Step by step Installation Guide

Install a complete underfloor heating system, up to 112m², using one simple pack.

The simple route to a professional solution.

www.one-pack.co.uk

uponor

Contents

Heat Outputs

The maximum output from an underfloor heating system is often stated at 70 W/m^2 for timber floors and 100 W/m^2 for screed floors.

In buildings that meet current Building Regulations, it is unusual to require more than 70W/m^2 heat output, based on a 20^{0}C internal design temperature.

In older buildings it is important to consider greater heat losses. Conservatories, rooms with high ceilings and areas that are poorly insulated may require supplementary heating. As with any home, the more effective insulation you have, the more efficient heating system you will gain.

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.

Floor Coverings

Most floor coverings can be laid on UFH systems.

For optimum performance, masonry coverings; ceramic floor tiles, slate, stone, marble, etc. are chosen as this offers minimum thermal resistance.

Wooden floors and carpets may also be used. Uponor recommend a maximum combined thermal resistance of 0.15m^{2}K/W is not exceeded for floor coverings. Carpet underlays should be less than 1.0 TOG and should be suitable for use with underfloor heating, while carpets should have a maximum 1.5 TOG value.

Thick felts, thick underlay (TOG value greater than 1), and cork should be avoided.

More detailed information regarding floor coverings can be found in the User Instructions chapter.

Insulation

In older buildings it is important to consider greater heat losses. Conservatories, rooms with high ceilings and areas that are poorly insulated may require supplementary heating. As with any home, the more effective insulation you have, the more efficient heating system you will gain.

NOTE: Consult your flooring supplier for additional considerations such as maximum temperature limits, wood drying conditions, special glues, etc.

NOTE: Refer to building regulations for further information about tog values and insulation.

Pack Content & Components

		Uponor One Pack System					
		Single Zone, 1-loop (max 14m2 pack)	Single Zone (2 loops or more)	Multi-Zone	Single Zone, 1-loop (max 14m2 pack)	Single Zone (2 loops or more)	Multi-Zone
Item	Item code	Solid Floor			Timber Suspended		
16mm MLC pipe, 75m coil(s)	1013377	✓	✓	✓	✓	✓	✓
Single loop TM manifold	1002197	✓			✓		
Compact Control Pack V4	1002287	✓			✓		
TM manifold c/w CCP V4	1002288-94		✓	✓		✓	✓
Actuator	1002053			✓			✓
Edge Strip	1000080	✓	✓	✓			
Kombi Klips (long)	1002297	✓	✓	✓			
Double heat emission plates	1034365				✓	✓	✓
T-37 wired dial thermostats	1000536			✓			✓
C-35 wired controller	1000534			✓			✓
I-35 setback timer	1000540			✓			✓
16mm x 3/4" pipe adaptors	1013989	✓	✓	✓	✓	✓	✓
Pipe cutter	1001369	✓	✓	✓	✓	✓	✓
Bevelling tool	1006830	✓	✓	✓	✓	✓	✓
2-port zone valve	1002047			✓			✓
Zone control pack	1002134	✓	✓		✓	✓	
Manifold fixing brackets -pair	1002278	✓			✓		

75m coils of Multi Layer Composite Pipe (MLC Pipe) - 1013377

The plastic pipe has an aluminium core which ensures oxygen cannot permeate and prevents the pipe from springing back after bending and during installation.

Single Loop Control Set

Uponor Compact Control Pack V4, Single Loop TM Manifold and Wall Mounting Brackets. Components boxed separately and require on-site assembly.

TM Manifold - 1002197
CCP V4 - 1002287
Manifold Fixing Brackets - 1002278

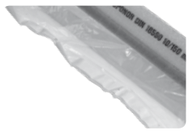
Underfloor Heating Pack - 1002288-94

The Uponor Compact Control Pack is for controlling the flow and temperature of water around your UFH System. The manifold, compact control pack there are only a few connections to be made.

Actuator - 1002053

24 volt thermal actuator, with open/ closed indicator, for use with Underfloor Heating Pack for multi-zone systems. Quantity supplied to match number of manifold loops.

Edge Strip - 1000080

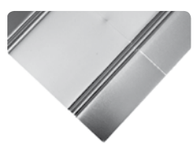


The edge strip is used iaround the perimeter of all walls to provide insulation between the heated floor screed and walls, and provision for screed expansion. 10mm thick x 150mm high with self-adhesive backing and strip on the outer face.

Kombi Klip - 1002297

The Kombi Klips are for use in screed floor applications to secure the UFH pipe work to the insulation boards. A minimum insulation depth of 35mm is required.

Double Heat Emission Plate - 1034365



The heat emission plates are used in timber suspended applications to support the pipe in a meander pattern between the joists at 200mm centres and transfer heat to the flooring element. They are made of 0.5mm thick aluminium sheet.

Plate dimension 1150 x 380mm.

T-37 Wired Dial Thermostat - 1000536

The T-37 Thermostat has a rotary hand dial on the front of the thermostat for adjusting the temperature. The thermostat is wired back to the C-35 Controller which in turn opens the actuators and operates the boiler/UFH pump relay.
NB. The electrician will require 2-core cable to install this component.

C-35 Controller - 1000534

The C-35 Controller is used for connecting the thermostats, the actuators and the Timer I-35.

I-35 Setback Timer - 1000540

The I35 setback Timer offers two timed setback programs of the thermostats connected to the C-35 Controller.
NB. A 2-core cable is supplied with this component.

Pipe Cutter - 1001369

Plastic pipe cutter for 16mm MLC Pipe.

Bevelling Tool - 1006830

Installation tool for bevelling of 16mm MLC Pipe.

Zone Control Pack - 1002134

The Zone Control Pack comprises of 3 components: a 2 port motorised zone valve, a 12 way wiring centre and a programmable room thermostat. The pack offers single zone time and temperature control for systems that only require one thermostat.

Zone Valve - 1002047

The zone valve is used to isolate the UFH system from the rest of the system. It is positioned on the boiler flow to the UFH manifold. The zone valve comes with 22mm connections and an auxiliary switch.

Screw Connectors - 1013989

The screw connectors are used to connect the UFH pipe work to the manifold.

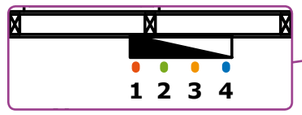
Planning Your Installation

This guide takes you through an underfloor heating installation using a 'meander' pattern, the easiest and most flexible to plan.

Manifold Location

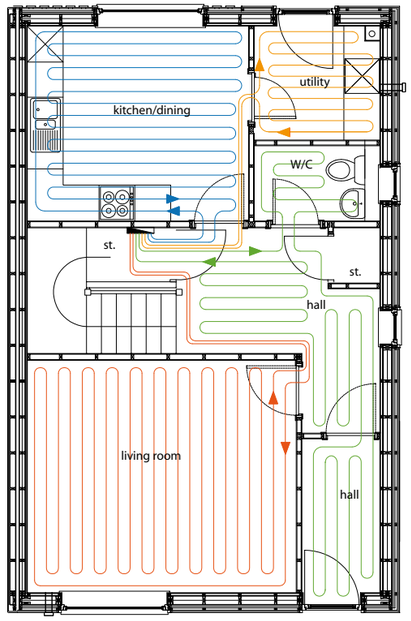
During the pack selection process, a central and accesible location is specified for the manifold, and this position must not change during installation.

In the example shown to the right, the manifold is located in the storage cupboard under the stairs. As the designer has defined four zones, the manifold has four ports. In properties with larger rooms, 2 or more loops may be required for a heated zone.



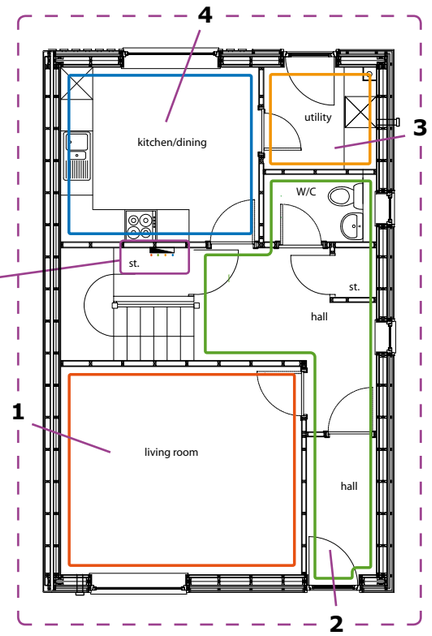
Loop Allocation

Also during the pack selection process a "Pack Selection Table" will have been filled in, either on the computer or on paper. This form is now required as a guide to your installation. The Pack Selection Table identifies how many loops of pipe are required for each heated zone. Below is an example drawing showing the loop and zone allocation from the Pack Selection Table.



Before laying any pipe, time should be spent planning a route from the manifold location to the respective zones.

Once you have a clear idea of the installation, you can begin to lay the pipe.



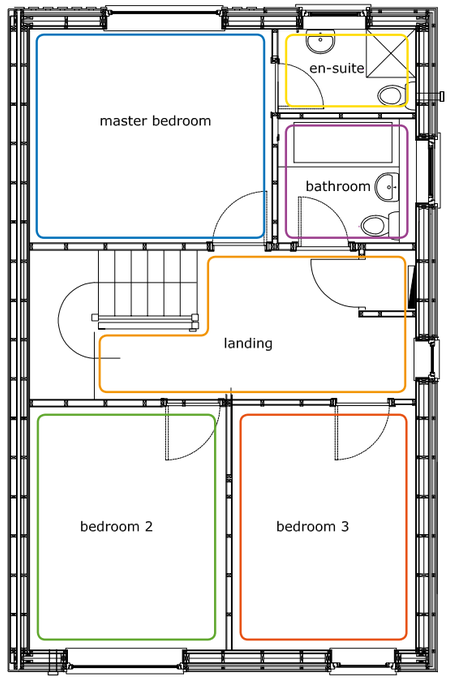
Plan to install one zone at a time, in a methodical order, as pipework must not cross over. Utilise the ports of your manifold sequencially, from the first to last or vice versa. Allow room for your pipe to 'run' to zones and 'return' to the manifold.

TIP: Lay pipe 100mm from walls, so not to damage pipes when installing your floor convering.

TIP: Lay feeds to heated zones at 50mm centres between flow and return pipes. Leave space for feeds routed through other areas.

IMPORTANT! Pipes must not cross over each other.

Worked example of zones & loops for suspended floor;



Linking Rooms

As a general rule, small rooms with similar occupancy use and comfort level to that of a larger adjoining room, can be linked together as one temperature controlled zone.

Examples of acceptable zoning, includes:

Bedroom with en-suite

Bedroom with dressing room

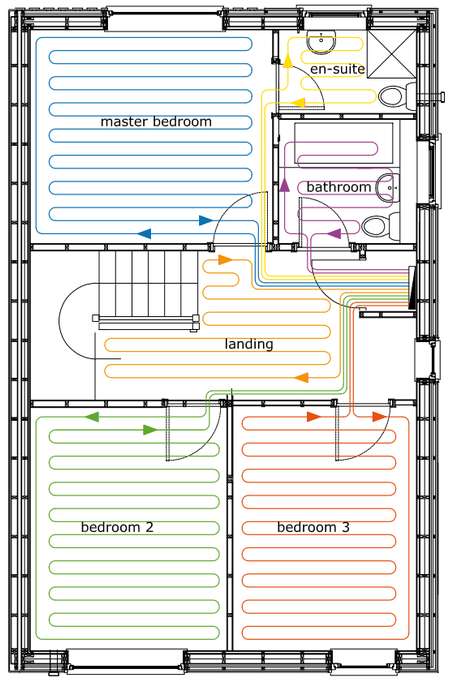
Kitchen with small utility

Hall with adjoining WC/cloaks room.

Every room you have defined as a zone allows for individual room control.

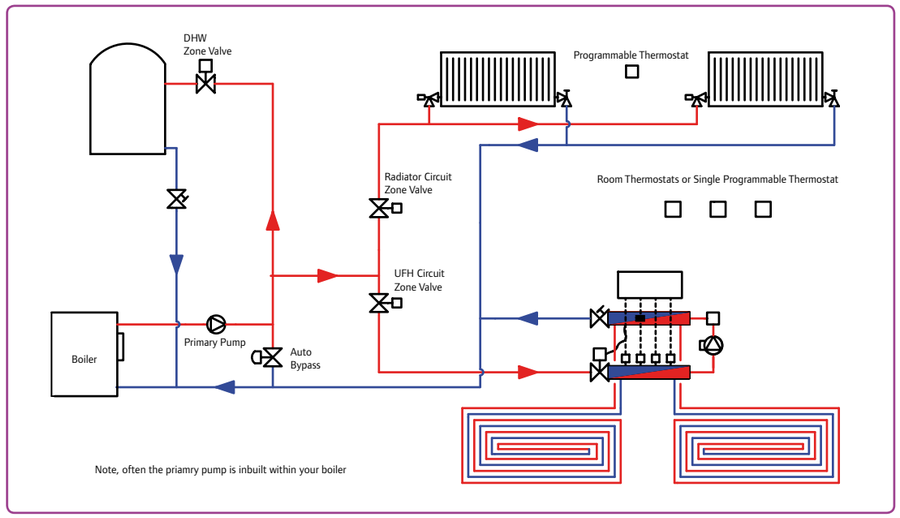
Floor Sensor

In wet areas, such as Bathrooms or en-suites, where regulations do not permit installation of a room thermostat and individual room control is required, fit the T-37 thermostat in the adjoining room and connect an optional floor sensor (Item number: 1000538).



First Fix Plumbing and Wiring

Every underfloor heating installation will require a hot water feed from the boiler to the manifold. The Heating Pack is designed to have the primary pipe work from your boiler enter the manifold assembly on the bottom left. Various components in the one pack will need connecting to your existing electrics.



Adding to an existing system.

An 'S plan' plumbing arrangement is required to run an underfloor heating system along side your existing heating and hot water circuits. An S plan arrangement will allow UFH, radiator and hot water circuits to be controlled independently, each by two port motorised zone valves. If a mid position (Y plan) arrangement is present on an existing system that you wish to add to, Uponor advise altering the arrangement to S plan, removing the mid position valve and inserting a two port motorised zone valve to isolate the radiator circuit and a second two port motorised zone to isolate the hot water cylinder. The Uponor One Pack provides a third zone valve for the underfloor heating system.

First Fix Plumbing

The zone valve should be fitted on the pipe work between the boiler (on the positive side of the primary pump) before the manifold.

We suggest the following sizes and pump settings:

Manifold Size	MLCP	Copper	Pump Setting
1 circuit	16mm	15mm	2
2 circuit	16mm	15mm	2
3 circuit	16mm	15mm	2
4 circuit	20mm	15mm	3
5 circuit	20mm	22mm	3
6 circuit	20mm	22mm	3
7 circuit	25mm	22mm	3
8 circuit	25mm	22mm	3

First Fix Wiring

A 230V fused spur will be allocated to the UFH system at or near the manifold location, to supply all of the electrical components within.

CAUTION: All wiring must be completed by a competant person and must comply with current IEE regulations.

Thermostats

A 2 core plus earth cable with a minimum cable size of 0.5mm and a maximum cable size of 1mm is required for use with the T-37 thermostats. A cable size of 1mm is required for use with the TP5000 programmable stat (single zone systems only).

Position the thermostats in each zone, out of direct sunlight and away from other heat sources or draughts.

Each T-37 thermostat needs be wired back to the C-35 controller, which should be positioned above the manifold.

Optional floor sensor, for T-37 thermostat, is supplied c/w 4m length of 2-core cable.

I-35 Setback Timer

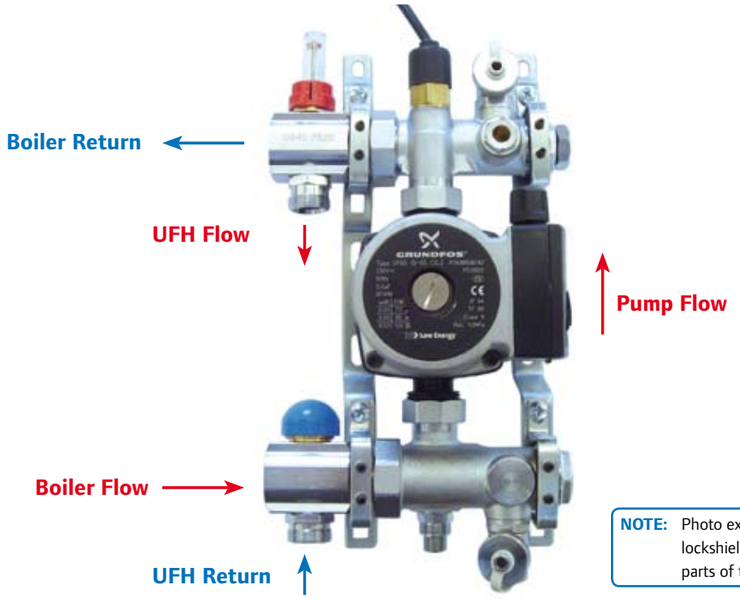
The I-35 Setback Timer needs to be wired back to the the C-35 controller. Once set, the I-35 needs no further attention, so this can be located close to the manifold, 2m length of cable is supplied.

INFO: The I-35 Setback Timer is a time clock, not an ON/OFF controller.

Compact Control Pack V4 - Single Loop Systems

Single Loop Systems

The Uponor Compact Control Pack is for controlling the flow and temperature of water around your UFH System. For 14m² single zone, only a single loop is required. The manifold, compact control pack and brackets are supplied separately and require on-site assembly.



NOTE: Photo excludes thermostatic control valve and lockshield valve, which are supplied as component parts of the Compact Control Pack V4.

Assembling the Manifold and Pump Connection Components

- Remove and Discard Manifold Securing Pipe Nipples
- Connect one end of the Manifold (with Flow Indicator) to the Capped Lock shield Valve
- Connect the other end of the manifold to the 1"MI x Swivel nut adaptor.
- Connect the High Limit Thermostat, Pump connection and fill and drain assembly to the above.
- Now connect the pump to the Flow assembly with the pump flow direction towards the flow manifold section on the top of the Pump.
- Connect one end of the Blue Capped manifold to the Thermostatic Headed Mixing Valve.
- Connect the other end of the manifold to the 1"MI x Swivel nut adaptor.
- Connect the Pump isolating valve, Pump connection and fill and drain assembly to the above.
- Now connect the pump to the Blue Capped Manifold assembly.

Assembling of the Manifold and Pump Wall Brackets.

Place the wall brackets,1 behind the space between the manifold and large swivel connecting nuts, the other to the side of the fill and drain valves.

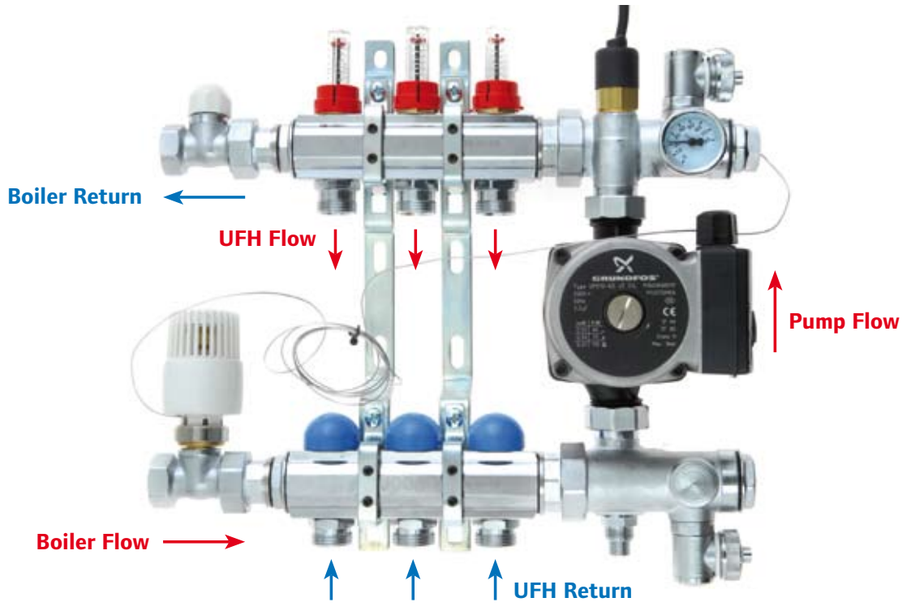
Now place the bracket front securing straps into position then secure the Manifold assembly with the fixing screws. (The Brackets are designed to be a tight fit)

The whole unit can now be positioned, marked then secured to the wall, ready for the pipe connections.

The base of the manifold should be a minimum of 300mm from the floor to allow room for the pipe to bend up to the manifold outlets. Space must also be available to make the primary pipe work connections on the left as shown.

Compact Control Pack V4 - Multi Loop Systems

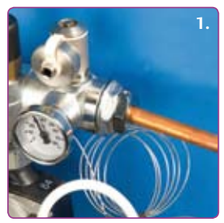
The Uponor Compact Control Pack is for controlling the flow and temperature of water around your UFH System. There are only a few connections to be made.

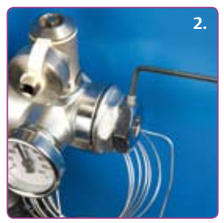


The Uponor Compact Control Pack is for controlling the flow and temperature of water around your UFH System.

Single and Multiple Loop Systems

1. First, fit the pipe sensor within the 90 degree elbow as shown
2. Tighten the grub screw with the small Allen key included. Next fit the thermostatic head onto the valve body.



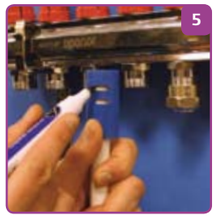


Tighten by turning the metal ring clockwise until it is hand tight.

Using appropriate wall plugs and fixing screws, mount the manifold on the wall. The base of the manifold should be a minimum of 300mm from the floor to allow room for the pipe to bend up to the manifold outlets. Space must also be available to make the primary pipe work connections on the left as shown.

Connections at the Manifold

1. Before pushing the pipe behind the manifold, carefully bend the pipe to prevent it being damaged.
2. Line the pipe end up to the threaded port on the manifold.
3. Cut the pipe end square, level with the bottom of the thread, using plastic pipe cutters, as shown.
4. With the bevelling tool, centre and bevel the MLC pipe to produce a chamfer of 2mm depth. Always rotate clockwise.
5. Mark the insertion depth onto the pipe using the tool provided.
6. Hand-tighten the compression adaptor fitting onto the manifold outlet thread as shown.

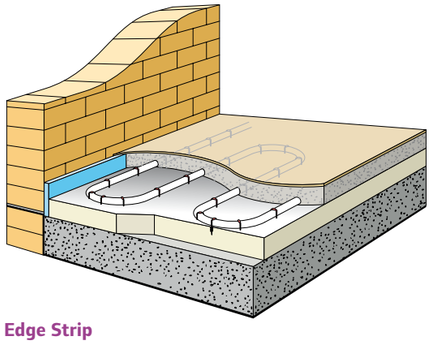


7. Insert the pipe into the adaptor fitting and push until the pipe comes to a halt as shown (the insertion indicator should no longer be visible).

8. Now tighten the adaptor fitting onto the manifold, using an appropriate spanner, until the insertion depth mark can be seen again.

Solid Floor Installation

INFO: Floor must be level, and swept clean of dust and debris before starting your installation.



Edge Strip

Fix the edge insulation continuously around all internal and external wall edges, using the adhesive backing. When installed correctly the PE-skirt will face out from the wall and the embossed 'Uponor' will be legible.

Insulation

NOTE: Insulation must conform to Building Regulations.

Lay the floor insulation over the entire floor area, butting up to the edge strip, ensuring the PE skirt overlaps. Tape the PE skirt onto the floor insulation. The Klips will grip to the insulation to secure pipe in position. A protective membrane may be required to protect the insulation from chemicals in the screed. Please consult your screed supplier for guidance. If a protective membrane is required, lay this immediately over the insulation. You will lay pipe on top of the membrane and the Klips will pierce through.

TIP: If you do not require a protective membrane, you can prevent screed from slipping between sections of insulations by taping at the seams.

Planning Your Installation

When installing underfloor heating on a solid floor, it is imperative the pipes do not cross over each other.

Before laying any pipe, time should be spent planning a route from the manifold location to the respective zones. Once you have a clear idea of the installation, you can begin to lay the pipe.

Each loop must be installed without any joints in the floor.

To assist with installation, Uponor pipe is marked every metre. Keep reference of how much pipe has been laid whilst installing over the intended floor area. This will help ensure you return to the manifold with sufficient pipe.

If required, lay more than one loop to a zone.

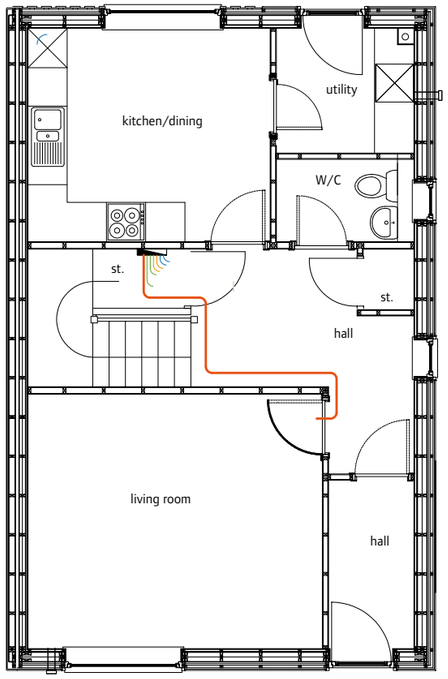
Laying Loops

IMPORTANT! A loop is one continuous run of pipe from the flow port to a return port of a manifold. Never join two coils in attempt to create one longer loop of pipe.

Start with the first or last coil to be run from the manifold.

In the case of the example, the installer could begin with either the living room or the kitchen/dining, We will start with the living room. Take your first coil and temporarily secure the end of the pipe at the manifold by lodging it behind.

Pipe should be laid 100mm from external and internal walls until you reach the zone you have planned to install first.



Once you reach the entry point for this zone, pipe direction is to the coldest area of the room first, for example, along external walls and under windows.

Lay the pipe as you walk, securing every half a metre with a Klip, which is pushed over the pipe and into the insulation.

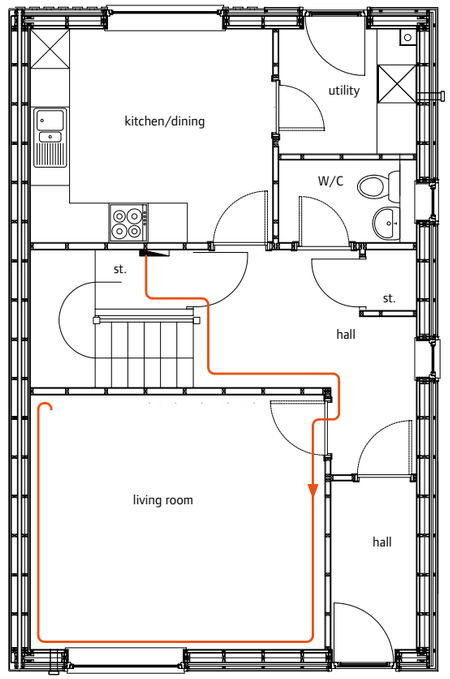
TIP: The Uponor Kombi Gun;
A quick and simple method for fixing Uponor MLC and PEX pipe to all common UK underfloor heating insulation boards. Item number: 1002295

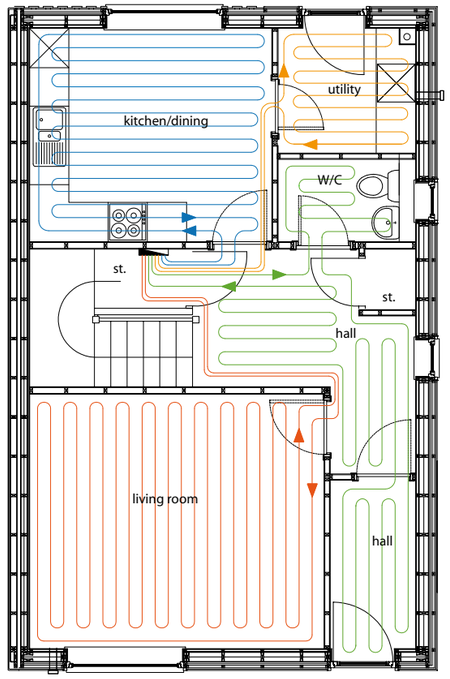
Travel to the furthest point of the room and make a 180º turn as shown in the drawing below.

The pipe needs to 'meander' back and fourth across the floor at 200mm centres on it's return to the entry point, then follow the same route back to the manifold.

On returning back to the manifold temporarily secure the pipework; ready to make connections.

Once the first loop is complete work through the others one after another. The example started with a loop for the living room zone. The next zone in the example will be for the hall & WC, followed by the utility and finaly the kitchen.





Insulating Congested Pipe

In order to prevent the floor from overheating directly below the manifold or through doorways, or any areas where pipes may be closer together, we would advise insulating the pipe, especially if they are not used to heat the room through which they pass.

50m of protective conduit suitable for 16mm pipe, Item number: 1012860

TIP: Feed pipes can be taken directly through partition walls and into their respective zones to reduce congestion.

NOTE: Ensure all pipe remains below the screed floor finished level at all points. Where pipe passes through walls, ensure the pipe is sleeved to allow for expansion.

SCREED:

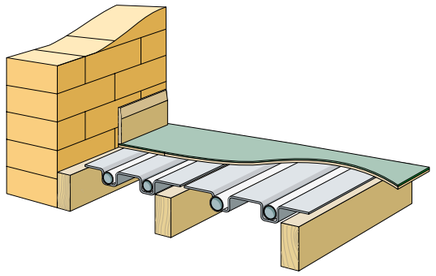
Your floor area is now ready to be filled and pressure tested.

Once filled and tested, lay screed as soon as possible to protect the pipe. Avoid unnecessary foot traffic on the floor area until screed is completely dry.

Consult you screed supplier for drying times.

Timber Suspended Floor

NOTE: Uponor Heat Emission Plate's (HEP's) are dimensioned to fit on 50mm wide square edged joists.



Joist/ Batten Preparation

The joist layout should be examined before starting the installation. This will enable you to address any variation in joist widths (minimum 50mm wide) and joist centres (400mm) before starting work.

Joists that are less than 50mm wide will require battening along one side to provide adequate support of the plates.

For variation in joists you can either cross batten on top of the joists or batten along the side of the joists. For additional support provide intermediate battens between joists supported on noggins.

TIP: When installing cross battens or intermediate battens, don't fix the batten ends until the pipe has been laid. This enables you to lift the batten and install the pipe without notching or cutting short the batten.

Insulation

Insulation must be installed between joists and as close to the underside of the plates as possible. Uponor recommend using a minimum of 100mm thick mineral wool, but where necessary the insulation thickness should also comply with Building Regulations/ Standards.

Heat Emission Plates

Uponor HEP's are dimensioned to fit on 50mm wide square edged joists at 400mm centres. Each plate is 1.15m long and supplied with two score lines approximately 1/3 from one end of the plate and at 1/6 from the other end.

Planning Your installation

When installing underfloor heating on a suspended floor, the straight runs of the pipe lie in the grooves of the HEP's. Before laying any pipe, time should be spent planning the layout of the HEP's as well as a route for the pipe from the manifold location to the respective area/room/zones.

TIP: Carefully consider the pipe route between joists and notch the joists / battens accordingly prior to installing the HEP's

Once you have a clear idea of the installation, you can begin to lay the HEP's and the pipe.

CAUTION: HEP's are used for heat distribution only and are non-load bearing. Always use safe working practices when working with and installing underfloor heating systems.

Planning the Layout of Heat Emission Plates

TIP: Ensure all insulation and battening work is installed prior to laying the HEP's.

NOTE: Your layout will be determined by joist direction.

HEP's are only laid under straight pipe runs and should cover approximately 80% of the floor area. When spacing out the plates leave a gap between plates to allow for expansion, approx 10mm, but no more than 100mm.

The pipe needs to 'meander' along the grooves, making 180° turns, so at pipe bend locations the HEP's should allow at least 300mm for the bend radius of the pipe.

Plates can be shortened at the break points. Keep the pipe groove uppermost and sharply break the plate over a straight edge.

TIP: Loose lay the HEP's until you are confident with the layout.

When the room is evenly covered with plates fix them down using a staple gun or tacks.

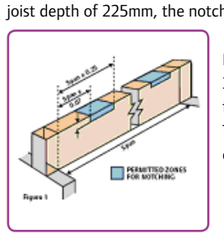
Notching joists

Holes should be drilled or notched in accordance with BS6700, BS5449 and NHBC regulations.

The following is an accepted guide to avoid potential structural problems in domestic floors. Any notching outside of the permitted zones must be subject to structural calculations by a structural engineer to verify suitability. Joists can be weakened and become structurally unsound by: holes drilled off the centre line or near to the end of a joist, holes or notches made too close together and, notching too close to the centre of the joist span.

Prior to installing the UFH pipes attention should be given to planning the pipe routes to ensure that any notches are within the permitted zones shown below.

With a joist span of 3.5 metres between load bearing walls and joist depth of 225mm, the notching zone :



Between 0.7 x 3.5 and 0.25 x 3.5 = 0.245 to 0,875 metres from each wall.
The permitted maximum depth of notch is 0.125 x 225 = 28mm.

Laying the pipe

Run the pipe from the manifold below joist height (joists may require notches) until you reach the entry point of the zone you have planned to install first. At this point, pipe direction is to the coldest area of the room, for example, along external walls and under windows. Lightly press the pipe into the plate grooves by hand or gently by foot. Be careful not to permanently bend the plates as the systems performance will be reduced. Once you have reached the end of a straight run, make a 180° bend with the pipe to align with the next groove.

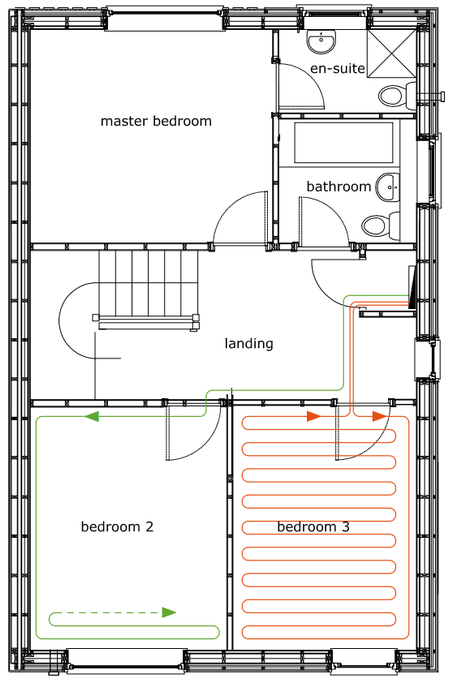
CAUTION: Do not pull the pipe tight against joists.

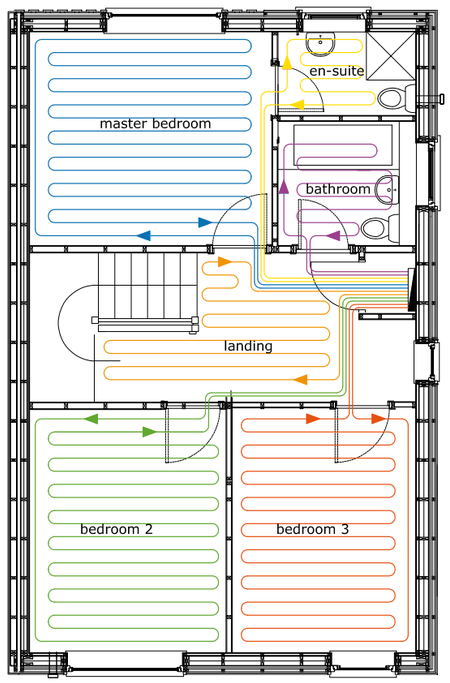
Continue to meander the pipe along the grooves of the HEP's until it's return to the entry point, then follow the same route back to the manifold.

One loop is complete. Work through your installation one loop after another.

IMPORTANT! A loop is one continuous run of pipe from the flow port of a manifold to a return port of a manifold. Never join two coils in attempt to create one longer loop of pipe.

If required, lay more than one loop to a zone. Larger zones will require more than one loop.





IMPORTANT! Do not lay pipe beneath shower trays as you will dry out the water trap.

Linking Rooms

As a general rule, small rooms with similar occupancy use and comfort level to that of a larger adjoining room, can be linked together as one temperature controlled zone.

Examples of acceptable zoning, includes:

Bedroom with en-suite

Bedroom with dressing room

Kitchen with small utility

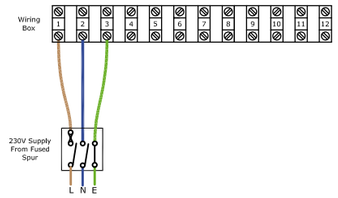
Hall with adjoining WC/cloaks room.

Every room you have defined as a zone allows for individual room control.

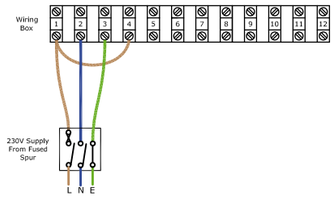
System Wiring

Single Zone Systems

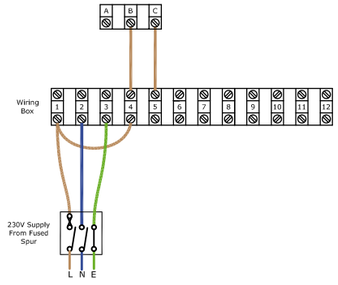
1.



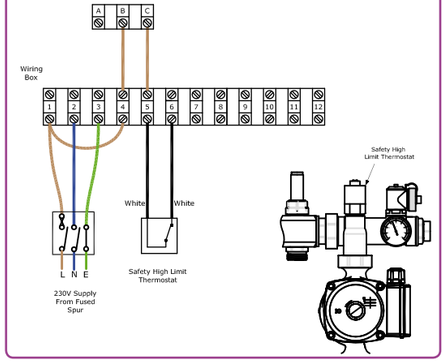
2.



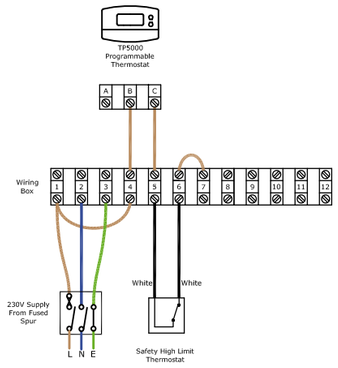
3.



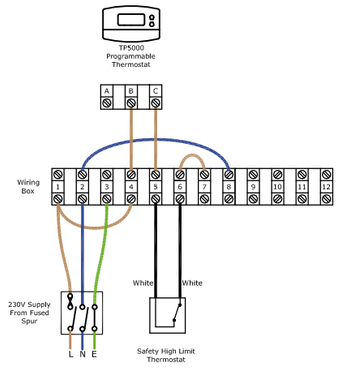
4.



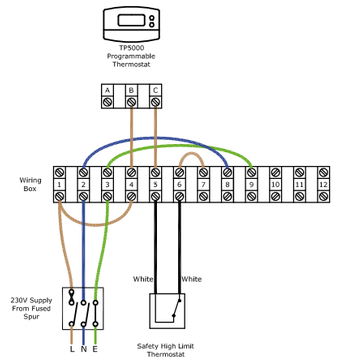
5.



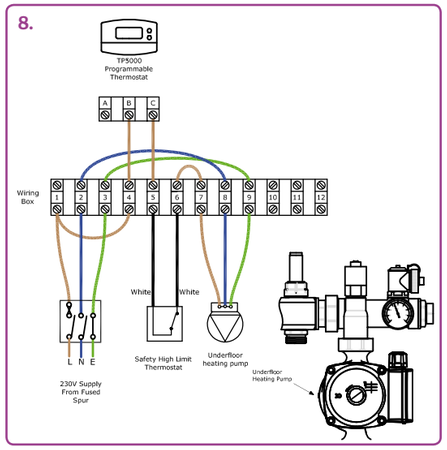
6.



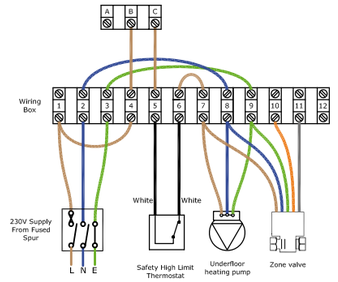
7.



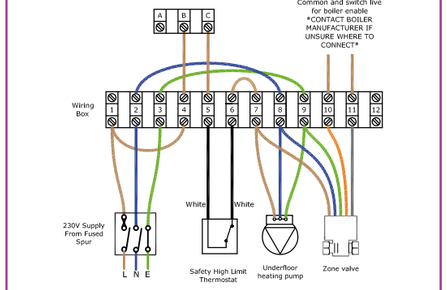
8.



9.



10.



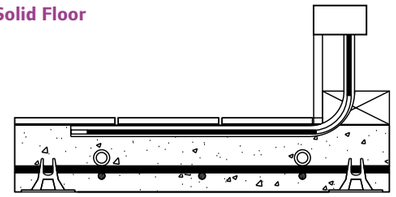
System Wiring - Optional Floor Sensor

Optional Floor Sensor for Multizone Systems

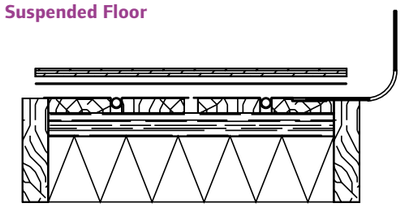
An optional floor sensor is available for connection to the T-37 room thermostat. The floor sensor is not included as a component in your UFH OnePack and will need to be ordered separately.

If your system includes a floor sensor, a potentiometer fitted on the Thermostat T-37 allows you to adjust the minimum or maximum temperature settings for the floor. The floor sensor can be used for maximum or minimum limitation of the floor temperature, regardless of the room temperature. For example, the maximum limitation will protect a sensitive floor covering from exposure to too high temperature when there is a high heat demand. The minimum limitation can keep a tiled bathroom floor warm even when there is a no general demand for heat supply to the room.

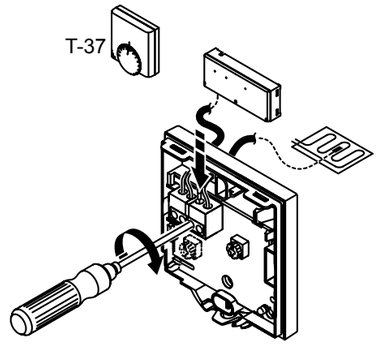
Solid Floor



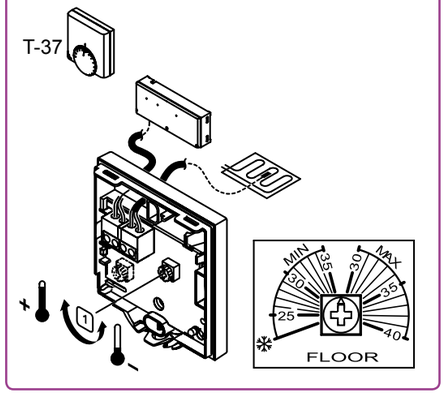
Suspended Floor



1.



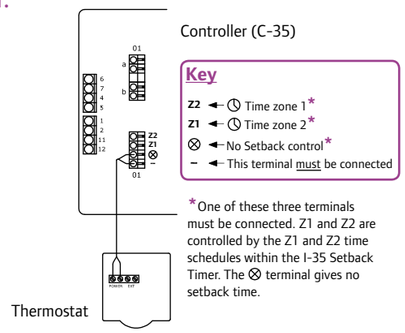
2.



System Wiring - Multizone Systems

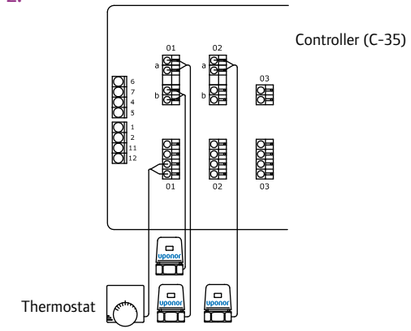
Wiring T-37 room thermostats, thermal actuators and I-35 timer to C-35 controller

1.



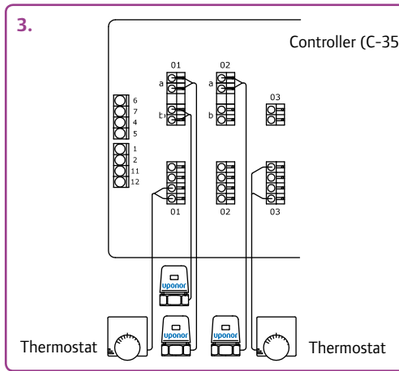
Wire your first thermostat into 01 set of terminals; the first wire into the bottom terminal and the second wire into one of the other three terminals depending on how you want to control the area heated.

2.



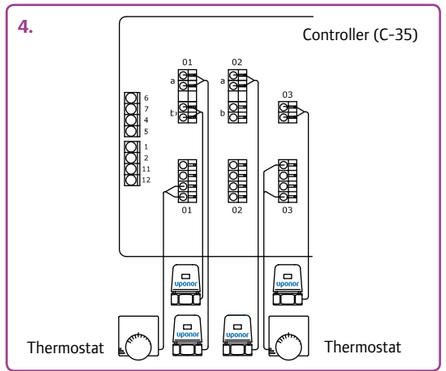
Wire all the actuators that will be controlled by the first thermostat. Start at 1a and work along; 1b, 2a, 2b, 3a, etc.

3.



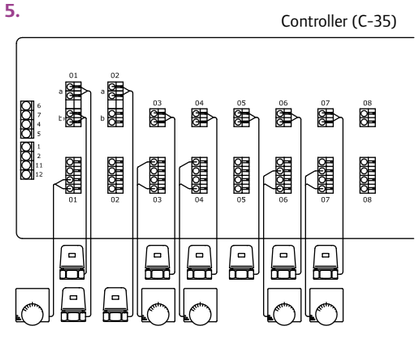
Wire your second thermostat into the next available set of terminals. DO NOT SKIP A SET OF TERMINALS. Your system will not work properly.

4.



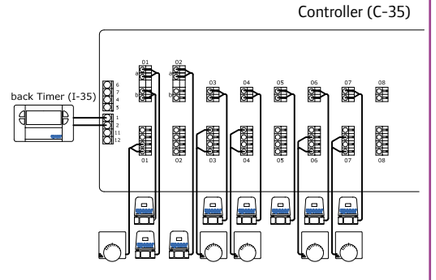
Wire in all the actuators that will be controlled by a second thermostat. Start in the same numbered set of terminals as the thermostat.

5.



Continue wiring your thermostats and actuators remembering not to skip a set.

6.

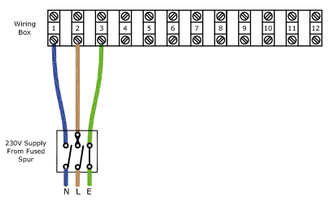


Plug the jack cable into the back of the I-35 Setback Timer and only wire the black wire into number 1 and the yellow wire into number 2 of the C-35 Controller.

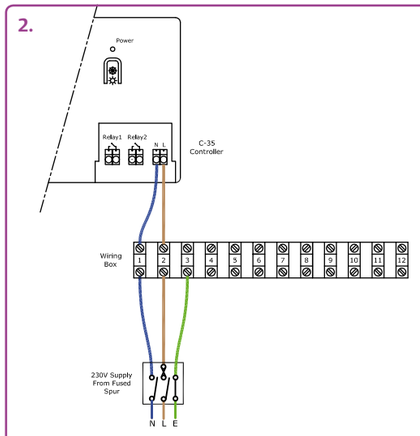
System Wiring - Multizone Systems

Wiring 230V supply to C-35 Controller and Compact Control Pack via 12-way wiring centre

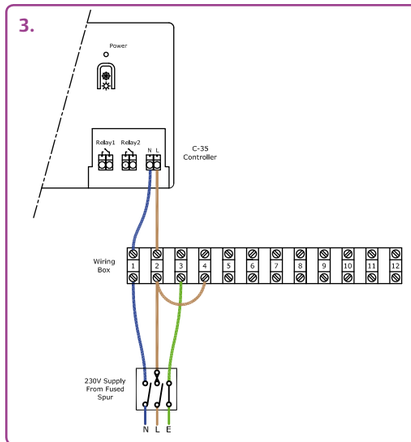
1.



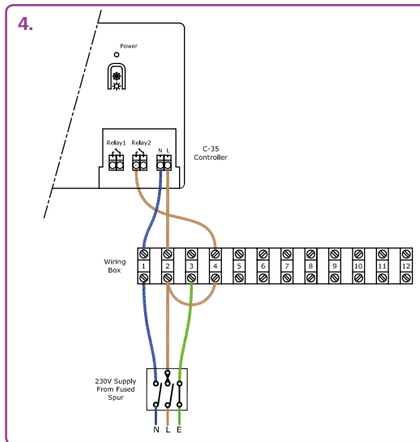
2.



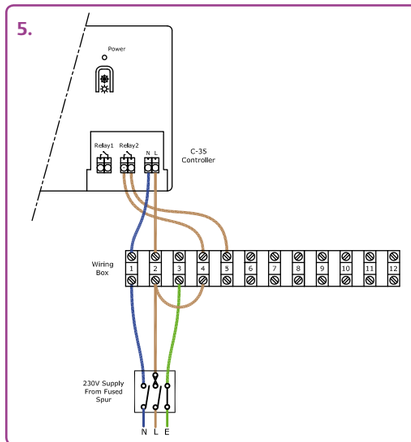
3.



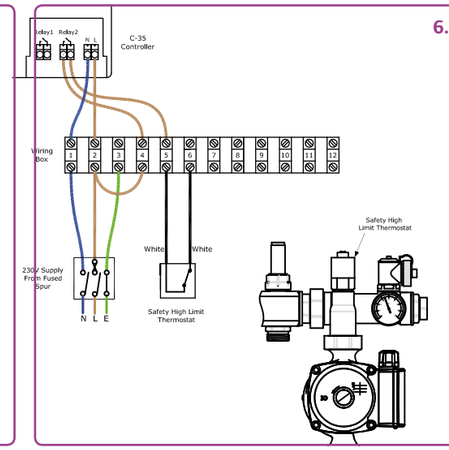
4.



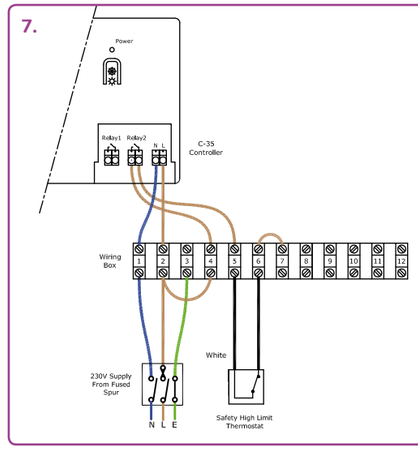
5.



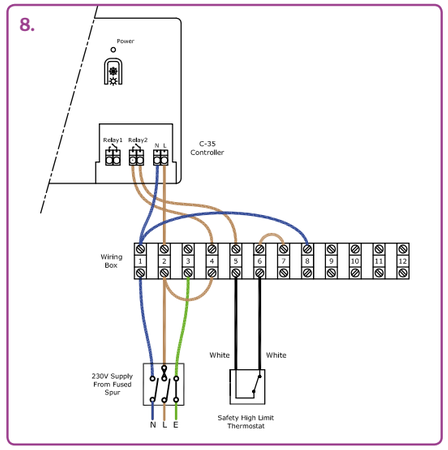
6.



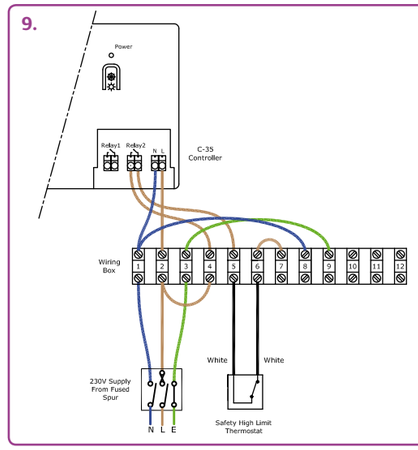
7.



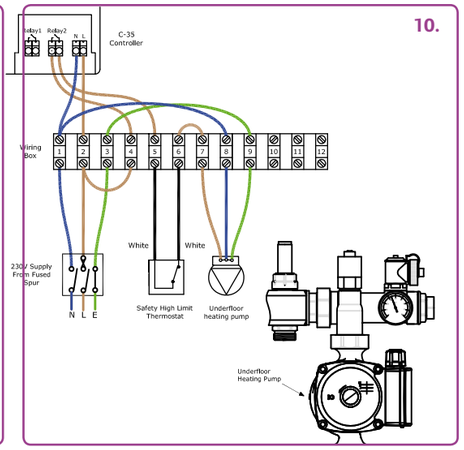
8.



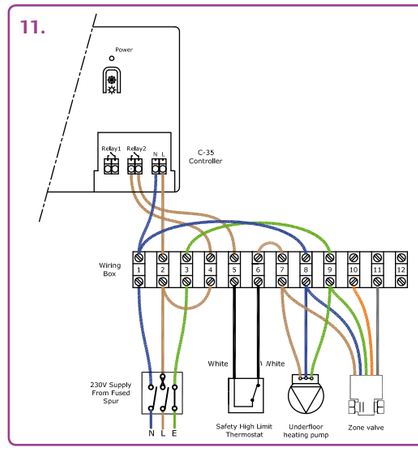
9.



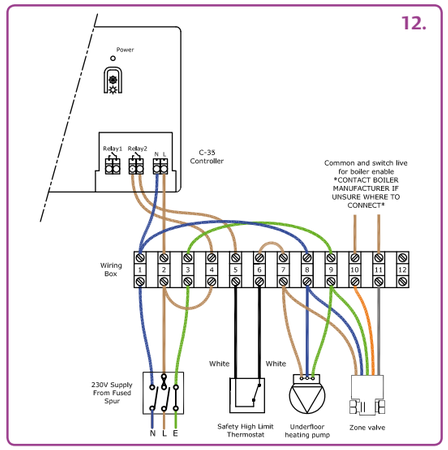
10.



11.



12.



System Wiring - C-35 Wiring Schematic

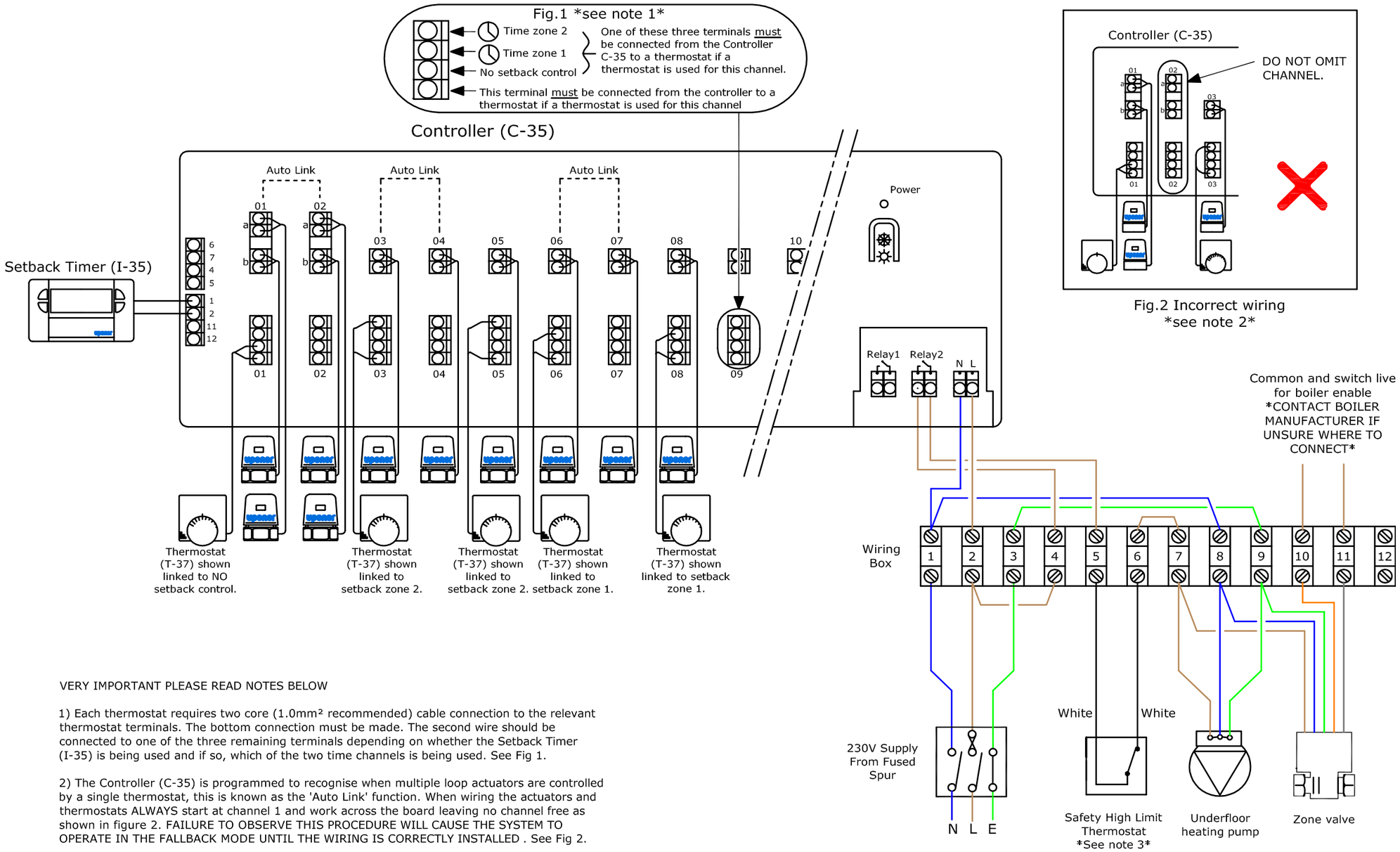


Fig.2 Incorrect wiring
see note 2

VERY IMPORTANT PLEASE READ NOTES BELOW

1) Each thermostat requires two core (1.0mm² recommended) cable connection to the relevant thermostat terminals. The bottom connection must be made. The second wire should be connected to one of the three remaining terminals depending on whether the Setback Timer (I-35) is being used and if so, which of the two time channels is being used. See Fig 1.

2) The Controller (C-35) is programmed to recognise when multiple loop actuators are controlled by a single thermostat, this is known as the 'Auto Link' function. When wiring the actuators and thermostats ALWAYS start at channel 1 and work across the board leaving no channel free as shown in figure 2. FAILURE TO OBSERVE THIS PROCEDURE WILL CAUSE THE SYSTEM TO OPERATE IN THE FALLBACK MODE UNTIL THE WIRING IS CORRECTLY INSTALLED . See Fig 2.

3) The high limit thermostat is located above the pump and has a black flexible cable with two white wires.

Controls Setup

Single Zone with TP5000

Before programming the thermostat press the + & – AND ▲ and ▼ buttons simultaneously to reset the unit (Fig.1)

Setting the Clock and Day

Press PROG (Fig.2) to begin programming

Use + or – buttons (Fig.3) to adjust the TIME (Fig.4)

Press PROG again (Fig.2)

Use + or – buttons (Fig.3) until correct DAY is shown (Fig.5)

(1 = Monday, 2 = Tuesday, etc)

Accepting the Factory Pre-settings

The TP5000 has pre-set times already programmed in, which often suit most people (see Table below).

To accept these settings close the front cover and after 2 minutes the presettings will automatically be accepted.

To adjust the factory pre-settings & set your own time and temperature programmes

For Days 1-5 (weekdays)

a)Press PROG (Fig.2) 3 times to show the 1st pre-set time and temperature (Event 1 Days 1,2,3,4,5) (Fig.6)
b) Use + or – buttons (Fig.3) to adjust the TIME (press and hold to change in 10 min increments)
c) Use ▲ or ▼ buttons (Fig.7) to adjust the TEMPERATURE
d) Press PROG (Fig.2) to move to next preset time & temp (Event 2) (Fig.8)
e) Repeat steps b, c & d for programming Events 3, 4 5 & 6

For Days 6-7 (weekends)

Press PROG (Fig.2) to show 1st pre-set time and temperature (Event 1 Days 6-7) (Fig.9)
Repeat steps b, c and d above to programme time and temperature events for the weekend

Weekdays (Mon - Fri)		
Event	Time	Temp °C
1	05:00	20
2	08:00	18
3	11:00	20
4	13:00	18
5	15:00	20
6	22:00	16

Weekend (Sat - Sun)		
Event	Time	Temp °C
1	06:00	20
2	09:00	20
3	12:00	20
4	13:00	20
5	16:00	20
6	22:30	16

Returning to RUN mode
Press PROG (Fig.2) – the colon in the LCD display will start to flash (Fig.10)

Fig. 1

Fig. 2

Fig. 3

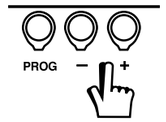


Fig. 4

Fig. 5

Fig. 6

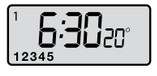


Fig. 7

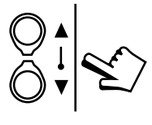


Fig. 8

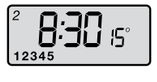


Fig. 9

Fig. 10

Temporary User Overrides

The TP5000 has several useful overrides which can be selected without affecting the thermostat programming
- Selection of time or actual room temperature in main LCD display – press + and – together to change between settings (Fig.11)
- Temporary override of programmed temperature – press ▲ or ▼ until required temperature is displayed (override will automatically cancel at beginning of next programmed event) (Fig.12)
- Temporary use of weekend programmes – press ▲ and ▼ together once (override cancels at 2:00am) (Fig.13)
- Frost Protection – a constant low temperature can be selected whilst away from home - press ▲ and ▼ together twice (Fig.14). To return to automatic programming press ▲ and ▼ together again

Summer Time / Winter Time Clock

To change from Summer to Winter (clocks back) - press and hold - button (Fig.15)
To change from Winter to Summer (clocks forward) - press and hold + button (Fig.15)

Battery Replacement

A low battery symbol will flash in the LCD display (Fig.16)
You have 15 days to replace the battery before the unit will switch off.
When changing batteries, remove old batteries and insert new ones within ONE MINUTE and programming will not be lost.
NB. If the display ever goes blank during normal operation, the batteries will need to be renewed, the unit reset and the time and programmes reset.

Fig. 11 **Selection of time or actual room temperature in main LCD**

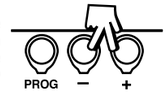


Fig. 12 **Temporary override of programmed temperature**

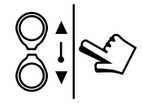


Fig. 13 **Temporary use of weekend programmes**

Fig. 14 **Frost Protection**

Fig. 15

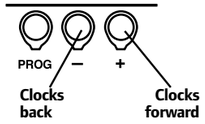
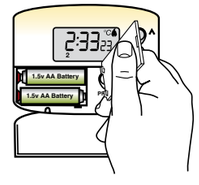


Fig. 16



Multizone Systems Controls Setup

T-37 Thermostat, I-35 Timer and Eco Function

When you set your thermostat using the jog wheel you will notice a longer line compared to the others. This equates to a temperature of 21°C when aligned with the marker on the thermostat. The increasing line lengths on the jog wheel indicate higher temperature, so turning the wheel clockwise will increase the room temperature setting.

When the I-35 is running in comfort mode then the thermostats will work to the set temperature.

When the I-35 is running in Eco mode then the thermostats will be working 4°C lower than the set point. Example, if thermostats are set at 21°C then they will run at 17°C.

Advantage of Eco mode is improved efficiency, by not allowing the system too fully switch off we prevent the floor from going completely cold. This prevents the need for a long energy intensive warm up period.

I-35 Settings

1. Set the Year

When you have installed batteries you will be presented with a flashing field, use the + & - buttons to set the year and confirm with the **ok** button.

2. Set the Month

01 is January, 02 is Febuary and so on. Again confirm with the **ok** button when correct month is selected.

3. Setting day of the Month

Use + & - , again press **ok** to confirm.

4. Setting the Time

Simply use + & - to select correct time. Again confirm with **ok**.

The timer uses a 24 hour clock, so 3.05pm is displayed as 15:05

5. Programming On/Eco Periods

Press **Mode**

- Default is P2 schedule, allowing 2 On & 2 Eco periods per day.

The full temperature symbols above the time line indicate the on periods, the half one's indicate the Eco period (reduced temp setting or setback).

- If you are happy with this pre-set heating schedule press **ok**, you will notice the day pointer has shifted to the next day. Day 1 Monday, day 2 Tuesday and so on.
- If you wish to change the pre-set press the Prog P1-P4 button, keep pressing to select the one that most suits your needs. Again confirm with ok button once selected.
- You will notice P4 is empty, use the temperature symbols to create your own heating schedule if the pre-sets don't meet your requirements. By pressing either one of the symbols you will notice the time changes as well as the flashing cursor moving along the time line. Once you are satisfied with the program you have created confirm by pressing **ok**.
- When all 7 days are programmed the timer will simply return to the time display.

6. Holiday Setting

Press the **suitcase symbol** and use the + & - button to set the amount of days holiday. Press ok to confirm, LCD will display a snowflake indicating a reduced temperature setting (ECO mode). Your heating will now run at a lower temperature during the holiday period. To cancel holiday mode simply press mode.

7. "Auto" Automatic Mode

Press **Mode** button until pointer appears under Auto. In this mode the timer displays time, day and temperature schedule for each zone.

2 time channels

The I-35 has two inbuilt timers, Z1 and Z2. These can be set to give timed ON/Eco periods for 2 independently timed UFH zones.

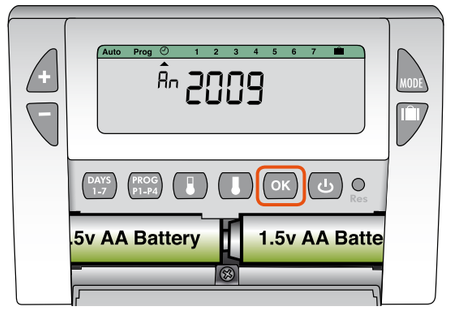
In automatic mode, use + or - button to make selection.

8. Manual Override Function

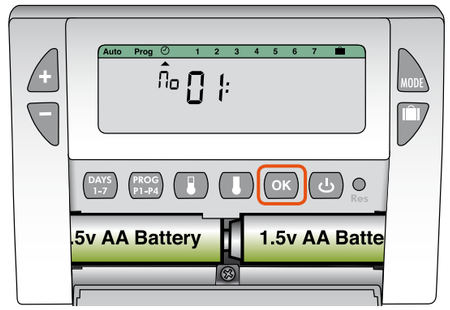
Press and hold **full temperature symbol** for Comfort Temperature Setting or press and hold **half temperature symbol** for Eco Mode setting. Note when in override function the system will continue in either Comfort or Eco until you cancel by pressing either temperature symbol once.

I-35 Settings

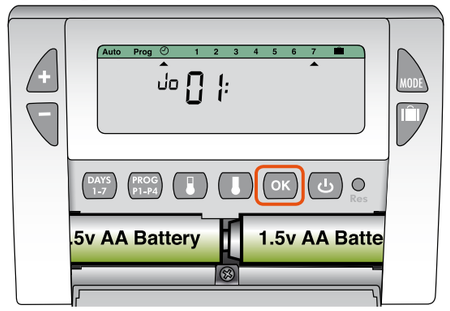
1. Set the Year



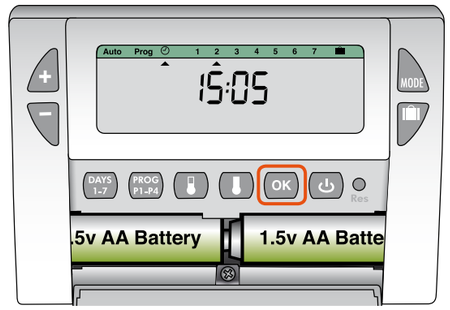
2. Set the Month



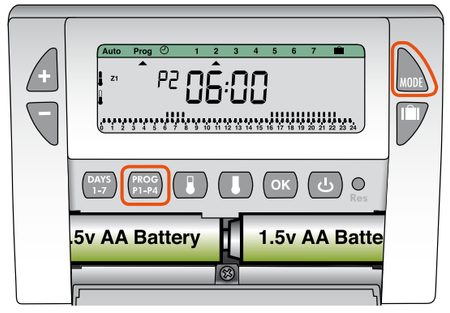
3. Setting day of the Month



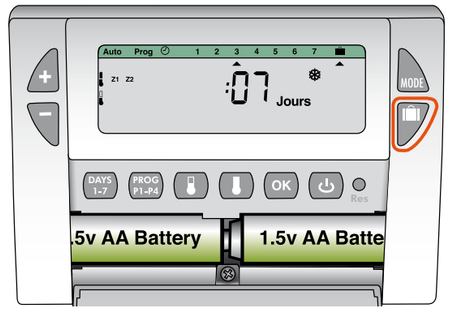
4. Setting the Time



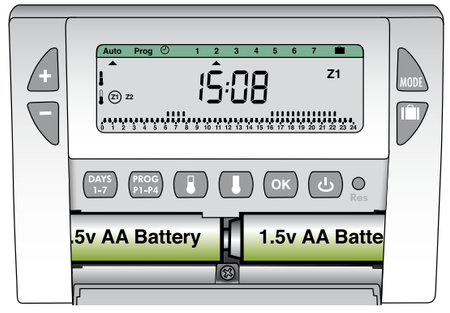
5. Programming On/Eco Periods



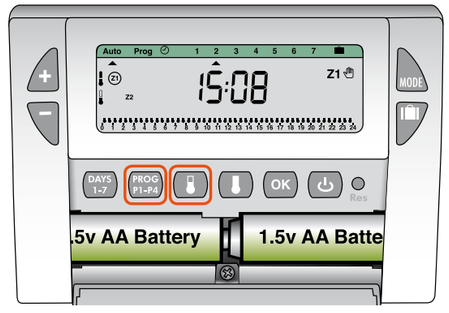
6. Holiday Setting



7. "Auto" Automatic Mode



8. Manual Override Function



Filling, Pressure Testing, Comissioning & Balancing

Filling

Prior to filling the system check each connection on the manifold and Compact Control Pack is tight. There is an integral fill/vent valve above and below the pump. Two hose unions are required to connect onto the 3/4" thread.

- Ensure all electrical supplies are switched off.
- Remove the fill port caps and connect a hose union to each.


- The integral valves in both end caps must be opened to fill the system. Use the square key in the cap to open the fill port valves.
- Ensure the thermostatic control valve and lockshield valve are CLOSED and all connections are tight. To close the control valve on the V4 Compact Control Pack, first remove the white thermostatic head and use cap to close the valve.


- Remove the white cap from the lockshield valve and close off with an Allen key.
- Fully close the valve on the elbow of the Compact Control Pack at the circulating pump inlet to ensure that water is forced around the UFH loops when filling and not short circuiting between the upper and lower manifold headers.


- Close all underfloor heating loop flow and return valves on the manifold.
- Fit a hose to the lower manifold hose union and run the other end of the hose to a suitable drain point.
- Connect a hose to the upper manifold hose union and connect the other end of the hose to a mains water tap.


- Individual loops need to be purged of air in turn. This is achieved by opening the manual head (blue cap) on the lower manifold, then fully opening the corresponding topmeter on the upper manifold. To fully open the topmeter, remove the red locking ring and turn the topmeter 3 full turns from the closed position. Before attempting, read 'TM manifold loop balancing procedure' later in this chapter..
- Slowly turn on the water tap. As the first loop fills with water, air will discharge through the hose to the drain. Once the air stops and there is a steady flow of water, close both ports on the manifold. Repeat this procedure for all UFH loops on the manifold ensuring that the valves are closed on each loop after filling.

- Close the valves on the end caps and switch-off the mains water before disconnecting the hoses.
- **Important:** Please remember to open the valve at the circulating pump inlet.

IMPORTANT! Remember to open the valve at the circulating pump inlet.

IMPORTANT! Fill loops independantly of each other.



Pressure testing

A hydraulic pressure test must be carried out on all loops prior to laying the screed or covering with the chosen floor coverings. A hydraulic pressure test kit is available from Uponor (Item Number 1004057).

- Isolate the primary flow and return to the manifold.
- Ensure that all flow and return valves to the UFH loops are open.
- Use the pressure gauge on the pressure test kit to monitor pressures.
- Connect a pressure pump to the hose union and open the valve on this end cap. Ensure the other hose union valve is closed.
- Pump up the pressure in the manifold to 2 x the operating pressure (minimum 4 bar, maximum 6 bar) for at least 1 hour. After an initial slight drop in pressure as the pipes expand, there should be no further drop in pressure. Check the pressure gauge during this period to ensure that the pressure remains constant under this period.
- Uponor recommends that the system should remain under pressure whilst the floor is laid so that if any damage occurs to the pipe, the laying of the floor can be stopped and the damage repaired immediately. The floor should be laid immediately after the pressure test.
- Where there is a danger of freezing, suitable measures such as the use of glycol-based antifreeze should be taken, using the correct mixture of water and antifreeze solution. However, before start up, the glycol mixture must be thoroughly flushed out of the system and disposed of carefully.

Use of Corrosion Inhibitors

Uponor UFH pipes will not be:

- Adversely affected by corrosion inhibitors normally used in central heating systems.
- Adversely affected by accidental contact with linseed oil based sealing compounds, or soldering flux. However, the latter should not be used for making joints to the pipe.
- Affected by soft, hard or aggressive potable water. The pipe will not be attacked by any constituents of concrete, screeds, mortars, and is fully resistant to attack from micro organisms.

Settings

- The thermostatic head is set to the required water flow temperature for the underfloor heating system, typical settings as follows:

Screed floors: 40 – 45°C

Wooden floors: 50 – 55°C

- The high limit thermostat does not need any adjustment. It is preset to 60°C.
- The lockshield valve needs to be opened so that it forces the majority of the water around the UFH system. The primary and secondary pump speeds, existing primary pressure and manifold size will affect how far open the lockshield valve needs to be opened, usually around 3 full turns from the closed position. The lockshied valve may need to be opened less/more depending on system performance.
- To make an adjustment first unscrew and remove the white cap. Use the included Allen Key to adjust the valve.
- To calibrate it is recommended that the lockshield valve is first fully closed and then opened until you see the thermometer continuously reading the same temperature as the setting on the injection valve head.
- Adjust the circuit flow rates by adjusting the flow regulators (topmeters) -see following pages.
- Pump setting: normally speed 3
- Typical loop flow rates, for varying loop lengths and Floor output [W/m^{2}] are shown on the table at end of this chapter.

Starting-up the UFH System

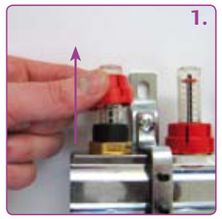
System Start-Up

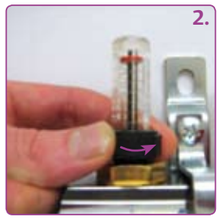
When the system has been connected to the heat source and all pumps, controls, valves and bypasses fitted, the system should be checked and started as follows.

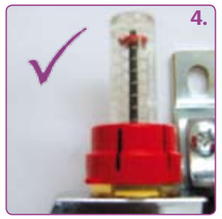
- Where applicable, ensure that the screed has had sufficient time to cure in accordance with manufacturers instructions and relevant British Standards, typically between 21 – 28 days.
- Check and ensure all electrical controls are wired correctly and in accordance with the latest edition of IEE Wiring Regulations, or ETCI National Rules for Republic of Ireland.
- The system set-up and control arrangement should be checked to ensure correct operation.
- Check that the system is filled with water and fully vented of air and all isolating valves are fully open. Once this is complete, the pumps should be run for 5 minutes and a final check made to ensure that all air has been vented from the system.
- Check that the boiler is operating in accordance with the manufacturers instructions and set to run with a flow temperature at least 15°C higher than the UFH design flow temperature.
- The flow rate for each UFH loop (in litres/min) is regulated by topmeters fitted to the flow header on TM manifolds. Set each loop by using the typical flow rate tables (overleaf) as a guide, and then carry out the balancing procedure that follows. Single loop manifold should have topmeter turned to fully open position.

TM manifold loop balancing procedure:

- Remove the red cover from the topmeter as shown in Fig 1. If the topmeter has been opened it needs to be closed by turning it clockwise. All topmeters should be fully closed at the start of the commissioning process.
- Ensure that all manifold return valves are fully closed (remove thermal actuators if fitted and replace with blue manual caps).
- Open the return valve on one loop and adjust the setting of the corresponding topmeter, until the design flow rate is reached, by turning the topmeter anticlockwise from its fully closed position as shown in Fig 2. It is important that the system and UFH pumps are running. Note, three full turns from shut will fully open the topmeter. It is not possible to adjust the topmeter further than this setting.
- Once the design flow rate is achieved the red locking ring should be refitted over the topmeter as shown in Fig 3.
- The topmeter will not turn at all if the red locking ring is fitted correctly. Fig 4 shows a correctly fitted locking ring.







Loop balancing

- Repeat the process for each loop, then go back and carry out fine adjustments, because each loop will have a mutual effect on the others. If the valve topmeter or lockshield is fully open and design flow rate is not achieved adjustment on the pump speed may be necessary.
- If removed, refit all thermal actuators.
- With the electric power off, initially set all room thermostats 5°C above current room temperature so that they call for heat.
- Set the water temperature control at the lowest possible setting (between 25 - 30°C).
- Switch on the UFH system and ensure UFH pumps are running and all relevant valves are open. Remember that the thermal actuators take some time to operate and there will be a 2 – 4 minute wait before they are fully open.
- If the foregoing procedures have been completed satisfactory, turn all room thermostats down and wait for the system to stop.
- When the system has stopped, turn up one room thermostat at a time and wait for the system to start. Then confirm that the correct circuit (loop) actuator(s) has opened for that particular room and immediately turn the room thermostat down again in that room.
- Wait until the system has stopped and then repeat the process on a room by room basis, ensuring that every actuator is controlled by the correct thermostat and that each one switched the system on and off. This should also include the boiler being switched on and off, providing there are no other user circuits, e.g. radiators and/or hot water primary circuits, calling for heat.
- Run the system at the lowest possible setting for at least 3 days, before raising the water temperature to the maximum design temperature, which should be maintained for at least a further 4 days.
- Set the room thermostats to the required levels and programme the system controls to run as required.
- When running normally, the temperature difference between the manifold flow and return connections may be between 5-10°C. To help assess the situation strap on thermometers are available. Item number: 1002324

Final Loop Balancing

When the furnishings have been installed into the building and normal working conditions achieved, the loops may require a final balancing. The system should be run at design temperatures for at least one week before this is done.

General Commissioning

Commissioning is required to enable the system to meet its design specification and comply with the energy efficiency requirements of the Building Regulations. Commissioning should only be carried out after the system has been run gently for adequate time to allow floors to dry out (do not use the UFH to cure the screed). The building work should be complete with all external doors and windows closed.

All safety checks relating to the boiler operation, controls wiring and water connections should have been performed in accordance with manufacturers instructions and with statutory requirements before system commissioning is commenced.

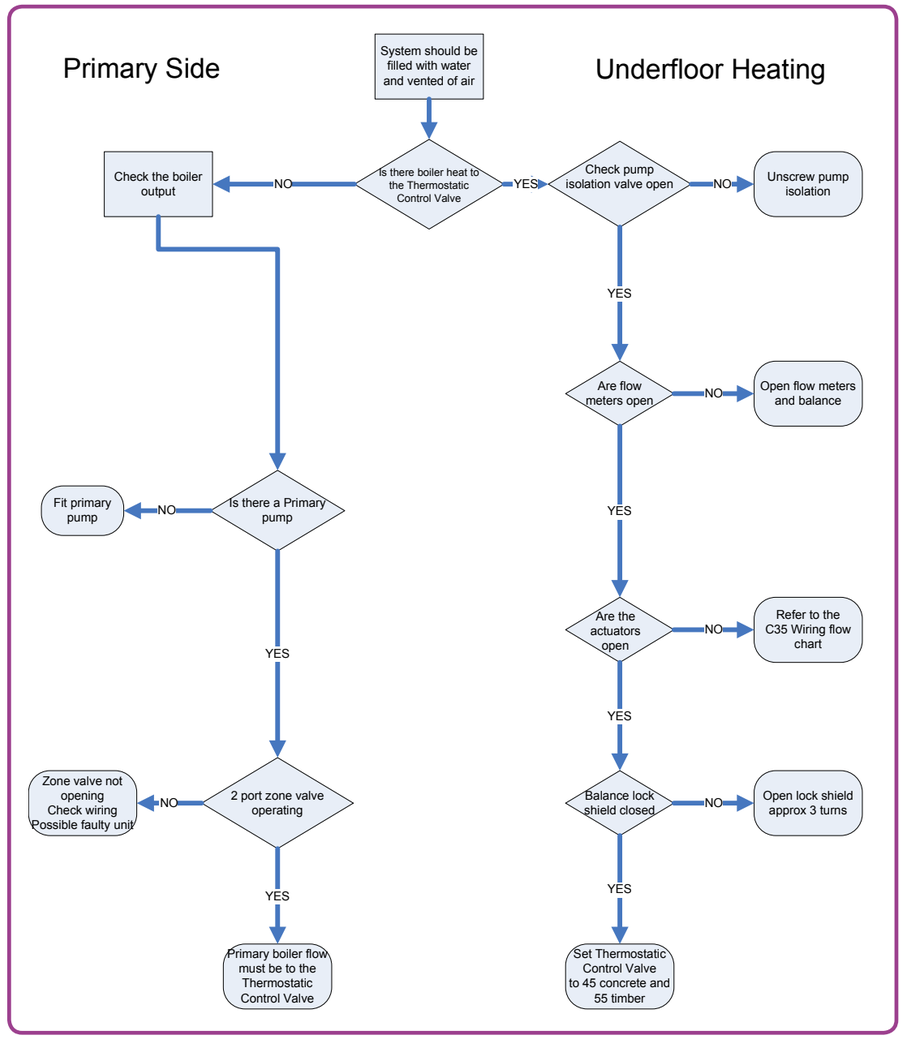
Table showing typical flow rates for 16mm MLCP

Loop Length (m)	Floor Heat Output (W/m²) 50	70	100
50	1.0 l/m	1.4 l/m	2.0 l/m
75	1.5 l/m	2.1 l/m	3.0 l/m

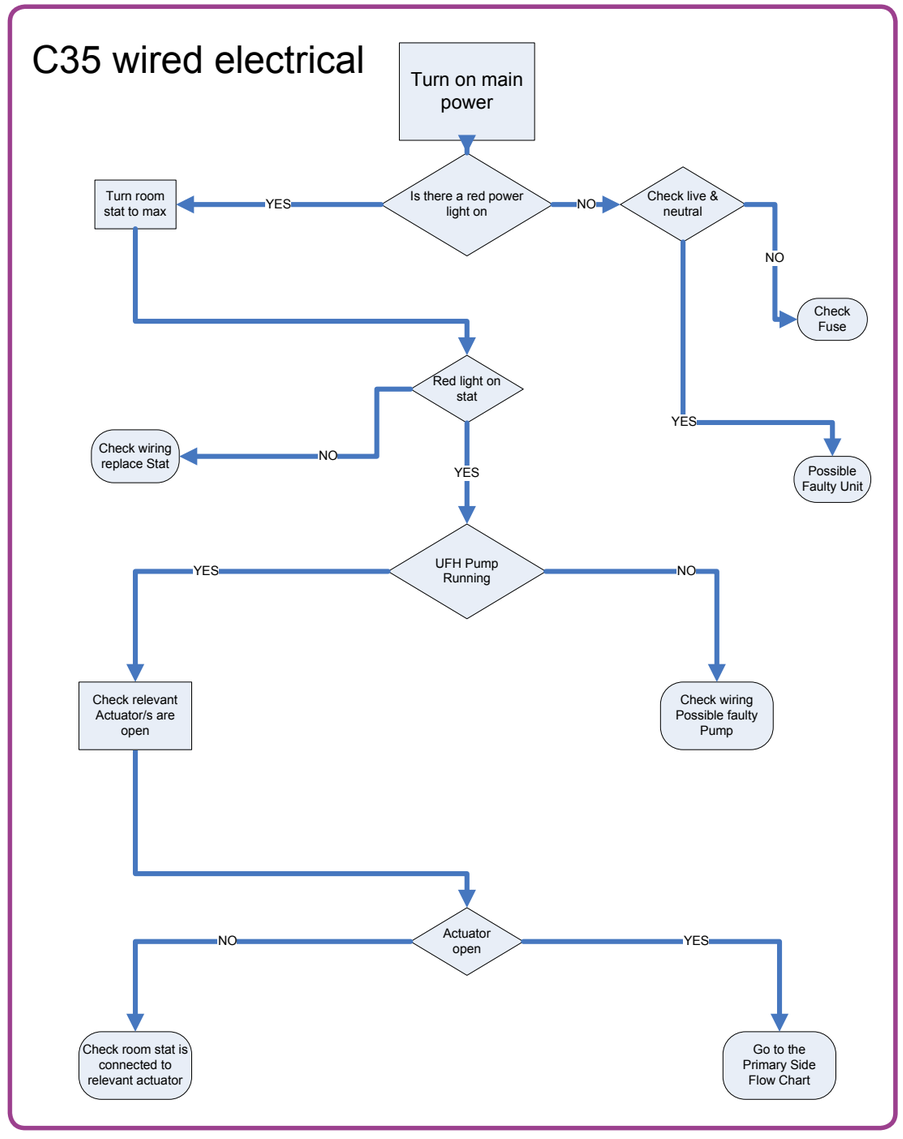
Note: Values based upon 16mm Uponor MLC pipes spaced at 200mm centres with a 7.5°C flow/return water temperature drop.

Fault Finding

The following flow chart shows general fault finding for Uponor One Pack UFH systems. The text that follows goes into more detail on problems that may be encountered.



Note: Some adjustment to the lockshield valve, to less or more than 3 turns from closed, may be required due to variations in installation conditions.



Fault Finding

Initial checks of the of the primary system

If the water arriving at the manifold is either cold or below the design temperature, check:

- the boiler is firing
- the primary pump is fitted
- the primary pump is working
- the boiler is of adequate size
- the primary pipework is sufficiently sized

Fault finding - Electrical Problems

In all cases where an electrical fault is reported it is always prudent to check the obvious before replacing components.

- Is there an electrical supply?
- Is it switched on?
- Are there any fuses that may have blown and need replacing?
- Are any components overloaded?
- Is everything wired correctly?

Under no circumstances replace a fuse with a higher rating than stated for that piece of equipment.

The following flow chart is designed to aid the installer in electrical fault finding when using a C-35 Controller in a multi zone system.

If a loop or loops fail to warm, when other zones are working correctly.

General things to look for:

- Check that the corresponding manifold valves are open
- Check that there is a demand from the corresponding room thermostat and/or the thermal actuator is open on demand.
- There may be an air lock in the loop, which will require purging. Either shut down all other loops by closing the valves at the manifold or turn down all other room thermostats. This will concentrate all pump pressure to the problem loop and may shift the air blockage. If all else fails the loop can be flushed through with high-pressure water following the instructions detailed in Filling, Venting and Pressure Testing.

If circulation is apparent but poor, it may be that the lockshield valve on the manifold requires adjustment.

Check the pump isolating valve on the V4 Compact Control Pack is open.

If a room fails to warm. General things to look for:

- That the room thermostat fitted is calling for heat and that the valve has opened using the visual window on the actuator.
- That the room thermostat is connected to and communicating to the correct actuator(s).
- That the room thermostats are not operating in temperature set-back mode.
- That the primary flow and return connections are installed correctly and not crossed over at the UFH manifold.
- That the primary water temperature is not too low. This needs to be at least 15°C higher than the UFH system water temperature.
- That the lockshield valve on the V4 Compact Control Pack is set correctly
- Thermal resistance of floor covering is not too high, as this could reduce the floor heat output.

If the system is too noisy. General things to look for:

- There is no air in the system
- That all pipes are firmly clipped in place and that the manifold brackets are tight.
- That excessive pressure from another circulator in the system is not interfering (hence the importance of having a primary bypass).

If the running costs are high. General things to look for:

- That the UFH system is correctly electrically connected to the boiler to prevent short cycling and to ensure that the boiler is not running when it is not required.
- That the room temperatures and thermostat settings are not too high (typical comfort temperatures are 20°C in living quarters and 18°C in bedrooms).
- For any open windows or draughts. It is not unknown for windows to be opened in cold weather, as the internal comfort remains constant with thermostatic controls.
- That the boiler is running correctly. Has it been serviced and/or commissioned by an approved engineer.
- That the floor downward losses are high due to inadequate level of floor insulation.

The system is losing pressure. General things to look for:

- If the system is losing pressure either during testing and/or after the system has been filled, but the flooring has not been laid, simple visual/manual checks around the manifold and along each loop of pipe should identify the problem area.
- If there are no clear visual signs, each loop/circuit may require a separate pressure test to identify the exact location.
- If the floor has been laid, identification of the fault can be traced through signs of a wet patch around the leak.

Obviously to make the repair, the floor will have to be raised. In screed floors, excavate carefully in the centre of

the wet patch.

- Any leaks on the manifold are generally due to the connection and any loose nuts and unions will require tightening.

Repairs:

To make a repair to the pipe, follow the processes below:

For 16mm MLC pipe Items required:

- 2 x compression adaptors, item no 1013805
- 1 x 15mm copper compression coupler, item no. 1002115
- Plastic pipe cutter
- Bevelling tool
- Denso tape

Repairing the pipe:

- Isolate the damaged pipe loop at the manifold.
- Cut out the damaged section of pipe.
- Prepare both ends of pipe using the bevelling tool and pipe cutter
- Slide the compression adaptor nut over each end of pipe, prior to inserting the insert/sleeve into each end.
- Offer both ends of pipe/inserts to the compression coupler and tighten both nuts.
- Ideally, the joint will require an inspection chamber in case further maintenance is required. However, in practice this is often not practical, and the fitting is wrapped in suitable tape before burying in the screed (ensure approval with the building inspector is sought prior to doing this).
- Pressure test
- Location of any repair joint should be recorded for future reference.

User Instructions

Single Zone Systems

TP 5000 Programmable Thermostat (USER adjustable)

The TP5000 combines the functions of a room thermostat and timer, allowing the user to program different temperatures for different times throughout the day.

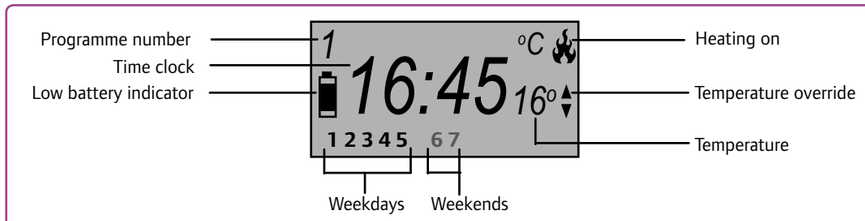
- Weekday/Weekend (5/2 day) Programming
- Up to 6 time & temperature events each day
- Battery powered (2 x AA/MN1500/LR6 Alkaline batteries)

For fuel efficiency, set the thermostat at the lowest temperature you find comfortable during the periods when the home is occupied. A useful fact to remember is:

If you turn down your thermostats by just 1oC you could make savings of around 8% on your energy bill.

When away from home and overnight, we recommend you program for a reduced temperature of around 4oC; commonly called temperature setback or Eco setting. A small temperature setback prevents the building from cooling down too much and allows the system to respond more quickly when higher temperatures are required.

Detailed instructions for programming and using your controls can be found in this document under Controls Setup and in the TP5000 instructions supplied with the unit.



Multi Zone Systems

The Uponor Control System Wired is a complete room-by-room control system for underfloor heating applications.

T-37 Thermostat (USER Adjustable)

The thermostat is the User's device for controlling the temperature within the room. It is important to set the temperatures as low as comfortable possible – **for every 1°C reduction in the room temperature you could save around 8% on your fuel costs** – typical set point temperatures are 20°C for living areas and 18°C for bedrooms.

I-35 Timer (USER Adjustable)

It is best to set the thermostats to your normal comfort setting and use the I-35 Timer to program for ON and Setback periods (referred to as ECO mode). During ON periods the thermostats will control to their temperature setting and during OFF periods the thermostats are usually wired for a setback temperature, which is 4°C below its set point; for example, a thermostat set to 20°C will be controlling to 16°C during the Timer OFF periods (ECO mode).

Optional Floor Sensor

The thermostat has the option of connecting a floor sensor. A floor sensor is used when control of a minimum or maximum floor temperature is desired and setting adjustment is via the potentiometer beneath the front cover. Any thermostat fitted with a floor sensor should be correctly configured and mode of operation explained by the installer.

Detailed instructions for programming and using your controls can be found in this document under Controls Setup and in the Uponor Control System Wired Operating Manual supplied with the unit.

Maintenance

The system is virtually maintenance free with the UFH pipes having a design life expectancy in excess of 50 years. However, propriety equipment such as pumps, valves and other electrical or mechanical components are all subject to wear and failure after prolonged use. Uponor strongly recommend you take out an annual maintenance agreement with a competent Heating Engineer/Plumber to cover your entire heating system.

Product Guarantee

25 years for pipe or fitting defects due to materials or manufacture when installed under normal conditions.

1 year from date of installation for electrical and mechanical products.

Full copy of Product Guarantee terms is available on request.

If you experience a problem with your system, you should initially make contact with the company, or person, responsible for the installation. And we suggest that you record the contact details below for future reference.

Installer Details

Installer Name: .....

Company (if applicable): .....

Address: .....

.....

.....

.....

.....

Tel Number: .....

Installation Completion Date: .....

Floor Coverings

Careful consideration should be given to the choice of floor finishes and coverings for floor heated rooms.

It is important to choose floor coverings that are suitable for use with UFH and ideally, to maximize the system energy efficiency, select materials with relatively low thermal resistances; heat needs to pass from the water in the embedded pipes upwards to the floor surface and then emit into the room itself, however if high resistance floor coverings are used a greater amount of heat will be contained in the floor structure and lost to ground or the room below.

UFH systems are designed to warm the upper surface of the floor to between 25 to 29°C when in operation.

Always check suitability of floor coverings with the flooring supplier before purchasing, with particular attention given to maximum temperature limits of flooring material and adhesives, together with any special installation requirements.

The floor covering thermal resistance should not exceed 1.5 m^2K/W; as per harmonized British and European Standard BS EN 1264.

Low resistance floor coverings (<= 0.5 m^2K/W thermal resistance):

Ceramic tiles, marble, slate, limestone, flagstones are all excellent materials for covering heated screed floors, especially in areas where heat losses may be excessive. Use a quality two part flexible adhesive, rated to at least 50°C, to continuously bond tiles/slabs to the floor substructure and flexible edge joints to avoid cracking.

Polished Screed, which is highly conductive and well suited for use with UFH.

Vinyl & Amtico, typically have a low thermal resistance, but tend to be limited to around 27°C maximum floor surface temperature. The vinyl tiles/sheets should be glued down with a higher temperature adhesive that is suitable for use with UFH. Use manufacturers' 2 part HT adhesive with Amtico floors. The heating should be switched off for 48 hours prior to installation and left off for another 48 hours after installation of the Vinyl floor.

Carpets (> 0.5 m^2K/W thermal resistance):

An underlay and carpet combined value of up to 2.5 TOG is acceptable when fitted onto a heated screed floor, although the underlay used should not exceed 1.0 TOG and must be suitable for use with UFH. Most underlay is of moulded waffle sponge rubber construction and is suitable, but avoid felts, heavy rubber crumbs and polyurethane underlay.

Recommended underlay includes:

- Duralay Heatflow by Interfloor (Tog = 0.75)
- Tredaire Technics 5 by Interfloor (Tog = 0.56)
- Tredaire Technics 6 by Interfloor (Tog = 0.66)
- Roma by Ball & Young (Tog = 0.8)

For timber suspended floors the additional resistance imposed by the floor boards need to be taken into account, therefore low TOG value carpets should be used.

Solid wood boards up to 25mm thick, engineered hardwood flooring up to 20mm thick and laminate boards are all compatible with UFH. For Solid wood it's important to maintain moisture content of about 10% when laying. When installing floating floors onto screed a thin low thermal resistance underlay is required, such as: 2.75mm thick Duralay Heatflow for laminate & solid wood floors (Tog = 0.35).

Notes:

Notes:

The information in this publication is correct at the time of going to press. Uponor reserves the right to alter specifications and operating parameters for all its Underfloor Heating & Plumbing Systems at any time as part of its policy of continuous product development.

1046443-V1-April 2009

Uponor Housing Solutions Ltd
Snapethorpe House
Rugby Road
Lutterworth
Leicestershire
LE17 4HN

E hsenquiries@uponor.co.uk
W www.uponorhousingsolutions.co.uk