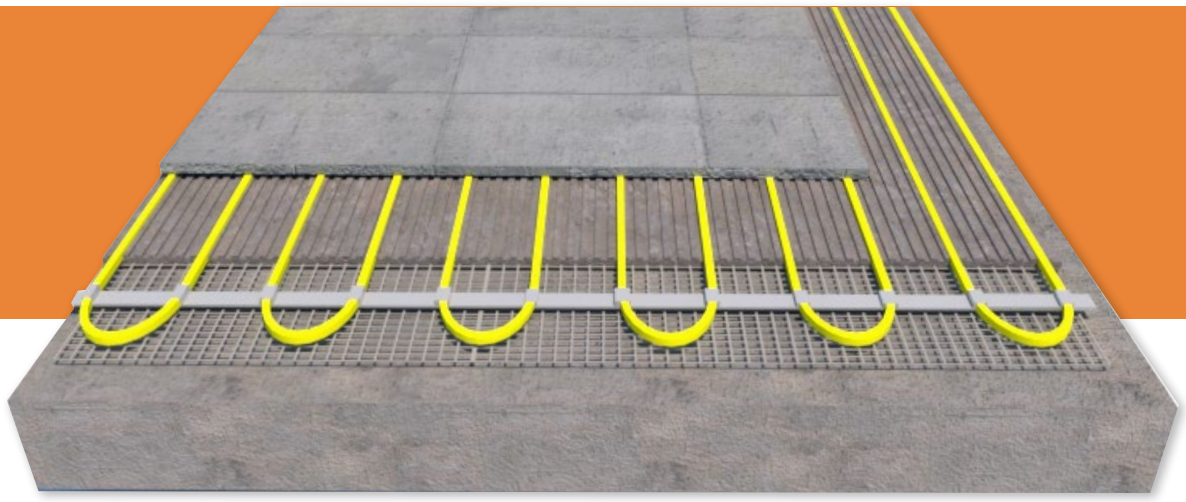
ELECTROTHERM
ELECTRICAL HEATING SYSTEMS

Installation Guide
and Product Care Manual



MDIR

Super thin, double core underfloor heating mat
Installation Guide and Product Care Manual

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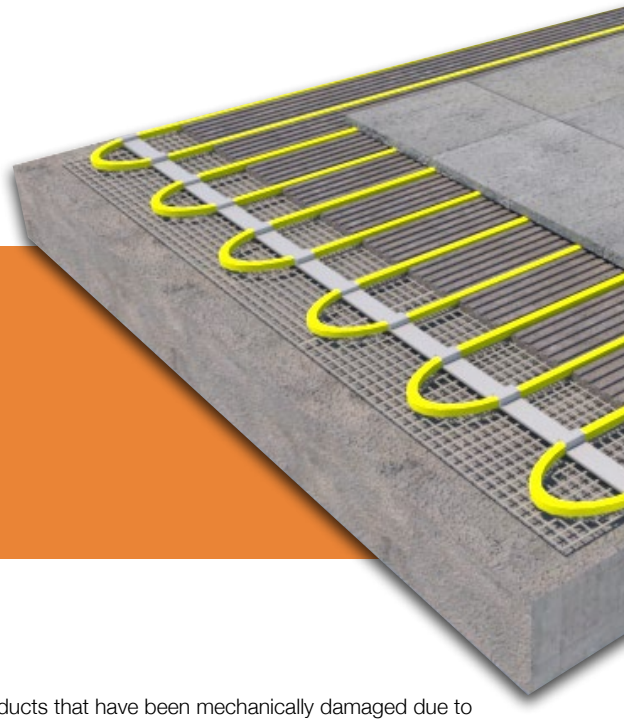


INSTALLATION GUIDE

General Information

We guarantee that our products are free from defects in materials and workmanship. Products that have been mechanically damaged due to incorrect connection or failure to follow the the terms of operating rules and servicing, are not subject to warranty repairs, replacement or return.

✗ NEVER	✓ ALWAYS	
✗ Connect the heating mats to electricity or turn on the heating mats while coiled	✓ Install the electric underfloor heating mat using an all pole disconnection (e.g relay, power contac-ter,) with a contact opening of minimum 3mm	✓ install the cold lead cable of the heating mat inside a seperate corrugated tube (DIN EN 61386-1)
✗ Connect the heating mat wires to electricity or shorten them. Only the heating mat cold lead wires are allowed to be lengthened or shortened during installation	✓ Operate the electrical underfloor heating mat with a ground fault circuit breaker (30mA).	✓ Install the floor temperature sensor cable inside a seperate corrugated tube (DIN EN 61386-1).
✗ Cross or fold the heating wires.	✓ Connect the electrical underfloor heating mat, by means of an electrical box, firmly to the power supply 230 VAC (3x1,5mm²).	✓ Level uneven floors using a self-leveling floor compound before installation of the heating system
✗ Bend the heating cables less than 30 mm radius at the turns.	✓ Install the thermostat outside of the protected zone 2, according to VDE 0100.	✓ Leave a distance of 60 cm to the partition wall, in case the final position of the furniture is not yet know.
✗ Exceed the total amperage of the thermostat (refer to thermostat specifications) by parallel connected heating mats.	✓ Record the mat resistance readings before and after the installation.	✓ Leave a minimum distance of 5cm between the and components such as bathtubs and shower trays.
✗ Apply more than 120N of impact on the termination joints	✓ Make sure all electrical work is executed by qualified persons in accordance with the local building regulations.	✓ Leave a minimum distance of 3cm from conductive heating pipes such as heating pipes
✗ Install the heating cable over a building expansion joint	✓ Verify that the existing floor thermal insulation complies with the latest technical standards and regulations. Therefore, a high energy	✓ Connect multiple heating mats in a parallel position with a recessed electrical box.
✗ Install the mats through or behind insulation material, under cabinets, under fixed objects or in small closets. Excessive heat will build up in these small spaces and the fasteners (nails, screws, etc.) used to install the fixed objects could damage the mat.	✓ Make sure that the complete room floor is covered with a special sustainable and temperature-resistant impact sound insulation before installation of the heating mat.	✓ Install the thermostat outside of the protected zone 2, according to VDE 0100.
✗ Turn on the underfloor heating system before the mortar or screed is fully dry.	✓ Ensure the subfloor should be even, secure, solid and with an appropriate load capacity.	✓ Connect the braided shield or screen to the PE ground conductor.
✗ Install the electrical heating mat on walls or ceilings.	✓ Ensure the surface is dry, clean, free of grease, dust and sharp objects.	✓ Ensure a qualified electrician installs the underfloor heating mats in order to meet regulations.
✗ Expose the heating mat to temperatures above 80°c	✓ Use certified underfloor heating system materials for the installation	
✗ Install the heating may below +5°c		

1 Installation Plan

Draw the intended floor layout for the ELECTROTHERM MDIR electric underfloor heating mat. Draw the zones that will be free of the heating mat and the required spacings around the surrounding walls. The heating mats distance from any conductive parts (e.g water pipes) of the building have to be at a minimum of 30mm.

2 Subfloor Preparation

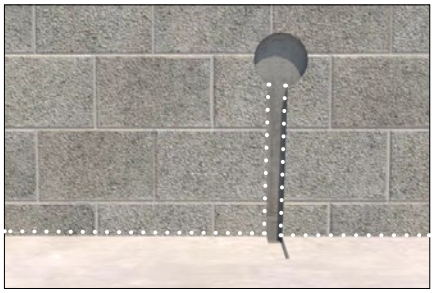
Before installing ELECTROTHERM **MDIR** electric underfloor heating mats, efforts should be made to ensure the subfloor is even, secure, solid and has the appropriate load capacity.

- Ensure the subfloor is dry, clean and free of grease dust and any sharp objects
- If the subfloor is uneven, it must be levelled using a self levelling floor compound to prevent air cavities
- Never install the heating mats over a building expansion joint

3 Thermostat Installation Preparation

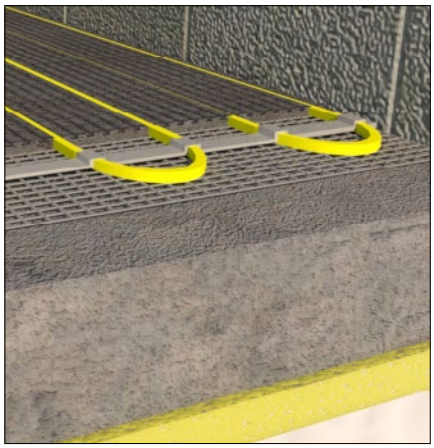
Create the required channels for the power supply wires, cold leads and temperature sensor in the wall and floor (**ATTENTION! the cold leads and sensor cables have to be installed in separate corrugation tubes**).

A standard plastic round recessed electrical box with 230 VAC power supply is preferred for installation at the chosen thermostat location. A ground fault breaker (30mA) should be used for the 230 VAC heating mat circuit.



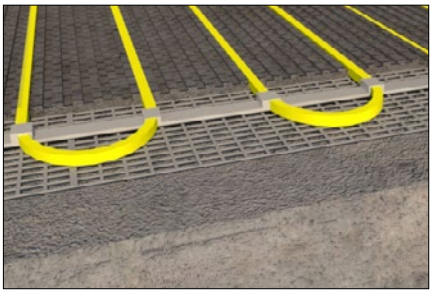
4 Mat Adjustment

Fix the ELECTROTHERM **MDIR** mat to the subfloor with the fibre mesh facing down. Adjust the mat to the heating area layout by cutting and turning the fibre mesh (**Attention! do not cut or damage the heating cable**). Once the heating mat has been has been modfied to the required form, press the heating mat firmly on the subfloor. Ensure there are no folds in the heating mat when it is being installed.



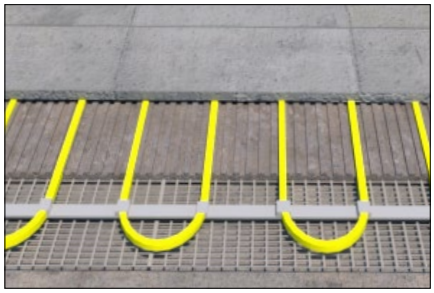
5 Safety

Keep a safe distance of between 4-6cm between the turnings of the ELECTROTHERM **MDIR** heating mat (it is not permitted to install the mats under the minimum distance of 3cm). During installation wear soft elastic sole shoes and cover the suface of the mat with plywood boards or other material to remove the risk of damaging the heating mat during installation. Avoid dropping sharp objects on the heating mat to prevent damaging the heating cables.



6 Installation with Different Floor Finishes

PVC and carpet floor finishings:
Insulation values and thicknesses should not exceed those stated in the *Thermostat Installation and Floor Construction* section below. If the subfloor is uneven, level it using a self-leveling floor compound before installaing the ELECTROTHERM **MDIR** heating mat in order to avoid air pockets underneath the heating mat. Never install the heating cable over a building expansion joint.



7 Floor Tempereature Sensor Installation

To meet the demands of EN 613186-1 the floor temperature sensor cable has to be placed into a seperate corrugated tube.

- The sensor should be placed in a central position between the heating conductor.
- Fit the heat mat cold lead through the second corrugated tube.
- Do not cross the cold lead over or place it closer than about 2cm to the mat heating wires.
- A standard round plastic recessed electrical box with a 230 VAC power supply is preferred for installation at the chosen thermostat location.
- A ground fault circuit breaker (30 mA) should be used for the 230 VAC heating mat circuit.
- Ensure that the sensor can be placed into and removed from the corrugated tube (Ø16mm); once during installation of the tubing and again before installation of the floor finish.

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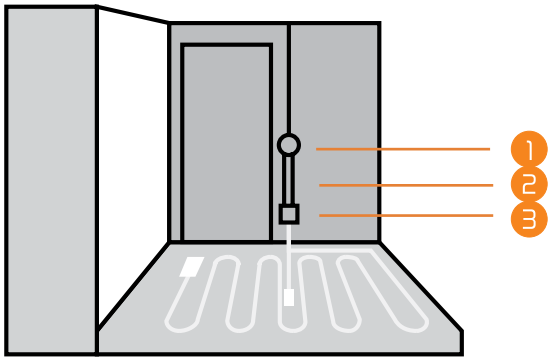
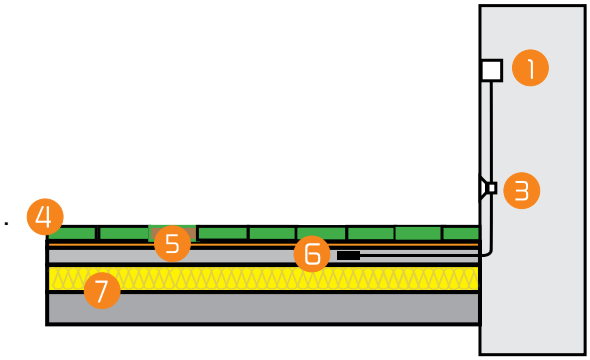
8 Thermostat Installation and Floor Construction

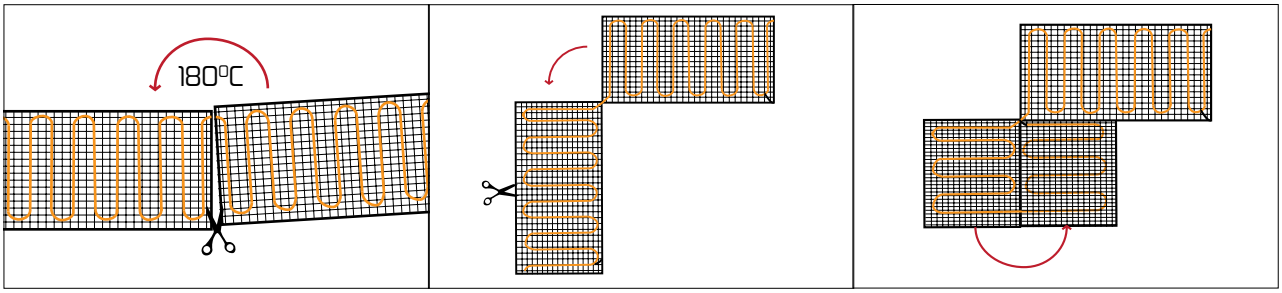




1	Electrical thermostat; Power supply distribution cable NYM 3 x 1,5 mm²
2	Corrugated tube for inserting the temperature sensor or cold lead (both should not to be installed inside the same tube)
3	Recessed electrical box (only necessary for more than one heating mat)
4	Floor finish
5	ELECTROTHERM MDIR heating mat
6	Temperature sensor, centered between two heating cables
7	Subfloor and thermal insulation

4	Floor Finish	Thickness	Insulation performance
	Tile	≤13mm	0.012 m²K/W (0.12 TOG)
	Carpet	≤10mm	0.09 m²K/W (0.9 TOG)
	PVC	≤2mm	0.01 m²K/W (0.1 TOG)
	Cork	≤11mm	0.13 m²K/W (1.3 TOG)
	Parquet	≤22mm	0.11 m²K/W (1.1 TOG)

9 Application Examples



SAFETY AND WARRANTY

Qualified electricians must be used to introduce electrical connections and the electric supply of the device according to regulations. The warranty is invalid if a qualified electrician does not install the device. Before installation, testing or replacing the thermostat swicth off all power. Only use plastic electrical wall mounting boxes for the thermostat installation. **Ensure that the sensor can be placed into and removed from the corrugated tube (Ø 16mm); once during installation of the tubing and again before installation of the floor finish.**

Warranty

In case of failure during the warranty period, please contact the UFH Supplies. The manufacturer guarantees the conformity of the heating mat with the design description, assuming compliance with the assembly and operating instructions. **Warranty period – 2 years from date of purchase.**
In case of a failure during guarantee period casued by a manufacturing defect, the customer has the right to supplementary performance. The warranty does not cover any damages due to inadequate handling, damages through a third party, wrong installation (not following the manual) or its consequential damages. The sales receipt must be provided for any warranty claims.

GUARENTEE CARD

A completed product test certificate is required for warranty claims

NAME _____
ADDRESS LINE 1: _____
ADDRESS LINE 2: _____
POSTCODE: _____
TEL: _____
PURCHASE DATE: _____
INSTALLATION DATE: _____

EMAIL: _____
INSTALLER: _____
SIGNATURE: _____
HEATING MAT TYPE

First measurement: before and after installation of the mat

☐ The sensor can be removed through the corrugated tube (Ø 16mm) during installation of the heating mat.

Total Resistance at 20°c (OHMS Ω)		Isolation Resistance at 20°c (OHMS Ω)	
Before installation	After installation	Before installation	After installation
Ω	Ω	Ω	Ω

Second measurement: before and after installation of the flooring

☐ The sensor can be removed through the corrugated tube (Ø 16mm) during installation of the heating mat.

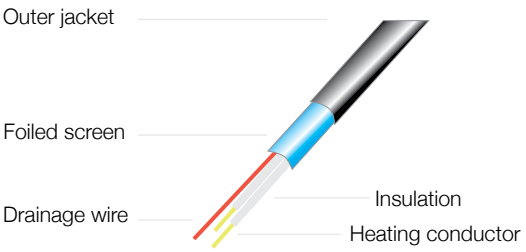
Total Resistance at 20°c (OHMS Ω)		Isolation Resistance at 20°c (OHMS Ω)	
Before installation	After installation	Before installation	After installation
Ω	Ω	Ω	Ω

TECHNICAL INFORMATION

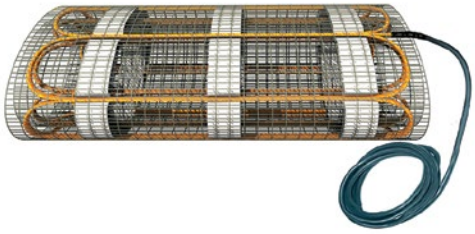
MDIR Resistance Values

TYPE	POWER W	AMPS	RESISTANCE AT 20°C (OHMS Ω)
MDIR-160-1.0/160	160	0,69	313,95 - 365, 52
MDIR-240-1.5/160	240	1,04	208,34 - 241,23
MDIR-340-2.15/160	340	1,48	136,45 - 158,00
MDIR-400-2.5/160	400	1,74	116,25 - 134,60
MDIR-480-3.0/160	480	2,09	96,66 - 111,92
MDIR-640-4.0/160	640	2,78	74,45 - 86,20
DFM-800-5.0/80	800	3,48	58,01 - 67,17
DFM-960-6.0/80	960	4,17	50,00 - 57,89
DFM-1120-7.0/80	1120	4,87	38,92 - 45,07
DFM-1280-8.0/80	1280	5,57	33,98 - 39,34
DFM-1440-9.0/80	1440	4,96	130,10 - 34,85
DFM-1600-10.0/80	1600	6,96	27,18 - 31,47
DFM-1920-12.0/80	1920	8,35	22,56 - 26,12
DFM-2400-15.0/80	2400	10,43	17,52 - 20,29

Cable Design



Product Image



Notes

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