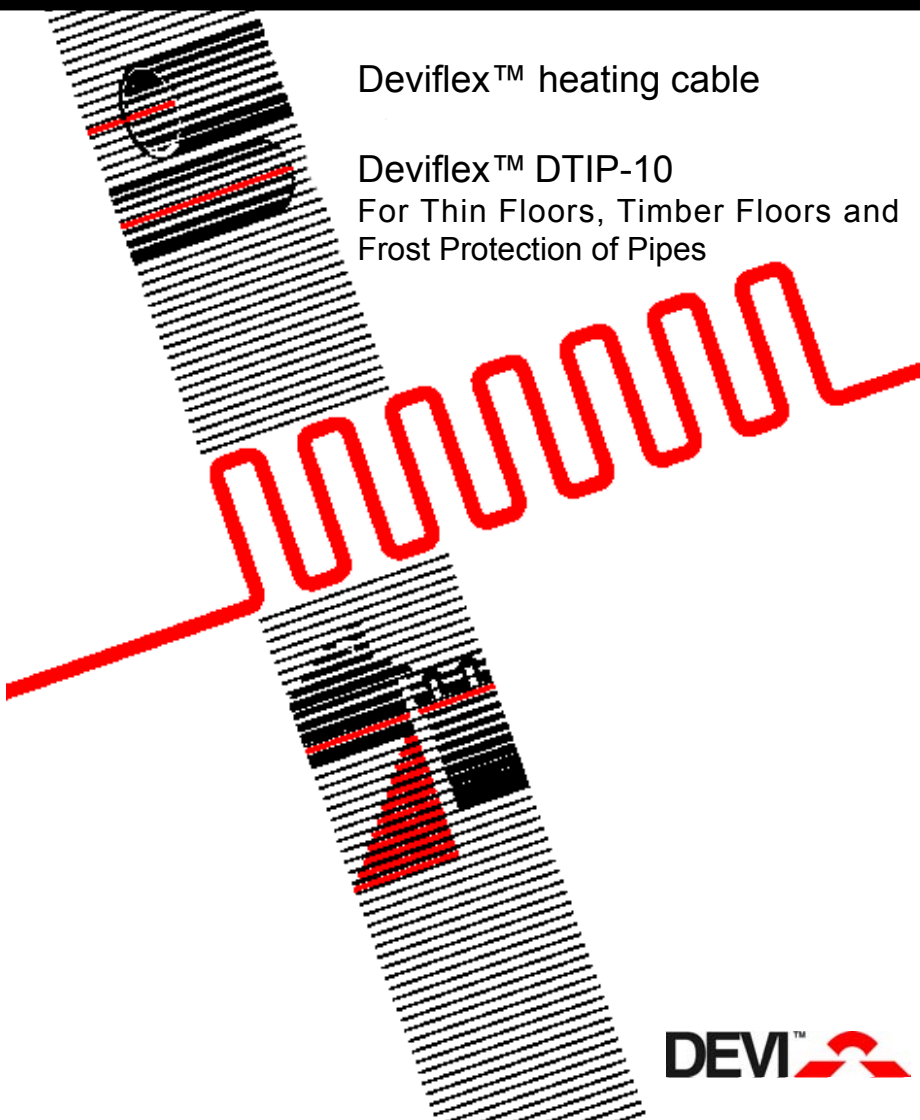
AUS **INSTALLATION INSTRUCTIONS**

Deviflex™ heating cable

Deviflex™ DTIP-10

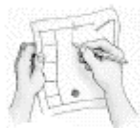
For Thin Floors, Timber Floors and Frost Protection of Pipes



PLEASE NOTE

The Floor Sensor MUST be installed so that it may be REMOVED for service if required! The sensor probe should be installed into a conduit with no more than one wide-angle bend. This should be installed from the floor to the thermostat or junction box located directly above the heated area.

PLEASE READ ENCLOSED INSTRUCTIONS



Draw up a plan of the cable layout on this page

Deviflex™ DTIP-10 Heating Cables

Devflex™ DTIP-10 heating cables are used in a wide variety of installation areas. They are especially well suited for comfort heating in wooden floors, or building renovations, where there is a demand for low building height, also called thin floors.
They are also used in connection with frost protection of pipes.
These are the three areas that will be covered by this installation instruction. Should you wish for further information concerning other areas for use for these cables, please see the DEVI heating compendiums.

Area of use

Area of use	Normal W/m²	Max. W/m²		DTIP-10	Sensor
Bathroom	100 - 180	200		X	Floor
Sitting rooms	80 - 180	180		X	Floor
Wooden floors	80 - 90	90		X	Floor/Air
Thin floors	100 - 150	180		X	Floor
Offices	60 - 180	180		X	Floor
Bedrooms	60 - 160	180		X	Floor
Hallways	50 - 160	180		X	Floor
Basic heat	40 - 60			X	Floor
Sport halls	50 - 80			X	Floor
Nurseries (Plant)	50 - 100	160		X	Floor
Work shop	80 - 100	180		X	Floor
Entry hall	70 - 150	180		X	Floor
Freezers	10 - 20			X	Floor
On pipes	7 - 40			X	Floor

IMPORTANT!
- The heating cables must not be cut or subjected to strain around the area of the termination.
- The cable must be connected by an authorised electrician.

Cable specifications

Cable	**Deviflex™** DTIP10
Type	Twin conductor with screen
Voltage	240 V AC
Effect	8 W/m and 10 W/m
Diameter	Ø 7.4mm
Cold tail	2.5m, 3 x 1.5mm²
Conduction insulation	XLPE (Polyethylene)
Sheath insulation	PVC 90ºC
Max. temperature	65ºC

Connections

Active - Brown
Neutral - Blue
Earth - Yellow/Green

General Installation Instructions

When installing heating cables the following should be observed:

1. The heating cables must only be used in the manner recommended by DEVI and should be properly connected to the main electrical source.
2. Connection of the heating cable must be done by an authorised electrician.
3. The maximum output for the different installations and operating wattage must be observed
4. **The heating cables must be protected against excess strain and tension.**
5. The are below the heating cable must be clean and free from sharp objects.
6. The heating cables' bending diameter must not be less than 6 x the cables own diameter.
7. The heating cables must not touch each other and must not cross.
8. **The heating cables screen must be earthed in accordance with the local electricity laws.**
9. The heating cable must not be exposed to strain in the areas of the termination.
10. The heating cables ohm value should be measured after the cable has been laid and after the concrete/ screed has been cast/laid. The heating cable ohm value should be as stated on the termination label: -5-+10%.
11. It must be possible to switch off the heating cable. We recommend a Devireg™ thermostat (see thermostat instructions).
12. It is recommended to draw up a plan or take photograph showing where the heating cables as well as the termination are positioned.

At low temperatures the heating cable can become stiff and difficult to work with. This can be solved by connecting the cables to the mains, for a brief period of time.

The heating cable must be rolled out when this is done!

It is not recommended to lay the cable at temperature below -5ºC.

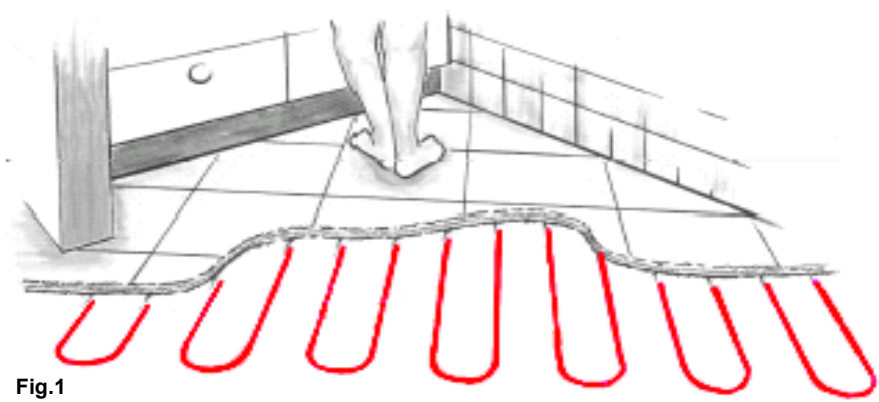


Fig.1

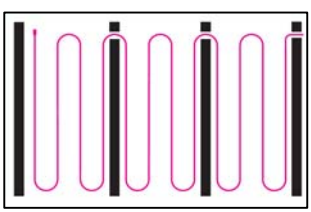
Installation under wooden floors on joists

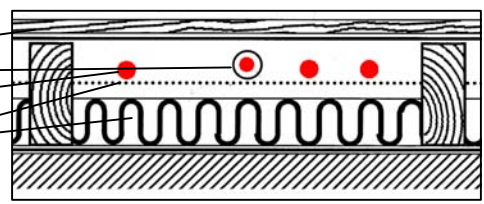
Deviflex™ heating cables can be used in connection with bare timber floors or laminated wooden floors resting on bears/joists for
BACKGROUND HEATING ONLY.
To achieve the best results insulation must be laid below the cables. The result is warm, healthy and dry floor which is maintenance free.

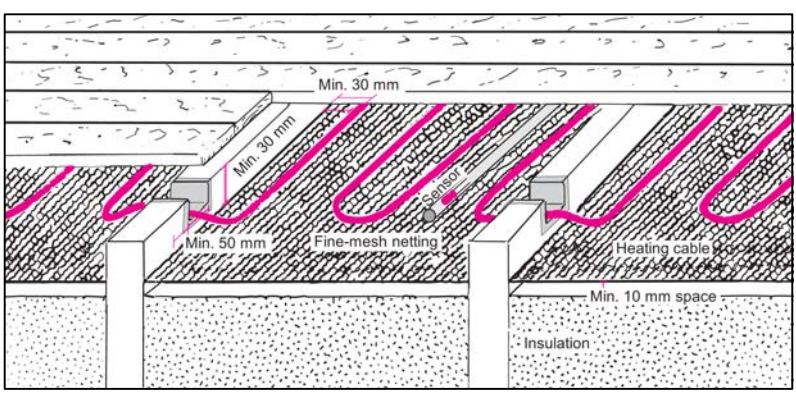
Measurement of output
Heating cables for wooden floors mist have a maximum wattage of 10W/m with a total output of maximum 90W/m². The floor manufacturers' recommendations for maximum floor temperature (usually 27ºC) must always be observed and carried out by means of an effective thermostat control.

Installation
The Deviflex™ heating cables are laid out on top of wire mesh netting, (or devifast fixing strips), which is stretched out and fastened between two bearers above the insulation.
- It is recommended that foil be installed between the cables and the insulation.
- The wire mesh netting is placed so that there is a minimum of 30mm between it and the underneath of the floor surface.
- The heating cable is laid parallel to the bearers with a minimum distance of 30mm from the bearers.
- The cable is attached to the wire mesh netting at intervals of 300mm.
- Where the cable cross a bearer a path of 30mm should be cut out of the wood and lined with aluminium foil or a similar fireproof material. There must be only one cable in each path.

Cables MUST NOT come into contact with the insulation







The Deviflex™ heating cable must be regulated by a thermostat incorporating a floor sensor with a temperature limiting function, i.e.
Devireg™ 132 or Devireg™ 522.

General Installation Instructions

Deviflex™ cables can be used in connection with renovation of floors and where there is a demand for a low building height. The cables can be laid on top of existing wooden or concrete floors. The result is a maintenance free, warm and dry floor.

Measurement of output
In connection with thin floors the heating cable has a maximum wattage of 10W/m. The total output should preferably be between 100-180W/m² depending on the climate conditions and insulation. The cables C-C distance should not exceed 100mm as this may result in cold zones on the floor. The floor manufacturers' recommendations for maximum floor temperature must always be observed and carried out by means of using an effective thermostat.

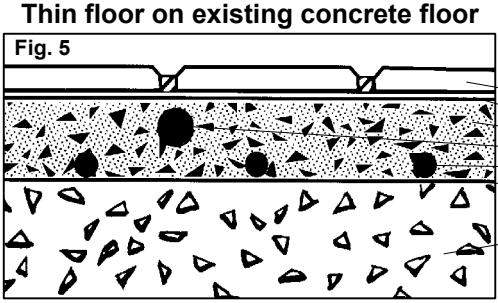
Installation
-The heating cable can either be laid on a devifast fitting band, wire mesh netting with a diameter of 1mm, or glued directly onto non-flammable surfaces.
-The cable is secured at 300mm intervals using a glue gun where necessary.
-A damp proof membrane must always be installed in connection with wet room floors.
- A fire resistance material must be laid between the heating cables and wooden or other flammable floors where the cables are to be laid directly on the floor surface. This could be for example a 5 mm layer of compound, a 6 mm thick plaster board, wire mesh netting with a 1mm diameter and mesh of 20 x 20mm.
- With regard to the casting of the concrete/screed compound on the floor the manufacturers instructions must be observed.

The heating cable must be regulated by a thermostat with a room sensor and/or floor sensor.
In connection with comfort heating a floor sensor is used and with total heating a room sensor. In connection with bathrooms always use a floor sensor. Under wood/vinyl a system which can limit the floor temperature should be used. (**Devireg™** 132/522).

The maximum temperature under a wooden floor laid directly on concrete is 27ºC. The manufacturer of the floor surface should be informed that there will be floor heating for advice concerning glue types etc.

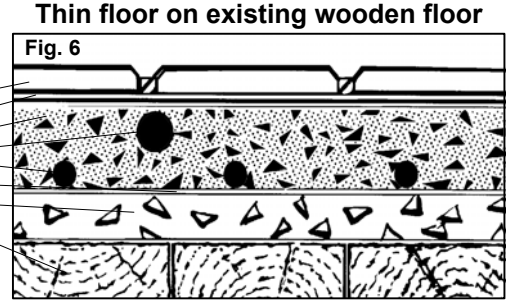
Thin floor on existing concrete floor

Fig. 5



Thin floor on existing wooden floor

Fig. 6



a) Tiles
b) Dampproof membrane
c) Compound
d) Sensor
e) Deviflex™ heating cables
f) Devifast™ fitting band
g) Non-flammable material
i) Existing floor

Frost protection of pipes

Deviflex™ cables can be used in connection with frost protection of metal and plastic pipes.

We do not recommend an output larger than 10W/m when installing cables on pipes.

Measurements of effect
The table below is based on frost protection of pipes down to -25ºC, when the appropriate insulation is used in connection with a Deviflex™ DTIP-10 cable. Also shown are the minimum amount of metres of cable to be used per metre of pipe.

		Insulation thickness in mm			
		10	20	30	50
Pipe Dimensions		m heating cable per m pipe/increasing in cm			
Inches	mm				
½"	15	1,5/8	A	A	A
¾"	20	2,0/5	1,3/11	A	A
1"	26	2,4/5	1,6/9	1,2/17	A
1¼"	32	2,8/5	1,9/8	1,6/10	1,2/19
1½"	39	3,3/5	2,2/8	1,8/10	1,3/19
2"	52	3,9/5	2,6/8	2,0/10	1,4/19
2½"	65	4,5/5	3,0/8	2,3/10	1,6/19
3"	78	5,0/5	3,5/8	2,7/10	2,0/19

X/Y

X= metres of heating cable per metre of pipe.
Y=increase in cm (see fig.9).

A

= 1 straight cable line, i.e. 1 metre cable per 1 metre pipe (see fig. 8)

= Possibility of using 2 parallel cable lines instead of winding the cable around the pipe (see fig. 10).

Fig. 7

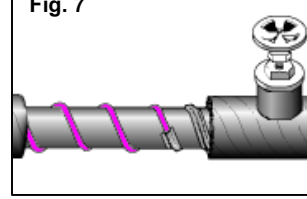


Fig. 8

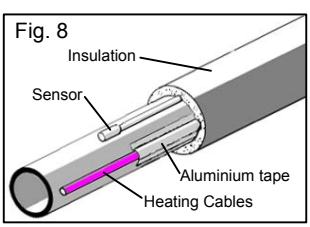


Fig. 9

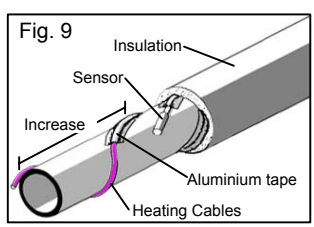
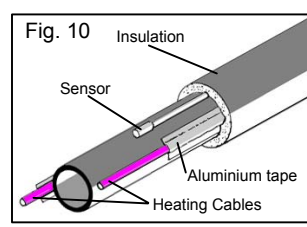


Fig. 10



Installation in general

- There must be a close fit between the heating cable and the pipe.
- The heating cables' bending diameter must not be less than 6 x its own diameter.
- The heater cables must not be fitted over sharp edges, cross or touch itself. It must not be subjected to mechanical strain.
- The full length of the heating cable must be secured with aluminium tape. This also acts as a reflector and prevents the insulation from coming into contact with the heating cable, which may result in overheating.
- The connection between the heating cable and the cold tail must also be secured to the pipe with aluminium tape.
- Never use clips which can squeeze the cable.
- Two parallel lines are secured, one on each side of the pipe (see fig. 13).
- Where it is intended that the heating cable should be wound around the pipe - but the pipe is not situated in an easily assessable place, you can choose to use the method shown in fig. 11+12. First find the correct length of cable in the above table and the alternate between hanging the cable loops first on the left and then on the right hand side of the pipe.
- The cable's resistance and insulation must be tested both before and after the pipe has been insulated. The heating cables Ohm value should be as stated on the termination label: -5-+10%.
- The heating cable is regulated by a Devireg™ thermostat.

Fig. 11

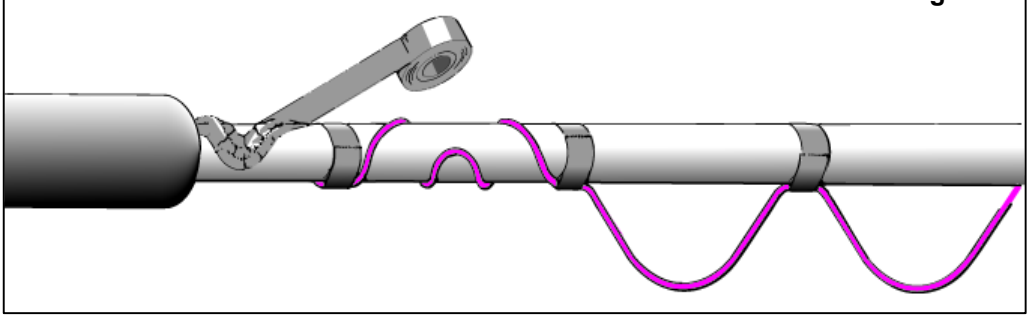


Fig. 12

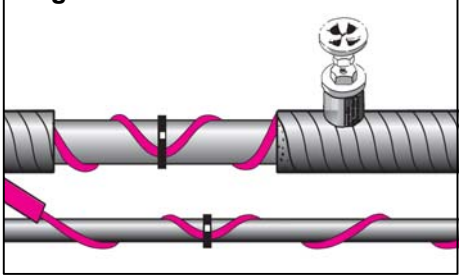
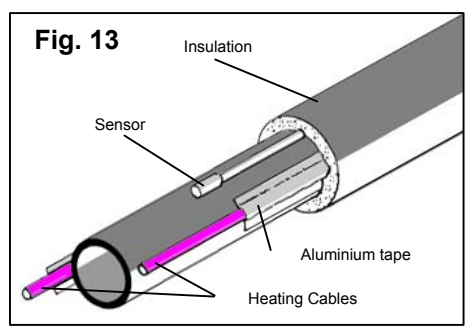


Fig. 13



Calculating the C-C distance

There are two ways to calculate the C-C distance, either by using the length of the cable or by using the total effect.

$$\text{C-C} = \frac{\text{The area of usable floor space in m}^2 \times 1000}{\text{Cable length}}$$

= C-C distance in mm.

Or

$$\text{C-C} = \frac{\text{Wattage per metre cable} \times 1000}{\text{Wattage per m}^2 \text{ of usable floor space}}$$

= C-C distance in mm.

Regulation

The optimal control of **Deviflex™** heating cable is achieved by using Devireg™ electronic thermostats. **Devireg™** thermostats give a quick and effective regulation and take both comfort and economy into consideration.
These are a wide variety of **Devireg™** thermostats which can be chosen from according to the demands of the individual installation.

The external room sensors and wire sensors have the same Ohm values and can therefore be used ad hoc with the different thermostat.
(Ohm value = 15kOhm/25ºC).

Thermostats

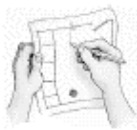
Devireg™	Mounting	Colour	Temp. range Floor sensor A	Temp. range Floor sensor B	Temp. range	Sensor Type	Optional Night Set Back	IP Rating
130	Surface	Polar White	5ºC-45ºC			Floor	5ºC	IP31
131	Surface	Polar White		5ºC-35ºC		Air	5ºC	IP31
132	Surface	Polar White	20ºC-60ºC	5ºC-35ºC		Air/ Floor	5ºC	IP31
520	Recessed	Polar White	5ºC-45ºC			Floor	5ºC	IP31
521	Recessed	Polar White		5ºC-35ºC		Air	5ºC	IP31
522	Recessed	Polar White	20ºC-60ºC	5ºC-35ºC		Air/ Floor	5ºC	IP31
330	DIN rail	Grey			5 ranges -10º-+160ºC	Floor or Air	5ºC where applicable	IP20
610	Surface	Polar White			-10º-+50ºC	Floor	n/a	IP44
850	DIN rail	Grey			Sensor -30º-+70ºC	Ground	n/a	IP30

Note: Sensor cables can be extended up to 50m using a 0.75mm² cables
Devireg™850 ground sensor up to 200m using a 1.50mm² cable.

For choice of thermostats - please see product catalogue!

Sensors and other accessories

- Wire sensors 2.5m, 4.0m and 10.0m.
- Room sensor.
- Remote regulation for thermostats.
- Devifast fitting band, 25m
- Aluminium tape, 38mm x 50m rolls with 'WARNING' text



Australian Warranty Certificate

The following Warranty is provided by DEVI Heating Systems ABN 39 898 434 262 hereinafter referred to as DEVI. It is offered in addition to any relevant statutory Federal or State Warranty. DEVI is a partner of the DEVI Group of Companies, who are a Danish based specialist heating product manufacturer. DEVI A/S Denmark is a member of the European Group of Suppliers, and is at all times subject to EEC general product liability rules.

DEVI warrants deviflex™ heating cables and heating mats for a period of TEN (10) YEARS from the date of purchase and all other DEVI products for a period of TWO (2) YEARS, from the date of purchase.
DEVI warrants its products against defects in manufacture, material, or workmanship. Proof of purchase must be provided. Installations must be carried out in accordance with the instructions supplied, and by accredited installers. An authorized DEVI representative must be given the opportunity to inspect and report on any defects.

The obligation of DEVI, under this warranty, is to repair or replace any product, which, within the above stated time periods, is found to our satisfaction to be defective, free of charge to the customer. However, the labour cost for removing and/or refitting any product will be at the customer's expense. In the case of any removable products such as Thermostats, these are to be returned to the place of purchase, or to DEVI Sydney, where DEVI reserves the right to repair or replace the unit at no charge or unreasonable delay to the customer.

In case of parts not of our own manufacture you are entitled only to such benefits as we may receive under any guarantee given to us by the manufacturers in respect thereof. We shall not be liable for consequential or special damages under any circumstances whatsoever.

This Warranty does not cover faults caused by incorrect installation, damage by others, misuse, misapplication, incorrect voltage, lightning, or incorrect design by others, or where payment is in default. Rectification work, performed as a consequence of matters not covered by the Warranty, will be at the expense of the customer. DEVI will respond honestly, efficiently and promptly to all queries and reasonable requests from our customers.

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PO Box 707
MONA VALE
NSW 1660
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WARRANTY AS SUPPLIED BY DEVI DENMARK

You have purchased a deviheat system, which we are certain will improve your home comfort and economy. deviheat provides complete heating solutions with deviflex heating cables or devimat heating mats, devireg thermostats and devifast fitting bands.
If, however, contrary to all expectations, a problem should occur with your heating system, we at DEVI, with manufacturing units in Denmark, are, as European Union suppliers, subject to general product liability rules, as stated in Directive 85/374/GEE, and all relevant national laws which implies that: DEVI provides a warranty for deviflex heating cables and devimat heating mats for a 10 year period and all other DEVI products for 2 year period against defects in material and production.
The guarantee is granted on the condition that the WARRANTY CERTIFICATE on the overleaf is filled out properly in accordance to instructions and that the defect is inspected by, or presented to, DEVI or authorised DEVI distributor.
Please note that the wording of the WARRANTY CERTIFICATE must be provided in English or local language with the ISO code for your country in the upper left corner of the front page of the installation instructions in order to release the warranty.
The obligation of DEVI will be to repair or supply a new unit, free of charge to the customer, without secondary charges linked to repairing the unit. In case of defective devireg thermostats, DEVI reserves the right to repair the unit free of charge and without unreasonable delay to the customer.
The DEVI warranty does not cover installations made by unauthorised electricians, or faults caused by incorrect designs supplied by others, misuse, damage caused by others, or incorrect installation or any subsequent damage that may occur.
If DEVI is required to inspect or repair any defects caused by any of the above, then all work will be fully chargeable.
The DEVI warranty is void, if payment of the equipment is in default. At all times, we at DEVI will respond honestly, efficiently and promptly to all queries and reasonable requests from our customers.
The above-mentioned warranty concerns product liability whereas matters in relation to legislation on sale of goods shall be referred to national law.

*This Warranty is provided by DEVI A/S, Denmark. Please contact your local DEVI Company for local Warranty details

Warranty Certificate

The DEVI™ Warranty is granted to:

Name:

Address:

Postal Code:

Phone:

Please Observe!

In order to obtain the DEVI™ Warranty, the following must be carefully filled in. See other conditions on the overleaf.

Electrical Installation By:

Installation Date:

Type of Thermostat:

Production Code:

Suppliers Stamp

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