



Your Complete Guide to Underfloor Heating & Heat Pump Solutions





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About Us

Joule have developed a wide ranging portfolio of solutions for heating and hot water systems. So whether it's a heat pump, underfloor heating or our industry leading 'Smartplumb' range of pre-plumbed cylinders, Joule have a solution for you.

InvaHeat design and supply underfloor heating systems to the residential, commercial and industrial sectors and can offer in-house' and 'on-site' support.

We offer a number of fixing systems for use with screeded, floating or joisted floors. We supply pipework, room temperature and water temperature controls. Our materials are complemented by a full planning, design and technical service.



*Formative underfloor
heating solutions for your
home or business*





Why Underfloor Heating?



Warmth & Comfort

Underfloor heating warms up a room using radiant heat and this is more comfortable than heating a room by air alone, as you do with radiators. We get a similar feeling of comfort from the sun.



Renewables

Renewable heat is easier to produce efficiently at low water temperatures. Underfloor heating uses low temperature water leaving an ideal match with renewable energy heat sources.



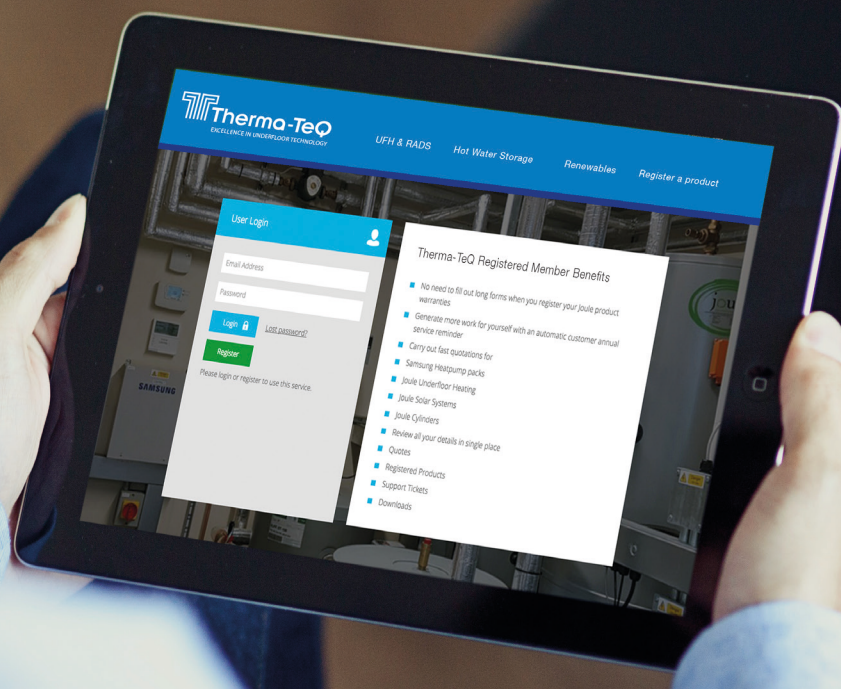
Efficiency

InvaHeat's products are designed specifically to work at low water temperatures, improving the efficiency of the heat pump, reducing running costs and saving you money.



Well Being

Underfloor heating provides a balanced level of radiant heat and air warming. If the heating is provided by high air temperatures this can dry the skin and eyes. Warming the floor reduces the occurrence of dust mites that cause allergies.



Become a Joule Registered Member

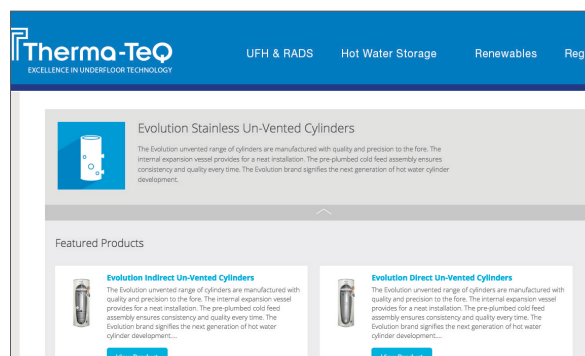
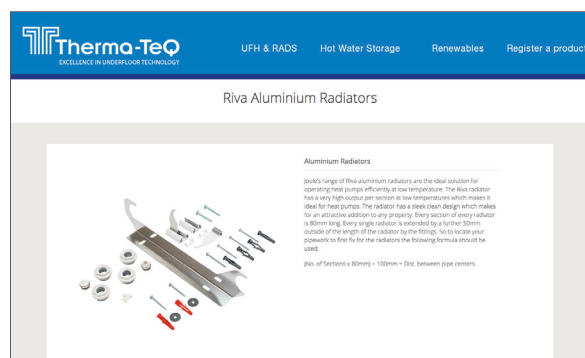
Save time and generate more money:

- No need to fill out long forms when you register your Joule product warranties
- Control your very own automatic customer annual service reminder

Carry out fast quotations for:

- Samsung Heatpump packs
- Joule Underfloor Heating
- Joule Solar Systems
- Joule Cylinders
- Review all your details in one place
- Quotes
- Registered Products
- Support Tickets
- Downloads

The dashboard tool provides a full quotation. Our online estimator gives you an instant quote and a list of all the items you need for your project.



UNDERFLOOR FOR EVERY APPLICATION



InvaHeat can provide a bespoke design for each and every project. We stock a wide range of underfloor pipe fixing systems designed to work with any type of floor construction. Here you will find an overview of the systems available for different project types.

Underfloor heating can be installed within a variety of different floor constructions. The different floor constructions comprise of solid screed floors, suspended floors and floating floors.



Self-Builders



New build or renovation, whatever your dream, our innovative, certified products, wide range of floor constructions mean we will ensure a bespoke design that's fit for purpose, accommodating pretty much any project or build requirement.

A detailed CAD layout will illustrate every aspect of the system to ensure that the installation can take place efficiently and to suit the build schedules of you and your builder.

Underfloor heating provides many practical benefits including a more comfortable environment and design flexibility to design the interior of your build without the physical constraints of radiators. Whether integrated with a gas boiler or renewable heat source, underfloor heating provides an efficient and environmentally friendly solution.



- **EXPERIENCE COUNTS**
- **MAKING MORE OF YOUR LIVING SPACE**
- **COMPLETE CONTROL**
- **ENHANCING YOUR PROJECT**
- **ADDING QUALITY & STYLE**

”

*I wanted to create a warm and inviting space and that's exactly what I got with **InvaHeat Underfloor.***

Installers

InvaHeat understands that a good reputation is vital to your business. With InvaHeat your reputation is in good hands as all our products are manufactured to the highest standards using the latest technologies.

Simple to install and easy to use, all of our underfloor heating systems come with manuals demonstrating everything you need to know.

InvaHeat have technical experts on hand based throughout the country. **InvaHeat** can provide on-site backup as well as technical and design support on future projects.

InvaHeat's designers produce a detailed CAD design layout to illustrate every aspect of the system and ensure that the installation can take place efficiently and to suit the install schedule.

- **DESIGNING THE RIGHT SOLUTION**
- **ON SITE BACK UP**
- **INSTALLATION GUIDES**
- **SITE VISITS AVAILABLE**
- **USER MANUALS**



”

*Working together with
Joule & **InvaHeat** enables
us to offer our clients a
single heating solution
that delivers great energy
efficiencies.*

Architects & Developers



Underfloor heating offers greater design flexibility when it comes to the interior layout of your project and, with **InvaHeat** whatever the project, we will provide an up-to-date solution.

For projects that require an underfloor heating solution, **InvaHeat** designs and supplies heating systems that comply fully with all current building and regulatory requirements.

InvaHeat take full system design responsibility for our underfloor heating systems and renewable solutions.

For complete reassurance we are backed by Professional Indemnity Insurance.

With proven design proficiency and experience in projects ranging from new build, commercial to retrofit, **InvaHeat** is a partner you can trust. Employing industry-leading designers combined with world class intelligent calculation software, **InvaHeat** offers full CAD and technical support for you, along with our award winning technical manuals.



”

*Excellent back-up,
fantastic service and
superb product, what
more can I say*

- FROM CONCEPT TO REALITY
- DESIGN FLEXIBILITY
- SOLUTION FOR EVERY PROJECT
- DESIGN RESPONSIBILITY

Stockists



With a strong reputation and high quality range of underfloor heating systems **InvaHeat** Underfloor is the perfect partner for your business.

With a dedicated Technical Account Manager, you can be assured technical sales enquiries and pricing queries will be responded to quickly, with swift turnaround of drawings and quotes.

With a large sales team on the ground we can provide local branches with onsite technical training on the latest solutions and the most effective way to sell our products.

- A SIMPLE SOLUTION
- MANAGEMENT
- SMART SELLING
- HELPING HAND



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Once we put our customers in touch with **InvaHeat** they took care of everything.

Screed

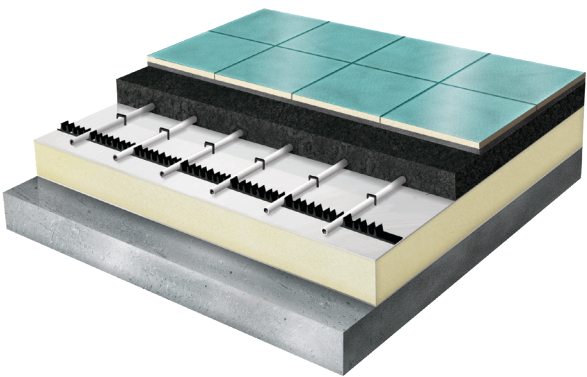
Screed systems rely on thermal conductivity to transfer heat from the pipes within the screed to the finished floor level.

Inva Clip & Rail

This is the most common system installed in new build properties where the floor is being laid is a screed solution.

The installer simply covers the insulation boards with polyurethane sheets, removes the sticky cover on the back of the rapid rails and then lays them out parallel to one of the walls keeping one meter between each row. They then lay the pipe down on to the surface clipping it to the rails as it passes over the rails in a configuration detailed in the installation instructions provided.

The Rapid Rail consists of a robust, u-shaped channel that is 2m in length, with fixing positions every 50mm. This system is quick and easy to install.



70MM



90
W/m²

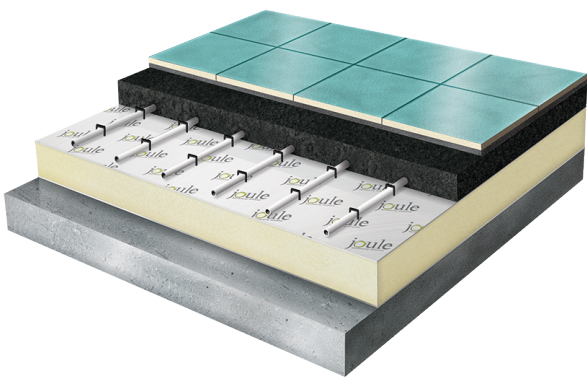


Inva Clip

This is identical to the rapid rail and clip system only it does not use the rapid rails.

This means that you must work out the spacings manually. Normally to use this method a staple gun is a good idea as there will be a high volume of staples to fix to keep all the pipe secure to the insulation.

An average of 3 tackler clips are needed for one metre of pipe. The length of the tackler is determined by the underlying insulation thickness.



70MM



90
W/m²



Suspended Floor

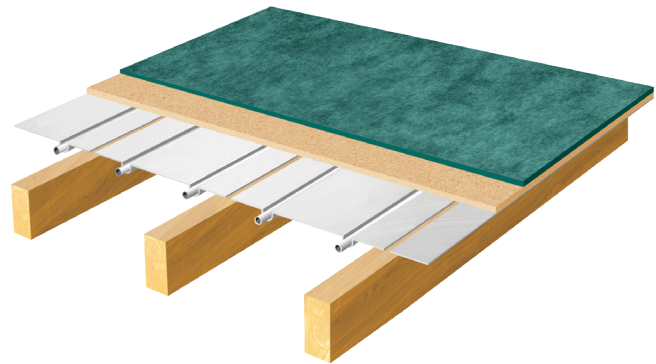
Underfloor heating systems may be successfully installed within suspended - floors providing the floor is constructed to suit the application.

Inva Plate

The aluminium spreader plate system is an ideal solution for a suspended timber floor both upstairs or downstairs.

The spreader plates fix to the joists and have preformed channels built in to take the pipe and also help radiate the heat from the pipe to the space above it. The finished floor can be laid directly over the spreader plates.

Both edges of the plates are simply fixed to either joist and this process is repeated along the entire run of joist and across the whole area being covered by the underfloor heating system.



OMM



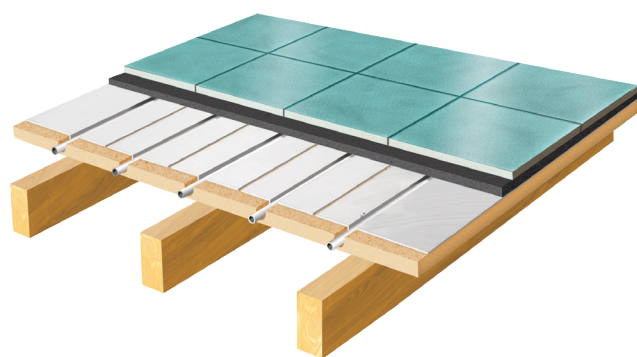
55
W/M²



Inva Struct

Our grooved chipboard board system is uniquely designed to offer a slim line alternative. At only 22mm total floor build-up this is a popular option for both new build and refurbishment applications.

InvaHeat's philosophy of continuous development we have developed a range of systems to suit low floor build ups where traditional systems cannot be used. This range is most often used in refurbishment projects where door and ceiling heights are fixed. Another development of the low floor build up range that provides a structural floor solution over suspended timber floors, ideally for engineered joists that cannot be notched.



22MM



55
W/M²



Floating Floor

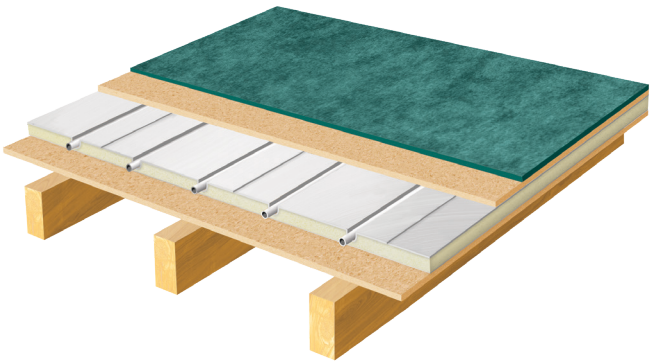
Floating floor systems are laid directly on top of the existing floor eliminating the requirement to disturb the current floor structure.

Inva Lite

This is an ideal solution where you have available floor to ceiling heights to have 20, 25 or 50mm floor build up.

Effectively four products in one, these Insulation Panels comprise a rigid thermal insulation material with grooves positioned in the upper surface. The upper surface has a metallised foil bonded to it, following into the grooves, which acts as a radiant surface improving heat transfer and reducing system start up times.

The grooves in the insulation securely retain our 16mm pipe in the correct position, eliminating the need for supplementary fixings.



43MM
WITH TILES



65
W/M²



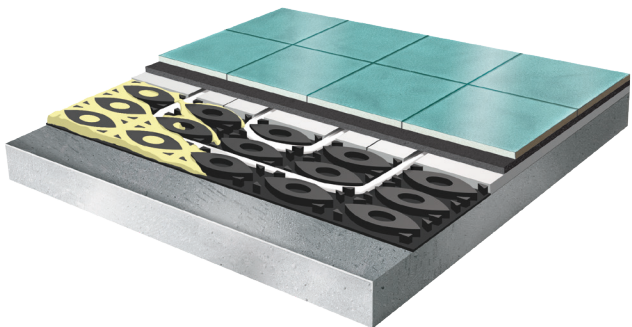
25MM
WITH ENGINEERED
TIMBER FLOOR

Inva Board

InvaHeats pre-grooved cement boards offer an ideal fast-fit, 18mm floor build up with a high output underfloor heating system.

Used in conjunction with our structural plastic floor panel at either end of the room to enable turning and routing of pipe this unique system can be installed directly onto both screed or wood floors.

The boards have a high thermal conductivity so heating response times are quicker and energy use is reduced.



18MM
ON HARD BASE
36MM
ON JOISTS



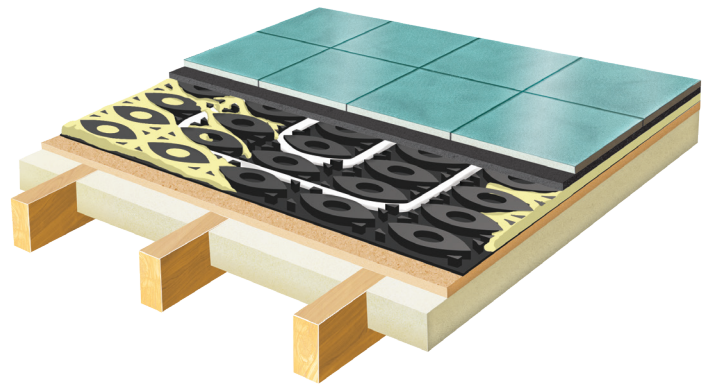
65
W/M²



Inva Screed

This structured plastic panel, when combined with a low profile quick drying self-leveling screed and a warm water underfloor heating system, provides a unique low thickness/high heat output floor heating solutions for both new build and retrofit projects.

This revolutionary new system can deliver high heat outputs even at relatively low water temperatures, which makes it an ideal solution for use with heat pumps.



15MM
ON HARD BASE



95
W/M²



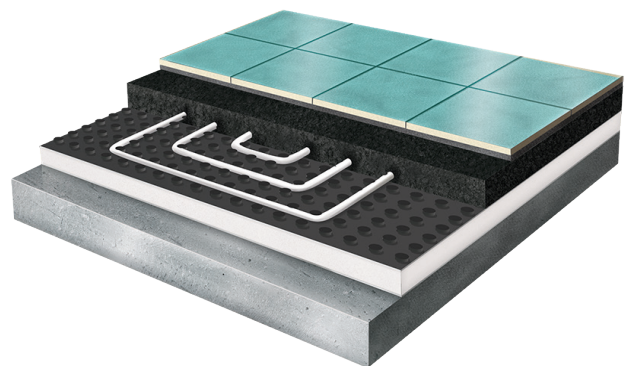
33MM
ON JOISTS

Inva Matt

InvaHeat's castellated matting panels are interlocking vacuum formed sheets of recycled plastic which incorporate pipe-locating castles.

Sheets are laid over the sub floor, thermally insulated in accordance with Building Regulations, overlapping the edges by 75mm and interlocking them to form a continuous layer. Castellated sheets are useful where there is a restricted floor depth.

InvaHeat 16mm pipework is clipped into the panels and the installation is complete and ready for the specified screed to be laid.



70MM



90
W/M²



Heat Outputs

When designing conventional heating systems it is necessary to know the required heat output to determine the size of the heat emitter. When designing an underfloor heating system, the heat emitter is the floor area and is fixed.

The heat output achieved is a direct relationship between the difference in floor surface temperature and room air temperature. The floor construction, floor covering material, pipe size, pipe spacing (or pipe centres), and the temperature of water circulating through the UFH pipes are major factors that determine the floor surface temperature.

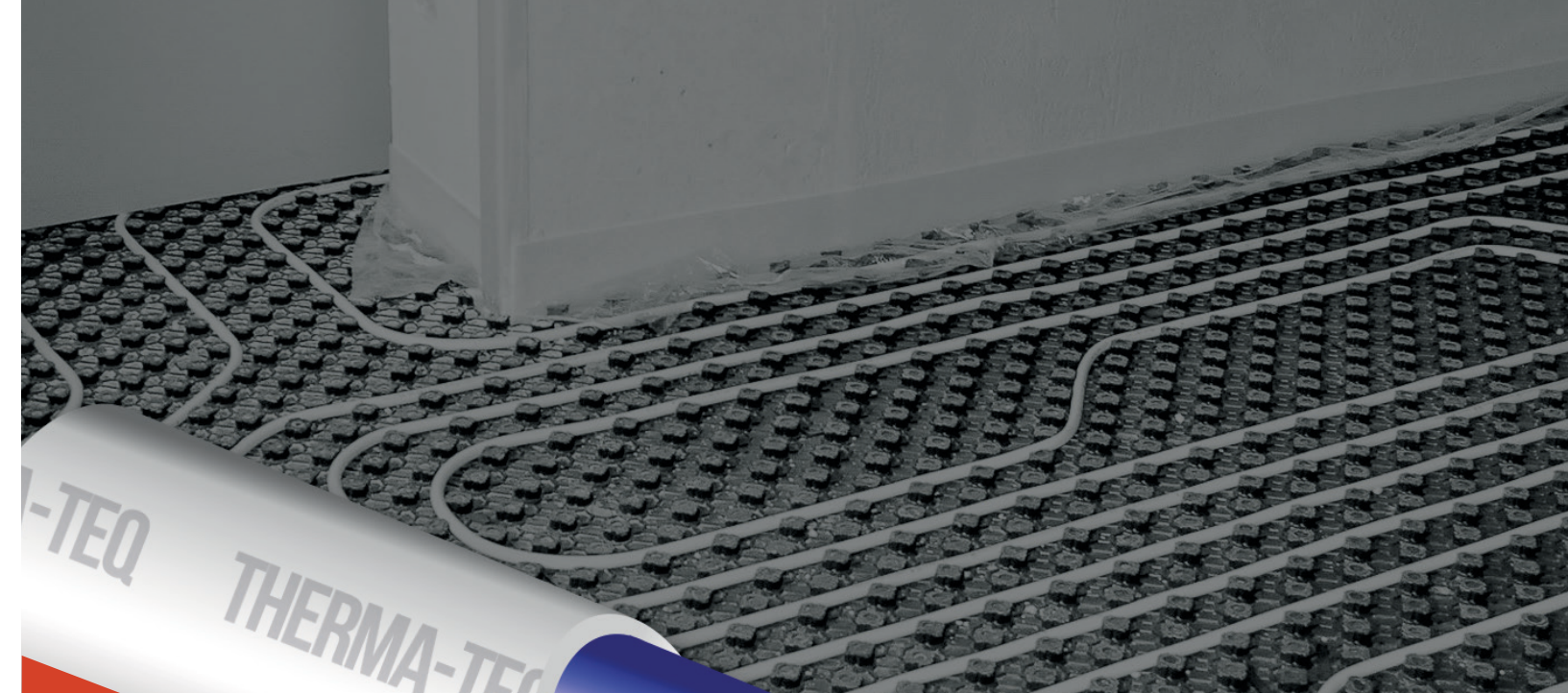
		Mean Water Temperature							
		30		35		40		45	
System Type	Floor Covering	Heat Output W/m ²	Floor Surface Temp °C	Heat Output W/m ²	Floor Surface Temp °C	Heat Output W/m ²	Floor Surface Temp °C	Heat Output W/m ²	Floor Surface Temp °C
Inva Screed	Tile	56.6	25.24	84.9	27.86	113.2	30.48	141.5	33.1
	Hardwood Flooring (TOG 1)	40.2	23.72	60.32	25.59	80.43	27.45	100.53	29.31
	Carpet (TOG 1.5)	30	22.78	45	24.17	60	25.56	75	26.94
Inva Board	Tile	39.1	23.62	58.7	25.44	74	26.85	92.5	28.56
	Hardwood Flooring (TOG 1)	26.2	22.43	39.3	23.64	52.4	24.85	65.5	26.06
	6MM Ply + Carpet & Underlay (TOG 1.5)	17.5	21.62	26.19	22.43	34.92	23.23	43.65	24.04
Inva Clip Inva Rail & Clip Inva Matt	Tiles	55.5	25.3	84.3	27.7	112.8	30	141.3	32.3
	Hardwood Flooring (TOG 1)	33	23.3	50.1	24.8	67.1	26.3	84.1	27.7
	Carpet (TOG 1.5)	27.8	22.8	42.2	24.1	56.5	25.4	70.8	26.6
Inva Plate	Tiles			45	24.4	61	25.7	76	27
	Hardwood (TOG 1)			35	23.5	47	24.5	58	25.5
	Carpet (TOG 2)			28	22.9	38	23.7	47	24.5
Inva Lite	Tiles			57.9	25.5	77.2	27.1	96.5	28.7
	Tiles,Hardwood (TOG 1)			39.2	23.8	52.2	25	65.3	26.1
	Carpet (TOG 2)			30.9	23.1	41.2	23.7	51.5	24.9
Inva Struct	Tiles			42	24.1	55	25.6	68	26.4
	Tiles,Hardwood (TOG 1)			35	23.5	47	24.5	58	25.5
	Carpet (TOG 2)			28	22.9	38	23.7	47	24.5

Note:

The heat output data table shown should be used for comparative purposes between systems and floor coverings only.

The performance of warm water underfloor heating systems can be influenced by many factors and differences in actual heat outputs achieved on site may be observed when compared to the above data.

Contact the technical support team for further details



Pipe Options

Pert-Al-Pert

InvaHeats' Pert Al Pert underfloor pipe is manufactured using a 5 layer technology. It has an aluminium middle layer that protects the pipe from accidental damage during installation and prolongs its use over the life span of the system. Intermediate adhesive layers permanently together bond all layers.

A special welding technique ensures high reliability. With our five layer composite pipe, we have developed an advanced product that unites the advantages of metal and plastic pipes and eliminates the disadvantages of both materials at the same time.

The pipe comes in coils ranging from 50 meters to 500 meters. Pipe markings every meter displaying number of linear meters:

- 50 year service life
- 10 year insurance backed warranty
- Available in 50, 75, 100, 200 and 320m coils
- Sizes available Ø - 12x2, 16x2 mm

5 Layer Pert

InvaHeats' pert pipe underfloor heating pipe is an ultrahigh quality, safe & reliable European manufactured product. With the longest possible warranty conditions and with a service life of 50 years, using the latest manufacturing techniques and industry know how.

InvaHeats' Pert pipe is constructed using FIVE layers in total; cross linked polyethylene, adhesive, EVOH gasdiffusion oxygen barrier, adhesive, cross linked polyethylene.

The layers of adhesive binds the two layers of cross linked polyethylene to the central oxygen barrier layer by a thermal reaction; the oxygen barrier layer is right in the centre of the pipe wall which prevents it being damaged from foot traffic during installation.

- 50 year service life
- 10 year insurance backed warranty
- Available in 50, 75, 100, 200 and 500m coils
- Sizes available Ø - 12x2, 16x2 mm

CONTROL



Controls are an essential part of any heating system as they create your environment in the most efficient and cost effective way possible. This means ensuring that your system only operates when required and for the minimum period of time.

There are various methods of doing this but all are managed by your control system with various levels of integration between the heating zone, heat source and outside temperature. The control system must be accurate and sophisticated as well as easy to use! Room temperature control for underfloor heating is measured by ambient room temperature controllers that are located in each zone. These are linked to the local manifold wiring centre.

InvaHeat provides a wide variety of controls to fit every scenario, whether it is wired, wireless or networked.

The majority of our room thermostats are designed to be flush mounted, resulting in a slim profile on the wall after installation. We offer a variety of options from wired and wireless to fully networked systems, with the option to control via our central control pad.





Joule Touchscreen Thermostat

The newly launched Joule Touchscreen Thermostat is a state-of-the-art solution to use in every underfloor heating system. You can use the top and bottom buttons on the left-hand side of the stat to change the room temperature up and down.

The top right button is where you program in your time periods and the bottom right button is where you turn it off. The Joule stat is designed to be flush mounted so it must be fitted to a single gang back box which will be installed during first fix.

The stat is a 230V mains stat and as such requires a 3-core Insulated cable to be installed connecting the stat to the wiring center.

- LCD TOUCHSCREEN
- 6 DAY EVENT EVERYDAY
- MANUAL MODE
- PROGRAMME MODE
- FLUSH MOUNTED





Wi-Fi Smart

The NEO system is designed to provide reliable communication of the thermostat data whilst at the same time providing an extended communication range.

Each NEO thermostat acts as a repeater on the NEO system network, helping eliminate range issues. The Neo system has been designed to offer complete local and App control of your heating, hot water and plug-in appliances. With Neo you can control your heating from anywhere using your smartphone.

- SMARTPHONE CONTROL
- GEO LOCATION
- MULTI-ZONE
- PROFILES
- SHARE ACCESS



ITEM CODES

Inva Clip & Rail

Code	Description	Pipe Centres	Pipe Diameter
UZC-S-300-40MM	40mm UFH Pipe Clips	100mm/150mm/200mm	16mm
UZC-S-300-60MM	60mm UFH Pipe Clips	100mm/150mm/200mm	16mm
UZR-S-RAIL-50M	50m UFH Fixing Rail (25 Lengths per Box)	100mm/150mm/200mm	16mm

Inva Clip

Code	Description	Pipe Centres	Pipe Diameter
UZC-S-300-40MM	40mm UFH Pipe Clips	100mm/150mm/200mm	16mm
UZC-S-300-60MM	60mm UFH Pipe Clips	100mm/150mm/200mm	16mm

Inva Plate

Code	Description	Pipe Centres	Pipe Diameter
UZD-001200X390	ufh Difuser Plate (1m X 0.39m) - 200mm PC 200mm		16mm

Inva Lite

Code	Description	Pipe Centres	Pipe Diameter
UZ-PF-EXT-0150	ufh foiled panel 1200x600x20 / 150PC Extruded	150mm	16mm
UZ-PF-EXT25150	UFH Foiled Panel 1250x600x25 / 150PC Extruded	150mm	16mm

Inva Matt

Code	Description	Pipe Centres	Pipe Diameter
UZP-01400X0800	ufh pipe matting (1400x800)	100mm/150mm/200mm	16mm

Inva Struct

Code	Description	Pipe Centres	Pipe Diameter
UZB-00000000GC	Pre Grooved Chipboard - 600x2400x22mm	150mm	12mm

Inva Screed

Code	Description	Pipe Centres	Pipe Diameter
UZ-PANEL-CHIPB	Structed Return & Fixing Chipboard (22x600x2400)	150mm	12mm

Inva Board

Code	Description	Pipe Centres	Pipe Diameter
UZ-DSB-00BOARD	Grooved Dry Screed Board (800x600x18) - 150PC	150mm	12mm
UZ-PANEL-CHIPB	Structed Return & Fixing Chipboard (22x600x2400)	150mm	12mm

12mm Pert / 16mm Pert

Code	Description	Pipe Diameter
UP-12PERT-320M	UFH 12mm x 1.6mm * PERT * Pipe (320m)	12mm
UP-16PERT-050M	UFH 16mm * PERT * Pipe (50m)	16mm
UP-16PERT-075M	UFH 16mm * PERT * Pipe (75m)	16mm
UP-16PERT-100M	UFH 16mm * PERT * Pipe (100m)	16mm
UP-16PERT-200M	UFH 16mm * PERT * Pipe (200m)	16mm

16mm Pert-Al-Pert

Code	Description	Pipe Diameter
UP-M16X2-0050M	16mm PERT/AL/PERT Pipe (50m)	16mm
UP-M16X2-0075M	16mm PERT/AL/PERT Pipe (75m)	16mm
UP-M16X2-0100M	16mm PERT/AL/PERT Pipe (100m)	16mm
UP-M16X2-0200M	16mm PERT/AL/PERT Pipe (200m)	16mm
UP-M16X2-0500M	16mm PERT/AL/PERT Pipe (500m)	16mm

Underfloor Components

Code	Description
HZC-0000A25-60	circulating pump 25/60 (A rated)
UP-C-000-0050M	ufh pipe CONDUIT (Black 50m Roll)
UZA-000000000J	ufh joule actuator
UZD-S-DECOIL-M	Decoiling Machine for UFH
UZG-S-CLIP-GUN	Clip Gun for UFH
UZI-S-ED-STRIP	Edge Strip for UFH (50m)
UZM-B000000000	ufh manifold blanks
UZM-E000000000	ufh manifold extender
UZM-U000000000	ufh manifold pipe unions
UZQB-000000000	ufh remote sens prob(bathroom)
UZQN-000000000	UFH sensor probe enclosure
UZXS000000000A	UFH MIXING SET A (with pump)

Underfloor Manifolds

Code	Description	No of Ports
UZM-0000000-02	ufh 2 circuit manifold	2
UZM-0000000-03	ufh 3 circuit manifold	3
UZM-0000000-04	ufh 4 circuit manifold	4
UZM-0000000-05	ufh 5 circuit manifold	5
UZM-0000000-06	ufh 6 circuit manifold	6
UZM-0000000-07	ufh 7 circuit manifold	7
UZM-0000000-08	ufh 8 circuit manifold	8
UZM-0000000-09	ufh 9 circuit manifold	9
UZM-0000000-10	ufh 10 circuit manifold	10
UZM-0000000-11	ufh 11 circuit manifold	11
UZM-0000000-12	ufh 12 circuit manifold	12
UZM-0000000-13	ufh 13 circuit manifold	13

Joule Touchscreen 230v Thermostats

Code	Description	Voltage
UZS-E91-TS0230	ufh TS stat 230v (E91.713)	230V
UZW-000000000J	ufh joule wiring centre	230V

NEO, Heatmiser 230v & Network Thermostats

Code	Description	Voltage
UZNT-000000012	ufh Neo Stat 12V Glacier White	12V
UZW-000000008N	ufh UH8-N wiring centre	12V
UZNT-00000W230	ufh Neo Stat Glacier White	230V
UZS-D-00000230	ufh digital stat 230v (Slimline)	230V
UZW-0000000008	ufh uh8 wiring centre	230V
UZNT-000000AIR	ufh Neo Stat AIR	230V
UZW-000000001W	UH8-RF Wiring Centre Wireless	230V
UZS-RF-0000000	UFH RF SWITCH	230V
UZNH-000000002	ufh Neo Hub Gen 2	12V/230V

NOTES

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