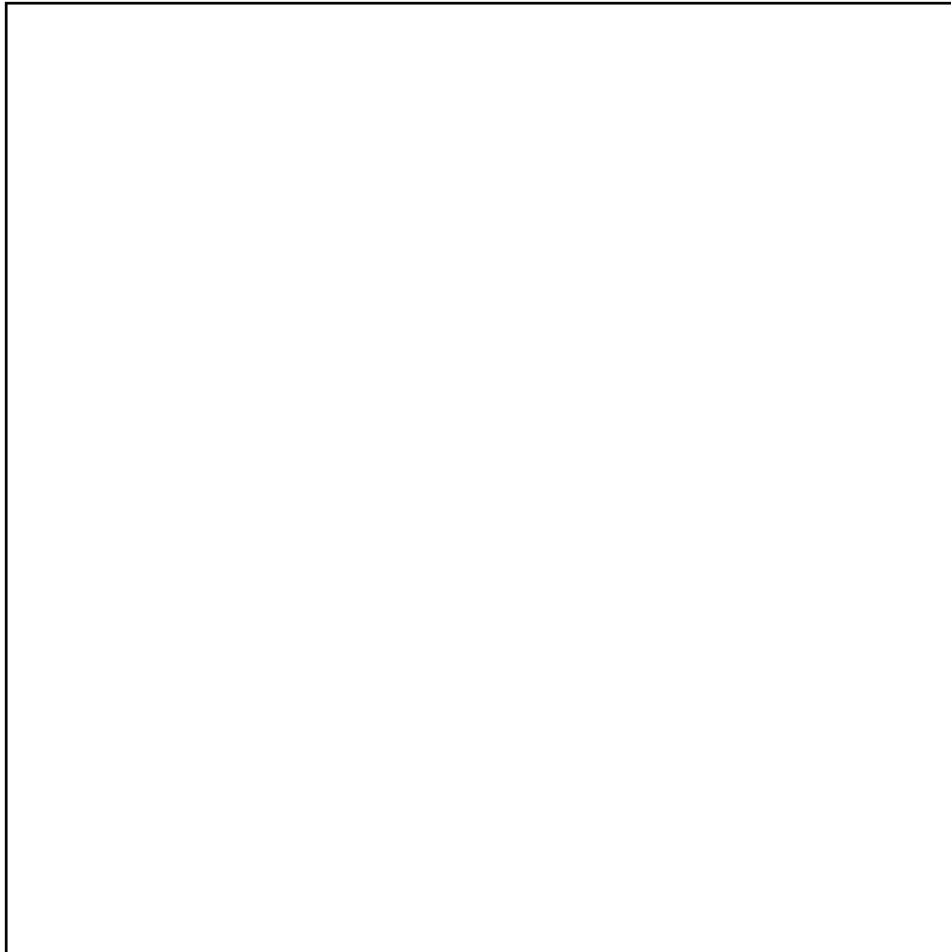


Drawing of floor:



Distributor :



HeatBoard Floor heating system Installation Instruction



Content:

- Installation instruction
- Technical Specifications

HANDYHEAT[®]
DANSK VARMEKABEL A/S

Before installation!

Thank you for choosing the **HANDYHEAT** HeatBoard system. Before you begin installing please read through these instructions carefully and check you have all the component required.

The HeatBoard system is designed for application under laminate, parquet or wooden flooring. You may also use linoleum, tiles, or stones, but in these cases it must first be covered with a suitable latex-based leveling compound. It is well suited for floors with a limited high. The HeatBoards only takes 5 mm. You may chose from 45 to 155 Watt / square metre.

HeatBoard is a rapid floor heating system! The solid Aluminium construction enables an efficient heat distribution, witch makes it ideal for wooden flooring. The system is a unique in it's ability to reflect and radiate heat, uniformly all over the floor surface.

System content

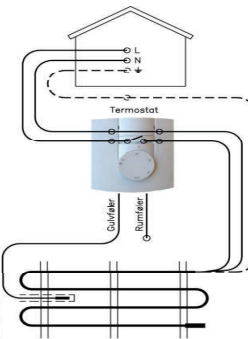
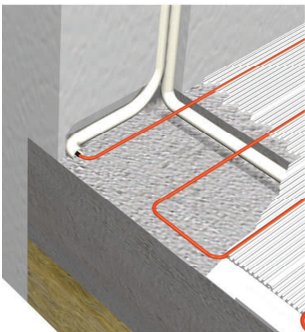
The **HeatBoard** system consist of HeatBoard elements, DVCM-10 heating cable and a DVTH13x thermostat with floor sensor

Recommended Watt / m ²		
(For well insulated rooms)		
Watt / m ²	Flooring	Room
60-80 W/m ²	Parquet	Kitchen / living room
80-100 W/m ²	Tiles/stone/marble	Kitchen / living room
150-200 W/m ²	Tiles/stone/marble	Bath room/toilets/entrance Conservetries

Note: Badly insulated floors or geographic cold areas may need higher W/m². Consult your dealer for more information.

Electrical provision:

Before starting the installation you should make provisions for the electrical connections, for smaller areas this should be possible by means of a fused spur from an existing circuit



Locating Thermostat:

Place Thermostat in a hight of aprox. 150cm. If installing in a bathroom or other wet room, the Thermostat must be located outside of the room on the opposite side of the wall.

Avoid:

- Thermostat location with:
- Radiant heat from appliances
 - Sinshine spots
 - Cold walls
 - Concealed pipes and chimneys
 - Do not cover behind curtains

Locating Floor sensor:

The floor sensor must be installed in the flexible tube. Locate the flexible tube in a spur in the floor as shown above picture. Close the end of the tube to avoid any tile adhesive to fill the tube.

Guarantee Certificate

HANDYHEAT gives 10 years Guarantee on heating cables and mats and 2 year on Thermostats.



Without prejudice to any claim the user (customer) may have in relation to the dealer or retailer, the customer shall be granted a manufacturer's Guarantee under the conditions set out below:

- In the case of new heating cable/mat and their components exhibiting defects resulting from manufacturing and/or material faults within 10 years (heating cables/mats) and 24 months (Thermostats) of purchase, *HANDYHEAT* shall, at its own option and free of charge, either replace the device with another device reflecting the current state of the art, or repair the said device.
- This Guarantee shall be invalid if the device defect is attributable to improper treatment and/or failure to comply with information contained in the user manuals.
- This Guarantee shall not apply to or extend to services performed by the authorised dealer or the customer themselves (e.g. installation, configuration, software downloads).
- The purchase receipt, together with the date of purchase, shall be required as evidence for invoking the Guarantee. Claims under the Guarantee must be submitted within two months of the Guarantee default becoming evident.
- This Guarantee shall apply to new heating devices purchased in the European Union. The Guarantee is issued by *HANDYHEAT*.
- Any other claims resulting out of or in connection with the device shall be excluded from this Guarantee. Nothing in this Guarantee shall attempt to limit or exclude a Customer's Statutory Rights, nor the manufacturer's liability for death or personal injury resulting from its negligence.
- The duration of the Guarantee shall not be extended by services rendered under the terms of the Guarantee.
- Insofar as no Guarantee default exists, *HANDYHEAT* reserves the right to charge the customer for replacement or repair.
- The above provisions does not imply a change in the burden of proof to the detriment of the customer.

To invoke this Guarantee, please contact the *HANDYHEAT* telephone service or your authorized *HANDYHEAT* dealer. The relevant number is to be found in the accompanying user guide.

HANDYHEAT is a Brand manufactured by: Dansk Varmekabel, Denmark

HANDYHEAT

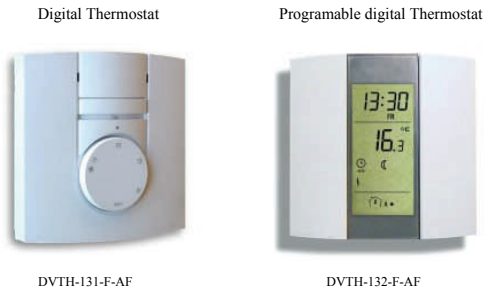
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DK-8722 Hedensted
Denmark

Tel. +45 7675 8030
Fax. +45 7675 8032
www. handy-heat.com
info@dansk-varmekabel.dk

Place product label here

Temperature control

The Thermostats from the DVTH series fit perfect to the HeatBoard system. The DVTH thermostats gives you the perfect Comfort and energi saving.



The Thermostat have a rating of 16 amps— loads in excess of 16 amps / 3600 Watt will need to be connected via a suitable switched contactor. Consult your electrician for this. Please se seperate instruction for connection and operation of the digital thermostat

Tecnical Specifications:

HeatBoards

Dimensions	1 m ² package	24 pcs of 500mm x 88mm x 4,5mm (L x W x H)
Dimensions	1 m ² package	24 pcs of 10 x 50mm x 88mm x 4,5mm (L x W x H)
Dimensions	2 m ² package	24 pcs of 1000mm x 88mm x 4,5mm (L x W x H)
Dimensionsr	Border list package	4 pcs of 1000mm x 19,5mm x 4,5mm (L x W x H)

Material Aluminium

Heating cable

Type:	DVCM-10 Twin heating element fully shielded, kevlar enforced heating Cable.
Supply voltage	230 VAC , 50Hz
Power	10W/ metre
Diameter	3,5 mm
Heating element insulation	Teflon
Shielding	Tinned copper wires, 1,5 mm ²
Outer jacket	PVC/ 90°C
Cold cable	2,5 metre 2 x 1,5 mm ² + shielding wires 1,5 mm ²
Cold cable dimension	6,5 mm x 4,5 mm
Available cable lengths:	15-25-35-45-55-65-75-90-110-130-150-180 metre
Cold cable:	2,5 metre

Approvals:

CE

By  Intertek ETL SEMKO

Standards:

EN 60335-1:1994 and A1+A2+A11-A16
SEMKO PA 834:1997



Important:

- The system **MUST** incorporate a RCD protection Let an qualified Electrician connect the system.
- The system must be installed according National/local electrical regulations
- Minimum temperature during installation must be 5°C
- The orange heater cable must **NOT** be cut or cross in any point— only the black "cold" cable may be cut or extended
- The joint between the orange cable and the black cable **MUST** be located under the floor. All the orange cable must be located under floor.
- Do not stretch the cable. Protect the cable against any physical damage. Protect the cable with cardboard or carpet during tiling
- Ensure the cable is spaced not closer than 50 mm
- Test the cable **BEFORE** tiling
- Wait at least 7 days before turning on the system. Always follow instructions on tile adhesive.
- Ensure that the subfloor is solid and suitable. Wood flooring with more than 30 cm between the joists should ideally be reinforced to prevent flexing and the possibillity of tiles dislodging. Wood flooring can be reinforced using 18 mm plywood or gipsonite boards.

Before installation of HeatBoard element

Make a drawing showing how you want to place the HeatBoard elements! This is essential to ensure the right combination of HealBoard elements. (under Technical Specifications you can see the sizes) Please note when the box seal on the elements is broken, you may no longer return the package to your dealer.

Determin the lokation of the thermostat. A location near by a corner is optimal taken the wiring in consideration. The drawing will help you to place the element correct as help you remember how the elements was laid.

With the drawing of the lay-out, you may choose the number of HeatBoard elements. Make sure you have the right quantity—good planning makes a succes.

Decide the heating power (Watt/ m2) you want in the floor!

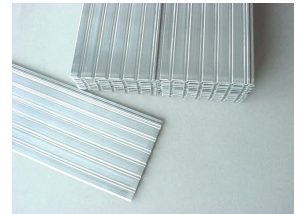
Calculate the net floor area. This is done by subtracting areas for drains, toilets, bath etc. from the total Floor area.

Example:	Total floor area	Length x width	7,5 x 2,55 metre
	Total floor area		19,3 m ²

Wanted heating power in floor 150 Watt / m²

Combination of HeatBoard elements

1. For the width 2,55 meter: 2 x 1000mm and 1 x 500mm elements with the split 2/3 of 1000mm and 1/3 of 500mm
2. 1/3 elements of 500mm = 6,37 m² = 7 boxes of 1 m² = 7 m²
3. 2/3 elements of 1000mm = 12,75 m² = 6 boxes of 2 m² = 12 m²
4. Total area excl. area of borderlist (0,0195 m² pr metre) = 19 m²
5. Borderlist length is 7,5 metre for each side of the room giving 2 x 7,5 metre = 15 metre total. Number of Borderlist boxes is 4 each containing 4 metre
6. Lay the elements in bonds fx. 1000mm—500—1000mm, followed by 500mm—1000mm—1000mm and so on



Make sure you have the right combination before starting, If any doubt contact your dealer, for choosing the right combination.

Power of heat (Watt/ m²) and cable length:

1. Choose the power of heat you want for your floor

Total power of heat = Netto floor area x power of heat (Watt/ m²)

2. From table below, choose the Watt/ m2 - cable length and loop distance C-C
3. It is important to select the right length of cable before starting— having too much cable will create problems!
4. You may combine your need of cable by combine more standard lengths. Fx 225 metre can be combined by 180m + 45m

Standard lengths: 15—25—35—45—55—66—75—90—110—130—150—180 metre
 Standard power: 150—250—350—450—550—650—750—900—1100—1300—1500—1800 Watt

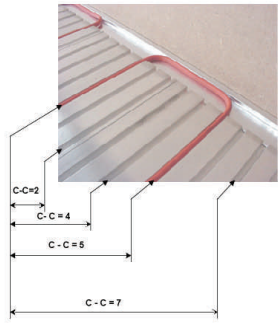
C-C:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Power of heat Watt /m²	155	131	114	101	91	82	76	70	66	62	58	55	53	50	48	46
Metre of kabel per m2	1 5,5	13,1	11,4	10,1	9,1	8,2	7,6	7,0	6,6	6,2	5,8	5,5	5,3	5,0	4,8	4,6

Example:

It have been decided to use 70 Watt / m² on a net floor area of 19,13 m²
 Der vælges 70 watt / m² på et nettogulvareal = 19,13 m²

From the table above it gives 7,0 metre per square metre and a C-C of 12

Cable length = 7,0 x 19,13 = 133,91 metre
 Selected standard length = 130,00 metre



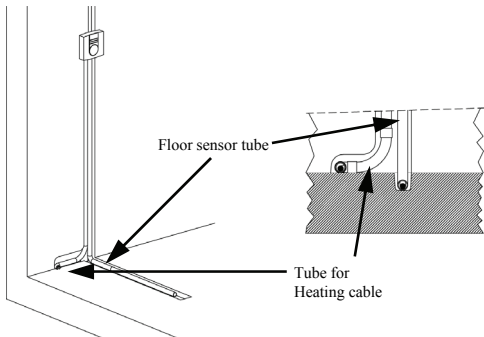
Installation step by step

Step 1

Locating floor sensor

Locate the Floor sensor tube in centre between the heating cable. Using the tube makes a later replacement of sensor easier.

Remember to close the end of the tube.



Step 2

Laying the HeatBoard elements

The junction between the orange and black cable must always be located in a deepening in the floor. It is comprehensive to plave the junction in a corner—this will ease the laying of cable. Yoy may extend the black cable if needed.

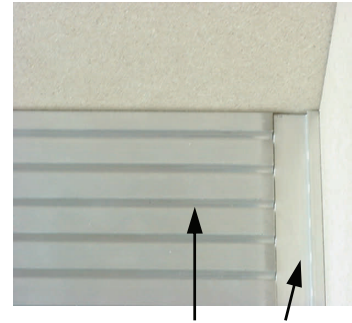
Clean the floor. Make sure the floor is free from dust, grease and debris.

Suitable subfloors are: concrete, wooden floors, chip boards & plywoods

To fix the HeatBoard elements it may be an advantage to apply an ordinary floor glue and gradually laying the elements in the wet glue.

Start with border lists!

If no glue ia applied, place a thin damper below the elemments!



Step 2 continued

Make sure the HeatBoards joins the Border lists. No distance between is allowed!

The length of the HeatBoard is available down to 50 mm by breaking off parts of the perforated element (10 x 50mm). If you need any other, you may cut it by saw .In that case you must remove all burrs to prevent the cable to be damaged.

HeatBoard Border list

Step 3 Installing the cable

Make sure the Borderlists is fixed (eventually by glue)

Place the cable according to your drawing. Start where the thermostat is placed. Place the cable with the desired C-C loop distance. Use a roller to press the cable down in the grooves.



Important!

The cable must always be layed as shown. The cable is placed closely along the Border list Layed in square form

Step 4 Installation of flooring

Wood, parquet or laminate:

- Place a damper according to the flooring supplier instructions.
- Install the flooring according to instructions given by the supplier.

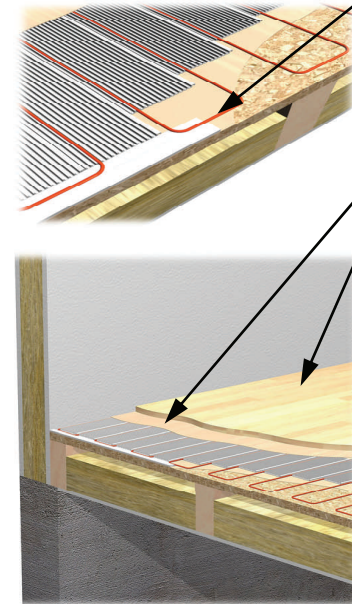
Carpets:

- Place a damper according to the flooring supplier instructions.
- Place a 5mm hard plate of wood or smilar material.
- Install the carpet

Tiles and stones:

- Apply a acrylic primer on the HeatBoard elements
- Apply a levelling compound to cover the HeatBoards completely, making the surface smooth.
- Tile the floor using a flexible tile adhesive.
- Carefully follow the instructions given by the manufacturer of the tile adhesive.

Finally wait at least one week before turning the heating system on, to allow the tile adhesive to harden and dry. Forced heating to dry the tile adhesive will weaken the adhesive and may damage the heating cable. Optimal drying time for the most common tile adhesives is approximately 28 days



Installation Notes

The system is intended for wooden flooring and the optimum recommended output is aprox. 50—100 Watt per sqm.

The insulation level of a floor will affect both the performance and running cost of an underfloor heating system. Good insulation level in floor, walls and roof is strongly recommended. It would not generally be considered nessery to insulate small areas where the requirement is simply to "take the chill of the floor". However in cases where the heating is being installed over large areas, particularly as the primary heating source in a ground floor room or conservatory, insulation boards will greatly reduce warm-up times and running cost.