

## Installation instructions

### HEM-GH-06/07, HEM-DH Thin-bed heating mat


Read these instructions carefully before starting the installation.



The electrical connection should be made by a trained electrician.

### Important installation notes

- A precondition for the installation is that the requirements of all applicable VDE provisions are observed, in particular, DIN VDE 0100 part 753 (provisions for installers), 0100 part 701 (requirements on rooms with bath tub or shower) 0100, part 520 (cables and line installations).
- Check to make sure that the delivery matches the plan.
- The base should be strong and free of vibrations.
- Thermal insulation under the sub-base is absolutely necessary if the mat is installed over soil or rooms without heating.
- When laying out the mats, observe that self-adhesive heating mats are installed with the plastic grid structure down. Non-self-adhesive heating mats should be installed with the plastic grid up.
- Tile adhesive, flexible mortar and levelling compound should be compatible with the floor heating system (e.g., product of PCI www.pci-augsburg.de).
- Completely embed the heating mats, heating cable and cable sleeves in the adhesive mortar.
- Avoid kinks of the heating cable.
- Heating cables should not touch or cross each other. Maintain 4 cm minimum distance between them.
- Do not install heating cables across expansion or dummy joints.
- Do not cut the heating cable short or connect it directly.
- Provide a fault circuit interrupter (FI  $\leq 30$  mA) as protection against direct contact during installation.
- Observe all applicable VDE and TAB provisions.
- The lowest temperature at which the heating mats can be installed is 5 °C, the highest permitted surface temperature is 80° C.
- Heating mats can be installed on almost any clean, dry, absorptive, load-bearing and frost free floor.
- Heating mats must not be installed in easily or normally flammable building materials acc. to DIN 4701.
- Fresh cast concrete floors should dry at least 4 weeks in the warm season and double that time in the cold season, depending on temperature and weather.
- Do not install heating mats in walls below 2.3m or ceilings inclined less than 45° to the perpendicular.
- Make sure to install the heating mat without folds, i.e., exert a slight pull when laying out the mat on the floor.

- Make sure that there are no sharp edges or pointed objects in the area which could damage the heating mats. If present, remove them completely.
- Install the heating mat and supply socket in such a way that the PTC thermistors / protective ground leads can be connected without the need to extend their length.
- It is forbidden to cut heating cables from the heating mat and install them loosely.
- Sleeves (cold-warm transitions) should not be kinked, e.g., 
- place the warning sign for installing the heating mat and the mat installation plan near the power distribution point.
- Install the heating mat at least 30mm from conducting parts of the building (e.g., water pipeline)

### Adhesive

- Remove all loose material such as loose tiles, waste adhesive, etc. from the floor and level out bigger floor unevenness with leveling compound.
- Heating mats can be installed with all branded quality flexible adhesives suitable for floor heating systems (e.g., product of PCI www.pciaugsburg.de).

### Connections

- The connections of the heating mats, the timers and switches must be made according to 0100 part 753 (provisions for installers) by a trained electrician.
- The connecting cables should be laid in plastic armored conduit with minimum 0.8 mm wall thickness.
- If more than one heating mat is installed, all connecting cables should be installed through the empty cable duct to the flush-mounted socket outlet and connected using the supplied system connector. PTC thermistors and protective switches should neither touch nor cross the heating cable.
- Heating mats, including mats of different sizes, can be switched together via a common system connector provided they have the same output per unit area. The maximum current of the controller should be observed.

### Other points

- When installing the heating mats in bathrooms and showers, do not install them at places where sanitary facilities, e.g., bathtubs, shower trays, free-standing flush WC or bidet and fitted furniture will be put (observe VDE 100, part 701).
- The heating mat or controller are not made to be handled by persons (including) children with restricted mental, physical or sensorial capabilities or who do not have the necessary experience or knowledge unless under the supervision of a person responsible for safety or unless they were instructed in the use of these items.  
Children should be supervised to make sure that they do not play with the products.

- Install the heating mats so they do not overlap (when installed in the adhesive bed).
- The only permitted way of installation of the heating mat is permanent fixing to the floor.
- Make sure that the heating mat is separate from other sources of heat such as lamps or chimneys/fireplace.
- The smallest permitted bending radius is 5 times the outer diameter of the heating cable.
- Do not step on the heating mat except you cannot avoid this during installation. Wear suitable boots with rubber soles. Put down or move tools for installing the cover material on a suitable support.
- Cabinets whose full bottom rests on the floor should only be placed on unheated floor area.
- As a rule, maintain 60 cm of non-heated edge around movable walls.
- Do not install penetrating objects (doweled screws for door stops) in areas with heating mats.
- Heating mats should not cross available or planned expansion joints.
- Additional floor covers, e.g., carpets or rugs, thicker than 10 mm are not permitted because they can cause heat build-up and damage the heating mat.

### How to avoid air gaps between heating mats and screed:

- Install the heating mat only after all unevenness has been leveled.
- The base on which the heating mat is installed should be aligned in vertical and horizontal direction according to DIN 18202.
- Substrate, heating cable and sleeve should completely be enclosed in the cover material.

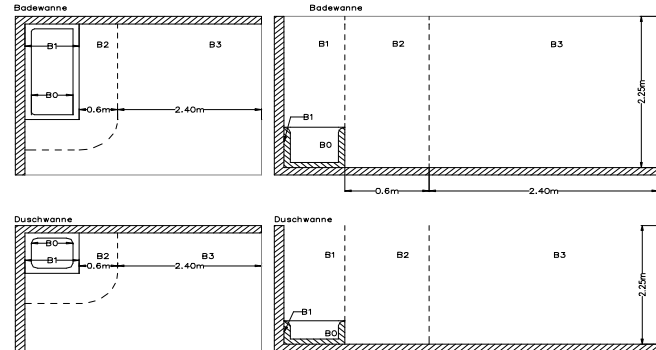


Figure: Areas without heating mat around bath tubs and shower trays

### Adhesive residue

Firm residue can remain on the floor, loose residue should be removed. Depending on the flexible adhesive you use, prime the floor as instructed by the supplier and let it dry. If marble or granite tiles are laid, remove all glue residue completely.

### Old tile or natural stone floor covers

Inspect the floor to detect loose or hollow tiles and remove these completely.

Also remove any grease or dirt layers. Depending on the type of flexible glue you are using and the supplier's instruction, apply an undercoat.

### Functional range

The super-flat heating mat provides a thermal environment and is installed directly below the floor covering. It can be used as additional or as only heating (note the heat output!). Due to its low height of only 3-4 mm, this heating mat is preferred for service fitting in bathrooms, showers, kitchens, etc.

### Maximum thickness of flooring

Tiles	30 mm	$\lambda = 1.00 \text{ W/mK}$
Parquet	16 mm	$\lambda = 0.14 \text{ W/mK}$
Wall-to-wall carpet	10 mm	$\lambda = 0.09 \text{ W/mK}$
Laminate flooring	8 mm	$\lambda = 0.08 \text{ W/mK}$
PVC	10 mm	$\lambda = 0.23 \text{ W/mK}$

**Consult the supplier for other floor materials.**

## Other points

Electrical floor heating system under the shower without a tub

DIN VDE 0100-701 (VDE0100 Part 701) and draft DIN VDE 0100-753 (VDE 0100 Part 753)

It has been stipulated in section 701.753 in this respect that radiant panel heating can be laid in the floor below the floor screed/in the floor screed irrespective of the areas.

it is allowed to lay this radiant panel heating system in the floor beneath area 1 for showers without tubs.

The prerequisite in this respect is that:

- Insulated heating lines in accordance with DIN VDE 0253 (VDE0253) or panel heating elements in accordance with the applicable standards for operating materials, are used
- The heating elements shall be fitted with a metal coating or a metal casing. They shall be connected with the protective earth conductor of the supplying circuit through protective earth conductors or equipotential bounding conductors.
- The circuit to be supplied shall be secured with an additional protective system through residual current protection devices (RCDs) with a rated differential current  $I_{\Delta N} \leq 30\text{mA}$
- The panel heating shall have a minimum protection class of IPX7.
- Moreover, the installation technician shall be expected to prepare the respective installation plans and attach warning information to the distribution board.

## Sensor tupe – Alu end seal senso

To prevent flex-mortar from entering the sensor protection conduit while laying it, a sensor sheath (Art. No.20079) will be fixed with an insulating tape at the end of the protective conduit. This will facilitate the replacement of the sensor (see image) whenever necessary. The sensor conduit shall be laid in such a way that the subsequent dismantling and installation of the temperature sensor is guaranteed.



## Heating mat design HEM-GH GH 06/07

The following data refers only to  
article No.: 30751-...

HEM heating mat with one-side connection for installation in tile adhesive or leveling compound. Best for refurbishments of old buildings, bathrooms, showers, etc.

### **NEW -sleeveless**

**self-adhesive,  
100% watertight**

**Insulating cover fully resistant to chemicals and temperature**

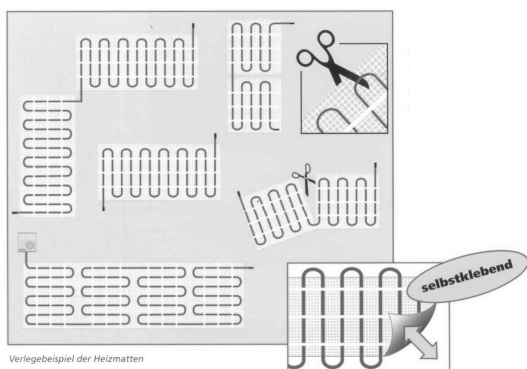


## Preparing the installation area

Inspect the area before you start installation work. Close cracks with epoxy resin. Make sure that the area is free from sharp, pointed objects which can damage the heating mat. Attach boundary insulation strip (foam strip abt. 8 mm) around all walls, columns, etc.

## Installation method

Put self-adhesive heating mats with the plastic grid down and non-self-adhesive heating mats with the plastic grid up on the floor according to the installation plan. The shape indicated in the plan is obtained by cutting the plastic grid at the intended turn point.

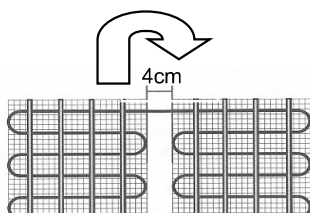


**Important!** Do not damage the heating cable. Bend the heating map where you cut it and install it in parallel with the first web.

When installing HEM heating mats in showers or bathrooms, do not install them at places where sanitary facilities, e.g., bathtubs, shower trays, free-standing flush WC or bidet and fitted furniture will be put (VDE 0100).

Drawing for **area 0, area 1 and area 2**  
according to VDE 0100-701.

**Maintain a minimum distance of 4 cm between heating cables.**



Do not lay heating mats so that they cross each other. Wherever possible, avoid stepping on the heating mats during installation.

The connection ends (PTC thermistors) are installed to the socket outlet from the side of the heating mats.

Make an insulation check before embedding the heating mat, measure the resistance of the heating mat and enter the value in the test report.

The products needed for installing the heating mats are available from several suppliers. Please observe the handling instructions of the respective supplier (e.g., product of PCI [www.pci-augsburg.de](http://www.pci-augsburg.de)).

## Installation on cement screed

1. Apply an undercoat to the base and let it dry.
2. • Fix self-adhesive heating mat to the base and cover it with flexible mortar or leveling compound completely.
  - If you use non-self-adhesive heating mats, apply flexible mortar and press the heating mat in the mortar bed with plastic grid up.
 At the end of this step, the heating mat with the sleeve should be fully enclosed by the flexible mortar or leveling compound.
  - The base should be firm, clean and sufficiently load-bearing. Carefully remove all oil stains and other impurities which reduce adhesion. This applies to all kinds of base in general.
3. Allow the mortar bed and leveling compound to dry.
4. Remove any unevenness by applying leveling compound and let it dry.
5. If you want, request the CD / DVD before you start the installation.

### Installation on ceramic flooring, synthetic or natural stone tiles

Any cover should adhere firmly. Contamination of any kind, e.g., wax or grease, should be removed carefully using suitable cleaner.

Proceed as described for "Installation on cement screed" (see above).

### Installation on anhydride screed

The anhydride screed should be dry, maximum moisture 0.5 %. Slightly grind the surface, if necessary.

Apply self-leveling cement screed and let it dry sufficiently.

### Installation on wood planks or wood chip board

The floor should be non-vibrating and dry. Contamination of any kind, e.g., wax or grease, should be removed carefully using suitable cleaner.

Screw-fasten or glue hard foam carrier panels or polyester press fiber board on wood planks or wood floor.

Heating mats on a wooden base should be embedded completely in levelling compound or flexible mortar.

Proceed as described for "Installation on cement screed" (see above).

### Floor top cover

Ceramic tiles and natural stone are very good for floor heating systems, textile, plastic and parquet flooring can also be used. Generally, the top flooring should be fixed with an adhesive suitable for floor heating.

### Tiles as top flooring

Install tiles in flexible mortar, then cut off the projecting edge insulating strip.

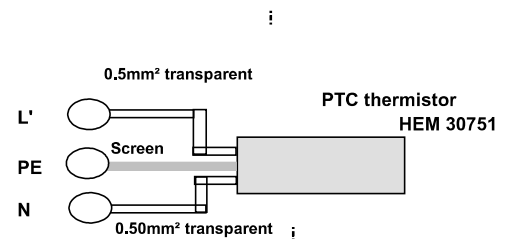
Close the tile joints, use silicone for the edge joint.

### Textile or PVC top floor

Where textile or PVC top flooring is installed, the mat should be covered with at least 10 mm flexible levelling compound as mechanical protection. Constant temperature resistance of the levelling compound: at least 50 °C

### Connection of PTC thermistors

The PTC thermistor ends are connected in the wall socket outlet as shown in the schematic below.



HEM GH-06/07



#### Important!

Several heating mats are connected in parallel.

The maximum permitted current at the switch contact of the controller should not be exceeded.

- L'     Terminal for the switched phase (230V~) via controller (B1), e.g., temperature controller.
- PE     Connecting terminal for the screen of the PTC thermistor for line protection and residual current monitor.
- N     Connecting terminal for the neutral conductor of the PTC thermistor.

### Coverage of heating cables / heating mats

The VDE / EN regulations (60335-2-96-2002) require 5.00 mm covering over heating cables / heating mats. The continuous temperature requirement of 50°C must be met.

## Installation

Electrical heating equipment must be installed by a trained electrician. EN60335-1) The heating system must be equipped with an all-pole disconnecter with at least 3 mm open contact width of each pole.

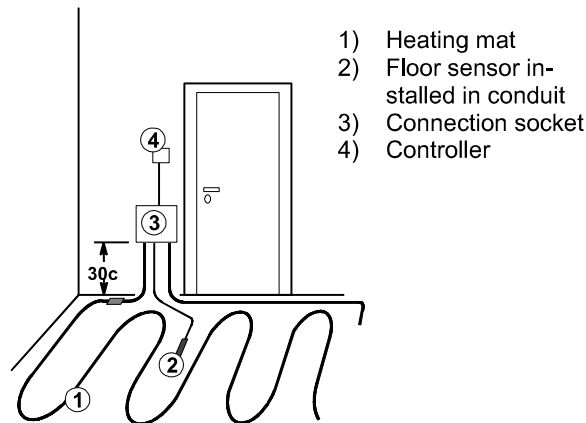
Protection against indirect touching should be provided by a residual current switch ( $FI \leq 30 \text{ mA}$ ).

The floor sensor of the temperature controller should be installed directly in the floor in a conduit closed on one side. Position the floor sensor in the middle between the two heating cables.

The PTC thermistors of the heating mats must be installed in a conduit from the floor-to-wall transition up to the wall socket outlet.

The PTC thermistor ends of each heating mat must be connected to 230V~ mains supply voltage via the control device. The protective ground conductor of the heating mat is connected to the protective ground. Also see chapter "Connection of PTC thermistors".

Hemstedt heating mats must only be used together with Hemstedt temperature controllers (part of the VDE registration).



## Documentation

The owner of the system should receive the following documents:

- Installation instructions with completed test report,
- inspection plan with position of the heating mats, temperature sensor and footprint area of furniture, etc. as well as connection points of heating cables and PTC thermistors.
- Description of the floor structure.

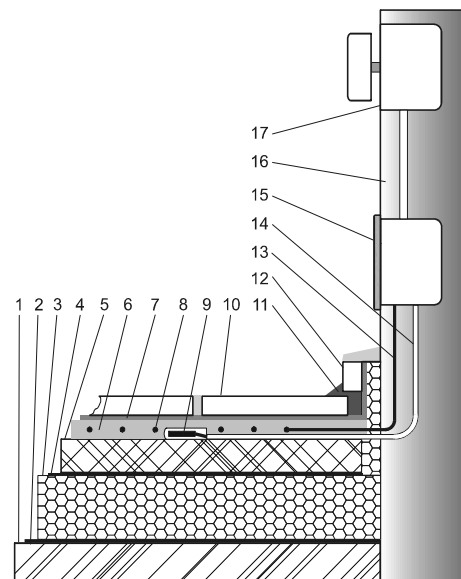
## Temperature control

The floor and room temperature can be controlled by flush-mounted or surface-mounted controllers. Only floor temperature controllers are permitted in rooms with several heating sources (e.g., bathrooms).

A timer can be connected to the floor heating for the preset of heating time. Alternatively, floor temperature controllers with programmable times and levels of temperature reduction are also available.

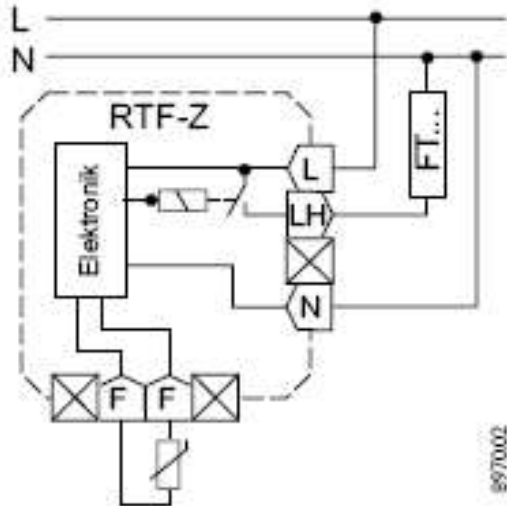
For available controllers, see next page.

## Example of floor structure and electrical installation

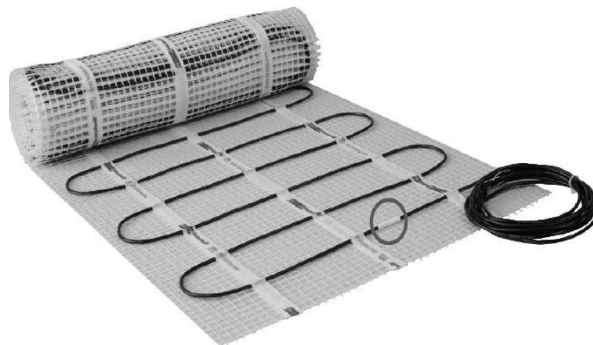
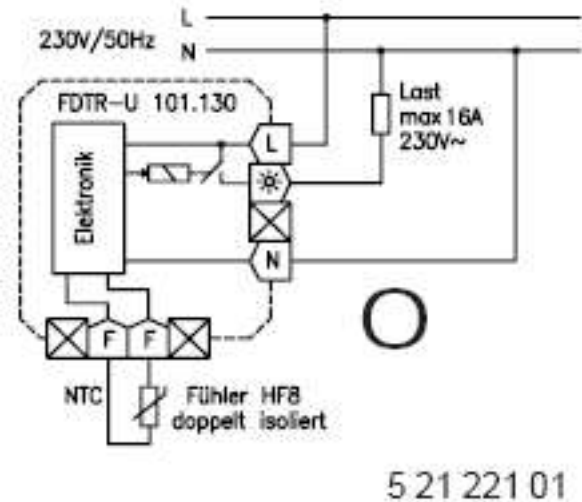


- 1 Unfinished floor
- 2 Vapor barrier (optional)
- 3 Footstep sound insulation, thermal insulation
- 4 Plastic film
- 5 Screed
- 6 Levelling compound, temperature resistant
- 7 Thin-bed adhesive, temperature resistant
- 8 Heating mat
- 9 Floor sensor
- 10 Floor tiles
- 11 Flexible joint seal
- 12 Skirting
- 13 Heating mat feeder cable conduit
- 14 Floor sensor conduit
- 15 Connection socket
- 16 Wall
- 17 Empty receptacle, temperature controller

**Dot scale controller type HEM TP-A**  
 (article No.: 93093)  
 FETR- 101,716



**Timer thermostat HEM TU-A (article No.: 93099)**  
 FDTR-U 101,132



### HEM system thin-bed heating mat with sleeveless cold-warm transition (article No.: 30751-...)

The transition from the heating cable to the connecting cable (sleeve) is marked as follows:

The end of the heating cable has a red cable strap, the beginning of the connecting cable has a blue cable strap.

An additional color marker is attached between the cable straps to mark the transition

„transition/ connection“. The rest of the connecting cable has the words

„KALT / COLD KALT / COLD“ printed on it. This PTC thermistor is installed from the connecting socket and to the thermostat, respectively. The connecting cable can be cut short to 1.00 m before the blue cable strap (transition / connection).

\*Noting the date confirms the proper function of the installed Hemstedt heating mat, incl. temperature controller.

**Warranty can only be claimed if the test and heating report and temperature control are completed**

**Important warranty note!**

To claim warranty, mail the completed test and heating report in the design documentation or the test and heating report HEM-1 + HEM-2 in the installation instructions within **3 weeks** after installation of the heating to the following address. No warranty is available if the end user or a third party does not comply with our installation and operating instructions. Warranty is available for the period granted by the distributor. In each case, submit the original proof of purchase showing the date of purchase and / or delivery.

**Disposal**

The product cannot be disposed of as general household waste.



DISTRIBUTOR:

Subject to technical modifications. No liability accepted for typographical errors



<b>Abnahmeprotokoll</b> <b>Протокол приёмки</b> <b>Test Report</b>	Formular: FO-10-45 Формуляр: FO-10-45 Form: FO-10-45
<b>Dünnbettheizmatte</b> <b>Отопительный мат</b> <b>для тонкой стяжки</b> <b>Thin –Bed Heating mat</b> <b>HEM-DH</b>	Erstellt/Составлен/Provides: 23.12.11/SP Revision/ревизия/Revision: 07.05.03/AS Seite/страница/Page: 1 - 2

**Kontrollmessungen** werksseitig: nach DIN VDE 0700 Teil 1/10.95 und 500/02.97/ Prüfung nach Prüfanweisung FO-10-28

**Контрольные измерения производителя:** по DIN VDE (Пром. стандарт ФРГ, Общ-во нем. электротехников) 0700 ,часть 1/10.95 и 500/02.97 / (Контроль по инструкции: FO-10-28)

**Test measurements** factory-installed: according to DIN VDE 0700 part of 1/10.95 and 500/02.97

Testing instruction FO-10-28

**TYP**

**IST WERTE**

Nicht unter 5°C verlegen  
 Montage- und Verlegeanleitung beachten  
 Vor Beschädigung schützen  
 Aufheizen mit 5°C / Tag  
 Die Heizmatten dürfen nur in Verbindung mit einem Fehlerstromschalter  
 mit 30 mA Fehlerstrom betrieben werden

Не укладывать при температуре ниже +5° C.  
 Соблюдать указания по монтажу и укладке.  
 Защищать от повреждений.  
 Ежедневное повышение температуры нагрева на 5°C согласовывать с укладчиком стяжки.  
 Отопительные маты могут эксплуатироваться только совместно с применением защитного устройства  
 ( FI < 30 mA).

Do not lay less than 5°C  
 Please note assembly instructions  
 Protect against damage  
 Heating up with 5°C/day  
 The heating mats need to be operated only combined with a fault current switch with 30 mA fault current

Kontrollmessung durch den Installateur:

vor dem Einbau:

nach dem Einbau:

Gesamtwiderstand: \_\_\_\_\_  $\Omega$

\_\_\_\_\_  $\Omega$

Isolationswiderstand: \_\_\_\_\_  $\Omega$

\_\_\_\_\_  $\Omega$

\_\_\_\_\_  
Datum

\_\_\_\_\_  
Unterschrift

\_\_\_\_\_  
Firmenstempel (Errichter)

**Контрольные измерения монтажника:**

до установки:

после установки:

общее сопротивление: \_\_\_\_\_  $\Omega$

\_\_\_\_\_  $\Omega$

изоляционное сопротивление: \_\_\_\_\_  $\Omega$

\_\_\_\_\_  $\Omega$

\_\_\_\_\_  
дата

\_\_\_\_\_  
роспись

\_\_\_\_\_  
печать фирмы установителя

**Test measurement by the installer:**

Before the installation:

after the installation:

Total resistance: \_\_\_\_\_  $\Omega$

\_\_\_\_\_  $\Omega$

insulation resistance: \_\_\_\_\_  $\Omega$

\_\_\_\_\_  $\Omega$

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Company

**Dieser Anhang gilt nur nach durchgeführten Kontrollmessungen als Garantiekarte-**

*Anmerkung: Wenn die Dünnbettheizmatte eine der Prüfungen nicht besteht, wird sie nach der Reparatur oder Nachbesserung noch einmal allen Prüfungen unterzogen.*

**Это приложение после проведённых контрольных измерений является гарантийной картой.**

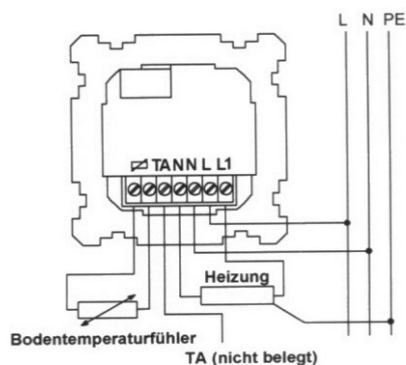
*Примечание: если отопительный мат не прошёл заводской контроль, то после доработки он должен подвергнуться всем видам контроля.*

**This attachment only will be accepted as warranty policy after performing the test measurement**

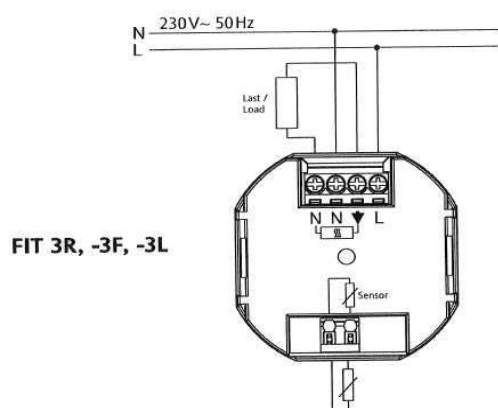
*Please Note: If the thin bed heating mat does not exist one of the examinations, it becomes after again all examinations submitted of the repair or rework.*

**Annex A (supplements the controller overview on p. 6)**

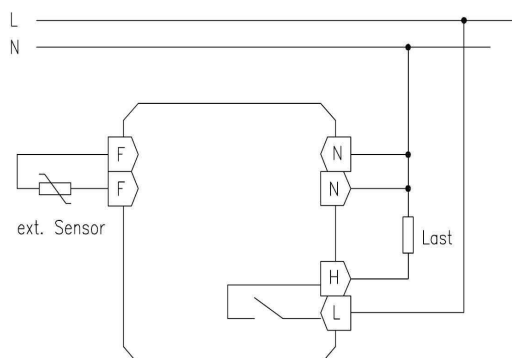
**Floor temperature controller HRT 6145-50**



**Digital floor regulator digital up TYP 52781245  
 (article –No.: 93089)**



**Digital floor regulator digital up TYP HTRRUu 210.021  
 (article –No.: 93086)**



PA-UP Temperature Regulator with numeric scala FRe F2A/50 (**Article No. 93088**)

