Feb 2024

UNDERFLOOR HEATING SYSTEMS
TECHNICAL DATA

Heat Merchants can provide complete underfloor heating solutions for both residential and commercial projects. Technical support includes bespoke designs and product specification provided by our technical design team to provide high quality heating systems that offer maximum efficiency and comfort.

Polytherm® UNDERFLOOR SYSTEMS

Heat Merchants

Heat Merchants

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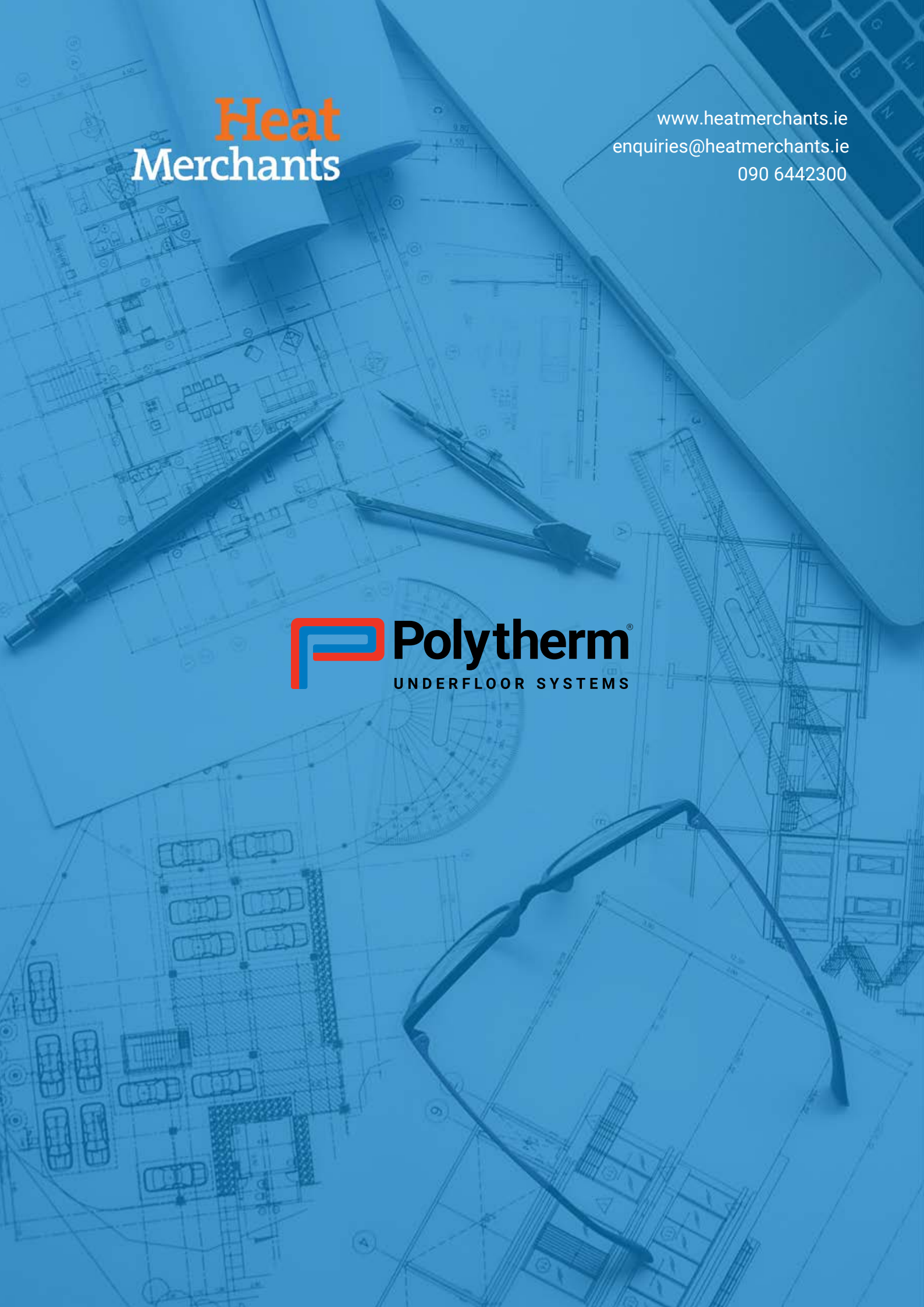


Polytherm®
UNDERFLOOR SYSTEMS

Contents

System Component

Introduction

Polytherm Heating Systems

Polytherm Underfloor Systems is the underfloor heating (UFH) brand of Hevac Ltd and provides a wide range of solutions for underfloor heating systems in residential, commercial and industrial sectors. The focus of Polytherm underfloor systems is to provide quality systems that offer maximum efficiency and comfort.

Our system is based on state-of-the-art technology, backed up with the extensive experience of our engineers and CAD/Revit technicians. Due to the low energy requirements involved, the Polytherm UFH System is an extremely efficient method of heating, especially when combined with low temperature heat sources such as heat pumps. The UFH operating temperature of 35-45°C allows for heating to occur at lower cost, in comparison to conventional radiator systems with operating temperatures of 80°C.

Using U-Values stipulated in current building regulations along with internal design temperatures, our engineers can provide heat loss calculations at the start of every UFH project. Upon receipt of relevant project specifications and building floor plans in either CAD or PDF format, our engineers and CAD/Revit technicians will be able to complete relevant heating calculations for the UFH system. These calculations supply the specific heat outputs and the flow rates for each UFH loop. Along with these calculations, we also provide comprehensive UFH drawings indicating manifold locations, UFH loop directions, loop lengths and cutting schedules. This prevents pipe wastage and allows for fast installation. For these reasons, we are confident in offering you a comprehensive system warranty which covers not only individual components but the entire heating system. Polytherm Underfloor Systems are desiged in accordance with international standards, leaving the customer secure in the knowledge that their system has been tried and tested by householders and specifiers alike, making it a guarantee of quality and reliability.

With instruction an Underfloor Heating (UFH) system is not difficult to install, but it is it is important that the right guidelines and instructions are followed to ensure that the system will work correctly once installed.

Introduction

This guide was produced to give technical information of all the components which make up a Polytherm Underfloor System. Also, within the contents of this guide the fundamental principles and design of underfloor heating will be outlined.

With an underfloor heating system, the materials and methods of heat distribution are as follows:

- UFH has a central distributions point, the manifold, which is serviced from the main heat source and distributes the hot water to the UFH pipes.
- UFH is operated with a low flow and return water temperature which means the system efficiently with Heat-Pump technology.
- UFH uses the whole floor surface area as a heating medium, which takes away the conventional radiators and leaves the end user with more wall space.

The design and components of the Polytherm Underfloor System are at the top of the UFH heating market, it is vital that the installation of the system be carried out at a very high standard, as once the components is installed and are concealed it would be difficult to make any changes to the system.

Underfloor Heating Design Principles

Principles

The principle of Polytherm underfloor is rather than placing metal panels (radiators) on walls, pipes are laid within the floor construction with warm water circulating so that the floor becomes one large low temperature radiator. As a floor area will be a bigger area than a radiator, the system will only need to run a couple of degrees higher than air temperature to provide a comfortable warmth to a room.

The aim for UFH design is to create an even surface temperature across the floor area within a building which will ensure a uniform comfort level throughout the structure. When the floor temperature is higher than the air temperature, the floor will release radiant heat. The heat output from the floor is directly related to the temperature of the floor and that of the surrounding air. As UFH is a radiant heating system it heats from floor to ceiling, avoiding wasting heat at a high level. For example, an UFH system can be set 1-2 degrees lower (ambient) than a conventional radiator system. This reduces the wasted heat reduces waste heat at levels above head heights and in turn saving on fuel costs.

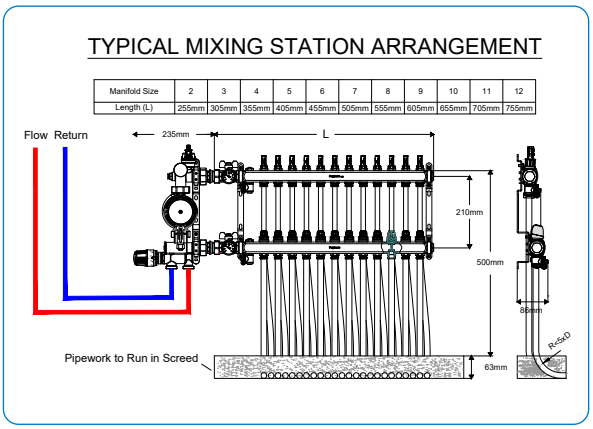
Heat Outputs and Design Limits

Generally, the maximum heat output from an UFH system is often stated at between 70 and 100W/m2. The actual output achieved is a direct relationship between the difference in floor surface and room air temperatures. The floor construction, floor covering material, pipe size, pipe spacing, and the temperature of water circulating through the UFH pipes are major factors that determine the floor surface temperature. Given the low U-values stipulated in current Building Regulations, it is unusual for a new build to require outputs greater than 35-40 W/m2, based on a 20°C internal design temperature. BS EN1264-2 states that the maximum floor surface temperature is 9°C above the room temperature in occupied areas and bathrooms, in order to achieve an acceptable comfort level underfoot. This results in a maximum floor surface temperature of 29°C in an occupied space with a room temperature of 20°C. A 9°C temperature difference will equate to a floor heat output of 100W/m2. Hevac would advise that the heat loss calculations for the building be carried out by a heating consultant or engineer at the start of every UFH project.

Water Temperature Control

To ensure that the maximum floor temperature is not exceeded we provide a mixing station, integrated with a pump to be placed at each manifold. This mixing station combines the primary heat source flow water temperature with the UFH return water temperature, resulting in a suitable flow temperature for the UFH system.

The Polytherm Underfloor Heating Mixing Station has a thermostatic mixing valve included which ensures accurate temperature control of underfloor heating. The unique design of the internal mixing valve components ensures that hot water from the heat source and return water from the underfloor circuit are mixed together in the valve body to produce a temperature range of between 20°C and 70°C (It is recommended however, to limit the flow temperature to the underfloor heating to max 50ºC so as to protect the screed and finished floor). This temperature range will suit a wide range of underfloor heating applications, from commissioning new floor screeds to operating with very thick floor screeds in commercial applications.



UFH Pipe Spacing

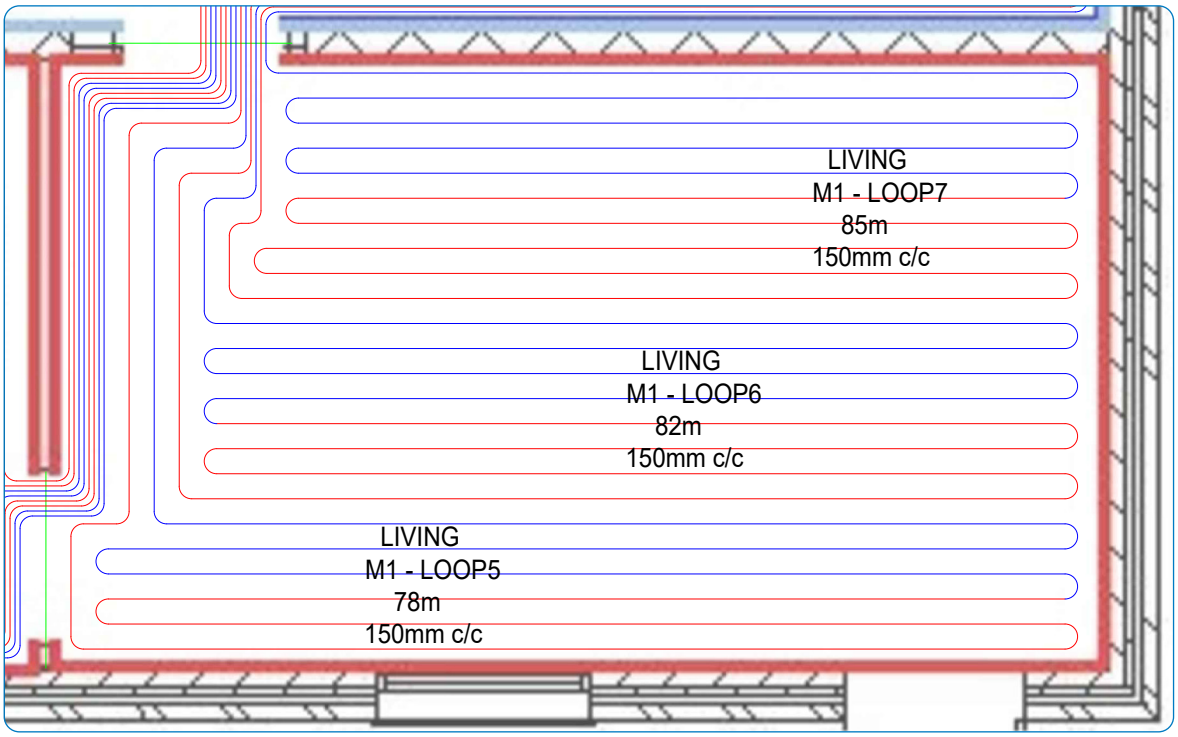
The pipe spacing is determined by a couple of different factors, pipe size, heat source and which Polytherm Underfloor System is being used. For a domestic setting the most common scenario is 16mm pipe at 150mm c/c with a heatpump as the heat source. In this instance, tighter pipe centres will allow for lower hot water temperatures and result in improved efficiency and lower energy costs. For a commercial UFH the pipe may be increased to 20mm pipe and 300mm c/c depending on the scope of the project, primary flow temperatures and floor build up.

Areas with high heat loss may need tighter pipe centres, these areas include, highly glazed areas such as a conservatory, rooms with high ceilings, bathrooms with limited floor area and poorly insulated buildings.

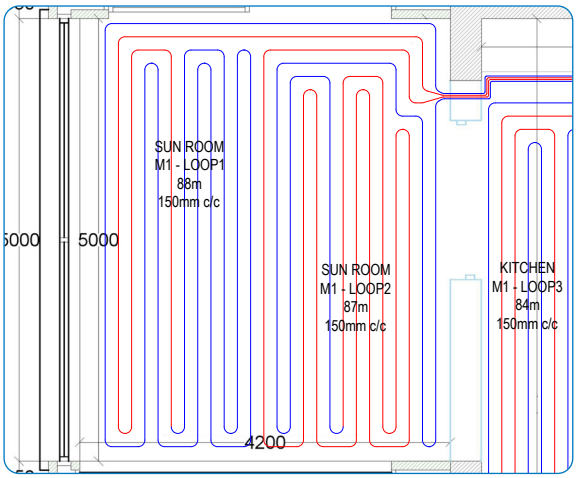
Pipe Layout

There are a number of different ways to lay the pipe within a room, some patterns are meander, double meander and spiral methods. The most common of these are the meander and spiral. Where possible, the pipe should be laid so that the flow direction is to the coldest area of the room first, e.g. under windows, along outside walls.

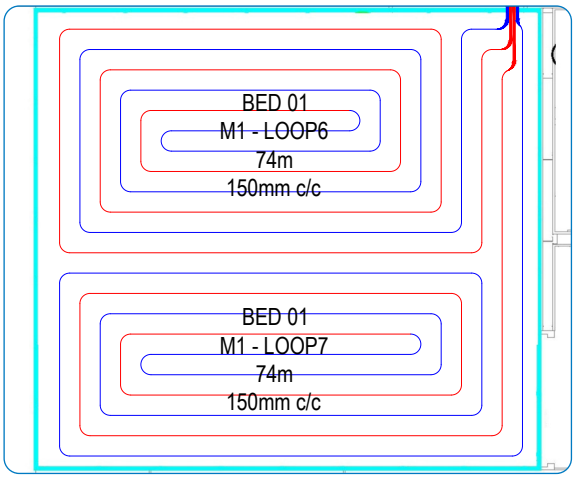
The meander method, the flow pipe is first fixed towards the window or cold part of the room before returning backwards and forwards across a room. The spiral method, the flow pipe is run in circles starting at the external walls of the room and continues until it reaches the centre of the floor area, then it reverses direction and returns parallel to the flow pipe back to the starting point. Both methods of installation are acceptable, however the spiral methods gives a more uniform floor surface temperature. The meander pipe layout is most common with the Polytherm Clip and Rail system, with the spiral pipe layout method being used with the Polytherm Polycomfort Panel System.



Meander Pattern



Double Meander Pattern

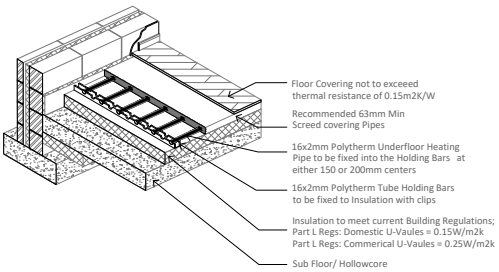


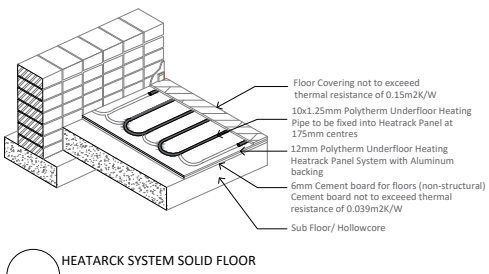
Spiral Pattern

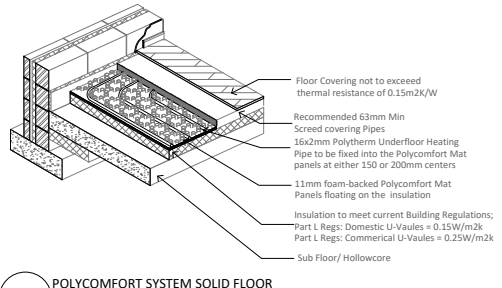
Floor Build-ups

With regard to floor build-ups, and underfloor heating, Polytherm Underfloor Systems can only make recommendations for the different components of a floor build-up. It is the responsibility of the architect or the builder to ensure that the floor build-ups meet the standards of the relevant building regulations. The relevant building regulations are the Technical Guidance Documents Part L - Conservation of Fuel and Energy- Dwellings (2022).

The thermal resistance of the finished floor covering also has to be considered in the design of the floor build-up. The floor supplier will have the thermal resistance of the product being used. It is recommended that the max thermal resistance does not exceed 0.15m2K/W.







Underfloor Heating Multilayer Pipe

PEALPE16X200

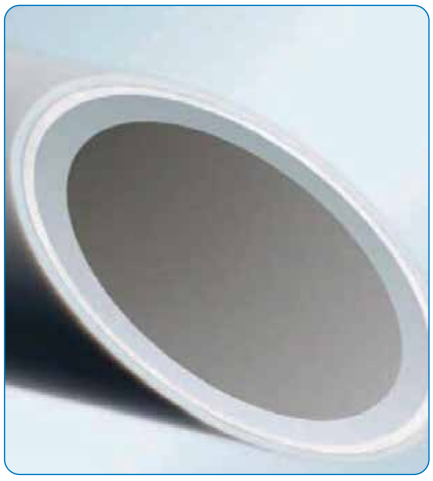
The Polytherm UFH pipe is a light gauge multilayer pipe. The maximum operation temperature is 700°C at a 6bar pressure. The Polytherm UFH pipe is available in 16x2mm and in both 200m and 500m coils.

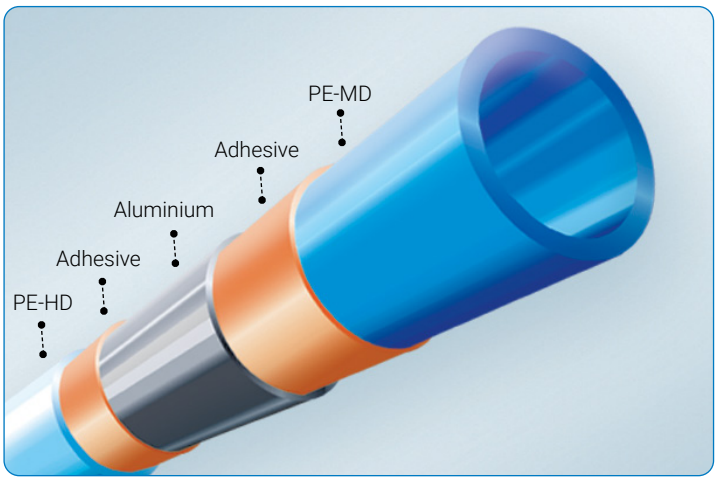
PE-MD / AL / PE-HD

- Quick laying even on large surfaces; allows easy bending thanks to the thin aluminium layer, low weight and rapid installation.
- Stable in form, preventing spring back.
- High product and processing safety through uniform layer structure as well as equal calculable properties for the entire pipe circumference (each individual layer is checked).
- Resistant to temperature and pressure requirements in surface heating and cooling applications.
- Corrosion-free for long service life.
- Encrustation-free, therefore no cross-section constriction, reduced pressure losses and constant flow speed.

Pipe Dimension (mm)	16 x 2
Outer diameter, nominal size (mm)	16
Wall Thickness (mm)	2
Inner diameter, nominal size (mm)	12
Pie weight (g/m)	113
Pipe weight with water (g/m)	226
Internal volume (L/m)	0.113
Heat conductivity (W/m.K1)	0.43

Expansion coefficient (mm/m.K)	0.024
Surface Roughness (inner pipe) (µm)	1.5
Oxygen diffusion (mg/l.d)	0
Max operating Temperature"	70
Max operating pressure (at 70°C) (bar)	6
Malfunction temperature (°C)	95
Bend radius, freely bent	≥ 5 x D
Bend radius with bending tools	≥ 3.5 x D





Aluminium layer butt welded without overlap.

made in Germany

U35684 200m Coil
U35685 500m Coil

Polytherm Clip Rail

PCR16

Packaged in bundles of 16x 2m lengths = 32m
The Polytherm Tube Holding Bars are manufactured from polypropylene and can be supplied to accommodate 16x2mm and 20x2mm UFH pipe depending on the project. The function of the rail is to ensure the UFH loops are fixed in the correct pattern before screed is poured. The Tube Holding Bars are 2000mm in length and come in bundles of 32m. The Polytherm Tube Holding Bars are attached to the insulation in the floor using the Polytherm Clips.

	Tube Distance	Height	Width
U35726	50mm	25mm	40mm

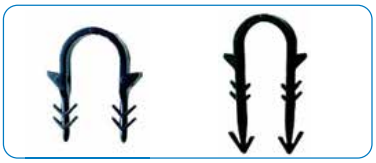
Polytherm Black Clips

E2L

These clips are used to secure the underfloor heating pipe onto the floor insulation.

E2
Proper attachment of tubes used with roll-insulation or insulation mats.

E2L
Proper attachment of tubes used with roll-insulation or insulation mats, also in standard insulation without foil facing.



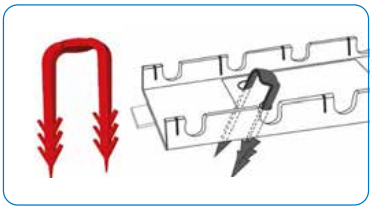
	Item	Length	Colour	Qty	Weight (Approx)
E2	UA4990	40mm	Black	1000*	2.0kg
E2L	U24611	57mm	Black	300**	0.9kg

*** Magazines of 40 pieces each** **** Magazines of 20 pieces each**

Polytherm Red Clips

PRC50

These clips are used for securing the clip rail onto the floor insulation.



Item	Length	Colour	Packing Qty	Weight (Approx)
U24617	50mm	Red	500 per bag	0.73kg

Polytherm Manifold Type FBH-VL-RL Stainless Steel

02-12 Port Available

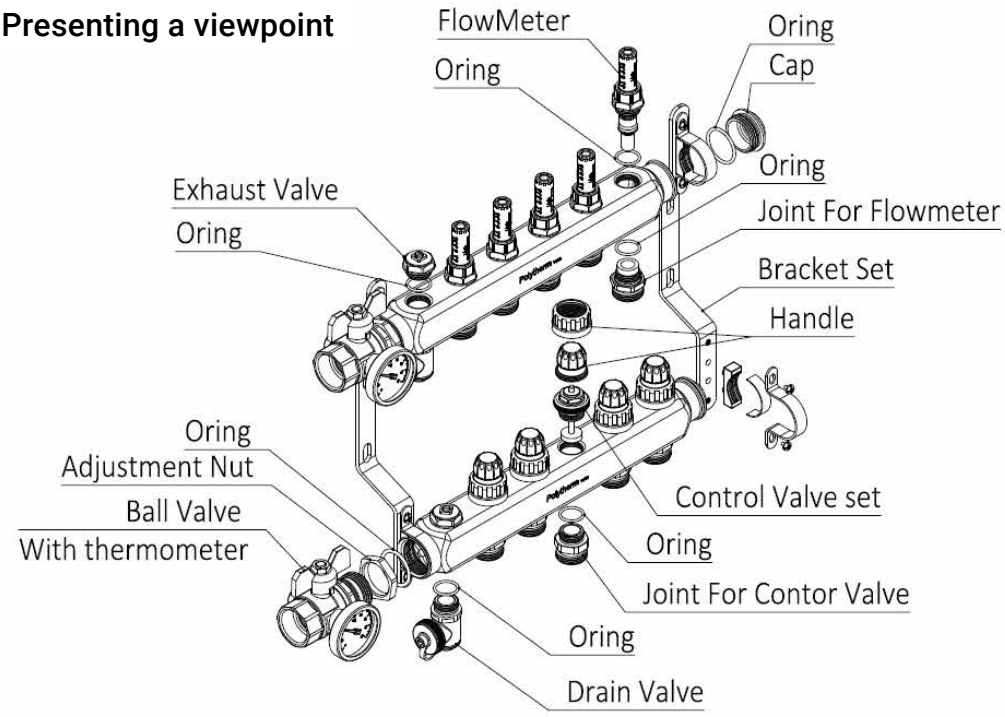
The Polytherm Underfloor Heating System focal point is its stainless-steel manifold. The manifold acts as a radiant epicentre for the flow and return distribution throughout the piping system while regulating the mass flow of individual low temperature heating circuits. Each pipe circuit is secured to the ports of the manifold through compression adapting unions (10.5x1.25mm/16x2mm/20x2mm).

Polytherm Manifolds distribute the heating fluid from the buildings heat source to each circuit and allow for the isolation and control of flow rates. Our Underfloor heating system will operate in conjunction with regular boilers, but most effectively with heat pumps due to the low temperatures required.

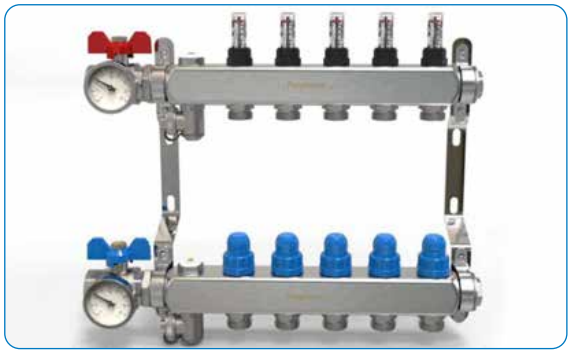
A fully furnished manifold for 2-12 heating circuits is light and durable, with stainless steel body.

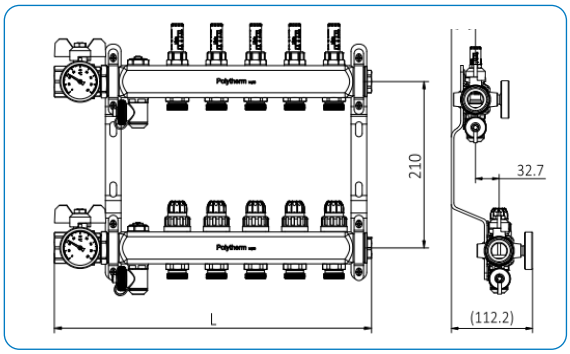
- The thread specification for the drain valve of the underfloor heating manifold is G3/4.
- The thread of the water separator connection is G3/4.
- The operating range of the thermometer is 0-80 degrees Celsius.
- The measuring range of the flowmeter is 0-5 L/min.
- The internal thread of the ball valve is G1.
- The thread conforms to the ISO228/1.
- The external thread of the control valve spool is M30×1.5.

Presenting a viewpoint



Circuits	Size (Length)	Code
2	255 mm	U95479
3	305 mm	U95980
4	355 mm	U95981
5	405 mm	U95982
6	455 mm	U95983
7	505 mm	U95984
8	555 mm	U95985
9	605 mm	U95986
10	655 mm	U95987
11	705 mm	U95988
12	755 mm	U95989





Flowmeters 0 – 5 L/min

Hydraulic calibration is done while the circulating pump is operating and thermostatic valves are open.
After regulation of all heating circuits the settings of the first heating circuit must be checked again and readjusted, if necessary

Adjustment of flow volume:

1. Pull off red cap.
2. Loosen black adjusting nut (anticlockwise).
3. Adjust calculated flow rate in L / min at the sight glass with the red actuation aid.
   Clockwise = reduce flow volume. Anticlockwise = increase flow volume.
4. Press black adjusting nut till it stops (clockwise).
5. Put red cap on and push down.

Closing:

6. Turn with the red actuation aid to its stop (clockwise).

Opening:

7. Turn with the red actuation aid to its stop (anticlockwise) = open with default setting.

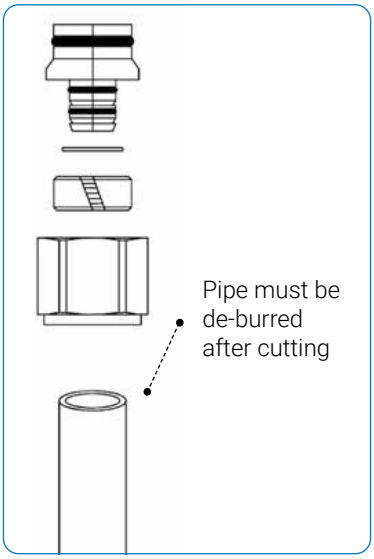
Manifold Accessories

Manifold Unions

650378012

Polytherm manifold unions are used to connect the underfloor heating pipework onto the flow and return connections on the manifold.
(These unions are attached to the manifold when delivered)

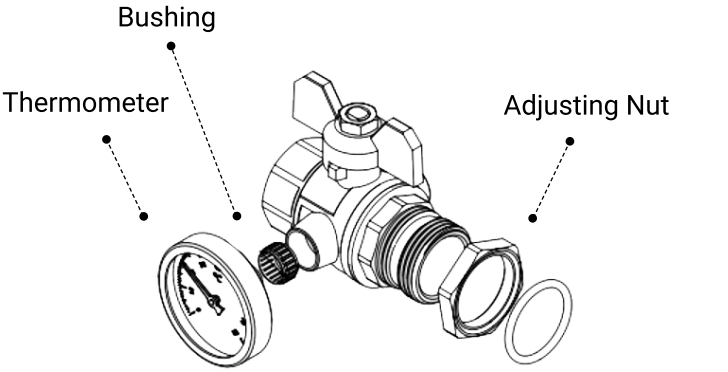
UA2391



1” Ball valves complete with temperature gauges (0-80˚C)

600310005

Polytherm ball valves with built in temperature gauge, allows for ball valve adjustment after installation. Use the locking sleeve to create a perfect fit to prevent the thermometer from rotating. Internal thread of the ball valve is 1”.



U95990 - PAIR

*** Supplied as a Red and Blue pair**

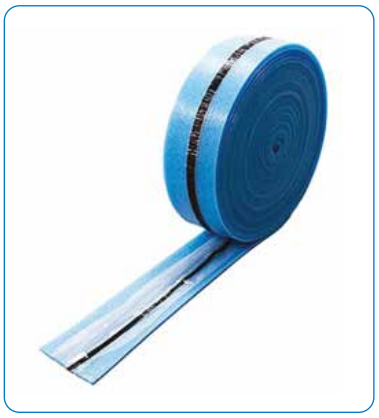
U50066 - RED
U50065 - BLUE

General System Components and Accessories

Polytherm Edge Insulation Strip

IS50C U29610

The Polytherm Edge Insulation Strip is a PE (Polyethylene) insulation, with a self-adhesive strip and overlapping foil, that is placed around the perimeter of each room, when a wet UFH system is being installed. The self-adhesive strip allows for an easy fitting to walls and into corners and the overlapping foil prevents moisture and water from the screed reaching the floor insulation. The edge insulation strip joints must overlap by 5mm.



Thickness	Height (mm)	Length/Roll (m)
8	150mm	50mm

Standard: Building Material Class B2 according to DIN 4102

Installation details:

1. Remove the protective film from the adhesive strip on the back of the insulation.
2. With the Polytherm logo facing out, place the strip around the perimeter of each room.
3. Pull the film down over the floor insulation to form a seal between the edge insulation strip and the floor insulation.

Corrugated Sleeve

1050B U29608

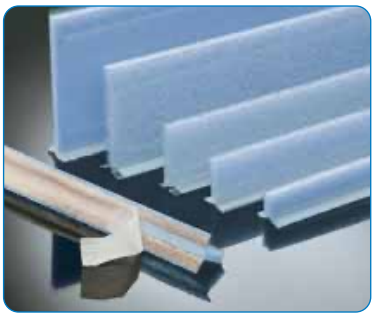
The Polytherm Corrugated Sleeve is used within a screeded UFH system to protect the Polytherm UFH pipe where pipes are fed into the distribution manifold and where tails run over movement joints, door thresholds and through walls. The Corrugated Sleeve can be cut with a pipe shears and slipped down over the Polytherm UFH pipe, where needed.

Outer Diameter: approx. 25 mm
Inner Diameter: approx. 20 mm
Weight: approx. 63 g/m
Colour: black
Material: Polyethylene
Chemical resistance acc. to DIN 8075

Expansion Joint Profile

7337B U35734

The Polytherm Expansion Joint is used at joints within the screed slab for example at internal doorways (door thresholds). The self-adhesive strip on the bottom of the profile provides a quick method to fix the joint to the insulation. For installation of the Polytherm Expansion Joint, first cut approx. 300mm of the corrugated sleeve and place over the UFH pipe. Cut holes in the expansion joint for the pipe and corrugated sleeve to fit through the profile.



Pipe Cutters

900450001 U36152

The Polytherm Pipe cutters can be used to cut 16mm – 32mm pipe:

- Two hand retraction movement of the premium hardened steel blade
- Cuts all commercially available plastic (PE, PP, PB, PEX, PVC) and compound pipes
- Light and robust design

Polytherm Tacker Gun

PTG U35710

Tacker Gun for rapid stapling of E2 and E2Ls in to the insulation.

- Speeds installation
- Use while standing upright
- Suited for staples E2 and E2L
- Loading staples is easy
- Durable construction (aluminium)

Technical Data			
Item No.	**Length**	**Filling Quantity**	**Weight Approx.**
TAEKOMBI for short and long staples E2 and E2L	Approx. 92cm (3 ft)	120 staples	2.5 kg (5.5 lbs)

IMPORTANT:
Remove tape before use!

Please Notice: We supply tacker tools only in conjunction with staples

Pipe De-coiler

900404001 U35156

4-arm folding pipe de-coiler, predominantly for PEX-pipe-systems up to dimension 20mm pipe and coil length up to 600m, also usable with other kinds of pipes.

Max. weight capacity: approx. 100kg
Max. inner-Ø: approx. 620mm
Max. coil height: approx. 670mm
Weight: approx. 12.5kg
Dimension height x width x length: approx. 270mm x 145mm x 940mm (folded)

Polytherm Pipe Bend Former

7230 U35688

Polytherm pipe bend former can be used along with the Polytherm Tube holding bars to provide a stable and defined way of fixing the pipe below the manifold. They can also provide additional support in areas of a tight bending radius, as the bend formers prevent the pipe from kinking every time the pipe is heated up.

Pipe Size: 16mm and 20mm
Design benefits:

- No corrosion, no sharp edges or burrs
- No sound transmission
- Highly heat resistant, strong and durable material (fiber glass reinforced nylon)
- Required bending radius of 5 x D is maintained
- Visually and technically improved product

Polycomfort Panel

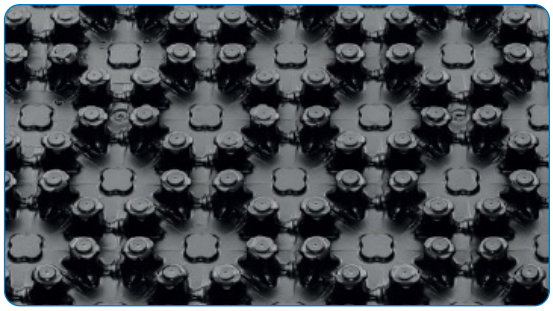
One of the most successful underfloor heating systems that Polytherm has developed in its time, is the Polycomfort Panel System. This consists of overlapping floor panels which interlock to form a completely sealed surface before final screeding, resulting in negligible heat losses. Polycomfort is a floor heating system incorporating a level of comfort which sets standards from the planning stage right through to the smallest nooks and crannies of a room during installation.

Polycomfort with Insulation

7203 U20370

The Polycomfort System Panel (Combitop ND 11) meets required acoustic and thermal insulation performances. A thermal conductivity resistance of Rλ = 0.035 m2K/W is prescribed for the thermal insulation of the Polycomfort system. Polycomfort Panel has 11mm rigid polystyrene foam (EPS) with added graphite for improved thermal conductivity at low installation heights.

The panel itself is approximately 1.12m2. It can accommodate 16 x 2 mm pipes and can be optimally adapted to any size and geometry of room and can be laid at either 150mm c/c or 200mm c/c. It is installed easily and cleanly using the overlapping press-stud principle.

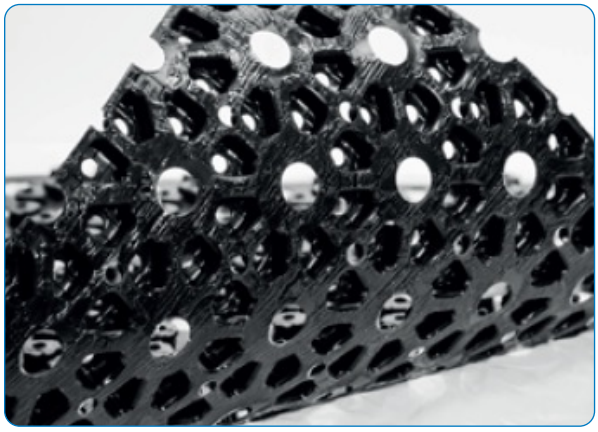


Properties	Combitop ND 11
Board dimensions (length x width)	1,450 x 850 mm
Effective board size	1,400 x 800 mm
Effective board area	1.12 m^2
Laying grid (pipe spacing)	50 mm
Nominal insulation thickness dL	11 mm
Total thickness with pipe holder	31 mm
Pipe diameter	14 -17 mm
Compressive stress at 10% compression	150 kPa
Type of application per DIN 4108-10	DEO
Designation per EN 13163	EPS 150
Fire behaviour per EN 13501-1	E
Impact sound improvement	-
Stiffness group EN 13163	-
Thermal conductivity (normal value)	0.035 W/(mK)
Thermal resistance	0.30 m^2K/W
Heat distortion temperature	80°C
Max. load	45 kPa (4,500 kg/ m^2)
Flexural strength	250 kPa
Standard film color	black
Quantity per box	13 boards = 14.56 m^2
Box size (L x W x H)	1,520 x 320 x 870 mm

Polycomfort with no Insulation

7202

A Polycomfort Panel also comes with no insulation and self-adhesive thin film element with perforated castellated surface.



HEATRACK

Unlike systems that require concrete poured, HEATRACK Panels can be installed directly over the subfloor. This method is known as a dry system. The system is made up of a number of different components;

Single HEATRACK Panels
7500

This patented concrete-free under-floor heating system features 1.22m (48”) long x 12mm thick panels backed with aluminium. So, they’re not only neat and easy to install, they also reduce energy costs compared to other underfloor heating systems.

Pre-Assembled HEATRACK Panels
7501

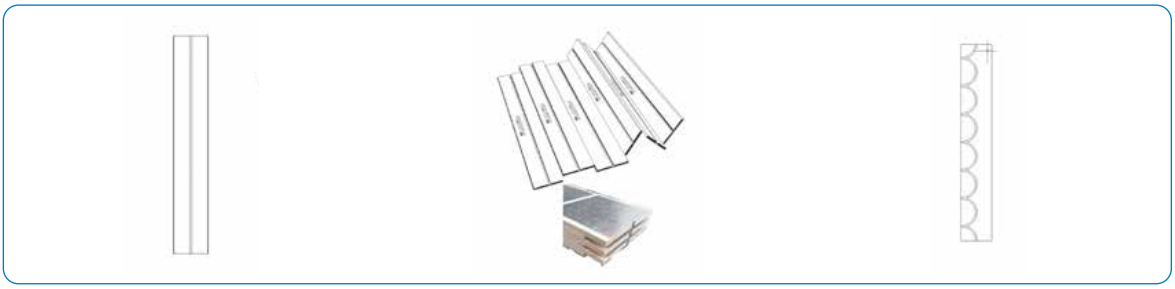
The patented HEATRACK - pre-assembled system offers the same benefits as the single panels - plus the added advantage of pre-assembling them for dramatically faster installation. Because they are pre-assembled and folded, pre-assembled panels are easy to handle and carry. To install, simply unfold the pre-assembled panels, interlock the sections, fasten to the subfloor, and walk in the Polytherm tubing.

U-Turn HEATRACK Panels
7502

These special U-Turn panels (filler strips) are part of the system to make installations neat and easy.

Silicone For HEATRACK
7511

This specially designed heat transfer adhesive aids the heat transmission into the heated zone.



Single Panel	Pre-Fab Panels	U-Turn Panel
7500	**7501**	**7502**
Sold in 10s (10 in a Pack) with fixed aluminium plates	Sold in 1s (6 in a Pack) with fixed aluminium plates	Sold in 10s (10 in a Pack) with loose aluminium plates
175 x 1215mm	175 x 1215mm (x6)	175 x 1215mm
U35728	U35729	U35730

UFH Electrical Components

With underfloor heating (UFH), the basic principles of domestic thermostatic control remain the same. The floor of a room can be considered to be a large low surface temperature radiator, but instead of a self-regulating thermostatic radiator valve to provide room temperature control, a room thermostat is used to open and close a loop(s) on the UFH manifold. Alternatively, a single room sensor or programmable room thermostat can be used to control the UFH as a single zone.

We recommend that all UFH systems are equipped with room temperature controls, to optimize operating efficiency of the heating system and provide for the flexibility of independent control to each room or heating zone.

Polytherm Room Controls 230V

Polytherm's 230V hard wired control system, for multizone applications, provides mains voltage power to the thermostats and actuators. There are many room thermostat options available, digital programmable (Time and Temperature) or digital WIFI enabled stats and Dial (temperature only) thermostats. All thermostats have the ability to regulate floor temperature through floor sensors. Thermostats are generally mounted approximately 1.5m above floor level, away from draughts, direct sunlight or any other direct heating outlet which could affect the reading.

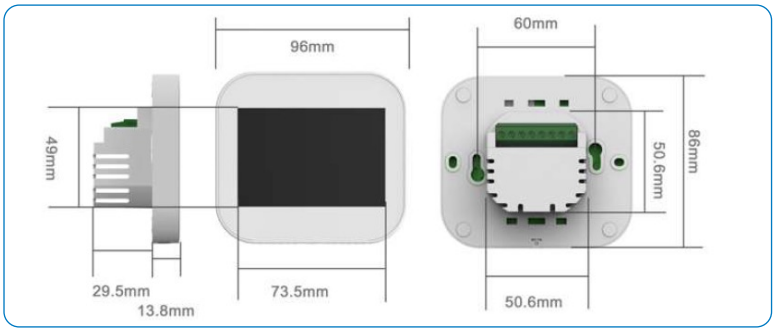
Programmable Thermostat with Built in Humidity Sensor

PolySTAT U97237

The POLYSTAT series are the luxury TFT colourful touch screen programmable WIFI (with no need for additional hub) thermostats for Boiler/Valve/Underfloor heating system control

Technical Specification

- Power Supply: 110-230Vac, 50/60 Hz
- Setting Temp Range: 5-35˚C
- Temperature Accuracy: ±1˚C
- Power Consumption: 1w
- Floor Temperature Limit: 20-45˚C
- Max Switch Current: 3A/16A(optional)
- LCD Screen Size: 3.5 inch
- Touch: capacitive touch
- Grade Of Protection: IP40
- App Controlled without the need for external hub / module.
- Humidity reading
- Floor probe ready
- Remote probe ready
- Adaptive self-learning technology
- 35mm pattress box required



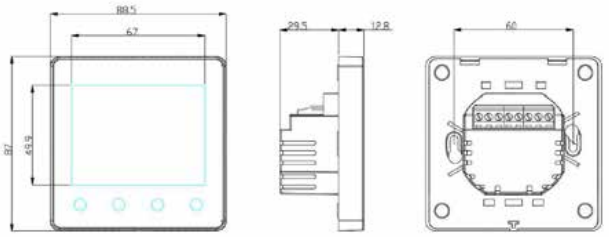
Programmable Thermostat with WIFI and App Control

PolyWIFI U97235

The PolyWIFI series are the small soft-touch programmable thermostat for boiler/valve or underfloor heating control. App controlled as an option with the addition of"PolyZIGBEE"

Technical Specification

- Power supply: 85~230VAC, 50/60 Hz
- Temperature setting range: 5-35°C
- Temperature accuracy: ± 0.5°C
- Temperature control Accuracy: ± 1°C
- Relay Rating: 3A
- Remote Sensor Type: NTC10K, B=3950
- Storage temperature: -20C~60C
- Operating temperature: 0~50°C
- Max Humidity: 5~95%
- Backlight: white
- Floor probe ready
- Remote probe ready
- 35mm pattress box required



NON-Programmable Thermostat with touchscreen

PolyTOUCH U97234

This is a multi-function thermostat/timer for any part of your heating or hot water system where thermostatic or programmable control is required. The thermostat consists of two main modes: programmable or single channel time clock.

Technical Specification

- Power supply: 220VAC±10%, 50/60 Hz
- Temperature setting range: 5-35°C
- Temperature accuracy: ± 0.5°C
- Temperature control Accuracy: ± 1°C
- Relay Rating: 5A
- Remote Sensor Type: NTC10K, B=3950
- Storage temperature: -20C~60C
- Operating temperature: 0~50°C
- Max Humidity: 5~95%
- Backlight: white
- Floor probe ready
- Remote probe ready
- 35mm pattress box required

NON-Programmable Dial Thermostat

PolyDIAL

The "PolyDIAL" series are the basic non programmable thermostat for boiler/valve or underfloor heating control. Ease of use is key. Integration of timeclock recommended to enable time and temp control.

Technical Specification

- Power supply / input 230Vac 50-60Hz
- Power consumption Operating ≤1.5W
- Temperature range 5 ... 35˚C
- Ambient range 0 ... 45˚C
- Ambient admissible humidity 5-95% RH
- Contact rating 7A 230Vac
- Dimensions 85 x 85 x 36mm
- Temperature sensor NTC 100K
- Backlight White
- Switching differential Adjustable from 0.0-1.0˚C
- 0.1˚C increments
- Automatic action 1˚C

Dimensions;
85mm x 85mm x 36mm

Remote Air Probe/ Floor Sensor

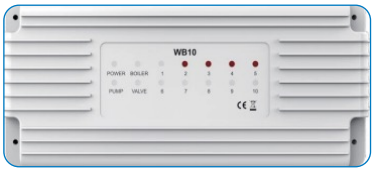
MISC103 U61498

Floor sensor attached to a 3m cable for use with the thermostats to enable control over the maximum or minimum floor temperature.

Polytherm 230V wiring Centre

PWB10 U97238

PWB10 is a 10 Zone wiring centre for use with 230v thermostats, can be used to control any actuator or valve which requires a 230v AC signal to open. At the same time the PWB10 offers the ability to operate a heat-pump or other heat source through a volt free output. Additional outputs designed for use with underfloor heating systems are also included as standard. These are the pump and valve outputs which would normally operate a pump or a valve.



Dimensions: 32cm x 14cm x 5.5cm

Connections
Power supply into the PWB10, which should be fused at 5amp, these connections are:

- Heat Enable
- This is the main call for heat for the system, there are 3 connections;
  LS = Live Supply E = Earth LR = Live Return
- Electrically, this is a volt free switch, whatever supply is placed on the LS connection is fed to the LR connection when there is a call for heat.

Polytherm Electric Actuator

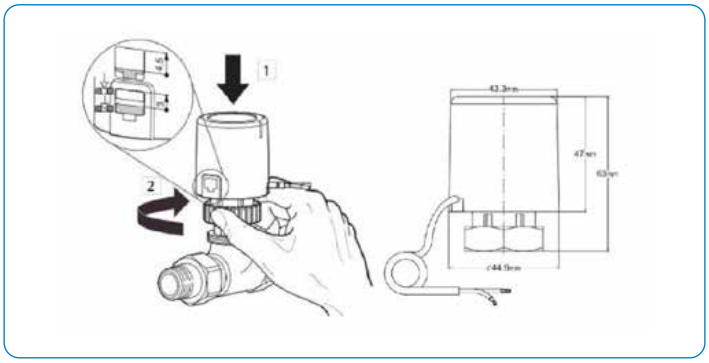
POLY30230 U18658

Thermal actuators are fitted onto the UFH manifold and provide for automatic control of individual heating loops. They have an open and closed indicator window and take between 2–4 minutes to completely open.

Technical Data

Polytherm Code	Power Supply	Normally	Running Time
POLY30230	230Vac	Closed (Open)	3.5 min

Max. Stroke	4.5mm
Ambient Temp. Range	0...50˚C
Spring Pressure	125N

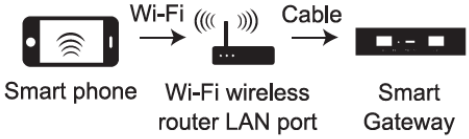


Internet Gateway for Poly WIFI

PolyZIGBEE U97236

The PolyZIGBEE is a smart gateway to control your PolyWIFI stats through a device, like a mobile or tablet.

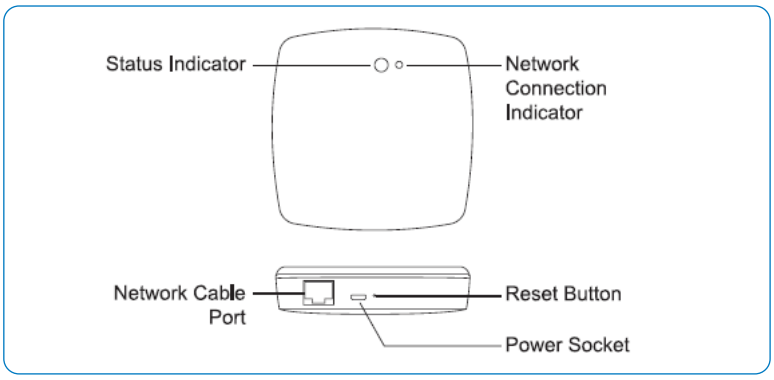
- Power supply Specifications: DC 5V 1A
- Operating Temperature: -10˚C – 55˚C
- Operating Humidity: 10%-90% RH



Download and open the App

In the App Store, search for the relevant App or scan the QR code on the package/manual to download. If you are downloading the App for the first time, please tap “Register” to register your account. If you already have an account, please click the “Login” button.

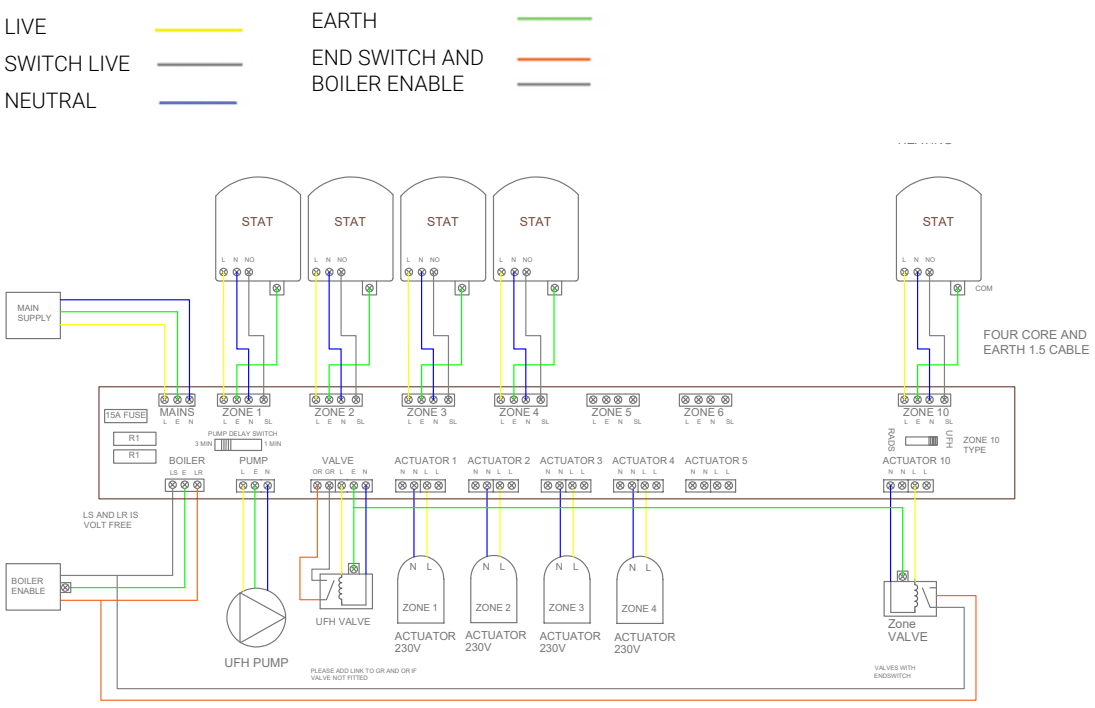
Mobile phone is connected to Wi-Fi.



Network Setting

- Connect the gateway to the power supply and connect it to the home 2.4GHz band router through the cable, please connect power to gateway first, if power LED is on, then connect network cable. Press the reset button for ten seconds and release, two LED are on, then go to the next step.
- Make sure that the mobile phone is connected to the home 2.4GHz band router. At this time, the mobile phone and the gateway are in the same local area network.
- Open the "My Home" page of the App and click the "+" button on the upper right corner of the screen;
- 'Gateway" will appear on the "Gateway Control" page, click it for adding device.
- Then follow the App's instruction to finish adding device.

Ensure that the smart phone is within the same Wi-Fi network of the Smart Gateway to ensure an effective connection between the smart phone and the Smart Gateway.



The Equipment should be installed by an appropriately qualified/registered electrician.
Fully read the instructions for proper wiring before applying power.
The warranty does not cover damage from improper wiring or installation.

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