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

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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.

The perfect solution to a warmer home.

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.

Gaia Climate Solutions Limited

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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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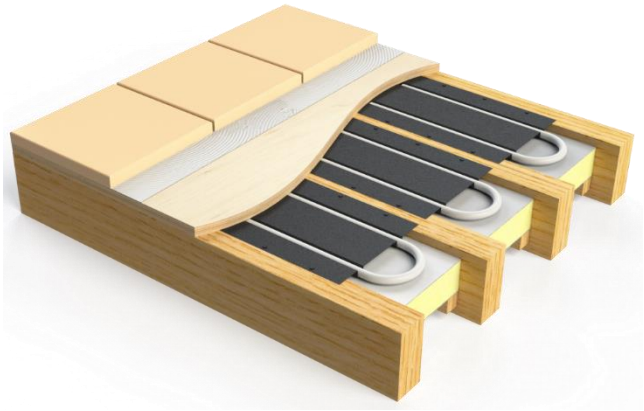
Aluminium Plates on Timber Joists



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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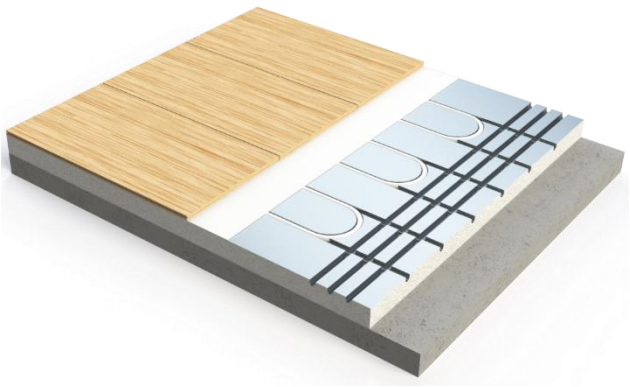
Grooved Overlay System

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)

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

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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.**

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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

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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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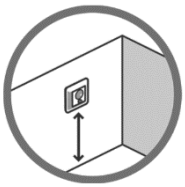
Installation

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:

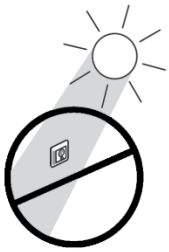


Place the thermostat at a suitable height on the wall (typically 80-170cm.)

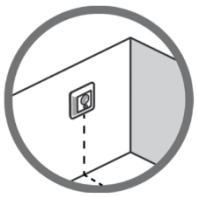
The thermostat **should not** be placed in wet rooms. Place it in an adjacent room. Always place the thermostat according to local regulation on IP classes.

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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