ETHERMA DS BASIC Underfloor Heating Under Tiles and Stone Instruction Manual

Contents

ETHERMA°

ETHERMA DS BASIC Underfloor Heating Under Tiles and Stone

ETHERMA Netzheizmatten

ETHERMA DS / D / NST

- Montage- und Gebrauchsanleitung Installation and usage instructions Installatie- en bedieningsinstructies Instructions d’installation et d’utilisation **www.etherma.com**

EINLEITUNG

Die Verpackung Ihres hochwertigen ETHERMA Produktes besteht aus recycelbaren Werkstoffen.

NETZHEIZMATTENAUFBAU

WICHTIGE MONTAGEHINWEISE

1. Heizleitung nicht knicken.

INSTALLATIONSBEISPIEL

BAUTECHNISCHE EINBAUVARIANTEN

Einbau unter Fliesenbelag

Die Netzheizmatte ist mit dem Heizleiter nach unten einzubauen, damit der Heizleiter durch das Netz beim Einspachteln geten z.B. mit 10 %iger Sodalauge, warm abschrubben.

Variante A – Sofort in Flexkleber

1. Eine Schicht Flexkleber
2. Auslegen der ETHERMA-Netzheizmatte.
3. Verlegen der keramischen Platten, Fliesen und verfugen.
4. Elastische Randverfugung.

Auf bestehendem oder neuem Zementestrich Fliesenbelag

- Fliesenkleber mit Netzheizmatte
- Estrich
- Isolierung
- neuer Fliesenbelag
- Fliesenkleber mit Netzheizmatte
- alter Fliesenboden alter Estrich

Einbau unter Teppichbelag, Klebeparkett oder PVC-Bodenbelag

Auf bestehendem oder neuem Zementestrich (Schnellestrich)

EMLOENKTTARGIES C H E R A N S C H L U S S

1. Anschlussleitung
2. Einschneiden Durch Einschneiden des Glasseidennetzes, wird die Netzheizmatte dem Grundriss angepasst. ACHTUNG! Den Heizleiter nicht durchtrennen.
3. Anpassung gleich nach Kaltleiter
4. Anpassungshinweise

MONTAGE

Messprotokoll:

BV:	DATUM:	Erstellt von:
Matte	Widerstand	Widerstand
Soll vor Einbau	ISO- Wert	Datum
Widerstand nach Einbau	ISO-Wert	Datum

Erlaubte Abweichungen: Widerstand: -5 % bis +10 % Isolationswert
Minimum: 2 MOhm

INSTALLATION

DO NOT USE SENSOR SENSOR 230 V 230 V L N LOAD LOAD 230 V

MONTAGE

Bodentemperatur-Einstellung Empfohlene Temperatur-Voreinstellung der Regler:

- ETHERMA Kapillarrohrthermostat KRU
- eTOUCH mini Schaltereinbauthermostat mit Touchpad

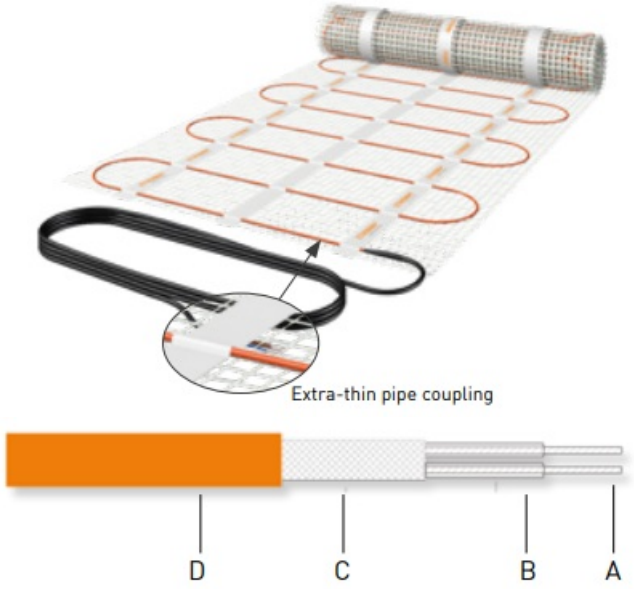
Product Usage Instructions

1. Do not bend the heating cable.
2. The network heating mat should be installed with the heating conductor facing downwards so that the heating conductor is covered by the network when trowelling.
3. For installation under tiles, follow Variant A instructions. For installation under carpet, parquet or PVC flooring, follow the instructions for installation on existing or new cement screed.
4. For installation on existing or new cement screed, prepare the subfloor accordingly and lay the network heating mat with the network against the floor. Continue with either Variant A or Variant B instructions depending on the type of flooring being installed.
5. To adapt the network heating mat to the floor plan, cut through the glass fibre mesh. Do not cut through the heating conductor.
6. Follow the recommended temperature pre-setting of the regulators for the ETHERMA Kapillarrohrthermostat KRU and eTOUCH mini switch installation thermostat with touchpad.

INTRODUCTION

- ETHERMA netted heating mats are laid under flooring for floor temperature stabilisation or for full heating, depending on heating requirements. The option of flat laying on substrates makes installation much easier and saves valuable installation time.
- These instructions are intended to help you to use your ETHERMA quality product as effectively as possible. They pro-vide important information on safety, installation, use and maintenance of the device. Therefore, please read the informa-tion provided in these instructions carefully and keep for refer-ence in the event of questions at a later occasion.
- The manufacturer shall not be held liable if these instructions are not complied with. Devices may not be used improperly i.e. for purposes other than the intended use.
- The packaging of your high-quality ETHERMA product is made from recyclable materials.
- This device can be used by children aged 8 years and over as well as by persons with reduced physical, sensory or mental abilities or lack of experience and knowledge if they have been supervised or have been instructed in the safe use of the device and understand the resulting dangers. Children must not play with the device. Cleaning and user maintenance must not be carried out by children without supervision.
- Switches that are designed to ensure all-pole shutdown of a fixed device according to 22.2 must be connected directly to the connection terminals and must have a complete shutdown un-der the conditions of overvoltage category III in each pole.

NETTED HEATING MAT COMPOSITION



- **A** Resistance cables
- **B** Teflon inner insulation
- **C** Aluminium protective sheath + protective con- ductor
- **D** PVC outer insulation

IMPORTANT INSTALLATION INFORMATION

- The netted heating mat’s lowest laying temperature is 5 °C.
- The relevant ÖVE & VDE regulations must be observed.
- Electrical connection must be carried out by a licensed elec-trician.
- The relevant applicable national standards must be observed with regard to laying netted heating mats in walls or ceilings.
- The heating element may be laid on a flat, planar surface only.
- A minimum distance of 100 mm from walls must be adhered to.
- Minimum distance of 3 cm between heating conductors.
- The netted heating mat may only be laid in a straight line so that the distance from the heating conductor is not reduced.
- Heating conductors may not be touched or crossed.
- Do not fold the heating conductor.
- Do not run heating conductors over expansion joints.
- The heating cable may not be shortened.
- During installation, make sure that the heating element (the heating conductor) is not damaged, e.g. by dropping sharp objects, by stepping on the heating element or by careless speckling.
- The conductor must be secured by means of a fault current protective device with release current of max. 30 mA .
- Each mat must be fed to the controller and connected sep-arately. The controller’s max. permissible current must be observed in this process.
- The laying plan, mat charts and warning sign must be kept permanently in the electrical distribution cabinet.
- Use only branded flexible adhesive suitable for floor heating systems.

- Limit temperature: 90 °C
- Minimum permissible bending radius: 15 mm

THE FOLLOWING MAY BE USED AS SURFACE COVERINGS:

	max. thickness, d	λ	D=d/λ	K=1/D
	mm	W/mK	m2K/W	W/m2K
Parquet	15	0,14	0,1143	8,75
Cork	10	0,051	0,1176	8,50
Linoleum	4	0,17	0,0235	42,50
Vinyl flooring	6	0,23	0,0260	38,50
Carpet flooring	10	0,09	0,1100	9,00
Laminate floors	9	0,16	0,5000	20,00
Tiles incl. adhesive	12	0,95	0,0126	79,00
Paving (granite)	30	0,75	0,0400	25,00
Marble	20	0,81	0,0250	40,00

NOTES:

- Surface thickness of surface coverings must be at least 4 mm for a floor heating system. Consent from the manu-facturer must be sought if surface coverings other than those listed above are to be used.
- When laying against the ground or through unheated areas, heat insulation at least 20 mm thick is mandatory under the underfloor.
- Do not fold the heating conductor.

The following maximum outputs may be used:

- **< 200 W/m²** Installation on floor screed, areas with increased heating requirements
- **< 160 W/m²** Installation on floor screed and wooden floors
- **< 130 W/m² I**nstallation on floor screed and wooden floors, areas with increased heating requirements

EXAMPLE OF AN INSTALLATION

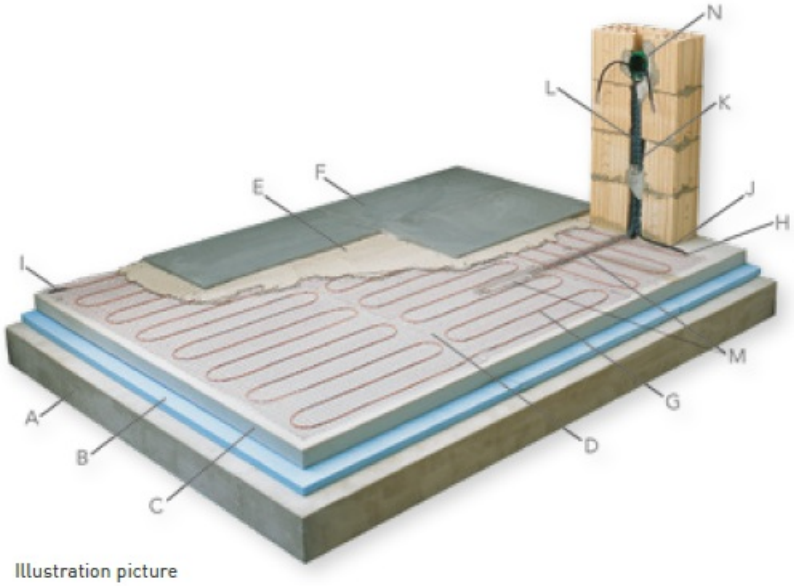


Illustration picture

- **A** Bare concrete
- **B** Existing insulation
- **C** Existing floor screed
- **D** Glass mat
- **E** Flexible adhesive
- **F** Floor covering (surface covering)
- **G** Heating conductor
- **H** Connecting component (element
- **I** End fitting
- **J** PTC thermistor
- **K** Installation pipe for PTC thermistor
- **L** Installation pipe for temperature sensor
- **M** Installation pipe and sensor protection tube made of copper
- **N** Flush mounting socket for thermostat

STRUCTURAL INSTALLATION VARIANTS

Installation under ceramic tiling

- The netted heating mat must be installed in a downward position with the heating conductor so that the conductor is protected by the netting during speckling and adhesive is spread more easily with the toothed trowel.
- **IMPORTANT:** The heating conductor must be surrounded fully by adhesive or the leveling layer.

- A rigid foam support element panel should be used as insulation if necessary (for garages or unheated cellars). These panels consist of extruded polystyrene foam with a cement layer on both sides – available in the building materials trade. The panels must be stuck to the floor screed with flexible adhesive.
- Lay netted heating mat and tiles according to version A or version B.

VERSION A - Immediate flexible adhesive

Step 1:	Preparation of floor screed for laying of flexible mortar
Step 2:	Laying of the netted heating mat - there are two options here:

Step 3a:

One coat of flexible adhesive
The netted heating mat is laid on the floor screed in accordance with the ETHERMA laying plan. 5-10 mm of tile adhesive (flexible adhesive) is applied over it and tiled immediately. (The flexible adhesive offers mechanical protection.)

Step 3b:

Two coats of flexible adhesive
The netted heating mat is laid out and is then overlaid with a 3 mm thick layer of flexible adhesive which is left to harden before the tiles are laid the following day with a second, 3 mm layer of tile adhesive.

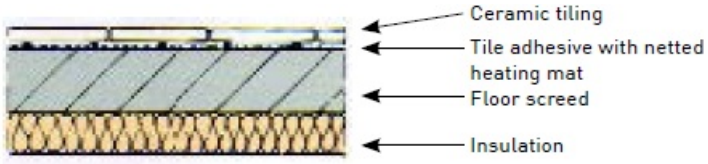
BENEFIT: The surface covering can thus be restored without damaging the heating.

VERSION B - with liquid levelling layer

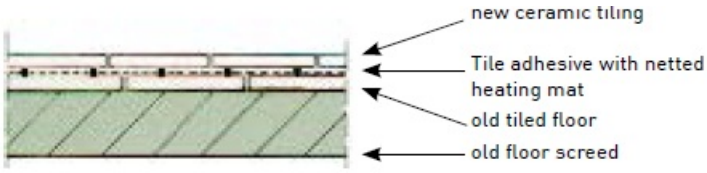
Step 1:	Undercoat the screed with 1:1 diluted water. Drying time: 12 hours.
Step 2:	Laying the ETHERMA netted heating mat.
Step 3:	Level with liquid levelling compound at a height of at least 5 mm. Curing time: 1-2 days.
Step 4:	Lay the ceramic tiles or flags and grout them.
Step 5:	Elastic skirt jointing.

- In both versions, the adhesive or levelling layer should be processed in a consistency that results in the heating conductor being surrounded completely.

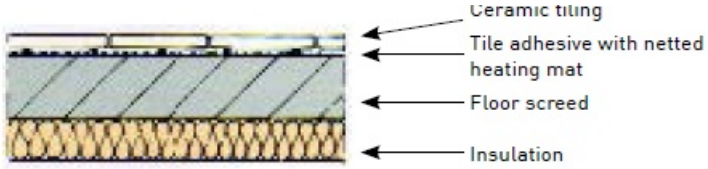
On new or existing cement screed



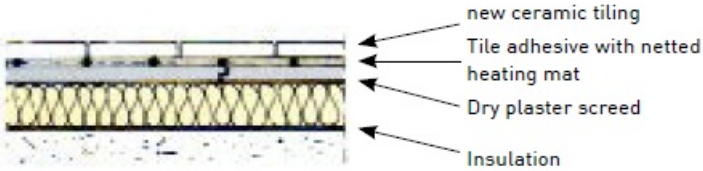
On old ceramic tiles or Terrazzo natural stone slabs



On anhydrite floor screed



On plaster underfloor



Layout:

As per version A or version B

Layout:

- Existing tiles must be free of wax and grease. Degrease with e. g. 10% sodium carbonate; scrub off with warm water.
- Undercoat, 5 hours minimum drying time; 24 hours maxi-mum
- Lay the ETHERMA netted heating mat.
- Continue to version A/step 3a or 3b or version B/step 3.

Layout:

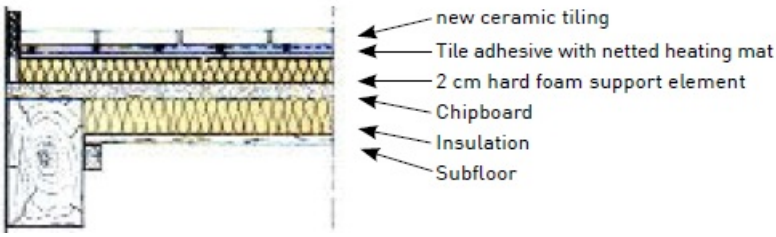
- Anhydrite screed must be dry, max. moisture 1%. Sand sur-face (grit grade 16).
- Undercoat with 1:1 diluted water.
- Lay the ETHERMA netted heating mat.
- Continue to version A/step 3a or 3b or version B/step 3.

Layout:

- Undercoat, undiluted.
- Lay the ETHERMA netted heating mat.
- Continue to version A/step 3a or 3b or version B/step 3.

On timber floorboards and chipboard

- **UNDERFLOOR PREPARATION:** For wooden floors, a hard foam support plate must be installed as a substrate, or the chipboard must conform to quality grade V100G – at least 25 mm thick. Seams must be designed with a tongue and groove and must be structurally glued. The plates must be screwed tightly to the substrate.



- The fresh undercoat must be sprinkled with furnace-dried quartz sand (grain size 0.7-1.2 mm).
- It must be ensured that the heating element is installed with a distance of at least 30 mm from conductive materials such as water pipes, for example.

Layout:

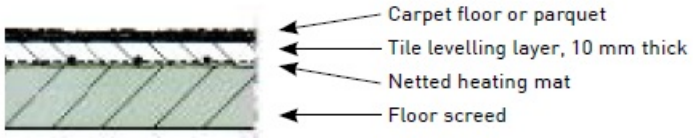
- 2 cm-thick hard foam support element plates are screwed to the existing floor with drywall screws. Seal joints.
- Pretreatment for laying tiles with flexible adhesive (also see underfloor preparation)

- Laying the ETHERMA netted heating mat.
- Continue as per version A or version B

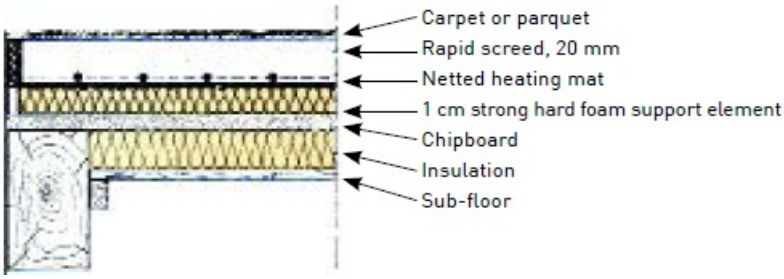
Installation under carpet floors, glued parquet or PVC floor covering.

- With these surface coverings, a smooth and level surface must be achieved – this is best suited to liquid levelling compound.
- The netted heating mat must be installed in a DOWNWARD position with the heating conductor so that the conductor is pro-tected by the netting during speckling and adhesive is spread more easily with the toothed trowel.
- The heating conductor must be surrounded fully by adhesive or the levelling layer.
- **ATTENTION:** For parquet, wooden floors and laminate, the surface temperature must be limited to 28 °C.

On new or existing cement screed



On new or existing cement screed



Layout:

- A liquid levelling layer must be used on floor screed, old ce-ramic floors, anhydrite screed and plaster underfloor.
- Pre-treat underfloor accordingly.
- Lay the netted heating mat; use flexible adhesive selectively in order to fix the netting on the floor and prevent it from being raised.
- Apply liquid levelling compound; 10 mm thick.

Layout:

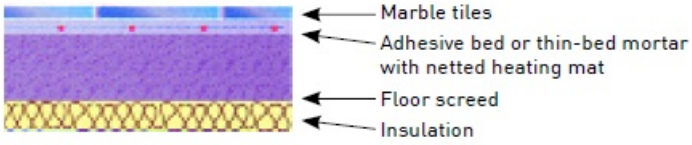
- A 10 mm hard foam support element plate must be used on wooden floorboards and chipboard. Netted heating mats may not be laid on wood.
- 10 mm-thick hard foam support element plates are screwed to the existing floor with drywall screws. Seal joints.
- Undercoat, undiluted (see also underfloor preparation)
- Lay the ETHERMA netted heating mat; use staples to fasten the netting to the plates and prevent it from being raised.

- Level with liquid levelling compound, 20 mm thick (rapid screed)

Additional installation options

- The netted heating mat must be installed in a downward position with the heating conductor; this ensures that the conductor is protected by the netting during speckling and adhesive is spread more easily with the toothed trowel. The heating conductor must be surrounded fully by adhesive or the levelling layer.

Under marble tiles in mortar bed



Layout:

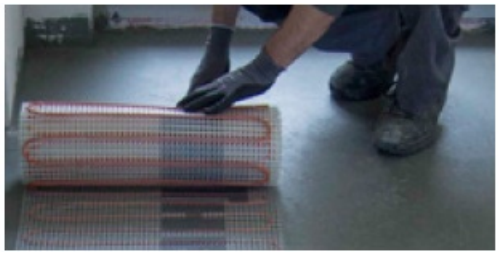
- In adhesive bed with marble tiles/thin-bed tiling. The netted heating mat is laid on the screed; the thin layer masonry mor-tar is laid with marble tiles as normal.

INSTALLATION

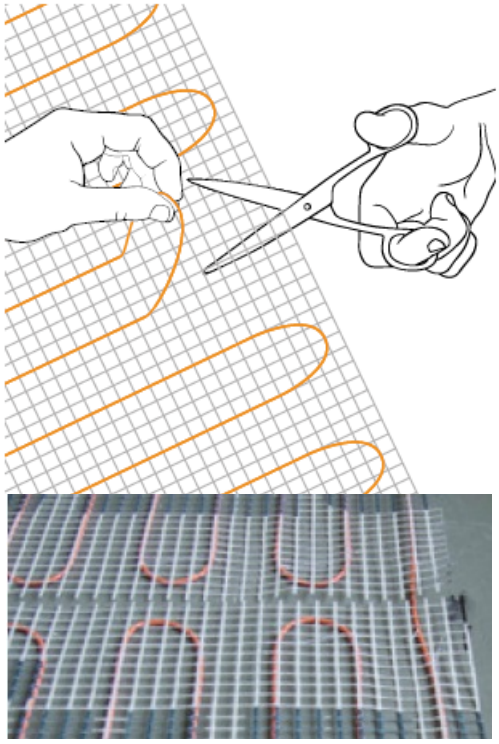
1. **Connecting cable**
   - Must be protected from mechanical impact using a protective pipe or protective hose.

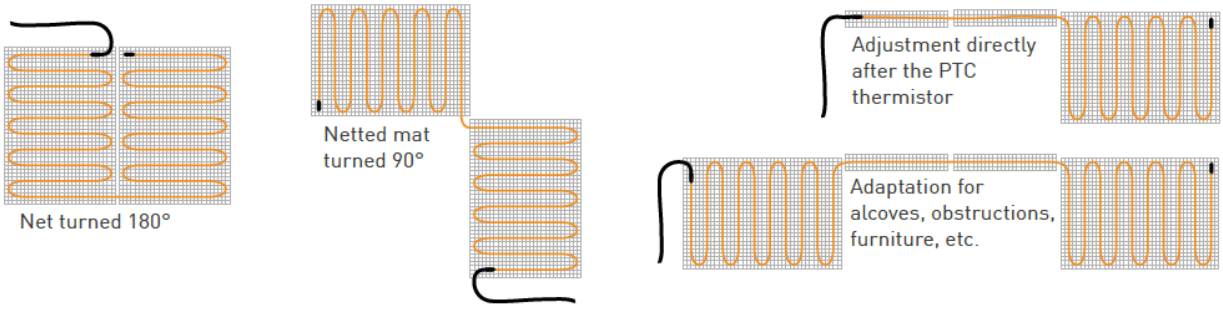
2. **Positioning the sensor**
   - Caulk in the sensor cable and connect the protective sensor hose. Ensure that the sensor cannot subsequently be cov-ered with furniture. It is best to place it in front of a door.

3. **Laying**
   - Beginning at the connection box, the mat is unrolled in accordance with the laying plan and is pressed down. The netted heating mat must be installed in a down-ward position with the heating conductor so that the conductor is protected by the netting during speckling.



4. **Cutting**
    - The netted heating mat is adapted to the floor plan by cutting the glass netting.
    - **ATTENTION!** Do not sever the heating conductor.
5. **Netted heating mat laying options**
    - The netted heating mat can be turned if the flooring layout so requires it. The netting (not the heating conductor!) is cut at the appropriate point in order to do this.





Adjustment instructions

- Use a knife or a scissors to turn or adjust the glass netting; when doing so, ensure that the heating conductor is not damaged or severed.
- When making modifications, ensure – even if just one heating conductor is fed further – that it remains on the glass netting in order to ensure level laying. The netted heating mat may not be shortened. (prevention of hotspots with superior cable)
- When making adjustments directly after the PTC thermistor, ensure that the heating conductor cannot be withdrawn for use as an extension to the PTC thermistor in the protective installation hose. Never use the

heating conductor as an extension of the PTC thermistor.

Sensor/connection cable

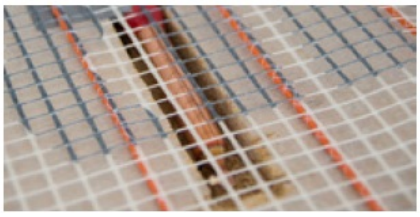
- **IMPORTANT:** Ensure that the sensor's caulked protective hose is positioned be-tween the two heating conductors. The temperature sensor and connection cable are then placed in the hose.

Protective coating

- The netted heating mat is coated with flexible adhesive when laid out. Ensure that you mix the adhesive to the correct consistency so that no trappings of air are created between the heating con-ductor and the adhesive.

Inspecting the netted heating mat

- After laying and completion of the floor-ing, the netted heating mat must be in-spected for throughput, resistance and insulation value, compared with the re-sistance value on the rating plate and en-tered in the inspection record. Deviations of -5 to +10% of the set point value are within the range of tolerance.



TEST CHART

ETHERMA°
INGENIOUS HEATING

Building Projekt:
Date:
Prepared by:

Measurement of resistance
Measurement of insolution factor (mind. 500 V, max. 1000 V testing voltage)

Mat	Resistance target	Resistance before mounting	value insulation	Date	Resistance after mounting	value insulation	Date

Granted Accuracy:
resistance: -5 % up to +10 %
minimum insulation value: 2 MOhm

Attention: Please store this chart together with the layout drawing and the product tag, otherwise warranty claim against manufacturer is voided.

Stamp Stockist

ETHERMA Elektrowärme GmbH | Landesstraße 16 | A-5302 Henndorf | Tel.: + 43 (0) 6214/7677 | Fax: + 43 (0) 6214/7666 | Mail: office@etherma.com | www.etherma.com

Lay flooring

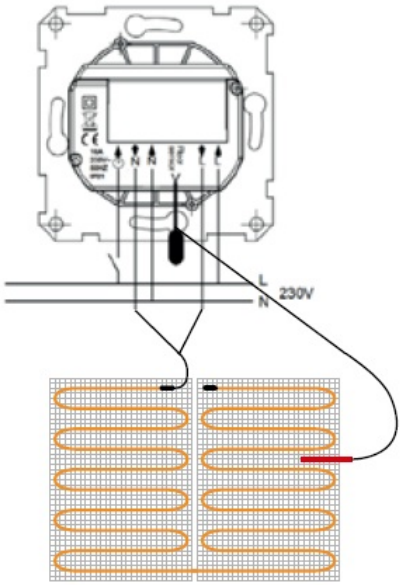
After the protective coating has hardened, the new flooring is laid with flexible ad-hesive.

Inspecting the netted heating mat after completion of flooring
After laying and completion of the floor-ing, the netted heating mat must be in-spected for throughput, resistance and insulation value.

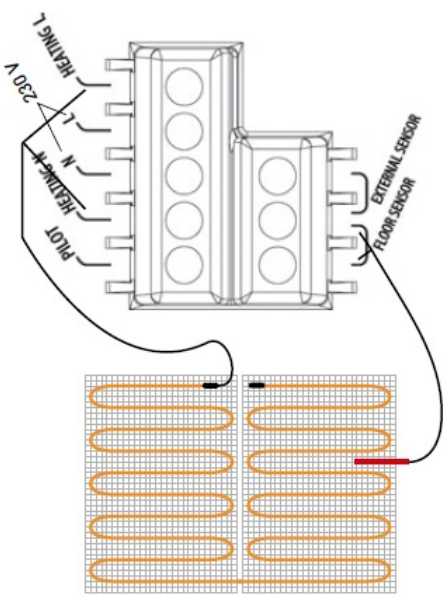
Electrical connection

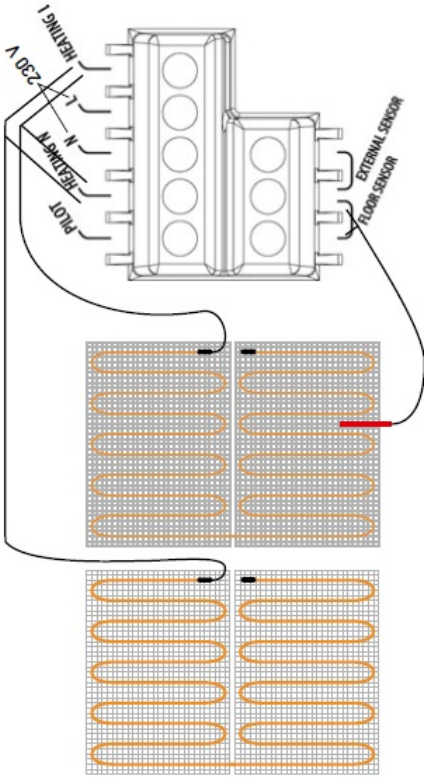
Netted heating mats are intended for fixed connection in a flush-mounted con-nection box.
A requirement from VDE 0100, part 520: The netted heating mat's connecting ca-ble (cold lead) must be fed into a conduit pipe. All mats are connected in parallel, whereby total power consumption must be considered depending on which con-trol device is used (10 A or 16 A switching current).

Wiring diagram for eTWIST



Wiring plan for eTOUCH mini





A ground fault circuit interrupter (30 mA) must be provided as a protective measure. Wiring and connection may be carried out by a licensed electrical company only. DIN VDE 0100, Part 753 must be observed.

Connection of electronic controller

- A terminal box, 150 cm in height, is pro-vided for electronic controllers (floor temperature controllers, combined con-trollers). The sensor is fed into the con-duit pipe; this must be caulked into the screed (or other underfloor).
- An aluminium or copper protective hose is attached to the end of the conduit pipe; the sensor measuring element must be positioned in this protective hose.
- Requirement from EN 60335-1; 7.12.2: A switching device with a contact open-ing width of at least 3 mm is required as a separating device. e.g. switch, fuse, ground fault circuit interrupter.

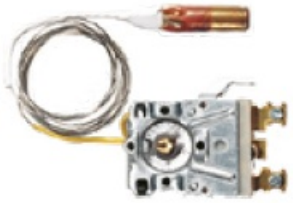
- There must be an all-pole isolating circuit (for 230 V mats only).

Control via room thermostat

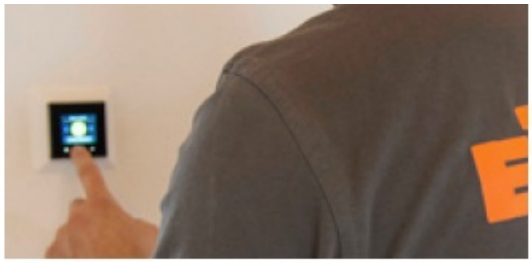
- If the floor heating system is controlled via a room thermostat, a capillary tube controller or floor temperature limiter for service distribution-board mounting must be provided as a maximum tem-perature limiter (own supply line for sensor). A 100/100 socket or larger is required for the capillary tube controller.

Floor temperature adjustment

- Recommended controller default tem-perature setting:
- 36 °C in bathrooms and saunas
- 30 °C in living rooms
- 28 °C for parquet, wooden or laminated floors
- ETHERMA MTS installation kit: 2.5 m installation sleeve SS-12 1 x copper sensor protection tube FSH-12



ETHERMA capillary tube controller



eTOUCH mini -
Switch mounting thermostat with touch-pad

eTOUCH wellness controller for wall and special applications up to 60 °C.

eTOUCH wifi
with WLAN-function

eTOUCH eco
with Touchpad

eTWIST
with App function

INSTALLATION

After the tile adhesive or the leveling compound has hardened, but at the earliest after 24 hours (observe the manufacturer’s instructions), the heating can be put into operation and the user instructed.

DOCUMENTS FOR RETENTION

The following documentation must be given to the user after instruction, and kept permanently in the electrical distribution cabinet:

- Mat chart(s)/power rating plate(s)
- Laying plan
- Completed inspection record
- Controller operating manual
- Warning sign

GENERAL WARRANTY CONDITIONS

Dear customer,

- Please observe our general terms and conditions. Country-specific legal entitlements apply to warranty claims; please assert such rights directly through your distributor.
- **RESERVATION:** We reserve the right to make technical changes. Modifications, errors and misprints shall not constitute grounds for damages.
  WARNING: Electrical and electronic appliances often contain precious materials. But they can also contain harmful substances that were necessary for their function and safety. They can harm the environment if disposed or mishandled. Please help to protect our environment! Therefore do not dispose of this device in the residual waste.
- Dispose of this unit in accordance with local regulations. Dispose of the packaging materials, replacement parts or equipment parts properly.
- **ETHERMA**
- **Elektrowärme GmbH**
- **Landesstraße 16**
- **A-5302 Henndorf**
- **Tel.: +43 (0) 6214 | 76 77**
- **Fax: +43 (0) 6214 | 76 66**
- **Web: www.etherma.com**
- **Mail: office@etherma.com**

Documents / Resources

	ETHERMA DS BASIC Underfloor Heating Under Tiles and Stone [pdf] Instruction Manual DS BASIC Underfloor Heating Under Tiles and Stone, DS BASIC, Underfloor Heating Under Tiles and Stone, Heating Under Tiles and Stone, Tiles and Stone

References

- ETHERMA - Electric heating & infrared heating