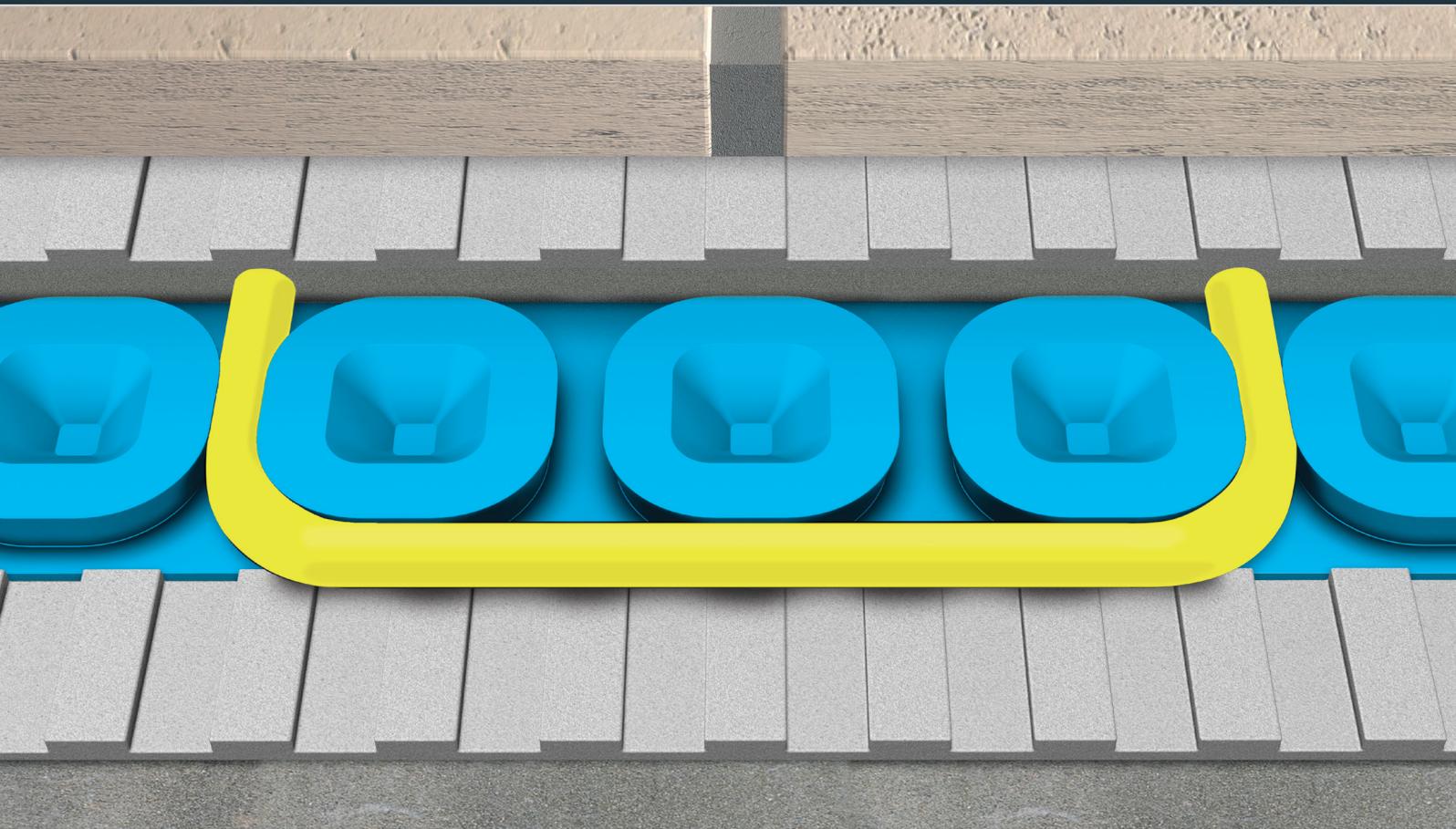




ElectroMat[®] OneZone[®]

Installation Manual



PLEASE ENSURE YOU HAVE READ AND FULLY UNDERSTOOD THIS GUIDE BEFORE INSTALLATION!



UNDERFLOOR
HEATING



HEAT
PUMPS



SOLAR
THERMAL

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INSTALLING NU-HEAT ELECTROMAT® ONEZONE® UNDERFLOOR HEATING

Please read this manual fully before fitting. It assumes a basic knowledge of electrical work and common terms used. If you are unsure you should consult Nu-Heat's Technical Support team or a qualified technician.

Attention to the advice given in this manual will help to ensure a trouble-free and effective installation.

The requirements of the relevant British Standards and Regulations should always be met.

In line with the company policy of product development, Nu-Heat reserves the right to supply different components to those shown.

Please ensure that this manual remains with the homeowner when installation is complete.

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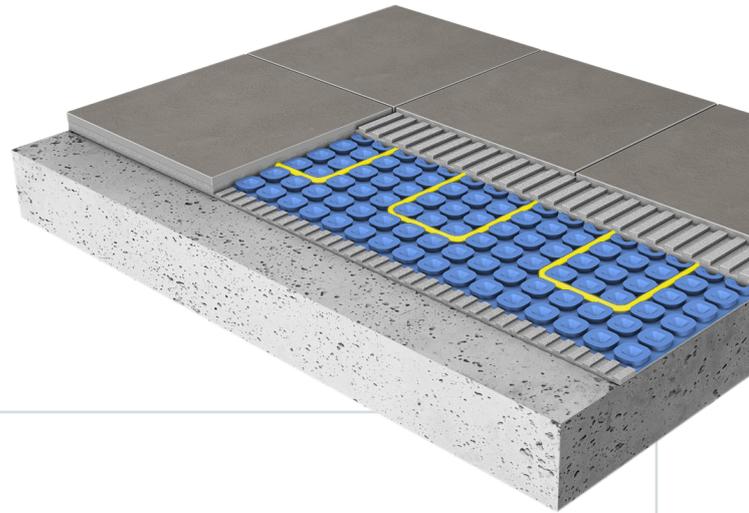
Taking delivery

Please check your delivery contents against the delivery note and report any discrepancies within 7 days of receipt.

Nu-Heat OneZone® ElectroMat® underfloor heating

Congratulations on buying a Nu-Heat OneZone® electric underfloor heating system, which has been designed to make installation as simple as possible.

Nu-Heat ElectroMat® is an electric underfloor heating system consisting of a patented de-coupling membrane and underfloor heating cable, which delivers an even heat across the entire floor area, and provides a stable, waterproof surface that is particularly suited to bathroom and kitchen areas.



KEY FEATURES AND BENEFITS



De-coupling technology

De-coupling membrane neutralises movement between the substrate and floor finish preventing the delamination and cracking that can be associated with tiled floors.



Waterproofing

ElectroMat® is totally waterproof, and by using sealing tape on edges and gaps you can create a wet room quickly and easily.



Vapour management

The cavities below the ElectroMat® membrane create space for water evaporation.



Load distribution

ElectroMat®'s pyramid cavities evenly distribute concentrated floor loads from the tiles, directly onto the floor substrate.

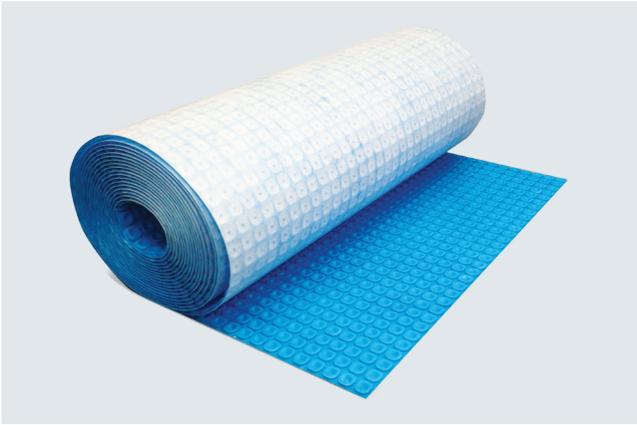
COMPATIBLE SUBSTRATES

- ✓ Concrete floors
- ✓ Cementious screeds
- ✓ Anhydrite screeds
- ✓ Green screeds
- ✓ Timber sub floors
- ✓ Plywood panels

COMPATIBLE FLOOR COVERINGS

- ✓ Tile and stone
- ✓ Self-levelling compound (SLC)
- ✓ Carpet (with 10mm SLC)
- ✓ Laminate (with 10mm SLC)
- ✓ Vinyl (with 10m SLC)

System components



ElectroMat® De-coupling Membrane

ElectroMat® is a patented polypropylene membrane, with rounded square shaped dimples that form channels specifically designed to hold heating cables in place. On the underside is an anchoring fleece to ensure the membrane bonds to the substrate.

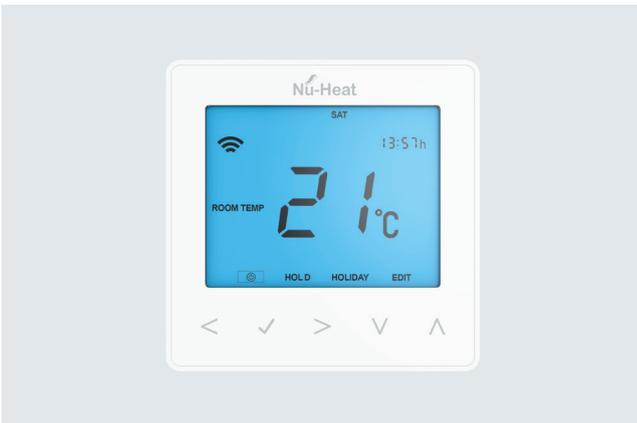
Available in 1 - 19m² lengths. The correct amount will be supplied for the heated area, additional membrane should be ordered separately.



Underfloor Heating Cable

ElectroMat® underfloor heating features cable twist technology to neutralise cable stress offering unbeatable quality. Designed for seamless installation into ElectroMat® de-coupling membrane in areas where heating is required.

Available to cover 1 - 19m².



Thermostats and Controls

Nu-Heat supplies the neoStat-e with all electric underfloor heating kits. This can be linked to a neoHub+ wifi controller if required – the neoHub+ links to a smartphone or tablet for effortless programming. A floor sensor is supplied as part of the package.



Edge Insulation Strip

This 5mm edge isolation strip should be installed around the perimeter of the room to act as a cushion for slight expansion/contraction and also to reduce sound transfer through walls.

Available in 5mm x 50mm x 25m rolls.

Optional extras



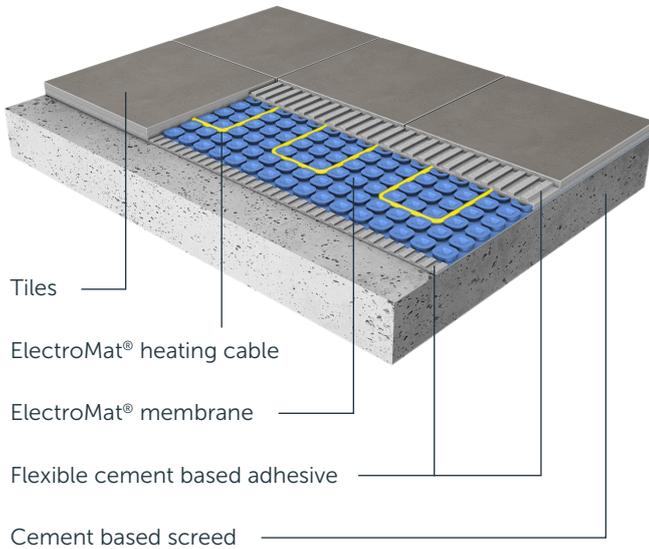
Sealing Tape

Sealing tape is a reinforcing band that is used to seal joints between sections of ElectroMat® membrane. It can also be used to create a watertight seal in internal corners and joints between floors and walls.

Available in 120mm x 10m rolls.

Compatible substrates

CONCRETE OR CEMENT BASED SCREEDS



The curing process of concrete screeds can bring about long term changes in the substrate resulting in tension between the substrate and floor finish. These tensions occasionally lead to cracking and delamination because concrete expands and contracts at a different rate to tiled finishes such as porcelain, natural stone and granite.

ElectroMat® membrane de-couples the tension between the substrate and tiled finish allowing you to install tiles as soon as the concrete is suitably dry.

Areas of use

- On any sound cement-based screed.
- On fresh cement-based screeds (cured for more than seven days).
- On cracked cement-based screeds.

Limitations

- Minimum tile size 50 x 50mm.
- If the screed is subject to rising moisture the waterproofing instructions should be followed.
- Do not use if vertical movement cracks are present.

Requirements

- The cement-based screed must be structurally sound.
- The substrate must be free from grease, oil, dust and any elements that may compromise adhesion. If this is not the case, the surface should be primed.

Substrate preparation

- Any levelling of the sub floor must be performed before installing ElectroMat® de-coupling membrane to ensure an even thickness between the heating cable and floor finish.

Movement joints

- Perimeter expansion strips and tile surface expansion joints should be fitted according to building norms. No joints should be made in the screed.

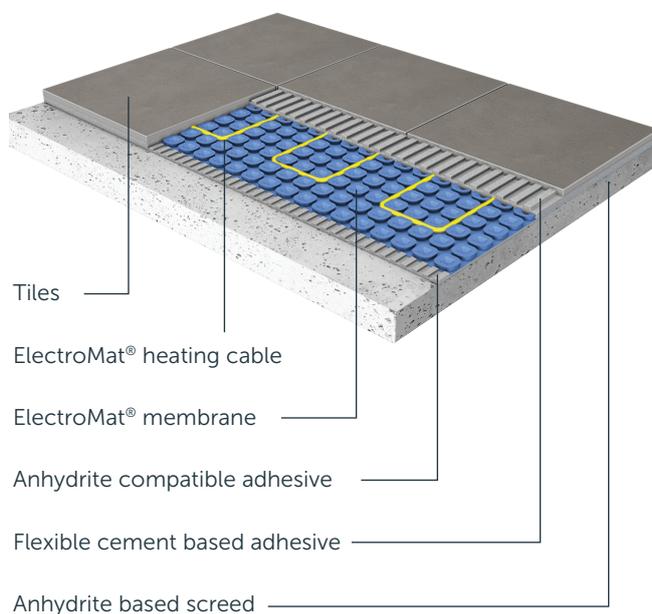
Other considerations

- If waterproofing is required, use sealing tape and a flexible tile adhesive between adjacent sheets, penetrations and all wall to floor joints.
- Always use a suitable adhesive when fitting moisture sensitive materials such as natural stone.

Floor covering preparation

	Tile and Stone	Engineered timber	Vinyl and thin laminates	Carpet (max. 1.5 tog)
Prime the substrate if dusty or oily	✓	✓	✓	✓
Level the floor before fitting membrane	✓	✓	✓	✓
Fit tile surface expansion joints if required	✓	N/A	N/A	N/A
Fill membrane with 10mm self-levelling compound	X	✓	✓	✓

ANHYDRITE (CALCIUM SULPHATE) SCREEDS



Regulations state that anhydrite (calcium sulphate) screeds must have a residual moisture level below 0.5% before tiling can begin. Failure to observe these guidelines can result in delamination and detachment of the tiles.

Anhydrite is very sensitive to humidity, has long curing times and expands/contracts at different rates to tiled floor finishes.

When installing de-coupling membrane, tiles can be laid as soon as the residual moisture level falls below 2%, saving time and money. The membrane also prevents tensions between the substrate and floor finish, preventing cracks and delamination issues.

Areas of use

- On anhydrite screed installed over a sound structure.
- Internally in wet and dry areas.
- On anhydrite screeds with residual moisture levels below 2%.

Limitations

- Minimum tile size 50 x 50mm.

Requirements

- If the anhydrite screed is installed over floor heating pipes or cables there must be a minimum of 20mm screed over the top of the heating system.
- The residual moisture of the anhydrite screed must be below 2% before installing de-coupling membrane.
- Any levelling must be carried out before installing the membrane to ensure an even thickness between the heating cable and floor finish.

Substrate preparation

- Follow the manufacturer guidelines

Movement joints

- Perimeter expansion strips and tile surface expansion joints should be fitted according to building norms.

Other considerations

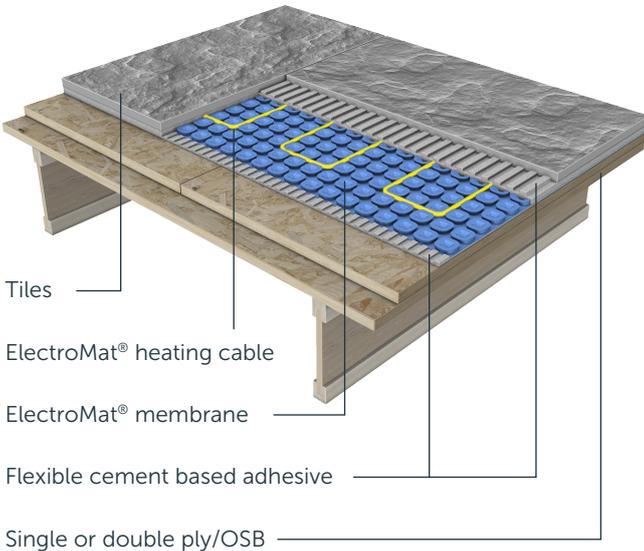
- Follow the anhydrite screed manufacturer's instructions regarding priming and surface preparation to ensure the surface is ready to bond to the de-coupling membrane.
- If waterproofing is required, use sealing tape and a flexible tile adhesive between adjacent sheets, penetrations and all wall to floor joints.
- Always use a suitable adhesive for moisture sensitive materials such as natural stone.
- Always use a suitable adhesive for adhering to anhydrite screeds.

Floor covering preparation

	Tile and Stone	Engineered timber	Vinyl and thin laminates	Carpet (max. 1.5 tog)
Prime the substrate if dusty or oily	✓	✓	✓	✓
Level the floor before fitting membrane	✓	✓	✓	✓
Fit tile surface expansion joints if required	✓	N/A	N/A	N/A
Fill membrane with 10mm self-levelling compound	X	✓	✓	✓

Compatible substrates

TIMBER & PLY FLOOR STRUCTURES



Plywood and OSB panels are vulnerable to moisture and large changes in humidity which can cause expansion, contraction, bending and deflection.

As a result the timber structure has a different coefficient of expansion to tiled finishes such as porcelain, natural stone and granite, and these changes can cause stress and tension in the floor fabric.

Fitting a membrane de-couples the tension between timber substrates and tiled finishes, allowing you to install tiles on timber floors without the threat of delamination and cracking.

Areas of use

- On any structurally sound ply or OSB structure.
- Internally in wet or dry areas.

Limitations

- Minimum tile size 50 x 50mm.
- If the sub floor is subject to moisture the waterproofing instructions should be followed.
- If installing natural stone fit a double layer of OSB or plywood.

Requirements

- The OSB or ply panels must be fully supported by the floor joists or extra supports (noggins) should be provided.
- All joints between boards should be secured to a floor joist or noggin to provide a stable substrate in accordance with building norms.

Movement joints

- Perimeter isolation strips and tile surface expansion joints are necessary according to building norms.

Substrate preparation

- Check that the plywood or OSB panels are securely fastened to the timber structure below.
- Leave a 3mm expansion gap between the OSB or plywood panels.
- Any levelling of the sub floor must be done prior to installing ElectroMat®.

Other considerations

- Follow the adhesive manufacturer's priming and preparation guidelines to ensure a secure bond to the timber substrate can be achieved.
- If waterproofing is required, use sealing tape and a flexible tile adhesive between adjacent sheets, penetrations and all wall to floor joints.
- Always use a suitable adhesive for moisture sensitive materials such as natural stone.

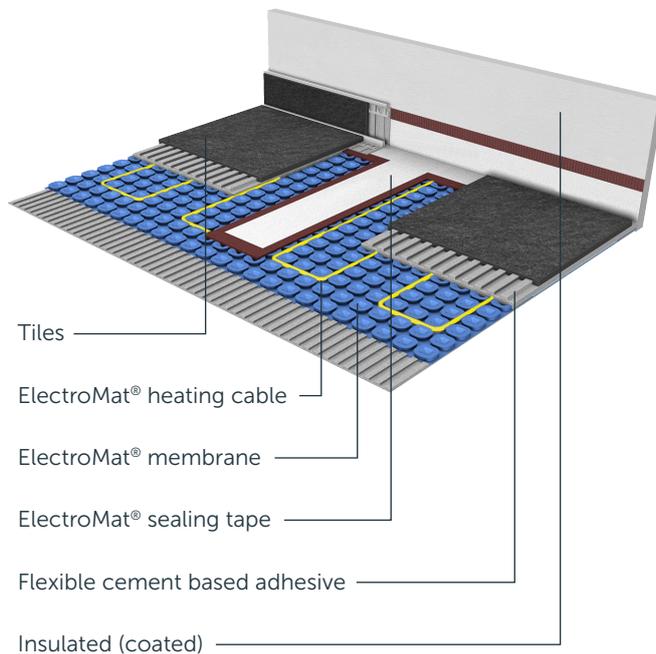


We recommend the use of impregnated external grade timbers and sheet materials to limit the effects of water contact. You should also follow the waterproofing instructions in wet areas such as bathrooms and wet rooms.

Floor covering preparation

	Tile and Stone	Engineered timber	Vinyl and thin laminates	Carpet (max. 1.5 tog)
Prime the substrate if dusty or oily	✓	✓	✓	✓
Secure loose floorboards and ply layers	✓	✓	✓	✓
Fit tile surface expansion joints if required	✓	N/A	N/A	N/A
Fill membrane with 10mm self-levelling compound	X	✓	✓	✓

WATERPROOFING



If a timber, concrete or anhydrite screed is exposed to moisture the tile layer above can become damaged and delaminate as a result.

Typical areas that require waterproofing include wet rooms, bath surrounds and showers. There are also environments where dishwashers, washing machines and water tanks are installed that could benefit from a waterproof floor. Waterproofing these areas will help to prevent the delamination of tile coverings in the event of water loss.

Install a layer of ElectroMat® and seal all edges and penetrations with sealing tape to create a totally waterproof sub floor.

Areas of use

- On any structurally sound substrate that requires waterproofing.

Limitations

- Minimum tile size 50 x 50mm.

Other considerations

- In some cases, such as installing shower trays and drains in wet rooms, it may be necessary to use a tanking system to create a wet room solution.
- Some wall substrates are not compatible with cement-based adhesive. Check with the wall board manufacturer and ensure you are using a suitable adhesive on wall to floor joints.

Other compatible substrates

ElectroMat® over a hardwood floor

ElectroMat® can be installed over hardwood tongue and groove floors. The floor finish must be sufficiently load bearing and fixed to floor joists with no visible movement.

We recommend an additional layer of plywood to increase substrate stability. The timber floor boards should be fully acclimatised to the surrounding environment before installing ElectroMat®.

ElectroMat® over synthetic flooring

Synthetic floor surfaces must be load bearing and appropriately treated to allow for proper bonding of the ElectroMat® anchoring fleece and the adhesive.

The installer must always check the suitability of the adhesive with the adhesive manufacturer before using with ElectroMat®. Follow the adhesive manufacturer guidelines for substrate preparation.

Preparing to install ElectroMat®

SUBSTRATE PREPARATION

Always check that the substrates on which ElectroMat® de-coupling membrane is to be installed are rigid, load bearing, even, level, clean and compatible with the materials to be used.

Check that all surface components that may weaken the bond have been removed, and any uneven or sloping surfaces have been levelled before installing ElectroMat®.

If your substrate is not compatible with a cement-based, flexible tile adhesive it is possible to adhere ElectroMat® to the substrate using acrylic emulsion adhesive.

Check with your adhesive manufacturer to ensure the substrate is properly prepared before using adhesive.

To guarantee effective heating, insulation board should be included in the installation above ground level substrates and in upper rooms over unheated spaces.

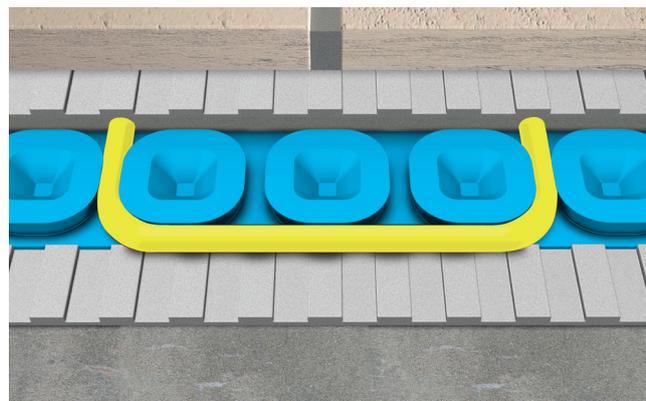
PRE-INSTALLATION PLANNING

1. Draw your floor area onto squared paper taking care to mark any unheated areas such as a bath, sink, toilet or kitchen island unit.
2. Calculate your heated area by subtracting any unheated areas (such as baths or kitchen units) from the total floor area.
3. Choose the correct kit for your heated area from the chart below. During installation take care to install the heating cable 2 dimples (60mm) from any walls and permanent fixtures.
4. Ensure enough ElectroMat® de-coupling membrane is purchased to cover the whole floor area. Additional de-coupling membrane can be purchased for un-heated areas if required.

ElectroMat® Heating kits		
ELECTROMAT® KIT SIZE	DE-COUPLING MEMBRANE SUPPLIED	MAXIMUM RECOMMENDED HEATED AREA
1m ²	2m ²	1.2m ²
1.5m ²	2m ²	1.7m ²
2m ²	3m ²	2.3m ²
2.5m ²	3m ²	3.0m ²
3m ²	4m ²	3.5m ²
4.5m ²	5m ²	4.7m ²
5.5m ²	6m ²	5.8m ²
6.5m ²	7m ²	7.0m ²
9m ²	10m ²	9.5m ²
11.5m ²	12m ²	11.8m ²
13.5m ²	14m ²	14.0m ²
18m ²	19m ²	19.0m ²

ElectroMat® Membrane	
AREA	
1m ² - 19m ²	

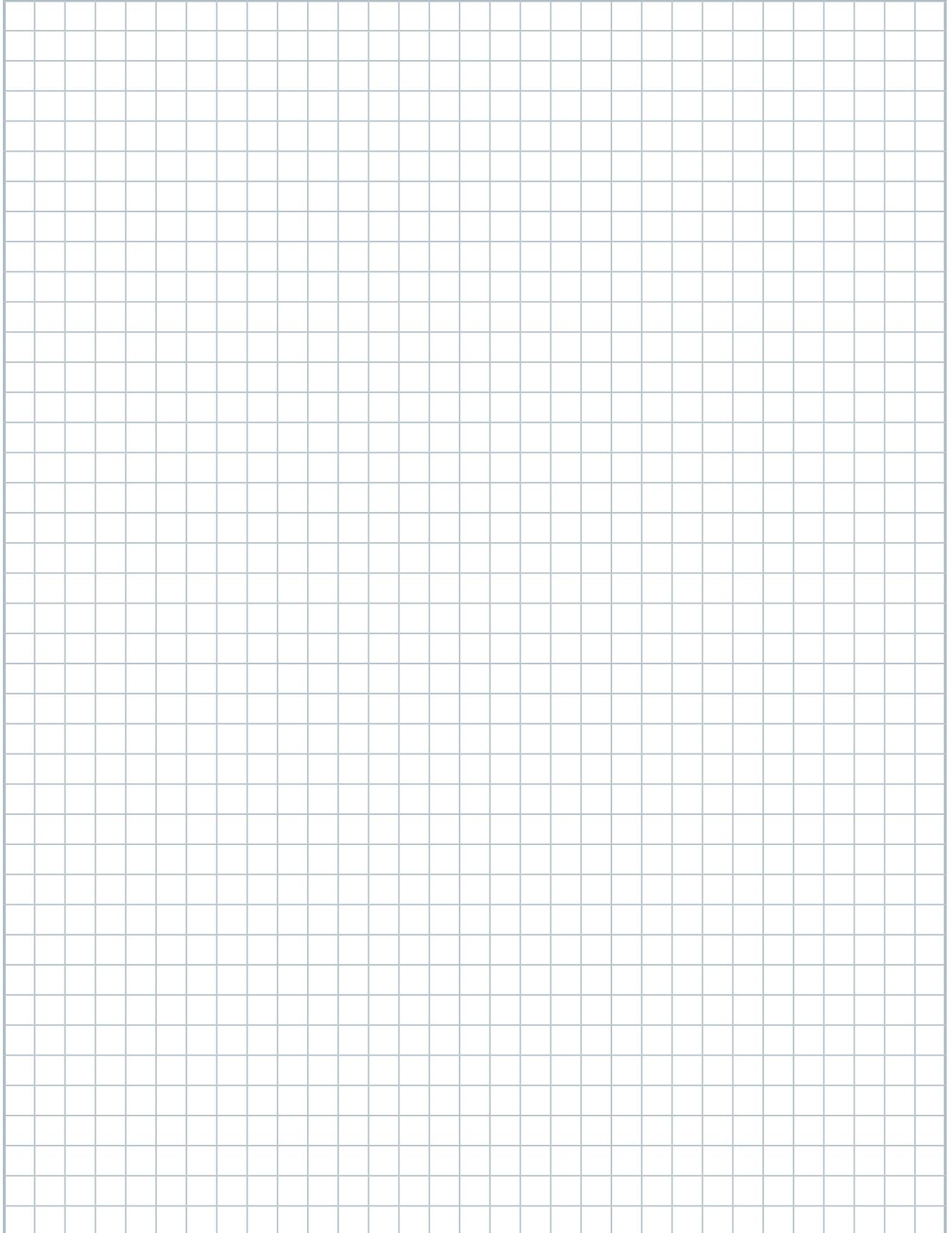
De-coupling membrane is available from Nu-Heat in any length from 1m² up to 19m².



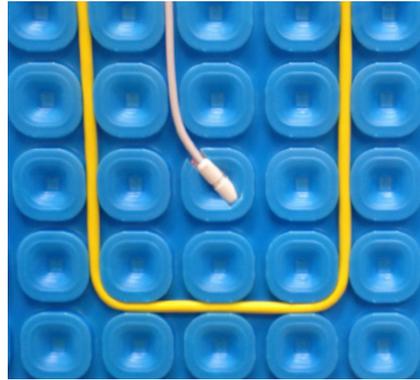
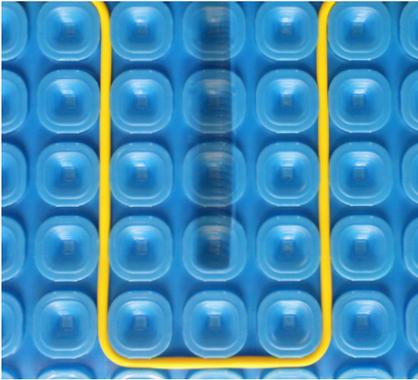
Kits are designed for 3-dimple spacing (90mm); the maximum recommended area covered by each kit is indicated in the table above. Where there is excess cable it can be run in a combination of 3-dimple spacing and 2-dimple (60mm) spacing. Single dimple spacing (30mm) is not advised as it can cause overheating and damage to the flooring covering.

Heat output can be determined by dividing the cable output (shown on page 19), by the total heated area.

Use the grid to draw your proposed layout



Floor sensor installation



Method 1: Sensor under the membrane

The thermostat floor sensor should be installed inside the supplied conduit, directly in the floor below the ElectroMat® membrane.

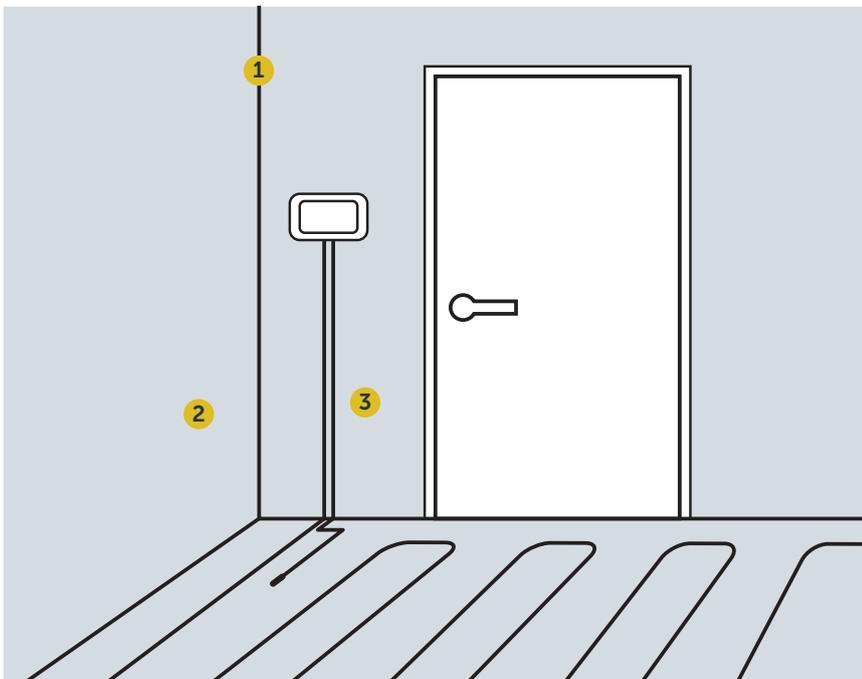
The end of the sensor should be positioned between two runs of heating cable, away from temperature influences such as water pipes and large glazed areas.

Method 2: Sensor in the membrane

The thermostat floor sensor should be fitted between the dimples on the ElectroMat® membrane.

To accommodate the sensor probe, cut a groove into one of the dimples to hold it in place.

The end of the sensor should be positioned in between two runs of heating cable, away from temperature influences such as water pipes and large glazed areas.



THERMOSTAT AND SENSOR LOCATION

When installing ElectroMat® in wet areas such as bathrooms and wet rooms, take care to place the thermostat in accordance with UK regulations for 230V electrical supply.

The thermostat should be placed outside of zones 0, 1 and 2 – at least 60cm from any water sources.

1. Thermostat
2. Floor sensor probe
3. ElectroMat® heating cable

top tip

Nu-Heat thermostat sensor probes are not polarity sensitive. Either colour wire can be connected to either of the sensor probe ports on the back of your thermostat.

ElectroMat[®] de-coupling membrane installation



1. Spread adhesive on the substrate

Mix a compatible flexible cement-based tile adhesive according to manufacturer instructions and spread over the substrate using a 6mm notched trowel.



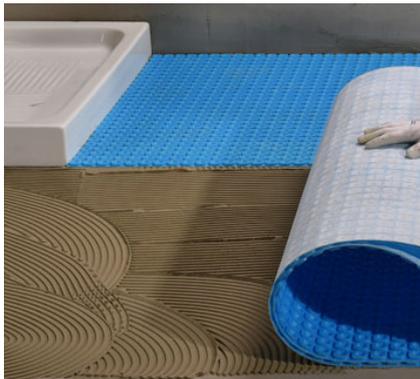
2. Apply ElectroMat[®] membrane

Cut a length of ElectroMat[®] suitable for the room and lay over the adhesive. Press the membrane down immediately using a trowel or roller with even pressure.



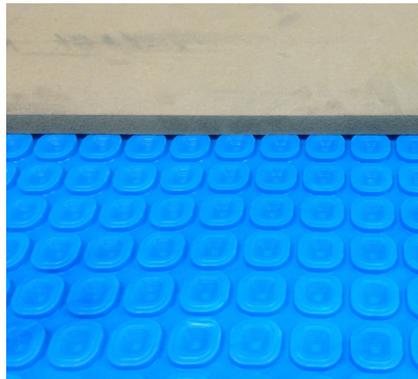
3. Check adhesive coverage

Peel back a small section of the membrane to check that the back side is fully covered in adhesive. In the case of partial coverage, apply more adhesive or adjust the mix.



4. Cut and lay the next sheet of ElectroMat[®]

Follow steps 1-3 to lay sheets of membrane until the floor is totally covered, without overlapping. Align the dimples to facilitate installation of the heating cable.



5. Protecting the installed membrane

If heavy foot traffic or mechanical loads are expected, it is recommended that you protect the membrane with boards or planks to prevent damage and ensure bonding.

top tip

If your substrate is not compatible with cement-based flexible tile adhesive it is possible to adhere ElectroMat[®] to the substrate using an acrylic-based emulsion adhesive. Check manufacturer's guidelines on correct substrate preparation to ensure a strong bond is achieved.

Testing the ElectroMat[®] underfloor heating cables

IMPORTANT TESTING PROCEDURE

ElectroMat[®] heating cables must be properly tested before installation to ensure no damage has been done to the cables. You must also test them after they have been laid, and again once the floor finish has been applied.

To perform these tests a Multimeter and Megohmmeter are required. Test results must be logged on page 21 and passed on to the end user to facilitate warranty registration.



Test 1: Heating cable resistance test

Connect a multimeter, set for resistance measurement, to the live and neutral power leads. Record the results on page 21. If the measured resistance falls outside a tolerance of +/- 10% it may mean the cable is damaged or the multimeter is not set correctly.

Resistance values for each cable length can be found on page 19.

Test 2: Continuity between earth and conductors

The conductor cables are separated from the earth cable by an insulator. Verify there is no contact between the earth and conductors by connecting a multimeter, set to continuity, to the earth and both conductors.

Record results on page 21.

Test 3: Insulation resistance test

This test will detect very small holes in the insulating layer that separates the conductors from the earth. These small holes are not usually detected by the continuity test because they are not necessarily short circuits.

Connect a megohmmeter calibrated to 1000V to one of the conductor cables and the earth. If there is no current leakage, insulation resistance between the power leads and earth must be equal to or greater than 1 G Ω / 1000 M Ω .

Record results on page 21.

Test 4: Floor temperature sensor testing

Connect a multimeter to the two conductors of the floor temperature sensor probe. Measure its resistance at room temperature. The resistance of the sensor varies depending on the ambient temperature.

Lower temperature = greater resistance.

Higher temperature = lower resistance.

Record all test results on page 21.

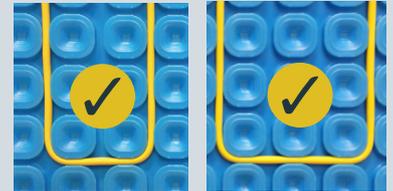
ElectroMat[®] underfloor heating cable installation

HEATING CABLE ADVICE

Before installation, the user and/or installer must read, understand and adhere strictly to the instructions below. If these instructions are not followed, the warranty will be considered invalid and the manufacturer is not liable for any responsibility.

The following instructions must be followed in order to avoid personal injury or property damage due to potentially fatal electric shocks.

- The product must be installed by qualified personnel and all electrical connections must be performed by a qualified electrician according to building norms.
- The heating cables must be grounded.
- The heating cables must not be modified on site; if the installer or the user modifies the cable, they will be liable for any damage resulting from its modification and warranty and product certification will be invalid.
- Do not energize the cable when on the spool; this could damage the cable and cause a fire.
- The heating cable and connection to the cold tail must be installed entirely below the flooring finish.
- Use heating cables only for electric underfloor heating.
- Lay the cables with a spacing of 2 or 3 dimples. Lower spacing may cause a fire or damage the flooring.
- Never use a cable for 120V systems.
- Never cut the heating cable; it could change its resistance and could cause a fire.
- Avoid bending the heating cable with a radius of curvature less than 5 times its diameter.
- Do not lay heating cables under walls.
- The minimum application temperature of the cable is 5°C.



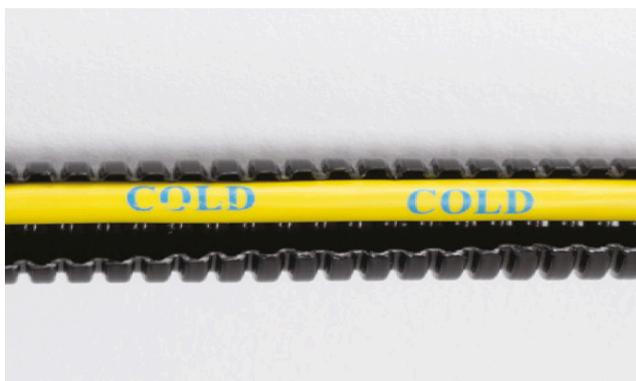
Correct heating cable spacing

Ideally, heating cables should be installed in runs spaced between every third dimple although 2-dimple spacing is allowable. Heating cables should never cross.



Incorrect heating cable spacing

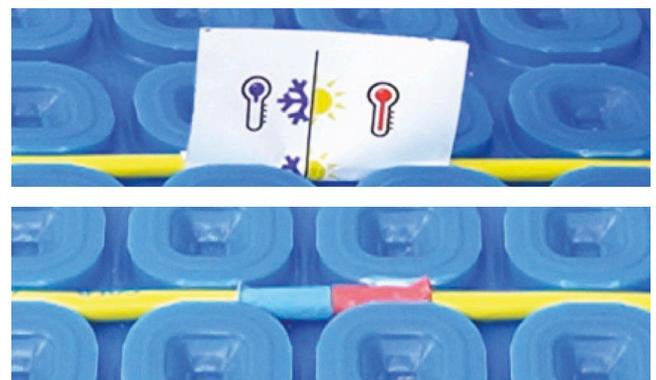
Single or double cable spacing is not advised. It can cause overheating and possibly damage the floor finish and building fabric. The heating cable should also be no closer than 60mm from elements and permanent fixtures such as walls, baths, columns and kitchen units.



1. Identifying hot and cold tails

The cold section of cable is marked **COLD** along its entire length.

The **COLD** section of the cable does not get hot, so can be run up the wall, within a conduit, to the thermostat wiring point.



The join between the **HOT** and **COLD** sections of the cable is shown by **BLUE/RED** marker and a **HOT/COLD** label.

The markers and label must both be fully encased in the floor, embedded in flexible tile adhesive or levelling compound.

NOTE: Some product versions may present the cold tail in a black cable as shown on next page's step 2.



2. Installing cold tails and floor temperature sensor

Insert the cold tail and temperature sensor(s) into the conduit from the base of the wall up to the thermostat electrical back box.

NOTE:

- The cold tail must be fully encased in adhesive when tiles are fitted.
- Some product versions may present the cold tail in a black cable as shown above.



3. Lay ElectroMat® cable in the membrane

Press the ElectroMat® cable into the membrane using a float or roller. Observe the recommended spacing of 3 dimples. Take care not to damage the cable.

Waterproofing the installation



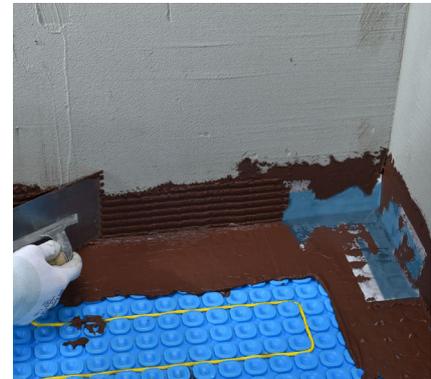
1. Spread adhesive over joints in adjacent membranes

Apply a compatible, flexible waterproof adhesive along the joints using the flat side of a trowel. Take care to fill the cavities and leave a thin layer of adhesive on top of the dimples.



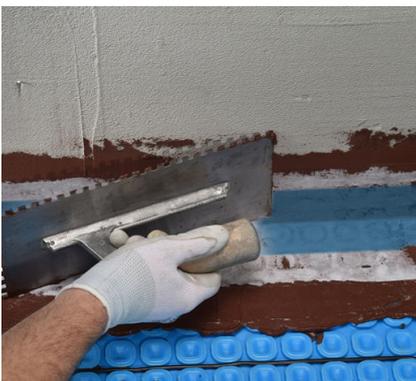
2. Apply ElectroMat® fixing tape

Cut a length of ElectroMat® fixing tape and apply strong pressure to push it into the adhesive layer to ensure a good seal. Avoid creating any creases.



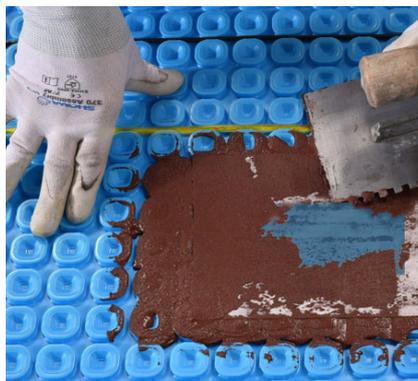
3. Waterproofing corners

Apply adhesive to the floor and walls taking care to fill all voids right into the corner of the room. Apply the tape as shown in step 2 and use the notched trowel to finish the wall adhesive to allow for tiling.



4. Waterproofing floor and wall joints

Apply adhesive to the floor and walls taking care to fill all voids. Apply the tape as shown in step 2 taking care to push it right into the corner. Use the notched trowel to finish the wall adhesive to allow for tiling.



5. Seal any holes or penetrations

Apply a layer of adhesive over the hole large enough to cover a section of sealing tape. Apply pressure to the section of tape and carefully apply an extra layer of adhesive over the top.

top tip

Follow the steps on this page if you intend to create a waterproof floor. Take care not to damage the heating cable with the notched trowel when applying adhesive to the membrane.

Laying tiles over ElectroMat®



1. Spread adhesive on the substrate

Tiles can be laid immediately after installing the heating cables. Use the flat side of the trowel to fill the cavities of the membrane with class C2 adhesive. Apply another layer of adhesive large enough for one tile with a trowel.



2. Apply adhesive to the back of the tile

Apply adhesive to the back of the tile with the notched trowel and lay them on the layer of adhesive previously applied. Remove some tiles and check the back of the tile is fully covered with adhesive. Apply more if required.



3. Check adhesive thickness

According to building norms, heating cables must be covered with a 5mm layer of adhesive. Check that your adhesive layer complies with these guidelines.



4. Complete the testing procedure

After laying the tiles, repeat all of the tests and record the values on page 21, to allow the end user to register their warranty with Nu-Heat.

OTHER FLOOR FINISHES

In some cases it may be necessary to install other floor finishes such as laminate, engineered board, vinyl or carpet over the ElectroMat® system. Before doing so you should check that your desired floor finish is suitable for use with electric underfloor heating and ensure the thermostat is set to limit the temperature to the manufacturer's maximum temperature guidelines.

ElectroMat® must be covered with a 10mm layer of flexible self-levelling compound before installing floor finishes other than tiles.



Make sure the back of the tile is fully covered with adhesive. If full back coverage is not achieved, remove the tile and apply the new adhesive paying attention to the consistency. In the case of large format tiles it is recommended to double spread adhesive.

SELF-LEVELLING COMPOUND

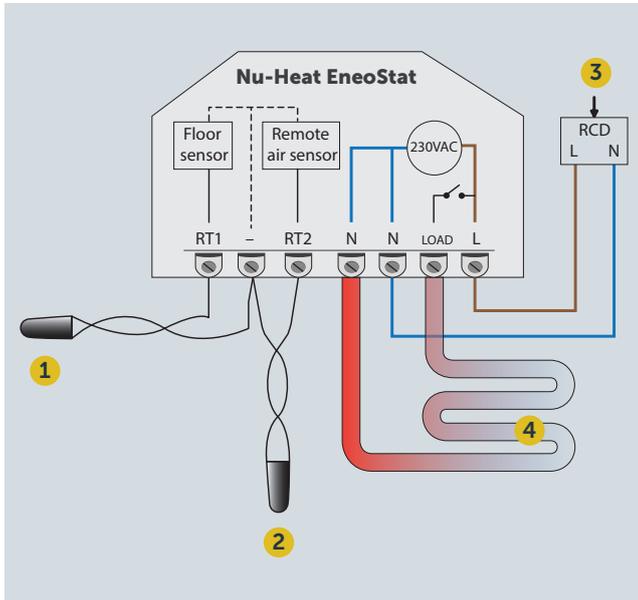
ElectroMat® systems can be covered with a flexible self-levelling compound before tiling if preferred. Follow the self-levelling manufacturer's guidelines.



Use a rubber or plastic trowel to avoid damaging the heating cable with the notched trowel when applying adhesive to the membrane.

Wiring the neoStat-e thermostat

CONNECTING YOUR THERMOSTAT



Nu-Heat neoStat-e thermostats must be installed by a qualified electrician in accordance with all applicable safety regulations. The electrical wiring must conform to the latest revision of the IEE wiring regulations.

We recommend installing the thermostat into a flush mounted plastic electrical box.

The diagram shows the connections to the neoStat-e for illustrative purposes only. Check your thermostat installation guide for accurate wiring diagrams.

1. Sensor probe
2. Optional air sensor probe
3. Power supply
4. ElectroMat® cable

Extending the cold tail and sensor probe

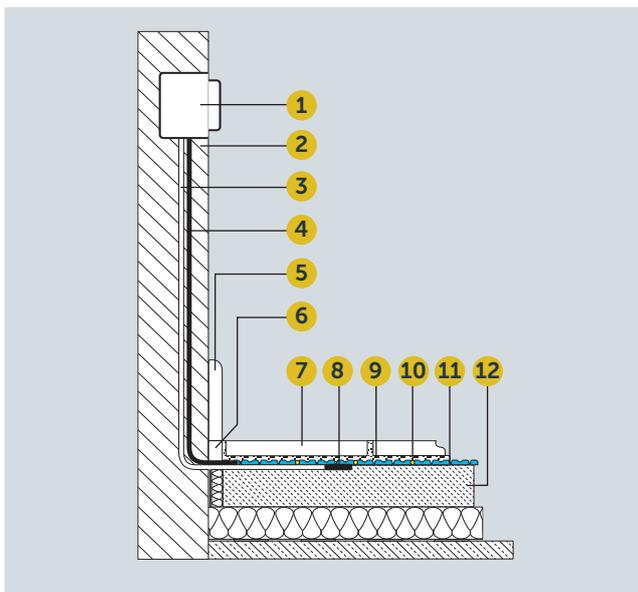
The cold tail (the part of the cable used for making the electrical connection to the thermostat), is 3m long and can be shortened to 1m or extended up to 50m.

The sensor probe can also be extended, to a maximum of 50m, using a twin core 1mm flex.

Please ensure appropriate rated and type of electrical flex is used..

Sample floor assembly

THERMOSTAT LOCATION AND FLOOR BUILD UP



1. Thermostat and back box
2. Existing wall structure
3. Sensor probe and conduit
4. ElectroMat® heating cable cold tail
5. Skirting board
6. Edge isolation strip
7. Tiled floor finish
8. Floor temperature sensor (installed under matting)
9. Flexible tile adhesive
10. ElectroMat® heating cable
11. ElectroMat® de-coupling membrane
12. Prepared substrate

top tip

Thermostats should be connected to a single phase mains supply via an RCD with a suitably rated fused isolator switch fitted. The fuse rating is dependent on the overall load of the system. Use the switching loads in the thermostat User Guide supplied with the system.

Important information

ElectroMat® Heating Cable			
KIT SIZE	LENGTH	RESISTANCE Ω	OUTPUT
1.0m ²	12m	352.7	150W
1.5m ²	18m	235.1	225W
2.0m ²	25m	176.3	300W
2.5m ²	31m	141.1	375W
3.0m ²	37m	117.6	450W
4.5m ²	50m	88.2	600W
5.5m ²	62m	70.5	750W
6.5m ²	75m	58.8	900W
9.0m ²	100m	44.1	1200W
11.5m ²	125m	35.3	1500W
13.5m ²	150m	29.4	1800W
18.0m ²	200m	22.0	2400W

ElectroMat® Membrane
AREA
1m ² - 19m ²

ElectroMat® Sealing Tape
SIZE
10m

Electrical regulations

All electrical connections must be made by a qualified electrician and conform to the latest edition of The IEE Wiring Regulations.

Electrical installations must comply with all applicable regulations, particularly for wet locations containing electric cables systems.

Substrate preparation

Any substrate levelling must be completed before you install a ElectroMat® system.

We recommend the installation of a suitable insulation board below ElectroMat® in ground floor installations, over un-insulated substrates or unheated rooms.

ElectroMat® should never be installed over highly flammable construction materials.

Before installing ElectroMat® the substrate must be level, load bearing, and free from any substances that may weaken the bond between the membrane and substrate.

Compatible adhesives

You must use an adhesive suitable for the specific type of substrate in your project. The adhesive must bond strongly to the substrate and set mechanically into the anchoring fleece on the under side of ElectroMat®.

A standard flexible dry-set adhesive is suitable for most substrates. It is possible to use an acrylic based emulsion adhesive in cases where the substrate is not compatible with standard dry set tile adhesives.

It is the installer's responsibility to check the compatibility of all materials.

Any adhesive used with ElectroMat® must be suitable for use with electric underfloor heating systems.

Information about the heating cables

When installing ElectroMat® heating cables in any rooms it is important not to install heating cables in areas under permanent fixtures such as toilets, kitchen units, walls and pillars.

- Never kink ElectroMat® heating cables.
- Heating cables must not touch or cross over.

- Heating cables must not cross expansion joints.
- Never cut or shorten the heating cables.
- Never join heating cables in series.
- An suitably rated earth leakage circuit breaker (30mA) must be included in the electrical installation.
- ElectroMat® cables should not be installed at temperatures below 5°C.
- Never kink the cold tail connection sleeves. The smallest permissible bending radius is five times the outside diameter of the heating cable.

Heating cables must be installed at least 30mm away from water pipes, pillars and other conductive construction components.

Heating cables and temperature sensors must be installed away from other heat sources such as lighting equipment, chimney breasts and flues.

Wear suitable footwear with rubber soles when installing ElectroMat® and step on the cables as little as possible. If high traffic is expected use boards to cover and protect the heating cables and de-coupling membrane.

Important information

Covering the heating cables

ElectroMat® heating cables and cold tail connection sleeves must be fully embedded in the tile adhesive. Failure to do so will void any warranty and may result in product failure.

Heating cables must be fully enclosed in tile adhesive to prevent air gaps. Regulations state the requirement for a covering thickness of at least 5mm over the heating cables. The heating/cold tail connection must also be fully covered in a suitable tile adhesive.

Thermostats & electrical connections

In addition to these installation instructions, the applicable installation instructions for the chosen thermostat must also be observed. Connection cables must be installed in plastic conduits with a minimum wall thickness of 0.8mm.

The heating cables must to be connected to the mains voltage 230V~ and switched through the thermostat.

If more than one heating circuit is to be installed, all connection cables must be run through the empty conduit into the thermostat or flush socket and connected via the supplied system connection.

Thermostat sensor probes and heating system cold tails should not touch or cross over the heating cables.

Heating circuits can be switched through a single shared system connection even if they differ in size. Several heating cables should be connected in parallel. The maximum load (A) of the thermostat must be taken into account.

Floor finishes and coverings

Once the heating cables have been installed and tested, tiles can be installed using the thin-set method, using a thin-set adhesive that meets the requirements of the covering.

It is helpful to fill the grooves of the de-coupling membrane in a single step, using the smooth side of a notched trowel (heating cables and sleeves must be fully enclosed by tile adhesive). Then use the notched trowel to apply the thin-set adhesive. The tiles are fully embedded in this layer.

Cabinets with full floor contact as well as built-in cabinets may only be fitted on unheated areas. No penetrating attachment parts (anchored screws for doorstops etc.) may be used in areas where heating cables are installed.

Additional layers over the floor covering (e.g. rugs) thicker than 10mm are not advised as they can cause heat accumulation, which may result in damage to the heating cables and floor finish.

For reasons of thermal efficiency, covering thicknesses over 30mm are not recommended.

Testing the system

Perform an insulation test before covering the heating cables in adhesive to measure the resistance of the heating cables and enter the value in the test log. Follow the full testing procedure and complete the results table on page 21.

Customer handover procedure

Attach a warning label for the heating cables with an installation plan and wiring diagram close to the electrical distribution box or consumer unit.

The following documentation must be issued to the end user/home owner for their records:

- Installation instructions with completed test results
- System plan including temperature sensor heating cable thermostat locations
- A full description of the floor assembly

Commissioning the system

Drying times:

Turning on electric underfloor heating too early can cause damage to the floor finish.

Refer to adhesive/leveller/flooring manufacturer's guidelines for drying and curing times before turning on the heating system; this is usually around 2 weeks.

Gradual start:

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 approximately 18°C and build up by 1°C per day until the desired temperature is reached.

Test results and customer handover

STOCK NO.	MANUFACTURER'S VALUES	BEFORE INSTALLATION	AFTER CABLE INSTALLATION	AFTER TILE INSTALLATION
Resistance measurement of the electric heating cable				
Two conductors and earth braid continuity test				
	Infinity (I) or Overload (OL)			
Insulation resistance test between conductor cables and earth braid				
	Equal to or greater than 1 G Ω			
Floor temperature sensor test				

Suitable RCD circuit breaker fitted

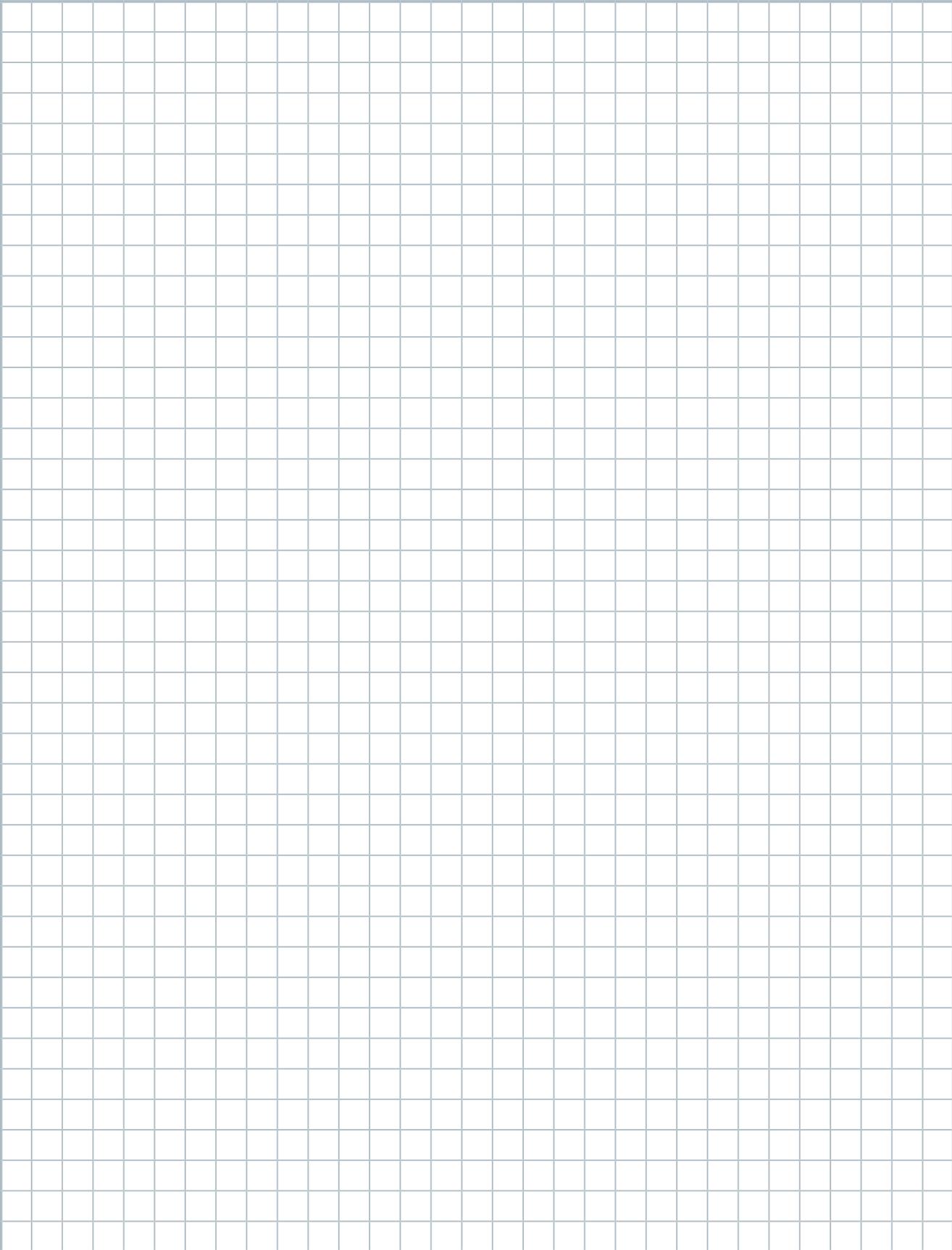
Qualified Installer
Name:
Email:
Phone:
Address:
Postcode:
Part P No.:
Signature:

End User / Home Owner
Name:
Email:
Phone:
Address:
Postcode:
Date:
Signature:



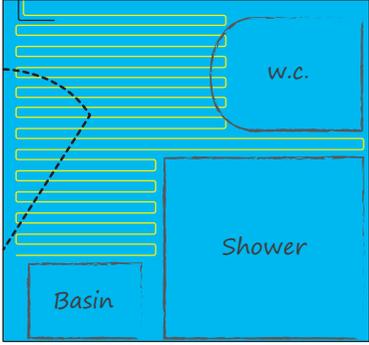
The installer must complete the full test procedure, record all results on the table above and present this document along with a completed system diagram to the end user/home owner to allow them to complete the warranty activation.
A warranty will not be granted unless this information has been completed in full.

Final ElectroMat[®] cable layout



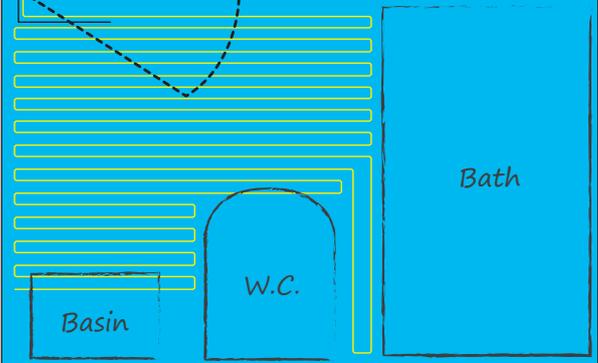
Example cable layouts

Note: The cold tail (the part of the cable used for making the electrical connection to the thermostat), is 3m long and can be shortened to 1m or extended up to 50m.



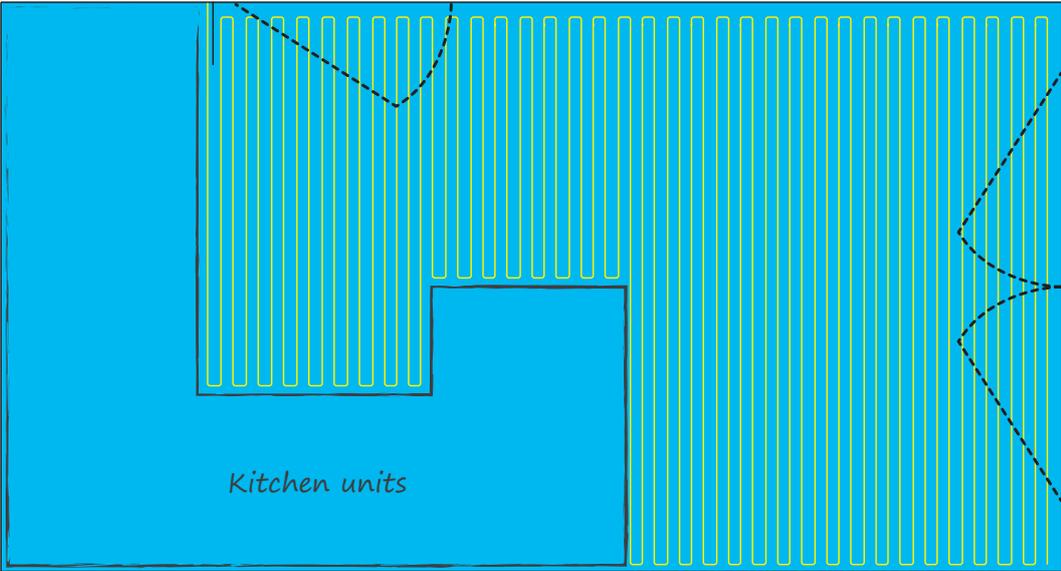
The diagram shows a rectangular room with three fixtures: a basin at the bottom left, a shower in the center, and a W.C. at the top right. Yellow lines represent the cable layout, starting from a dashed line on the left wall and running horizontally across the room, with a loop around the W.C. and a loop around the shower.

Small en-suite shower room 2 x 2m
4m² de-coupled floor area.
1.7m² heated floor area.
Thermostat positioned outside the room.



The diagram shows a rectangular room with three fixtures: a basin at the bottom left, a W.C. in the center, and a bath on the right. Yellow lines represent the cable layout, starting from a dashed line on the top wall and running horizontally across the room, with a loop around the W.C. and a loop around the bath.

Family bathroom 2.5 x 4m
9m² de-coupled floor area.
7.13m² heated floor area.
Thermostat positioned inside the room.



The diagram shows a large rectangular room with a large area labeled 'Kitchen units' at the bottom. Yellow lines represent the cable layout, starting from a dashed line on the top wall and running vertically down the length of the room, with a loop around the kitchen units.

Kitchen diner 3.5 x 6.2m
21.7m² de-coupled floor area.
14.25m² heated floor area.
Thermostat positioned in the room.

Warranty Information

The Nu-Heat UK Ltd Lifetime Warranty guarantees ElectroMat® decoupling membrane and heating cable to remain free from defects in workmanship and materials under normal use and maintenance, and is guaranteed to remain in full working order subject to the conditions and limitations below:

A Nu-Heat ElectroMat® kit is guaranteed for the lifetime of the floor covering under which it is originally fitted or 25 years, whichever is shorter, subject to the following conditions:

CONDITIONS & EXCLUSIONS

Nu Heat's ElectroMat® Lifetime Warranty applies:

1. The installer must carry out the full test procedure and fill in the Test Results and Customer Handover Forms plus a completed System Diagram and leave with the householder. These documents will need to be presented in the event of a warranty claim or investigation.
2. Proof of purchase must be presented in order to make a claim, so please ensure that a copy of both the invoice and purchase receipt are kept in a safe place. The invoice/receipt should clearly state the size of kit purchased and be in legible condition in order to aid in identifying the system.
3. Only if the Nu-Heat ElectroMat® Underfloor Heating System has been properly earthed and protected by a Residual Current Device (RCD) at all times.

This warranty does not include thermostats; these are covered by a separate 2-year warranty from the date of purchase, except as provided below.

The Nu-Heat ElectroMat® Lifetime Warranty does not cover accidental damage, including but not limited to, damage caused by lifting, replacing or repairing the original covering laid after installation.

The warranty period starts on the date of purchase.

At the discretion of Nu-Heat UK Ltd, the company will arrange for the underfloor heating membrane or loose wire element to be repaired or have parts replaced free of charge. The warranty only covers the cost of replacement and/or repair to damaged Nu-Heat parts and products; any damage to floor coverings or floors, costs of re-laying or repairing floors or floor coverings is not covered by the Nu-Heat ElectroMat® Lifetime Warranty.

CLAIMS

In the event of a problem arising with any components within the Nu-Heat supplied system that are within warranty terms, please contact Nu-Heat's Technical Support Team on 01404 549770.



Nu-Heat UK Ltd | Heathpark House | Devonshire Road | Heathpark Industrial Estate | Honiton | Devon EX14 1SD

