gaia

Design, supply and installation specialists of wet and electric underfloor heating systems, latex and insulation

Unit 4 Brickfields Business Park, Woolpit
Bury St. Edmunds, Suffolk, IP30 9QS

Registered in England 2424430

Tel: 01359 242400 | Fax: 01359 242525

www.gaia.co.uk

The perfect solution to a warmer home.

10-15%
Energy Savings

Why Underfloor Heating?

Underfloor heating is an energy efficient way to heat your entire home and studies have proven it will help reduce your running costs.

Our philosophy revolves around providing a professional service, using the highest quality products and tailoring each design to each individual project. Creating solutions that provide either sole source heating or floor warming, Gaia gives you the luxury of a comfortable warm floor.

With over 25 years experience pioneering total underfloor heating solutions across the UK and Ireland; Gaia specialises in the design, supply and installation of both wet and electric underfloor heating systems. With a wide range of underfloor heating solutions, we at Gaia can advise and design the most suitable system for you, whether it's a refurbishment, new build project, tiled or timber flooring; providing a professional service from initial project stage through to project completion. We are so confident of our product performance; we offer market leading warranties and an after-sales service to ease all concerns.

Along with underfloor heating solutions, we at Gaia specialise in the supply and installation of insulation and latex - giving complete project management service and peace of mind installation. Gaia maintains its strong links with DEVI/Danfoss as the only DEVI Project Solution Partner in the UK and Ireland designing, supplying and installing the complete DEVI underfloor heating solution.

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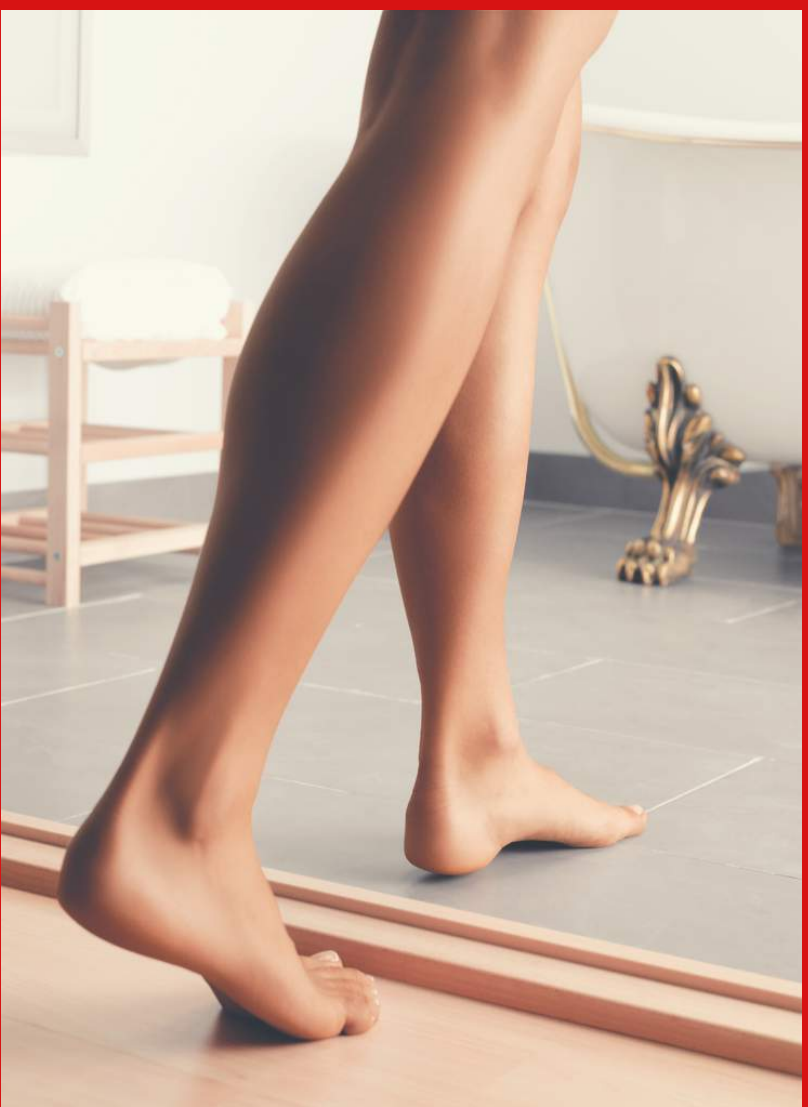

Electric Underfloor Heating

Thin Embedded Floor Heating

When floors in flats, houses or basements are renovated, floor heating can be added without breaking up the old floor. The comfort is provided by either a DEVIflex™ cable system or a DEVImat™ system, which is embedded on top of the old floor or subfloor. With low build-up height, DEVImat and DEVIflex systems provide a quick responding floor warming solution under any top flooring.

The freedom in design and choice of flooring makes it applicable in almost any application, domestic and commercial:

- *Flats, Apartments*
- *Conservatories, Kitchens, New build extensions*
- *Schools, Offices*

The system can in some cases cover the required heating load, removing the need for other heating systems taking up valuable wall space, whilst maximising the available room area.

Product Overview

DEVImat DTIR-100 - 100W/m^2

Perfect for timber floor constructions, our 100W/m^2 DEVImats are ideal for taking the chill off your flooring or as a secondary heating solution.

DEVImat DTIR-150 - 150W/m^2

Perfect for concrete floor constructions, our 150W/m^2 DEVImats are ideal for laying directly onto existing tiles, solid screed/concrete or thermal tile backer board. To be used as either a primary or secondary heat source.

DEVImat DTIF-200 - 200W/m^2

Perfect for screed/concrete floor constructions with poor insulation levels or rooms with high heat loss. Our 200W/m^2 DEVImats are ideal for laying directly onto existing tiles, solid screed/concrete or thermal tile backer board but must only be placed beneath tile/stone floor finish.

DEVIflex DTIR-10 – Loose Lay Cable

The ideal solution for intricate areas, this 10w/m heating cable is loose laid to provide maximum floor coverage, providing the ultimate flexible solution whilst keeping the floor height to a minimum. The DTIR-10 heating cable can be laid to achieve 100 or 150W/m^2 as an alternative to the DEVImat DTIR-100 and DTIR-150 heating mats.

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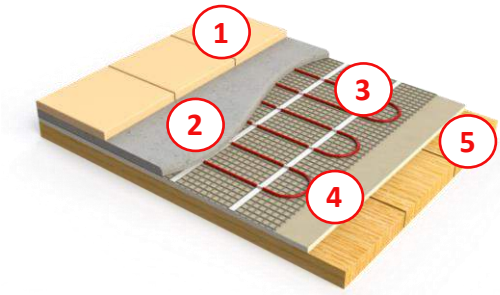
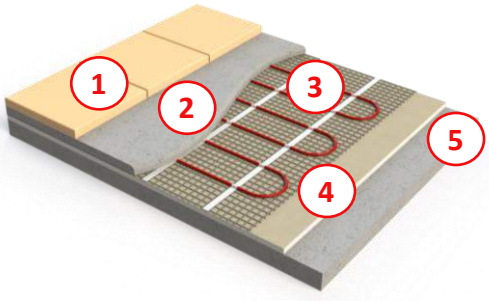
Installation

Our underfloor heating mats have an ultra-strong dual adhesion system; it's the stickiest mat available! So once laid, it will stay where it's put. It also has a 'single cold tail' which means there is no second tail to return to the thermostat. These features combine to ensure your installation time is kept to a minimum.



1 – Floor Finish
2 – Adhesive/Levelling Compound
3 – Underfloor Heating Mat
4 – Tile Backer Board (recommended)
5 – Timber Sub-Floor



1 – Floor Finish
2 – Adhesive/Levelling Compound
3 – Underfloor Heating Mat
4 – Tile Backer Board (recommended)
5 – Concrete Sub-Floor

Suitable Floor Build-up for Thin Embedded Floor Heating Systems

	Wooden Subfloor				Concrete Subfloor				Tile Backer Board			
	Tile / Stone	Floating Wooden/ Carpet	Vinyl	Solid Wood	Tile / Stone	Floating Wooden/ Carpet	Vinyl	Solid Wood	Tile / Stone	Floating Wooden/ Carpet	Vinyl	Solid Wood
100W/m² DEVImat	✓	✓	✓	✓					✓	✓	✓	✓
150W/m² DEVImat					✓	✓	✓	✓	✓	✓	✓	✓
200W/m² DEVImat					✓				✓			
DTIR-10 Loose Lay Cable – 100W/m²	✓	✓	✓	✓					✓	✓	✓	✓
DTIR-10 Loose Lay Cable – 150W/m²					✓	✓	✓	✓	✓	✓	✓	✓

While our DEVImat 100W/m² can be placed onto Tilebacker Board, our preference would be for our DEVImat 150W/m² to be used onto Tilebacker Board.

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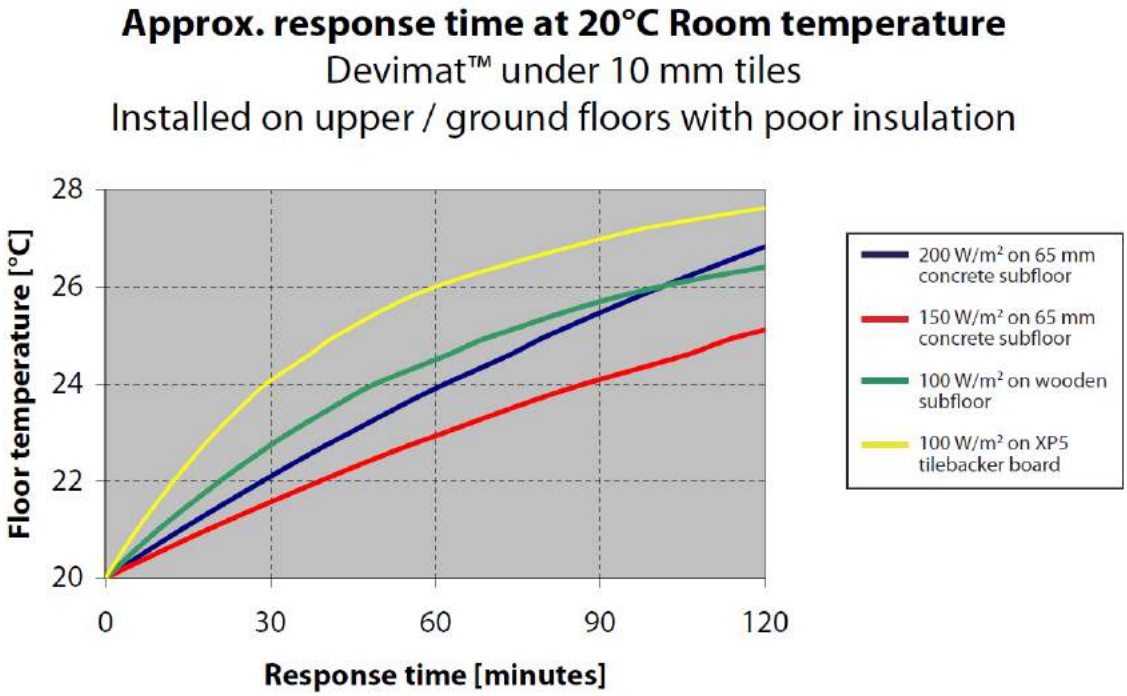
Performance

Our thin embedded floor heating products offer quick responding floor heat when you need it. Additional insulation can be applied between existing subfloor and heating mat/cable, which will reduce any downward heat loss. The result is a quicker responding floor surface temperature, which makes this application ideal for reducing your energy consumption.



Complete Floor Guard Warranty

20 YEAR WARRANTY

For ultimate insurance we offer up to 20 year product warranties on all heating mats and cables – which even include the floor cost!

A floor heating system which does not work causes not only dissatisfied customers - it also causes angry customers and with good reason.

A heating cable which is not working is not so easy to replace. The fault has to be found the floor must be taken up before the fault can be corrected. It is a difficult, dirty and expensive process.

Gaia places great importance on providing extremely high quality products and, in return, offers the market's highest security for unproblematic heating, backed with the promise of the best warranty in the market.

In the event of a fault that can be traced back to a manufacturing defect in a DEVIflex or DEVImat product, DEVI will repair or replace the product itself and cover any costs associated with the floor covering, at no extra cost to the customer.

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Electric In-Screed Heating

DEVI heating cables are ideal for new build applications which are installed directly into the floor screed, providing a full heating solution as well as floor warming.

The freedom in design and choice of flooring makes it applicable in almost any application, domestic and commercial:

- *Flats, Apartments*
- *Conservatories, Kitchens, New build extensions*
- *Schools, Offices*

The system can in most cases cover the required heating load, removing the need for other heating systems taking up valuable wall space, whilst maximising the available room area.

Product Overview

DEVIflex DSIG-20 - 20W/m

Perfect for screed floor constructions, our DSIG-20 cables are ideal for new build applications when a full heating system is required.

- *Screed floor heating output range 133-250W/m²*

DEVIflex DSIG-10 - 10W/m

Perfect for new build applications, our DSIG-10 cables provide a full heating system within floor screeds.

- *Screed floor heating output range 67-133W/m²*

Suitable Floor Build-up for DEVIflex Cables

	Floor Screed			
	Tile / Stone	Floating Wooden / Carpet	Vinyl	Solid Wood
DEVIflex DSIG-20 – 20W/m	✓	✓	✓	✓
DEVIflex DSIG-10 – 10W/m	✓	✓	✓	✓

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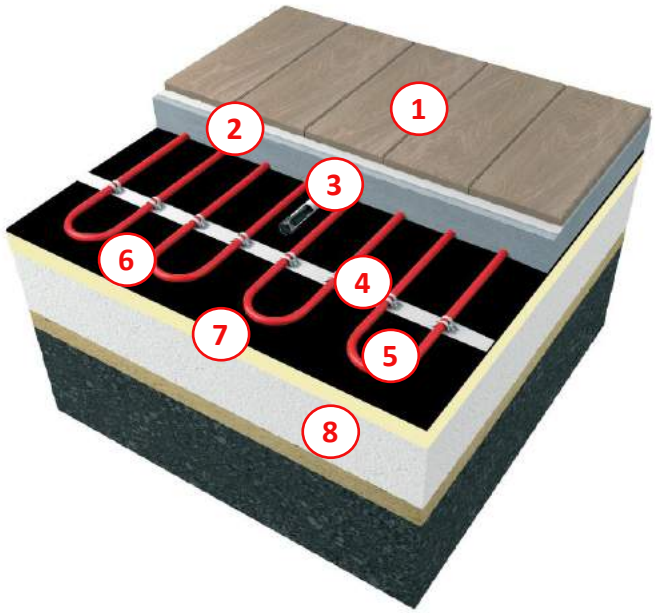
Installation

For the installation of heating cables we recommend the use of DEVIfast metal fitting band with possibility for fixing of heating cables for every 2.5 cm. These features combine to ensure your installation time is kept to a minimum.



1 – Floor Finish
2 – Floor Screed (65-75mm typically)
3 – Conduit Containing Floor Sensor
4 – Fixing
5 – Heating Cable
6 – Polythene Sheet
7 – Insulation (min 30mm)
8 – Concrete Base Layer

Complete Floor Guard Warranty

20 YEAR WARRANTY

For ultimate insurance we offer up to 20 year product warranties on all heating mats and cables – which even include the floor cost!

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Floor Heating Beneath Floating Floor

When floors in flats, houses or basements are renovated, comfort floor heating can be added without using screed or without breaking up the old floor. The comfort is provided by DEVIcell Dry heating system which is designed to be in contact with wooden sub or top floorings.

DEVIcell Dry:

- *Consists of a 12 mm polystyrene plate and a 1 mm aluminium plate with cable grooves.*
- *Is installed on the old / sub floor, right under the new top flooring e.g. timber or parquet.*
- *Ensures fast responding floor heating and evenly distributed floor heat.*

In the case of comfort floor heating, supplementary heating may be required. The heating output of 100 W/m^2, could provide the total heating of sufficiently insulated rooms.

Product Overview

DEVIcell Dry

The DEVIcell system cables allows you to easily press cables in to the cable grooves in the DEVIcell plates, after which the new wooden floor can be laid floating directly on the plates. The DEVIcell system can be installed on concrete floors or directly on wooden floors without additional preparation, and provides the necessary insulation against the subfloor.

DEVIflex 10T - 10W/m

Perfect for new build applications, our DEVIflex 10T cables provide a full heating system within DEVIcell dry overlay system.

- *DEVIcell floor heating output up to 100W/m²*

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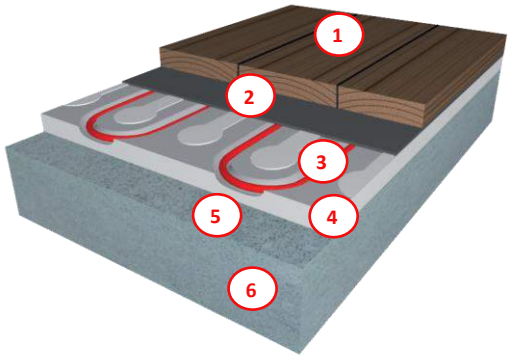
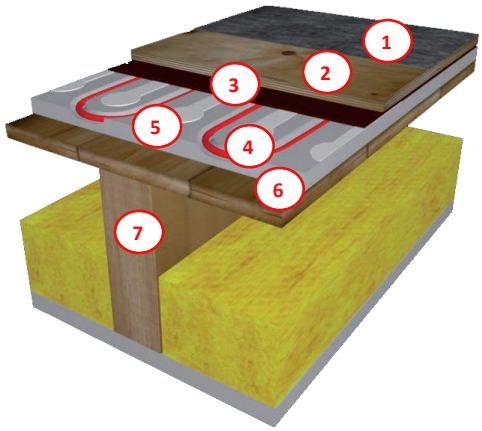
Installation

Our DEVIcell underfloor heating products are quick and easy to install. Our DEVIflex 10T heating cables have a 'single cold tail' which means there is no second tail to return to the thermostat. These features combine to ensure your installation time is kept to a minimum.



1 – Floor Finish
2 – Noise Absorption Mat
3 – DEVIflex 10T
4 – DEVIcell Dry
5 – Damp Proof Membrane
6 – Existing Floor Construction
(e.g concrete, gypsum, polystyrene)



1 – Linoleum / Vinyl, Carpet, Tile & Stone
2 – Pressure Distribution Board (e.g. Plywood)
3 – Noise Absorption Mat
4 – DEVIflex 10T
5 – DEVIcell Dry
6 – Damp Proof Membrane
7 – Existing Wooden Floor Construction

Suitable Floor Build-up for DEVIcell

	DEVIcell			
	Tile / Stone	Floating Wooden / Carpet	Vinyl	Solid Wood
DEVIflex 10T – 10W/m	✓	✓	✓	✓

With soft floor finishes (vinyl and carpet) and tiles, the DEVIcell system must first be over boarded with a pressure distribution board such as 6mm plywood.

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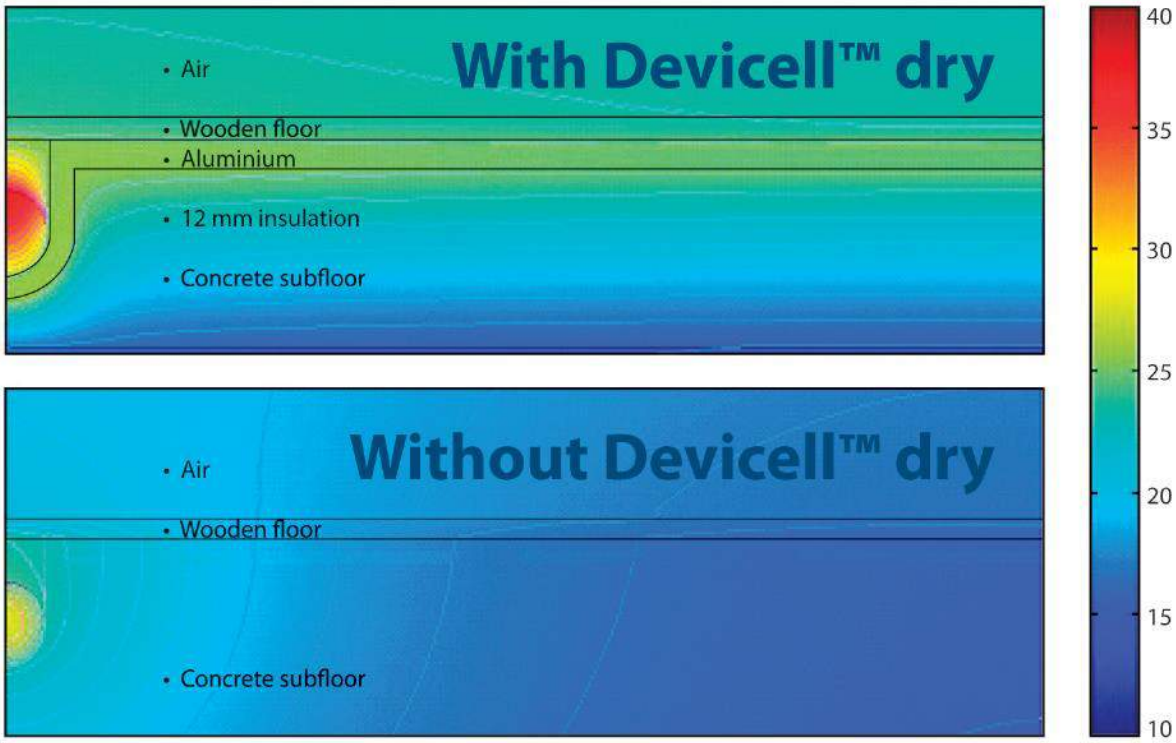
Performance

Since the DEVIcell insulation breaks the thermal bridge downwards and the aluminium distributes the heat sidewise, the temperature distribution and response time is improved. The result is a quick responding floor surface temperature, which makes this application ideal for timer thermostats.



Complete Floor Guard Warranty

20 YEAR WARRANTY

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In the event of a fault that can be traced back to a manufacturing defect in a DEVIflex™ or DEVImat™ product, DEVI will repair or replace the product itself and cover any costs associated with the floor covering, at no extra cost to the customer.

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Electric Thermostats

Bring that extra level of control to your life, by controlling all the heating systems in your home with ease. Offering a complete range of thermostats from simple dial to programmable options all designed for easy and accurate heating control. Further upgraded options include centralised colour touch screen pads and control away from the home, using an app via the internet.

Product Overview

DEVIreg 13X Thermostat

The 13X is a series of manual electronic thermostats used for control of indoor heating – comprising of both the DEVIreg 130 and 132.

DEVIreg 130 is a basic surface mounted manual thermostat for floor warming applications. Equipped with a floor sensor to monitor the floor temperature, commonly used for bathrooms where the controller is located outside of the room.

DEVIreg 132 is a basic surface mounted manual thermostat used for control of both floor heating installations and room heating installations. The thermostat is equipped with a built-in air sensor for control of the desired room temperature. In addition, the thermostat is equipped with a floor sensor to regulate the desired floor temperature.

DEVIreg Touch Thermostat

An easy and intuitive touch screen timer thermostat used for controlling electrical underfloor heating elements.

- Simple and intuitive touch screen operation, with combined thermostat and timer
- Fully programmable 7-day controller
- Fast and simple to use; can be programmed using an online app
- A clever range of energy-saving features to reduce heating costs by up to 12%
- In-built intelligence means that the thermostat will learn how each installation operates and alters the switching on time accordingly on a daily basis, ensuring minimal running costs
- Flush mounting, fits into a standard 47mm single socket box
- A unique 5-year warranty, including online replacement service

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DEVIreg Smart Thermostat

A wireless programmable timer thermostat, with touch screen operation used for controlling electrical floor heating elements.

- Control heating from anywhere, at any time
- A single DEVIreg™ Smart thermostat can be paired with up to 10 mobile devices using DEVIsmart™ App
- With one DEVIsmart™ App you are able to control as many locations with as many DEVIreg™ Smart thermostats as you need
- Can communicate with two mobile devices simultaneously
- Fast and intuitive setup using the built-in wizard
- Energy-saving program –including optimum start/end control ensuring the desired temperature at the correct time and thereby reducing heating costs
- Open window detection automatically switches off the floor heating
- Very precise regulation of user set room temperature by means of a specially developed PWM (Pulse Width Modulation) regulation, including optimal change from comfort to economy mode

Heatmiser neoStat-e & neoHub

Heatmiser's latest neo system delivers Control from anywhere functionality directly on your smartphone or tablet. NeoApp is designed to work perfectly with neoHub and neoStats. Together they present an advanced heating control solution that is perfect for modern lifestyles.

Key Benefits:

- Stunning design incorporating soft touch keys
- Non Programmable, 5/2 Day, 7 Day and 24 Hour Programming
- Air, Air & Floor, Floor Only Sensing Modes
- 3 Meter Remote Floor Sensor
- 5 Minute Program Intervals
- Self Learning Optimum Start
- 4 Comfort Levels / Times per Day
- Holiday Facility
- Flush Mounting
- C/F Selectable
- Key Code Facility
- Automatic Blue Back Light (Turns off after 30 seconds)
- Frost Protection

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DEVIlink Central Control System

DEVIlink offers you the possibility to control your underfloor heating system from a distance. You simply need your heating system, DEVIlink control panel and the App.

DEVIlink Central Controller
The perfect solution for the regulation of underfloor heating systems for apartments, family houses and multifamily buildings. All control devices are specifically designed to be networked as a complete system with two-way wireless communication, giving ultimate control from one central point.

- Vacation function
- Simple user interface
- Colour touch screen
- Weekly heating schedule
- At home mode
- Pause heating
- Control of on/off devices (not via app)
- Integrated help function
- Personalised settings
- Quick / moderate heating regulation functions
- Wi-fi enabled

DEVIlink Floor Thermostat (FT)
The FT is a wireless zone control switch with optional floor sensor. The FT is sued to control either each zone on a manifold or each electric underfloor heating circuit. It can also be used to function as an ON/OFF switch, for example an electric heated towel rail. All communication to the FT is wireless and therefore simple and quick to install.

- On/Off switch
- Wireless connection to the DEVIlink Central Controller
- Optional floor sensor
- 15A switching load, 4A inductive load

DEVIlink Room Sensor (RS)
The RS is designed for precise measurement and setting of desired room temperatures. The RS works in conjunction with a FT to control the required comfort and convenience. It is a battery-operated device for measuring room temperature. High flexibility through free positioning.

- Backlit display
- Built-in sensor for temperature measurement
- Display of set and actual temperature
- Timeless modern design
- 2 x AA batteries
- Battery life up to 2 years
- Warnings: ‘low battery’ and ‘no signal’

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Installation

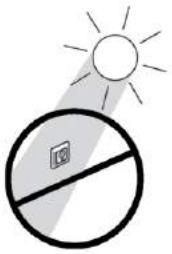
The installation of our thermostats must be done by an authorised and qualified installer. When mounting a thermostat, please pay attention to the details below:

Place the thermostat at a suitable height on the wall (typically 80-170cm.)

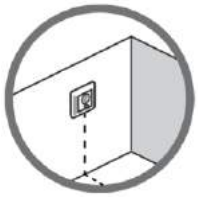
The thermostat **should not** be placed in wet rooms. Place it in an adjacent room. Always place the thermostat according to local regulation on IP classes.

Do not place the thermostat on the inner side of an exterior wall.

Always install the thermostat at least 50 cm from windows and doors.



Do not place the thermostat in a way that it will be exposed to direct sunlight



Note: A floor sensor enables a more accurate temperature control and is recommended in all floor heating applications and mandatory under wooden floors to reduce the risk of over-heating the floor.

Important: When the thermostat is used to control a floor heating element in connection with a wooden floor or similar material, always use a floor sensor and never set the maximum floor temperature to more than 35° C.

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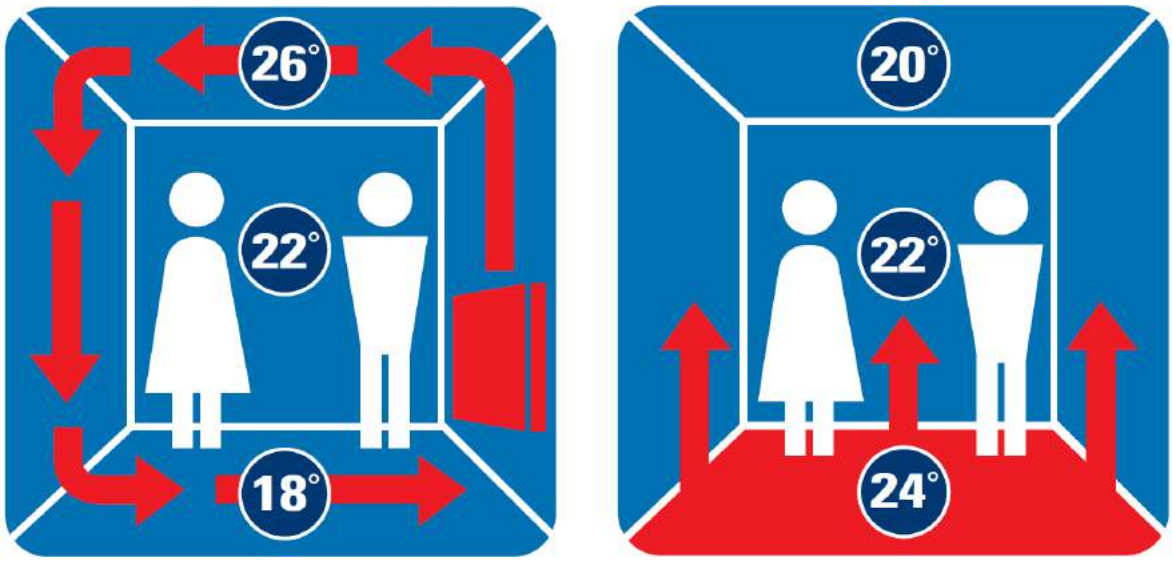
Performance



Thanks to heat distribution coming from the floor and a precise temperature control system such as a DEVIreg thermostat, the average room temperature can be reduced by 1-2° C compared with traditional radiator heating without influencing the thermal comfort level. This enables a reduction of the energy loss by up to 10-20%, which is both economical and environmentally beneficial.

Market Leading Warranties

We provide you with the most up to date thermostats, which help to increase energy saving and minimise costs. However, controls that don't work cause dissatisfied customers and as such we ensure that all our thermostats come with market leading warranties.

Both the DEVIreg Touch and DEVIreg Smart thermostats offer a unique 5-year warranty. In the unlikely event that the unit does fail, we will send a replacement to the address you specify within 48 hours.

Gaia places great importance on providing extremely high quality products and, in the event of a fault, that can be traced back to a manufacturing defect in the product, be repaired or replaced free of charge.

To apply for this warranty the installation must be performed by an authorised installer and the warranty certificate has to be stamped, signed and provided.

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Frost Protection

Snow and Ice Melting on Ground Areas

When heating cables are installed to melt the snow or slippery ice from ground areas, safety and cost savings go hand in hand. This system can be used at home on pavements, driveways and walkways or in commercial car parks, ramps, steps and areas of drainage. It is even possible to melt snow and ice from mastic asphalt surfaces by using our DEVIflex DTIK heating cables.

The system is usually designed taking the available power supply into account. If the available power supply is limited, then:

1) *Reduce the area to be heated e.g. by heating tire tracks instead of the whole driveway*
2) *Divide and prioritise the area in 2 zones by means of the DEVIreg 850*
3) *Install less W/m^2 than recommended, knowing that the snow melting performance is reduced*
4) *Do not install less W/m^2 than recommended in areas of drainage e.g.in front of heated steps*

Product Overview

DEVIflex DTCE-30

DEVI loose cable system. Perfect as a frost protection solution to be installed under driveways and paths within a concrete or sand layer under the final finish.

DEVIflex DTIK-30

DEVI loose cable system. Perfect as a frost protection solution to be installed where the final finish is to be mastic or asphalt concrete.

DEVImat DTCE-250 / 300

DEVI matting system. Perfect as a frost protection solution to be installed under driveways and paths within a concrete or sand layer under the final finish.

DEVImat DTIK-300

DEVI matting system. Perfect as a frost protection solution to be installed where the final finish is to be mastic or asphalt concrete.

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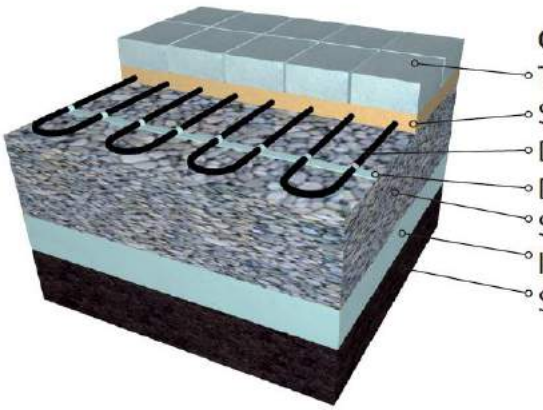
Installation

Our outdoor underfloor heating products are quick and easy to install. Thermal insulation is significant for free standing constructions such as ramps or bridges, steps, etc. Insulation of the free sides of the construction must also be considered. For example, a 6m wide bridge is exposed to snow at -3 °C air temperature and 4,5 m/s crossing wind. Please always follow the manufacturers installation instructions for each surface type you install on to.

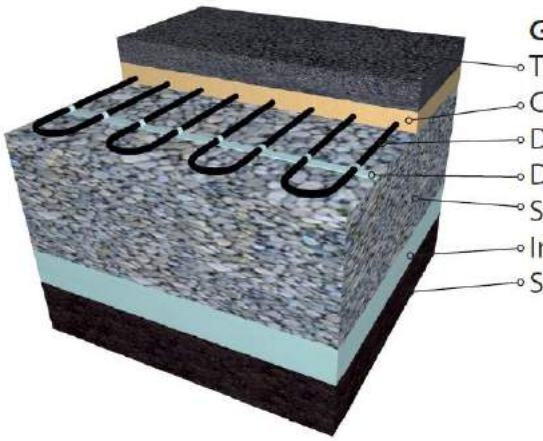


Ground areas such as driveways, walkways and pavements

- Top layer of pavement blocks or concrete slab
- Sand bed
- Deviflex™ heating cable
- Deviclip™ fixing accessory or mesh reinforcement
- Supporting layer of crushed stones
- Insulation (optional, ensure supporting layer is capable)
- Soil

Free constructions such as platforms, steps, bridges and terraces

- Top layer of concrete slab or mastic asphalt
- Deviflex™ heating cable
- Deviclip™ fixing accessory or mesh reinforcement
- Underlying free construction Insulation



Ground areas such as ramps and car parks

- Top layer of concrete slab or asphalt concrete
- Compact sand or concrete bed
- Deviflex™ heating cable
- Deviclip™ fixing accessory or mesh reinforcement
- Supporting layer of crushed stones / concrete / old asphalt
- Insulation (optional, ensure supporting layer is capable)
- Soil

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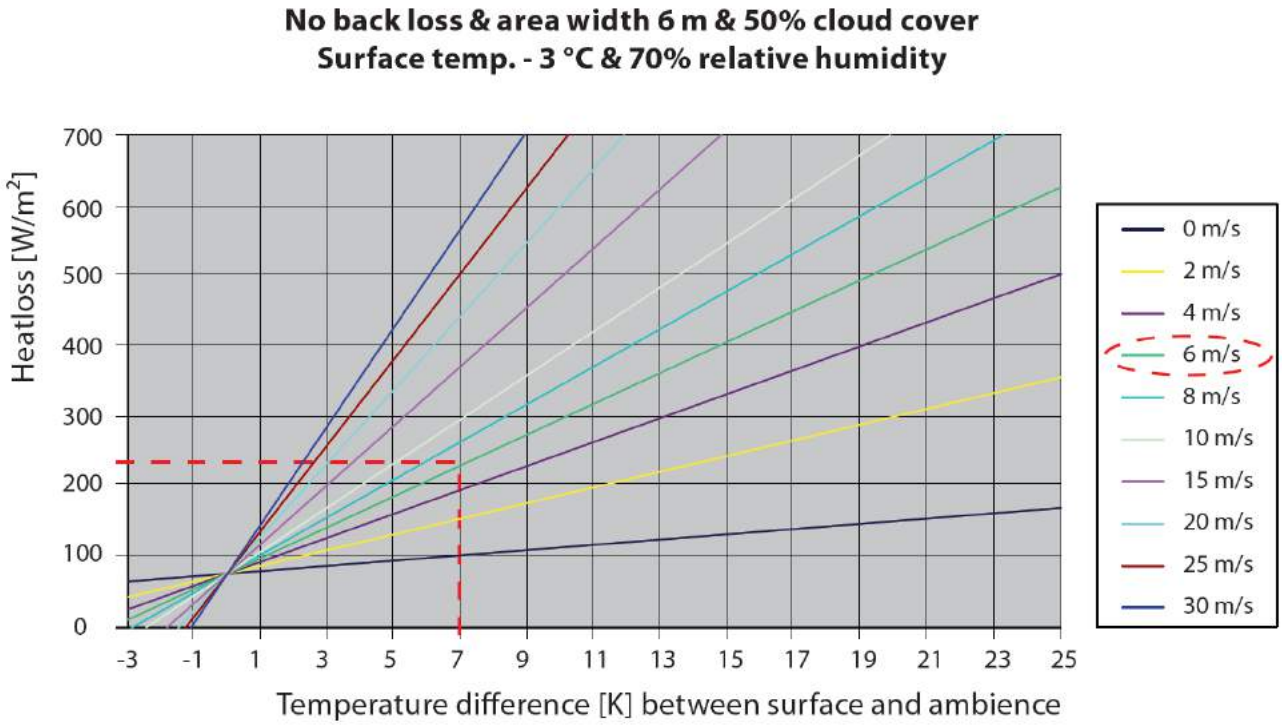
Performance

Our outdoor heating products offer quick responding floor heat when you need it. Evaluation of the specific output for ice and snow melting systems can be done based on the diagram and other similar documents. For example, for medium weather conditions and 6 m/s wind speed, if choosing ΔT = 10 K (from -3 K to +7 K) the heat loss value is approx. 230 W/m² (marked with the red dotted line in fig. 3). In other words, surface heating up to 10 degrees requires 230 W/m² or 230 / 10 = 23 W/(m²·K). All in all, for medium winter weather conditions, heating of 1 m² outdoor surface up to 1°C needs power of approx. 23 Watts. Or the calculation heat exchange coefficient for outdoor surfaces is approx. 23 W/(m²·K).



Complete Floor Guard Warranty

20 YEAR WARRANTY

For ultimate insurance we offer up to 20 year product warranties on all heating mats and cables – which even include the floor cost!

A floor heating system which does not work causes not only dissatisfied customers - it also causes angry customers and with good reason.

A heating cable which is not working is not so easy to replace. The fault has to be found the floor must be taken up before the fault can be corrected. It is a difficult, dirty and expensive process.

Gaia places great importance on the manufacture of extremely high quality products and, in return, offers the market's highest security for unproblematic heating, backed with the promise of the best warranty in the market.

In the event of a fault that can be traced back to a manufacturing defect in a DEVIflex™ or DEVImat™ product, DEVI will repair or replace the product itself and cover any costs associated with the floor covering, at no extra cost to the customer.

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Roof and Gutter Systems

When the winter sun melts the snow and ice, icicles start to form on the cold roof edges and gutters which over time can do a great deal of damage to the building and be a danger for vehicles and people passing by. First, in order to avoid this or, the manual work to remove the ice, heating cables are installed in all drains such as gutter valleys, gutters and down pipes.

The benefits of roof and gutter frost protection systems are:

- *No risk of icicles forming or falling in the cold season which cause injuries or damage to vehicles or other property*
- *Reduces risk of roof collapse due to extra snow loads or roof gutters and downpipes damage due to ice loads*
- *Cost reduction for renovation following the winter season by keeping the façade walls dry*
- *Designed for various weather conditions with automatic operation based on 24hour monitoring and ice and snow removal, it ensures payback period of just one snowy winter*

Product Overview

DEVIflex DTCE-20

DEVI's twin conductor flexible and easy to install loose cable system can be cut to length in situ and can be installed directly on the roof or in the gutter. Cable design provides for 230V and 400V power supply and ensures installation in a safe, efficient and cost-saving manner.

DEVIflex DTCE-30

DEVI's twin conductor flexible and easy to install loose cable system can be cut to length in situ and can be installed directly on the roof or in the gutter. Cable design provides for 230V and 400V power supply and ensures installation in a safe, efficient and cost-saving manner.

Important: Always install thermostat over 3m away from the self-limiting cables, this will help to prolong cable lifetime and minimize energy consumption in a standby mode.

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System Design

To determine the required output (W/m²) of the roof ice and snow melting system it is important to take into account the type of roof construction and local weather conditions. Generally, all roofs can be divided into two categories:

1. **Cold roofs**. These are well-insulated roofs with low upward heat losses. Typically, they are subject to ice formations during periods of snow melting under the sunlight on the roof surface.
2. **Hot roofs**. These are not properly insulated roofs and/or buildings with habitable attics. Hot roofs provide snow melting to a certain extent followed by meltwater moving to the roof edge where it freezes up.

The rated output in gutters should therefore be higher for hot roofs than for cold ones. This will ensure proper efficiency even at low temperatures.

Area	Cold roof	Hot roof	Max. rating	Cable rating
Valley gutter, roof surface	200-300 W/m²	250-350 W/m²	400 W/m²	20-30 W/m
Downpipes, plastic roof gutters	30-60 W/m	40-60 W/m	60 W/m*	20-30 W/m
Downpipes, metal roof gutters	30-60 W/m	40-60 W/m	100 W/m*	20-30 W/m
Downpipes, wooden roof gutters	30-40 W/m	40 W/m	40 W/m	20 W/m

* We recommend 2 x 30 W/m cable lines or 3 x 20 W/m cable lines in downpipes with diameter of Ø120 mm and above.

Installation

Roof Gutter and Down Pipe

For roof applications, cables of 20-30W/m output should be used. In case of cable installation on the roof top by means of dissolvable materials (like bitumen) the heating cable rating must not exceed 20W/m. Gutters running along the cold roof edge generally require 30-40W/m. As a reference the required rating for the hot roof is 40-50 W/m.

In this case in order to provide adequate output per meter, 2 or 3 DEVI cables are required and in some cases even more. The cable must be laid along the gutter in both directions to provide required thermal power. Usually two lines of heating cable are sufficient.

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Ensure that the number of cable lines n complies with the gutter/pipe diameter from the table below.
If not applicable, you can choose cables for roofs and gutters separately. The exact number of cable lines (n) to ensure proper heating in gutters and downpipes depends mainly on two factors:

- Design temperature
- Diameter of the gutter/downpipe

Gutter/pipe diameter	No. of cable lines n
Ø75-120 mm	1
Ø120-150 mm	2*
Ø150-200 mm	3

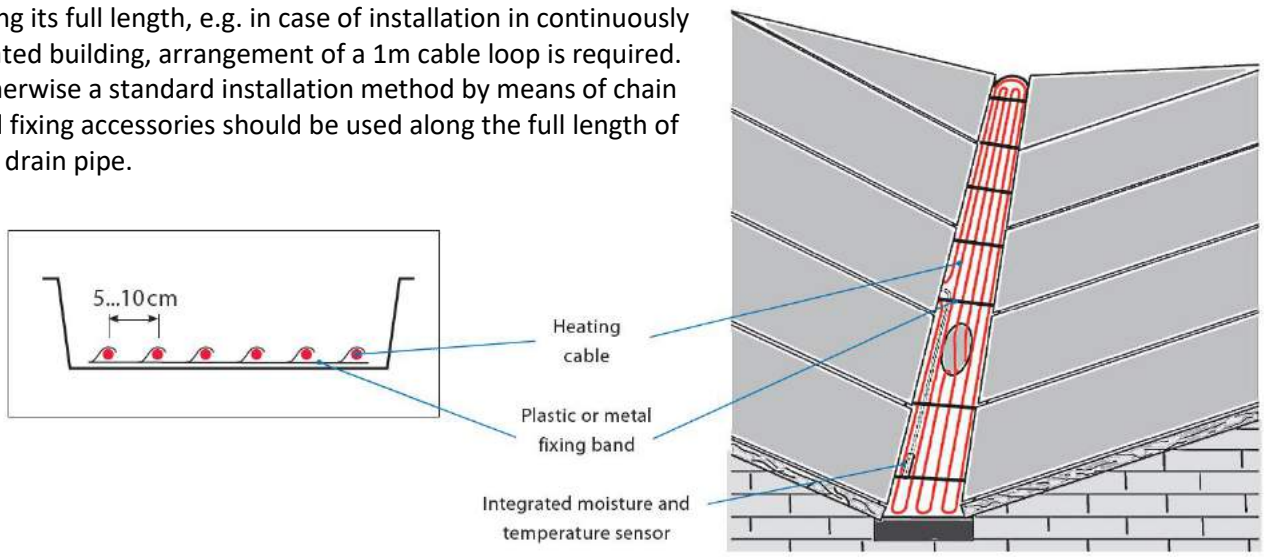
The following tables list the recommended amount of heating cable sections in typical gutters and downpipes, according to the above parameter.

Design temperature	20 W/m n [-]	30 W/m n [-]
0 to -5	1	-
-6 to -15	2	1
-16 to -25	2	2*
-26 to -35	3	2*

* 2 lines of 30 W/m (60 W/m) cable require minimum Ø120 mm downpipe and a controller with a moisture sensor, e.g. DEVIreg™ 850.

Gutter Valley and Drain Pipe

The installation of heating cables in valley gutters typically concerns larger buildings. The heating cable is led backwards and forwards along the gutter so the correct output per m² is achieved. Typically downpipes are connected to roof drains to ensure adequate water evacuation. Even if there is no need to protect downpipe along its full length, e.g. in case of installation in continuously heated building, arrangement of a 1m cable loop is required. Otherwise a standard installation method by means of chain and fixing accessories should be used along the full length of the drain pipe.



Gutter valley heating cable installation

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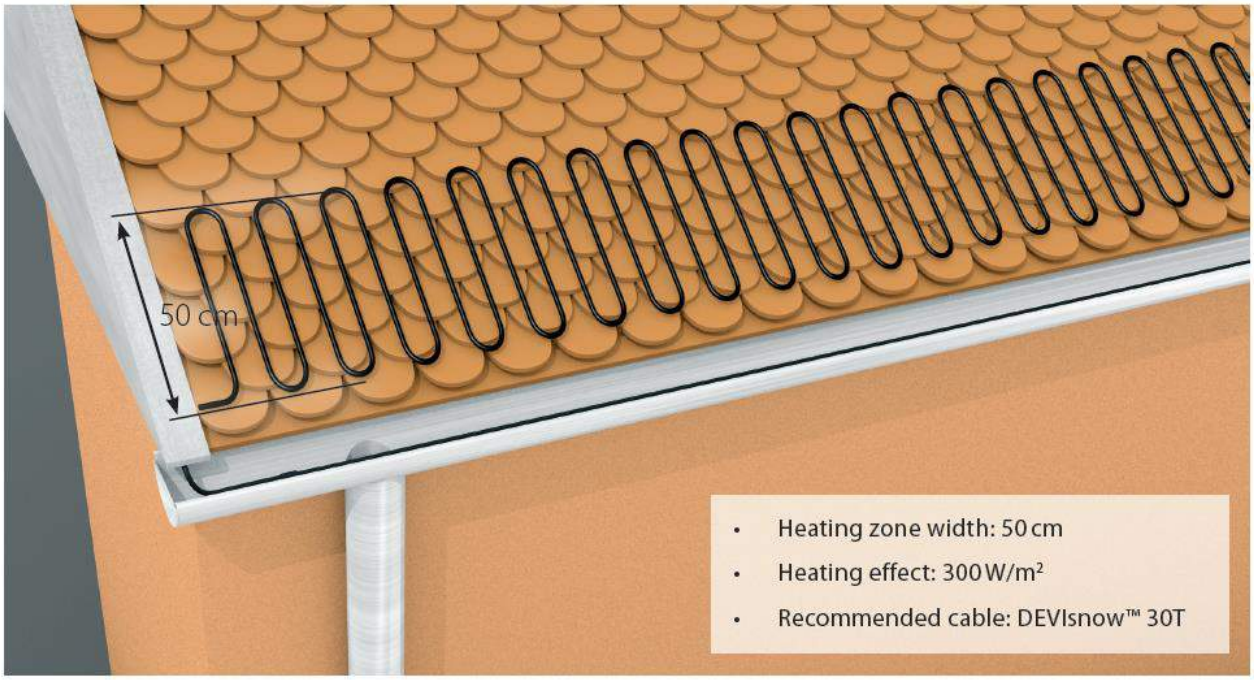
Roof Edges

Often lower unheated parts of roofs (especially hot roofs) are subject to accumulation of large amount of snow and ice. This will slowly transform into large and heavy overhang.
During thaw periods, it may break down leading nearly always to gutter destruction and contributing serious danger for passer-by. To prevent overhang formation lower parts of the roof should be equipped with a heating system. Usually the roof heating system uses special fencing (as shown in the picture) to avoid snow slides.



Roof edges and gutter with heating installation.

Complete Floor Guard Warranty

20 YEAR WARRANTY

For ultimate insurance we offer up to 20 year product warranties on all heating mats and cables – which even include the floor cost!

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Frost Protection Thermostats

Frost protection systems are different and require different thermostat types. DEVIreg thermostats are fitted with a complete set of control functions for heating systems for ice and snow melting of any type and allow attaching external measuring sensors for air or ground temperature measuring as well as control of moisture conditions.

Electronic thermostats feature high-speed operation and good repeatability. Correctness of thermostat selection and control accuracy impact significantly on reliability and power consumption of the heating system.

Product Overview

DEVIreg 330

To control simple or low output systems, a thermostat with a ground temperature sensor is recommended. The DEVIreg DIN rail thermostats can be used for various purposes, for example for controlling: Electrical underfloor heating systems and frost protection. The DEVIreg 330 wall mounted range consist different thermostats – each with separate temperature ranges depending of the application where it will be used.

- DEVIreg 330 (-10°C to 10°C) is mainly used for frost protection applications.
- DEVIreg 330 (5°C to 45°C) is mainly used for underfloor heating.

DEVIreg 850

To control ice and snow melting systems especially with high output the best solution is DEVIreg 850 regulator/controller with integrated ground and roof moisture and temperature sensors.

The DEVIreg 850 is an advanced thermostat with LED display used for outdoor ground or roof applications. The sensors provide information about both moisture level and temperature, resulting in an optimal control of the heating system.
The system can be set up in three ways; as a single system for roof or ground (1 to 4 sensors), as a dual system for roof or ground (2 - 4 sensors) or as a combination system for roof and ground (2 - 4 sensors).
In the dual / combination systems it is possible to prioritize between the zones, e.g. if only a limited power output is available.

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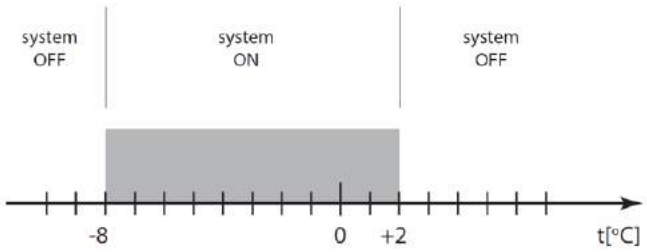
Performance

DEVIreg 330

The DEVIreg 330 thermostat operates based on temperature measurements only, therefore, it is expected that there will be higher running costs when compared to the DEVIreg 850.
The diagram is an example of the DEVIreg 330 operation in differential mode: the thermostat switches ON the heating cable only if the temperature is in the range -8°C to +2°C. It is assumed that it snows only when the temperature is about 0°C and snowfalls outside of this temperature range rarely happen. This is applicable for certain weather conditions only.

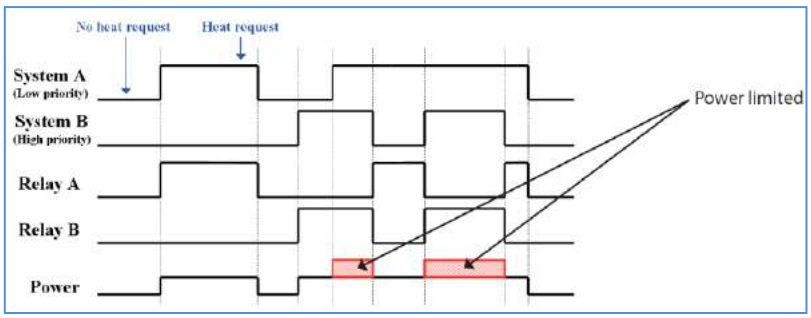


DEVIreg 850

Devireg 850 is a very economical thermostat as its moisture sensor enables it to turn off on cold dry days. The diagram shows what is detected and requested by the 2 zones (System A+B) and how the DEVIreg 850 prioritises and operates the corresponding relays. The result is power limitation.

Zone support saves energy

The DEVIreg 850 lets you divide your area in to 2 zones, e.g. a north and south side. In this way it is possible to save energy, when the south side is free of ice and snow faster because of the heat from the sun. The connection of up to 4 sensors provides maximum control of the outdoor heating system and compared to installations with typical ground temperature measuring the DEVIreg 850 guarantees a reduction in energy consumption costs by up to 40%.



Prioritizing – for limited power output

You can prioritize between the zones, e.g. if you have limited power output. This way one zone is made ice and snow free before focus is put on the other zone.

Market Leading Warranties

We provide you with the most up to date thermostats, which help to increase energy saving and minimise costs. However, controls that don't work cause dissatisfied customers and as such we ensure that all our thermostats come with market leading warranties.

Gaia places great importance on the manufacture of extremely high quality products and, in the event of a fault, that can be traced back to a manufacturing defect in the product, be repaired or replaced free of charge.

To apply for this warranty the installation must be performed by an authorised installer and the warranty certificate has to be stamped, signed and provided.

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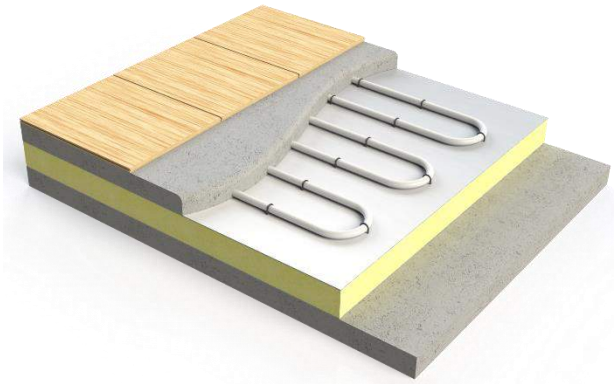
Wet Underfloor Heating

Solid Screed Heating

Solid Screed System is the most popular wet underfloor heating system, this solution can be used to install the underfloor heating pipes within a screeded floor. Two examples would be:



1. **Clipped direct with staples**

   - ✓ A thermal insulation board is laid directly onto the solid sub floor first, if insulation is not foil faced, ensure a 500G Polythene membrane is installed over
   - ✓ The pipe work is clipped directly into insulation, once the pipe work has been pressure tested, it is then covered with either a sand and cement screed or a pumped anhydrite screed

2. **Castellated panel system**

   - ✓ The pipes are clipped into egg crate style plastic panels, laid over thermal insulation, which is then covered with either a sand and cement screed or a pumped anhydrite screed
   - ✓ The castellated panels ensure uniform pipe spacing, for faster and easier installation to achieve the recommended heating output

By installing the pipes within the screed, this enables the whole floor to warm up like a storage radiator. This method works efficiently with any floor covering, as long as it is well insulated beneath and is normally used for new build houses or extensions/conservatories.

Recommended Heating Output

Screed System: Estimated heating output

Proposed Floor Finish	**Thermal Resistance (Estimate)**	**Pipe Spacing (mm)**	**Maximum UFH Output W/m²**	***Floor Surface Temperature (ºC)**
Tile / Stone	0.00 W/m²K	200	115	30
Vinyl	0.05 W/m²K	200	90	28
Timber	0.10 W/m²K	200	75	27
Carpet	0.15 W/m²K	200	65	26

Estimated heating outputs in accordance to BS EN 1264 for 16mm UFH pipe within 75mm floor screed.

Figures based on achieving 20ºC internal room temperature, with a mean water temperature of 45ºC (50ºC Flow, 40ºC Return)

**Check the maximum floor surface temperature is suitable in accordance with the floor finish manufacturer guidelines.*

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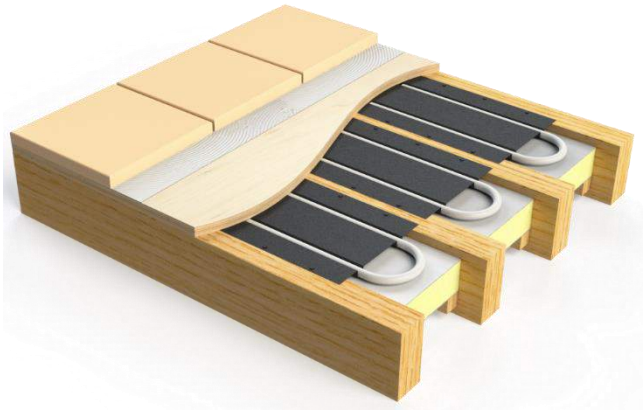
Aluminium Plates on Timber Joists



Aluminium plates are designed and made to be placed on timber joists and then secured by screws or nails to the joist. The plates have 16mm preformed grooves in them, which are generally set at 200mm centres to house the 16mm pipe running centrally up and down the joists, which typically are at 400mm joist centres.

The plates are for heat distribution only and are not structural. They normally cover approximately 80% of the floor area and should never touch each other, as they expand when heated and can create noise. The plates are only laid under straight runs of pipe, not the loop bends.

A standard installation for this system assuming the joists are deep enough would be to fix battens to the sides of the joists (about 70mm from the top of the joist) then a 50mm rigid insulation is cut and placed onto the battens, the pipe work is then clipped directly into the aluminium plates.

Recommended Heating Output

Aluminium Plate System: Estimated heating output

Proposed Floor Finish	**Thermal Resistance (Estimate)**	**Pipe Spacing (mm)**	**Maximum UFH Output W/m²**	***Floor Surface Temperature (ºC)**
Tile / Stone	0.00 W/m²K	200	76	27
Vinyl	0.05 W/m²K	200	67	27
Timber	0.10 W/m²K	200	58	26
Carpet	0.15 W/m²K	200	53	26

Estimated heating outputs based on 16mm UFH pipe with allowance for 18mm thick timber over-boarding layer, prior to floor finish.

Figures based on achieving 20ºC internal room temperature, with a mean water temperature of 45ºC (50ºC Flow, 40ºC Return)

**Check the maximum floor surface temperature is suitable in accordance with the floor finish manufacturer guidelines.*

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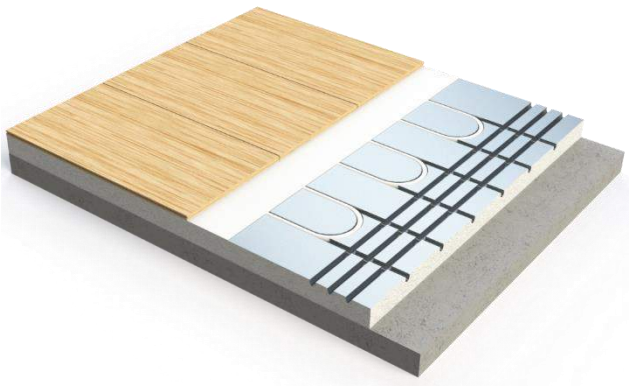
Grooved Overlay System

Our grooved overlay system, is a unique low profile floor heating system ideal for both renovation and new build projects. Installed over the existing floor and minimum 25mm in depth. A grooved overlay system allows underfloor heating to be installed where traditional underfloor systems would either require expensive excavation or would require the floor to be raised to an unacceptable level.



Simply lay the grooved overlay boards onto any existing level solid substrate and place the 16mm pipe in the pre-formed grooves. As the boards are constructed from EPS insulation with an aluminium foil layer covering, they dissipate the heat evenly across the floor. The pre-formed grooves ensure uniform pipe spacing, for faster and easier installation whilst still achieving the recommended heating output.

Recommended Heating Output

Grooved Overlay System: Estimated heating output

Proposed Floor Finish	**Thermal Resistance (Estimate)**	**Pipe Spacing (mm)**	**Maximum UFH Output W/m²**	***Floor Surface Temperature (ºC)**
Tile / Stone	0.00 W/m²K	200	76	27
Vinyl	0.05 W/m²K	200	67	27
Timber	0.10 W/m²K	200	58	26
Carpet	0.15 W/m²K	200	53	26

Estimated heating outputs based on 16mm UFH pipe with allowance for 18mm thick timber over-boarding layer, prior to floor finish.

~ To improve heating output, screed board could be used rather than timber or thinner timber over-boarding layer (minimum 6mm ply-wood)

Figures based on achieving 20ºC internal room temperature, with a mean water temperature of 45ºC (50ºC Flow, 40ºC Return)

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Complete Product Overview

Solid Screed Heating

		Screed System (Panel)	*Screed System (Clips)*
Pipe		**16mm PE-Xa Multi-layer barrier pipe**	**16mm PE-Xa Multi-layer barrier pipe**
Pipe fixing method		**Castellated Panel**	**Clips**
		Standard panel ~ no insulation	300 clips per 100m of pipe
		Floor insulation panel (10-50mm EPS)	
Maximum pipe length per circuit		120m Total length	120m Total length
****Maximum coverage per circuit @ pipe spacing***	100mm	12m²	12m²
	200mm	24m²	24m²
	300mm	36m²	36m²
Pipe requirement per m² @ pipe spacing	100mm	10m per m²	10m per m²
	200mm	5m per m²	5m per m²
	300mm	3.3m per m²	3.3m per m²

*Maximum coverage is based on the UFH manifold being located within the heated area. If the UFH manifold is located away from the heated area, allowance for the flow and return pipework to manifold and room needs to be taken into consideration, reducing the coverage of the remaining UFH circuit within heated area.

Aluminium Plates on Timber Joists

		Aluminium Plate System
Pipe		**16mm PE-Xa Multi-layer barrier pipe**
Pipe fixing method		**Aluminium Diffusion Plate**
		Available to suit joist / battens centres from 300-600mm, with pipe spacing 150mm / 200mm
Maximum pipe length per circuit		120m Total length
***Maximum coverage per circuit @ pipe spacing**	150mm	18m²
	200mm	24m²
Pipe requirement per m² @ pipe spacing	150mm	7m per m²
	200mm	5m per m²

*Maximum coverage is based on the UFH manifold being located within the heated area. If the UFH manifold is located away from the heated area, allowance for the flow and return pipework to manifold and room needs to be taken into consideration, reducing the coverage of the remaining UFH circuit within heated area.

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Grooved Overlay System

		Grooved Overlay System
Pipe		**16mm PERT MLCP Pipe**
Pipe fixing method		**Foil Faced EPS Grooved Overlay Panels**
		Minimum thickness 25mm (EPS300), 30mm and above (EPS200 as std.), with pipe spacing 150mm / 200mm
Maximum pipe length per circuit		120m Total length
***Maximum coverage per circuit @ pipe spacing**	150mm	18m²
	200mm	24m²
Pipe requirement per m² @ pipe spacing	150mm	7m per m²
	200mm	5m per m²

*Maximum coverage is based on the UFH manifold being located within the heated area. If the UFH manifold is located away from the heated area, allowance for the flow and return pipework to manifold and room needs to be taken into consideration, reducing the coverage of the remaining UFH circuit within heated area.

16mm PE-Xa Multi-Layer Barrier Pipe

A 3-layer barrier pipe suitable for use in Underfloor Heating. Ideal for fitting to castellated panels or direct to insulation. Easy to bend and secure into place for all heating applications. Suitable for use in general heating applications, maximum temperature 90°C, 6 bar maximum pressure.

16mm PERT MLCP Pipe

A 5-layer composite pipe, commonly used in underfloor heating because of its flexibility and strength. The pipe can be easily formed and will retain its shape which makes installation of underfloor heating loops extremely simple. Maximum operating pressure 10 bar; maximum operating temperature 70°C.

Thermal Actuator

An electrothermic head for use with our manifolds. The electrothermic head is, essentially a 2-port zone valve and will open the individual circuit when energised by the wiring centre. The valve body is closed and will open when energised. Available in both 230V and 24V.

Wiring Centre

A connection box for use in a wet underfloor heating system supplied from a manifold. The wiring centre is used to connect thermal actuators to room thermostats. It is provided with two potential-free relays for controlling a circulation pump and a boiler. The relays are activated when one or more thermostats require heat. Available in both 230V and 24V.

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Technical Heating Output Table

Screed System: Estimated Heating Outputs									
Floor Finish		Tile / Stone		Vinyl		Timber		Carpet	
Thermal Resistance		0.00 W/m²K		0.05 W/m²K		0.10 W/m²K		0.15 W/m²K	
MWT ºC	Spacing	W/m²	*FST ºC	W/m²	*FST ºC	W/m²	*FST ºC	W/m²	*FST ºC
35	100	92	28	69	26	55	25	46	24
	150	79	27	61	26	49	25	42	24
	200	69	26	54	25	44	24	38	24
	250	60	26	58	25	40	24	35	23
	300	52	25	43	24	36	24	32	23
40	100	123	31	92	28	73	27	61	26
	150	106	30	81	27	65	26	56	25
	200	92	28	72	27	59	26	51	25
	250	80	27	64	26	53	25	47	25
	300	70	27	57	25	48	25	43	24
45	100	154	33	115	30	91	28	76	27
	150	133	32	102	29	82	28	70	27
	200	115	30	90	28	74	27	64	26
	250	100	29	80	27	66	26	58	26
	300	87	28	71	27	60	26	54	25
50	100	185	36	138	32	110	30	92	28
	150	159	34	122	31	98	29	84	28
	200	138	32	108	30	88	28	76	27
	250	120	31	96	29	80	27	70	27
	300	105	29	86	28	72	27	64	26

Estimated heating outputs in accordance to BS EN 1264 for 16mm UFH pipe within 75mm floor screed.

Figures based on achieving 20ºC internal room temperature, with different mean water temps. "MWT"

Example MWT 45ºC = 50ºC Flow, 40ºC Return

***Check the maximum floor surface temperature is suitable in accordance with the floor finish manufacturer guidelines.**

Gaia Climate Solutions Limited

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Aluminium Plate System: Estimated Heating Outputs

Floor Finish		Tile / Stone		Vinyl		Timber		Carpet	
Thermal Resistance		0.00 W/m²K		0.05 W/m²K		0.10 W/m²K		0.15 W/m²K	
MWT ºC	Spacing	W/m²	*FST ºC	W/m²	*FST ºC	W/m²	*FST ºC	W/m²	*FST ºC
35	150	51	24	45	24	39	24	31	23
	200	46	24	41	24	35	24	28	23
40	150	67	26	59	26	52	25	42	24
	200	61	26	54	26	47	25	38	24
45	150	84	27	74	27	64	26	52	25
	200	76	27	67	27	58	26	47	25
50	150	100	28	89	28	77	27	63	25
	200	91	28	81	28	70	27	57	25

Estimated heating outputs based on 16mm UFH pipe with allowance for 18mm thick timber over-boarding layer, prior to floor finish.

Figures based on achieving 20ºC internal room temperature, with different mean water temps. "MWT"

Example MWT 45ºC = 50ºC Flow, 40ºC Return

***Check the maximum floor surface temperature is suitable in accordance with the floor finish manufacturer guidelines.**

Grooved Overlay System: Estimated Heating Outputs

Floor Finish		Tile / Stone		Vinyl		Timber		Carpet	
Thermal Resistance		0.00 W/m²K		0.05 W/m²K		0.10 W/m²K		0.15 W/m²K	
MWT ºC	Spacing	W/m²	*FST ºC	W/m²	*FST ºC	W/m²	*FST ºC	W/m²	*FST ºC
35	150	51	24	45	24	39	24	31	23
	200	46	24	41	24	35	24	28	23
40	150	67	26	59	26	52	25	42	24
	200	61	26	54	26	47	25	38	24
45	150	84	27	74	27	64	26	52	25
	200	76	27	67	27	58	26	47	25
50	150	100	28	89	28	77	27	63	25
	200	91	28	81	28	70	27	57	25

Estimated heating outputs based on 16mm UFH pipe with allowance for 18mm thick timber over-boarding layer, prior to floor finish.

~ To improve heating output, screed board could be used rather than timber or thinner timber over-boarding layer (minimum 6mm ply-wood)

Figures based on achieving 20ºC internal room temperature, with different mean water temps. "MWT"

Example MWT 45ºC = 50ºC Flow, 40ºC Return

***Check the maximum floor surface temperature is suitable in accordance with the floor finish manufacturer guidelines.**

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Wet Controls

Bring that extra level of control to your life, by controlling all the heating systems in your home with ease. Offering a complete range of thermostats from simple dial to programmable options all designed for easy and accurate heating control. Further upgraded options include centralised colour touch screen pads and control away from the home, using an app via the internet.

Timeclock Controls

Danfoss TS715-Si

The Danfoss TS715-Si is a single channel time clock for time control of the underfloor heating system when used in conjunction with manual room thermostats. It can be configured by the installer at time of installation to provide 7 day, 24 hour, or 5 day/2 day operation and either 2 ON/OFF's or 3 ON/OFF's per day, allowing the timeswitch to be tailored to match the specific requirement of the consumer.

- Service interval function
- Permanent backlit display
- AM/PM or 24 hour display
- Built in programmes
- Automatic BST/GMT time change
- Holiday function
- 'Industry standard' wallplate
- Warranty: 2 Years

Danfoss FP975-2H

The Danfoss FP975-2H is a two-channel programmer with independent timebase. Configured for two heating zones.

- Fits SET and MK9 wallplates
- Ideal for service replacement
- 'Industry standard' wallplate
- Convenient user overrides
- Simple GMT/BST time change
- AM/PM or 24 hour display
- Day programme copy facility
- Built-in programmes
- Battery back up
- Warranty: 2 Years

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Manual Controls

Danfoss WT-T

A simple dial thermostat used for room temperature control in water-based floor heating systems.

- Simple dial thermostat for room temperature control
- Frost symbol allowing minimal energy consumption while avoiding freezing temperatures in the room
- Coloured light system to display when there is a heat demand

Danfoss WT-D

The Danfoss WT-D is a basic room thermostat suitable for the control of air temperature.

- Modern design with white backlight
- AWAY function
- Child safety lock
- Optional Floor temperature control
- Max. and min. limit settings for room temperature
- Optional room temperature display when power is OFF (default setting: no display)

Danfoss Tamperproof

The FH-WP tamperproof room thermostat is used for single room temperature control, mainly in hydronic floor heating systems.

- All thermostats are provided with easy max. and min. limitation of the setting range, as well as thermal feedback to improve accuracy
- FH-WP is a tamper proof model of the FH-WS for use in public environments i.e. schools

Emmeti Electronic Dial Operated

Electronic dial operated thermostat with changeover contacts. LED provides call for heat indicator. Includes variable night setback operation from 2°C to 7°C (default 4.5°C) when used with a suitable timeswitch.

- Red LED light shows when the thermostat is calling for heat.
- The night set back temperature is adjustable in the range 2 °C to 7°C.
- Optional remote sensors - enables thermostat use in bathroom applications.
- Simple to use dial operation with clear temperature settings from 6 °C to 30 °C.

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Programmable Controls

Danfoss WT-P

The Danfoss WT-P is a programmable room thermostat suitable for the control of water-based floor heating systems.

- Modern design with white backlight
- AWAY function
- Child safety lock
- Optional Floor temperature control
- Max. and min. limit settings for room temperature
- Optional room temperature display when power is OFF (default setting: no display)
- Programmable 5/2-day feature with 4 time segments (WT-P&PR)
- Clock in 12-hour or 24-hour format (WTP&PR)

Emmeti CS-11 Programmable

Electronic digital programmable thermostat with pre-connected on-off contacts for 230V AC operation.

- Large simple clear, backlit, LCD display.
- Day and time display
- Extra slim control panel (15mm deep)
- Controls air, floor and air & floor temperatures using remote sensor
- Heating 'on' and programme number icons
- Offers simple to use 24 hour, 7-day, 6+1 day or 5+2 day programming options with six time / temperature events per day
- Manual override and vacation mode
- Frost protection and optimum start functions

DEVIreg Touch Thermostat

An easy and intuitive touch screen timer thermostat used for controlling underfloor heating elements.

- Simple and intuitive touch screen operation, with combined thermostat and timer
- Fully programmable 7-day controller
- Fast and simple to use; can be programmed using an online app
- A clever range of energy-saving features to reduce heating costs by up to 12%
- In-built intelligence means that the thermostat will learn how each installation operates and alters the switching on time accordingly on a daily basis, ensuring minimal running costs
- Flush mounting, fits into a standard 47mm single socket box
- A unique 5-year warranty, including online replacement service

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Wireless Control Systems

Heatmiser neoStat & neoHub

Heatmiser's latest neo system delivers control from anywhere functionality directly on your smartphone or tablet. NeoApp is designed to work perfectly with neoHub and neoStats. Together they present an advanced heating control solution that is perfect for modern lifestyles.

Key Benefits:

- Stunning design incorporating soft touch keys
- Non programmable, 5/2 day, 7 day and 24 hour programming
- Air, air & floor, floor only sensing modes
- 5 minute program intervals
- Self learning optimum start
- 4 comfort levels / times per day
- Holiday facility
- Flush mounting
- C/F selectable
- Key code facility
- Automatic blue back light (turns off after 30 seconds)
- Frost protection

DEVIlink Central Control System

DEVIlink offers you the possibility to control your underfloor heating system from a distance. You simply need your heating system, DEVIlink control panel and the App.

Combine the DEVIlink Central Controller, Room Sensor and Floor Thermostat to create the perfect solution for the regulation of underfloor heating systems for apartments, family houses and multifamily buildings. All control devices are specifically designed to be networked as a complete system with two-way wireless communication, giving ultimate control from one central point.

- Vacation function
- Simple user interface
- Colour touch screen
- Weekly heating schedule
- At home mode
- Pause heating
- Control of on/off devices (not via app)
- Integrated help function
- Personalised settings
- Quick / moderate heating regulation functions
- Wi-fi enabled

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Installation

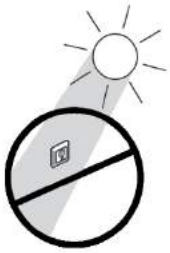
The installation of our thermostats must be done by an authorised and qualified installer. When mounting a thermostat, please pay attention to the details below:

Place the thermostat at a suitable height on the wall (typically 80-170cm.)

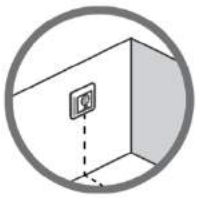
The thermostat **should not** be placed in wet rooms. Place it in an adjacent room. Always place the thermostat according to local regulation on IP classes.

Do not place the thermostat on the inner side of an exterior wall.

Always install the thermostat at least 50 cm from windows and doors.



Do not place the thermostat in a way that it will be exposed to direct sunlight



Note: A floor sensor enables a more accurate temperature control and is recommended in all electric floor heating applications, utilised under wooden floors to reduce the risk of over-heating the floor.

Important: When the thermostat is used to control an electric floor heating element in connection with a wooden floor or similar material, always use a floor sensor and never set the maximum floor temperature to more than 35° C.

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