laid out in various directions. While cutting the mat, cut the fiberglass mesh and aluminum foil but never the heating cables.



Laying out a custom-shaped heating mat



Example of the heating mat layout in a kitchen

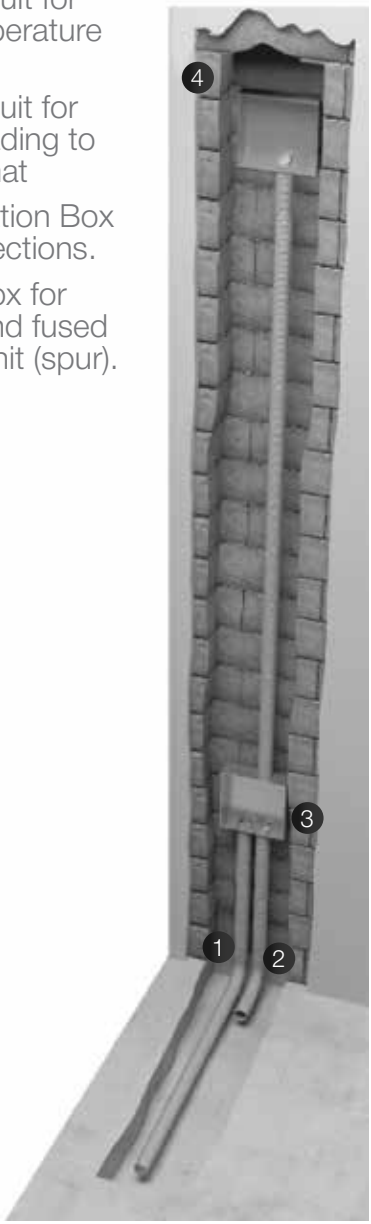
Step 1 - Preparation

As preparation for the installation take the following steps:

1. Choose a location for the temperature controller. For aesthetic and practical reasons, it is best to install the controller next to the lighting switches (e.g. under a common faceplate).
2. Install a deep installation box for the temperature controller.
3. Install a suitable 3-wire power supply to the thermostat position / installation box. Connect the power cable.
4. Install 2 flexible conduits (Ø 15mm) between the installation box and the floor. The flexible conduits should be laid in the previously made chases in the wall and in the floor. Depth of the groove should be 10-12mm. Later, when the heating mat is installed, the temperature sensor cable will be fed into one of the flexible conduits and the cold tails to the other.

The flexible conduits must not be sharply angled at the meeting point of the wall and the floor. Make sure that a smooth curve is provided.

1. Flexible Conduit for the floor temperature sensor
2. Flexible Conduit for the power leading to the heating mat
3. Single Installation Box for mat connections.
4. Installation Box for thermostat and fused connection unit (spur).



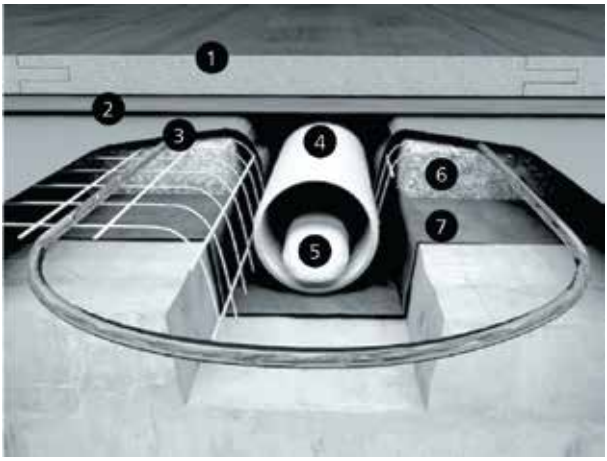
Step 2 - Laying the heating mat

A floor prepared for laminate flooring and/or engineered wood should be even, smooth, dry, and stable (max. permissible level deviations are 2 mm/sq. m).

1. Lay the Vapour Barrier over the prepared floor surface. The Vapour Barrier thickness should be at least 0.2 mm. Provide at least 20 mm wide overlaps between vapour barrier sheets. Turn up the edges of the vapour barrier sheets against the walls up to 5 cm. Before laying the insulating underlay and heating mat, feed the temperature sensor wire into the installed flexible conduit. Place the temperature sensor under the heated surface. Later, to ensure that the floor is even and level and the temperature readings by the sensor are correct. You will have to cut out a section of the insulating underlay and the fiberglass mesh of the heating mat, located above the flexible conduit in the floor. The closer to the Laminate flooring and/or engineered wood the temperature sensor is placed, the more accurate reading it will obtain. Also, feed the temperature sensor cable into the installation box.

Caution:

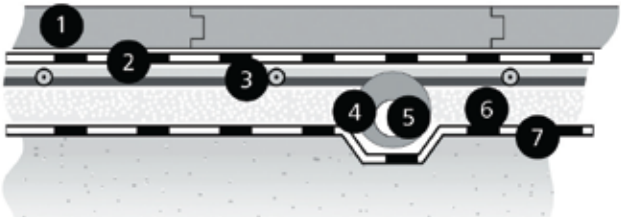
The temperature sensor cable should be positioned just between the mats heating cables.



Temperature sensor installation

1. Laminate flooring and/or engineered wood
2. Protective layer (PE sheet)
3. The nuwarm heating mat
4. Flexible conduit
5. Floor sensor
6. Insulating underlay
7. Vapour Barrier (PE sheet)

2. Place insulating underlay of at least 6 mm thickness over the vapour barrier. When choosing material for the insulating underlay, take its heat dissipation properties into consideration. The better the heat dissipation, the shorter the time to warm up the laminate flooring and/or engineered wood. Extruded polystyrene (XPS) insulating underlay meets these requirements optimally.



1. Laminate flooring and/or engineered wood
2. Protective layer (PE sheet)
3. The nuwarm heating mat
4. Flexible conduit
5. Floor sensor
6. Insulating underlay
7. Vapour Barrier (PE sheet)

3. It is now time to lay out the heating mat. Always lay out the heating mat with its aluminum foil layer facing up.

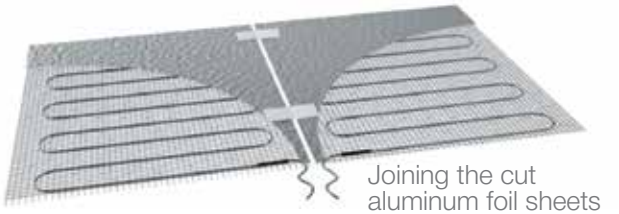
Caution:

The leveling layer in the area destined for built-in furniture or in the unheated area (where no heating mat is laid) should be 2 mm thicker or filled up with an additional 2 mm layer preventing creation of bumps on the panel in the place where the heating mat is laid.

With the heating mat in place, cut grooves in the insulating underlay and in the floor if necessary to compensate for the extra thickness of the heating mat's cold tails so as to obtain level surface. Lead the cold tails of the heating mat alongside the wall and into the installation box where the temperature controller will be housed. If the cold tails are too short, they can be extended. Feed the cold tails into the flexible conduits and into the installation box. Where the cold tails meets the heating cable, cut a groove in the floor to compensate for an added thickness of the connector. If the cold lead are too short they can be extended.

A “draw wire” can be used to feed cables into the flexible conduit.

If the aluminum foil was cut when the heating mat was customized, use min. 2 strips of self-adhesive aluminum tape with the conductive adhesive to join the heating mat sheets as shown in the picture. The aluminum foil serves as shielding for the heating cables, therefore the sheets must be electrically connected.



Joining the cut aluminum foil sheets

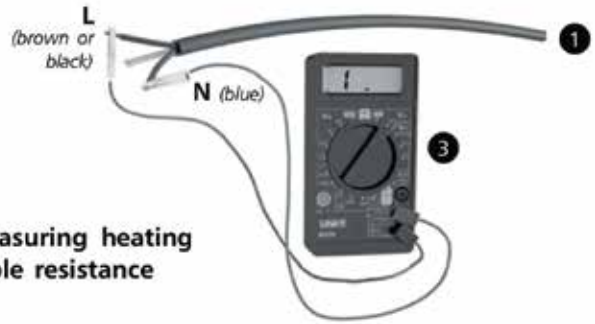
4. With the heating mat in place a protective layer (polyethylene foil, 0.2 mm) has to be laid out on top.
5. With the heating mat installed measure:
   - the heating wire resistance
   - mat’s insulation resistance
   - mat’s shielding (aluminum foil) continuity (if the aluminum foil has been cut during the heating mat layout).

   These measurements will have to be completed in the Warranty Card and repeated after the floorboards have been installed and their results compared.

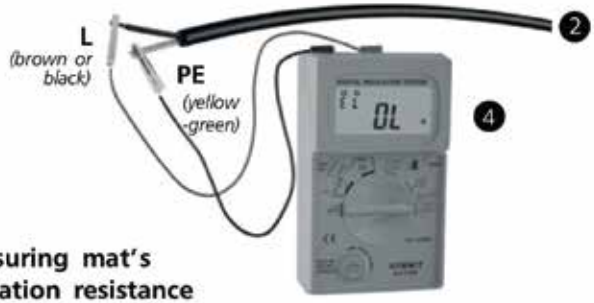
Measurements

1. Cold Tail
2. Cold Tail
3. Ohmmeter (multimeter)
4. Megaohmmeter
5. Aluminum shield

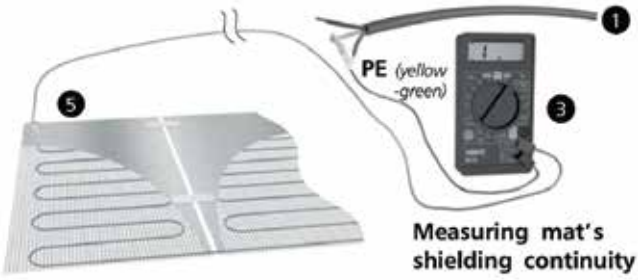
nuwarm measurements



Measuring heating cable resistance



Measuring mat's insulation resistance



The shielding continuity measurement has to be done by means of an ohmmeter (multimeter). The resistance between the PE wire of the cold tail and the end of the aluminum foil has to be measured.

Step 3 - laying laminate flooring and/or engineered wood

After the heating mat is laid, the temperature sensor installed, and the cold tails and the temperature sensor cords fed into the installation box, you can lay the laminate flooring and/or engineered wood.

Step 4 - installing the temperature controller

Before you can connect the heating mat(s) to the household wiring, through the temperature controller. Perform again the

resistance measurements of the heating cable and insulation and of shielding continuity in order to make sure that the heating mat has not been damaged during the installation of the laminate flooring and/or engineered wood. Note the measurements on the Warranty Card.

Connection of the heating mat with the household wiring should be made by a certified electrician.

Follow the temperature controller's manual when connecting the household wiring, the cold tails of the heating mat, and the temperature sensor wire to the temperature controller inside the installation box.

Caution:

The heating mats earth cables (PE) should be connected to the earth (yellow and green) of the household wiring with a special terminal on the temperature controller. If there is no such terminal on the temperature controller's housing, the connection should be made separately using a wire connector which will be placed in the installation box. If several heating mats were installed in the room, connect them in parallel, i.e. cables with the same markings should lead to the same terminals on the temperature controller.

Earth leakage protection

The power supply should be equipped with an RCD (Residual Current Device) with ≤30mA sensitivity.

Operation

The floor temperature of the heating system is limited by setting the desired temperature in the controller.

Note that the entire floor or a large part of it serves as a heater. Hence, heat dissipation from the floor should always remain unhindered by furniture or by the way the room is used.

For that reason, do not place large footprint objects on the heated sections of the floor, such as mattresses or furniture pieces without feet which have large contact surface with the floor.

Holes can be drilled in the floor only after the exact arrangement of the heating cables has been determined (based on the as built documentation or measurements taken with a special detector).

The guarantee card

The manufacturer provides a 20 year guarantee for nuwarm and thermostats are guaranteed for 2 years from the date of purchase.

The guarantee conditions

1 In order to have the submitted claim acknowledged:

- the installation of the heating mat should comply with the installation instructions
- the connection of heating mat and the thermostat to the electric mains, as well as measurements of the heating cable core and insulation resistance should be done by a qualified electrician
- the electric installation, supplying the heating circuit, should be equipped with an RCD
- a plan of the nuwarm layout should be submitted
- the properly filled guarantee card (with product label) should be submitted

2 The guarantee does not cover defects, caused by:

- mechanical damage
- improper power supply
- incorrect installation

3 Regarding the guarantee, the manufacturer is obliged to incur costs, connected exclusively with the repair or replacement of a defective heating cable.

Guarantee card

Your guarantee commences on the date of **purchase**.
This **card** must beretained for the duration of the the guarantee.



Any claim must be accompanied by this guarantee card & proof of purchase.

Installation Adress			
Address			
Town		Postcode	

Details of installer / Electrician					
Name				Professional body **enrolment** number	
Address				Email	
Town		Postcode		Tel	Fax

Heating core and insulation resistance	
After heating mat insulation, before floor insulation	Ω
	MΩ
After floor insulation	Ω
	MΩ

Caution: The measurement results of the heating core's resistance should not vary from the one given on the nameplate with more than 5% and should be at least 10 MΩ when measured with a megaohmmeter (Insulation resistance tester) with a rated voltage of 1000V.

Date	
Installer's signature	
Product label	

The electrician carrying out the electrical connections / insulation must provide a test certificate.

Sketch of heating layout

nuwarm

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