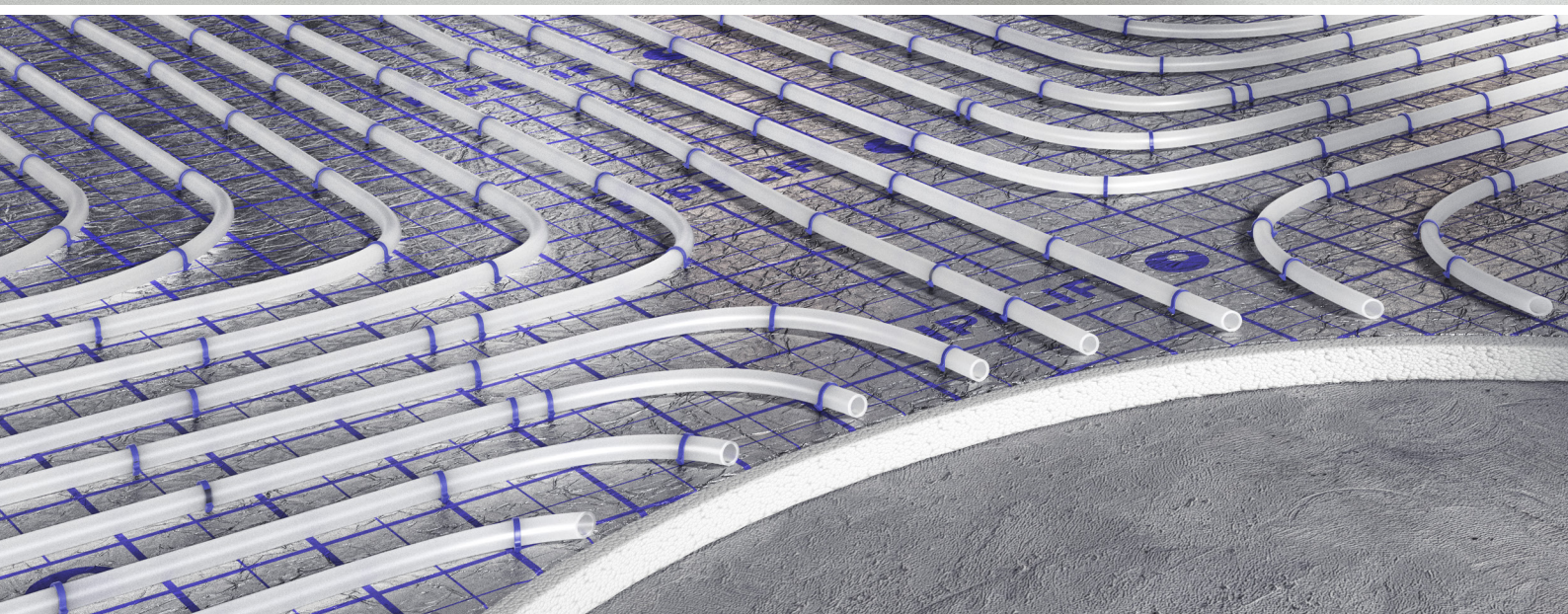


FLOORTHERM



Underfloor heating

Discover our full service portfolio online.

PIPELIFE 
always part of your life



It might not be possible to control outdoor weather conditions, however you can take complete control of the temperature indoors. With our complete range of surface heating and cooling pipes, fittings and accessories, you can make sure that the interior conditions of your home, office space or large-scale facility feel comfortable at all times, regardless of how hot or cold it feels outside. Whether you are planning a new construction or giving an old building an energy upgrade, our extensive range of flexible and robust surface heating and cooling solutions guarantee reliability and efficiency, even for the most challenging installations.

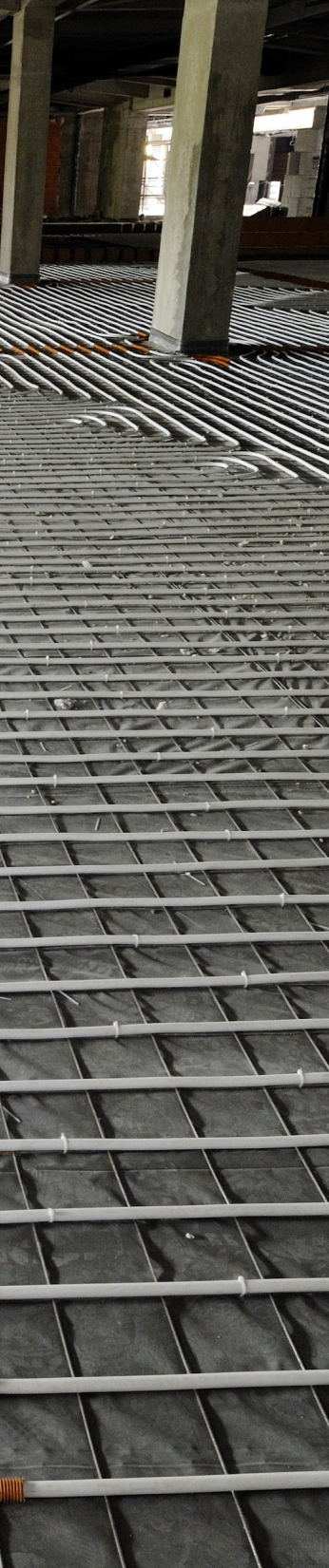


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1. INTRODUCTION

The comfort of radiant heating is not a modern invention. The floor has been used for this purpose for long and became a well proven, widely applied solution everywhere.

Advantages of surface heating

The energy released through radiation generates a pleasant temperature sensation. In order to reach the same comfort sensation as the temperature sensation caused by traditional heating methods a room temperature of even 2-3°C lower is enough in the case of surface heating. As a 1°C lower temperature means approximately 6% saving of the heating costs, so surface heating not only improves the temperature sensation but also but also saves money.

The low supply medium temperature can be generated through a heat pump or condensation boiler as well (the efficiency of these is bigger by lower supply temperature).

The less energy input – not to neglect – means a smaller environment load as well, which is a very important point of view nowadays.

The favorable effect of surface heating types on physiology is to be mentioned, too. By surface heating there is no dust stirred by the weak air flow generated through the convection of the radiator heating, and the air is not so “dry” either, because the air temperature being 2-3 grades lower is accompanied by a favorable (higher) relative humidity.

In the case of such a heating type the radiators also do not take away space (although, the wardrobes and other furniture objects have to be considered during planning of the surface heating as well).

To sum up, the definite advantages of surface heating are the following:

- pleasant temperature sensation
- efficient operation
- preserves the environment
- favorable effect on physiology

2. SCOPE OF APPLICATION

By underfloor heating the warm water flowing through the heating pipelines laid into the floor heats the structure of the floor, which releases the heat in the room evenly. Underfloor heating can be applied either in by itself or together, combined with other surface heating types (e.g. wall heating, ceiling heating). As the heating, respectively the cooling of the floor structure (concrete) takes a relatively long time, the system has great temperature inertia. That is why underfloor heating, combined with other surface heating types, is to be used as tempering heating. Now underfloor heating ensures a permanent heat import and pleasant, mild floor temperature, while the wall or ceiling heating covers the rest of the needed heat performance, and takes care of regulating the temperature relatively quickly and according to the demand (the heat inertia of the 2-3 cm thick plaster is small). In this case we talk about floor tempering, as the increased heating surface always results in lower supply water temperature, as well as floor temperature, eliminating the flutter of dust caused by underfloor heating. For the sake of healthcare the surface temperature of underfloor heating can be max. 29°C in the living zone (in the bathroom 33°C), and - if necessary - 35°C in the border zone (50 cm along the wall).

Important! Modern underfloor heatings work with low temperature water, resulting low (27-29°C) floor temperature in the living zone. This

low temperature difference between the room air and the floor surface does not cause dust circulation in the air (as it was in old days when floor was heated up much higher).

By the measuring the surface covered by furniture is subtracted from the available floor surface, or a 15-20% smaller surface is to be calculated with. For the layers applied by underfloor heating see Figure 7.

Advantages of underfloor heating:

- better temperature sensation
- heat energy saving (lower heating water average temperature)
- even surface temperature distribution
- flexible positioning of furniture and other contents

3. ELEMENTS OF THE UNDERFLOOR HEATING SYSTEM

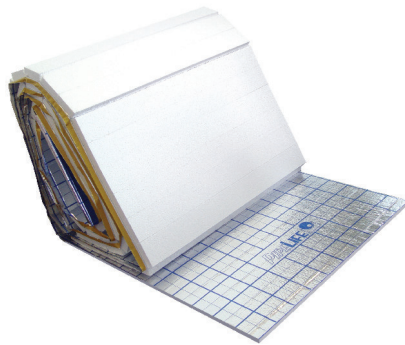
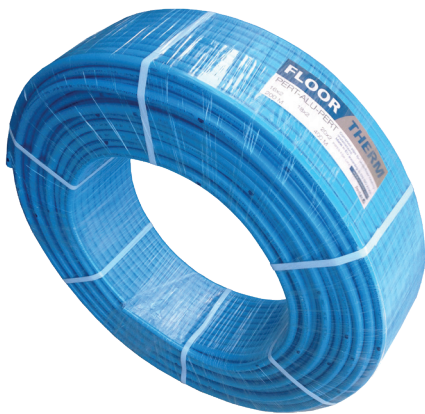
Underfloor heating pipes

Two types of pipes are available in the FLOORTHERM underfloor heating system. One of them is a PERT/AL/PERT (with aluminum layer) pipe of five layers and of type “M”, which is applicable to the usage in underfloor heating systems because of its flexibility, form stability and the oxygen tightness due to the aluminum layer. The other pipe type is PERT_EVOH-PERT. This pipe is type “P”, and has five layers as well. Here the pressure pipe is PERT (polyethylene with raised temperature resistance), combined with a plastic layer of EVOH (ethyl-vinyl-alcohol), protecting against oxygen, too. The closing layer made of EVOH significantly decreases the oxygen diffusion through the walls of the inner pipe, hindering effectively the oxidation processes in the heating circuit – so corrosion of the boiler or

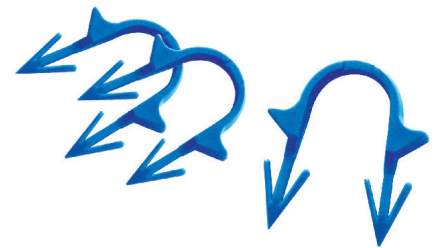
the radiators can be avoided. The EVOH layer is surrounded by a layer of the same material than the inner pipe, which protects it from external damage. The continuous contact between the layers is provided by a layer of glue. The PERT underfloor heating pipes have to be tempered below 10°C before laying, and they are not allowed to be laid below 5°C.



the need of bending and kneeling. The quantity and position of the clips are to be chosen by the pipe type and the designed pipe distance. Depending on the used pipe type fix the arc with double clips on both end when using PERT-EVOH-PERT pipe or just with one when using PERT-AL-PERT pipe. On straight sections clip the pipe on every half meter. (The aluminium layer pipe has more shape stability, hence needs less clips.) Due to the fiber glass reinforced material pulling out the clips in a non-destructive way is not possible.



for easier handling in blocks (packed in one).



Expansion insulation strip

It serves for absorption of thermal expansion of concrete along the wall, as well as for the inner dilatation of the surface. Its material is not absorbent, expanded polyethylene. Thickness 10 m, coil length 25 m. In the lower section of 30 mm of the total 130 mm high border strip there is a notch to make the placing easier.



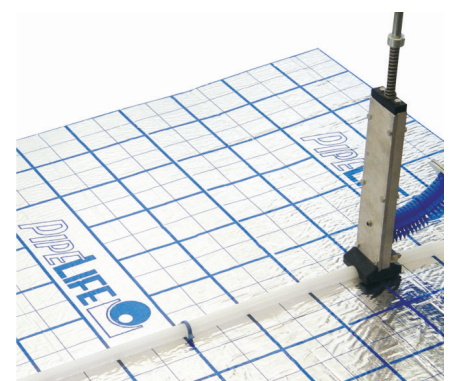
Underfloor heating insulation

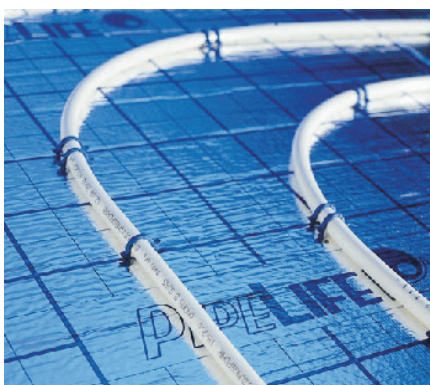
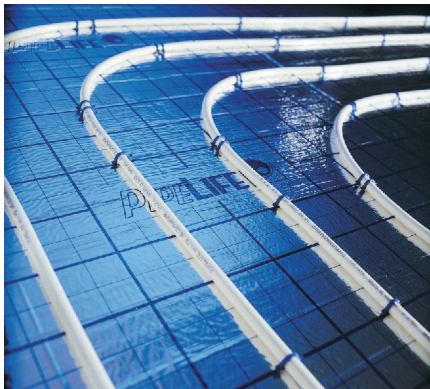
The FLOORTHERM (FT-ROLLE+) insulation is an EPS polystyrene floor insulation, slit into sections for better handling, 3 cm thick, with fiber glass reinforced heat mirror film on it. The insulation is provided with raster net marking of 5 cm, which allows the simple cut of the insulation, and quick laying of the heating pipes. It is recommended to make a prior design for the installation. The FLOORTHERM insulation has a 4 cm wide overlapping, so they can be easily fixed to each other. The EPS 100 insulation has up to 2,4 t/m2 load capacity and sectioned



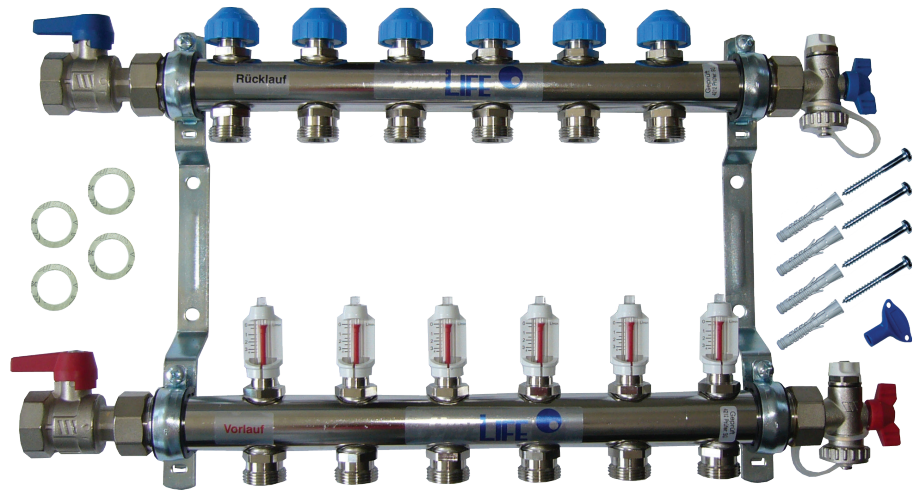
Tools and fixing materials

The underfloor heating pipe has to be fixed on the insulation with a fixing clip. A stapler gun is used for effort free work, quicker installation, eliminating





top of the regulating valve allows after the removal of the shut-off-cap the easy assembly of the thermo-electric actuator (not included in the package). Each manifold is made of stainless steel or brass and leaves the factory after a pressure test.



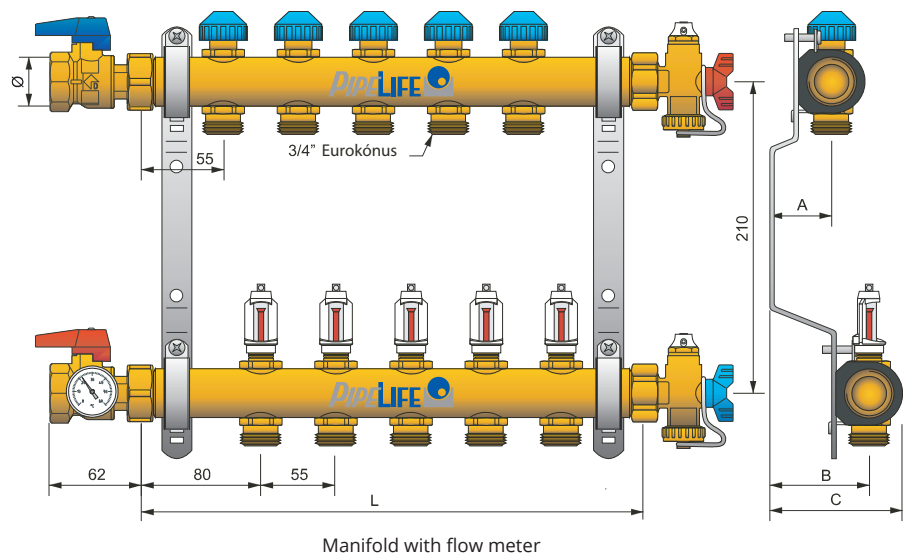
Manifold

The underfloor heating manifold with 2-12 circuits is completely equipped and ready for use.

Every 1" manifold body has 3/4" eurocone connecting ports for circuits.

This type contains the flow meters placed on supply side, which helps regulating the flow and comes with shut off valves embedded into flow meters with a revolutionary new solution. The combined regulating valve-closing armatures are positioned on the return side. The package also contains 1" ball valves as main shut off valves (2 ball valves) and the filling-draining-aerating end piece that can be mounted to the other end of the manifold. These are all mounted to the relevant bracket, facilitating immediate use. (Even screws, dowels and circuit marking labels are included in the box.)

The distance of the circuit connections are 50 mm. The M30x1,5 thread on the



The supply side can be placed at the top as well, depending on design.

Measure	1"
A [mm]	39
B [mm]	64
C [mm]	86

Number of circles	2	3	4	5	6	7	8	9	10	11	12
L [mm]	160	210	260	310	360	410	460	510	560	610	660

4. CONSTRUCTION PRINCIPLES

Floor insulation

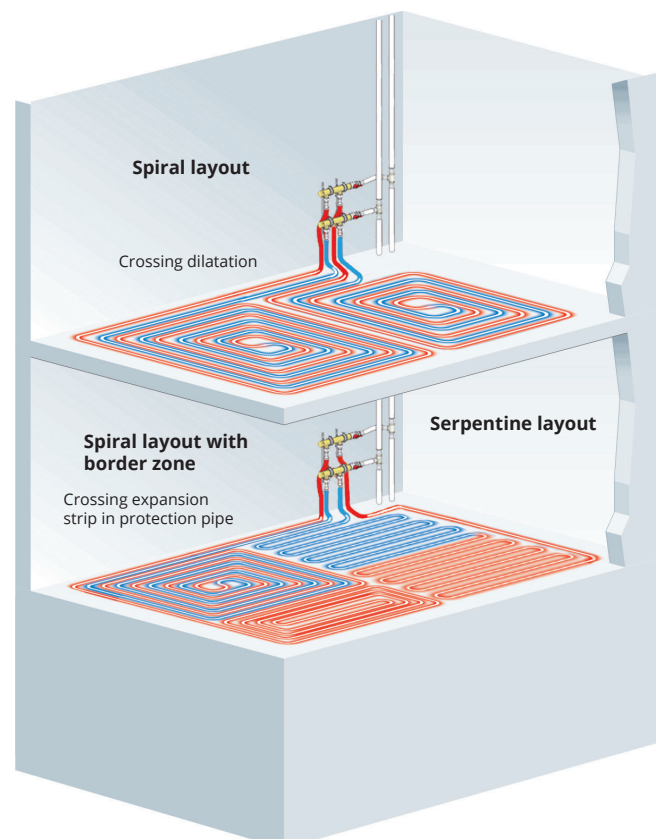
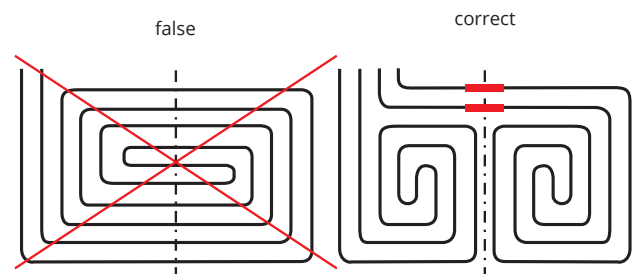
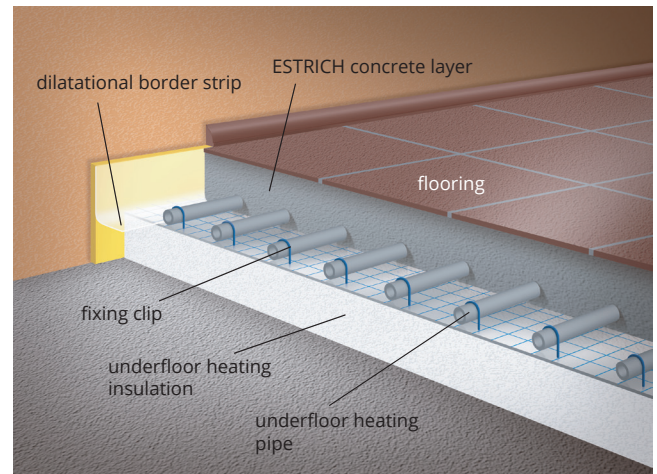
It is recommended to apply a polystyrene layer of 4-5 cm thickness for floor insulation if heated room below, and 8-10 cm if not heated room below.

Expansion clearances:

- use expansion insulation strips for compensating thermal expansion of the floor (generated always on the circumference of the floor)
- a significant thermal expansion in the heating zones is generated in the following cases:
- area of the zone is greater than 40 m²
- relation of zone length and width is greater than 2
- zone length is more than 8 m
- the zone goes through openings (e.g. door)
- The harmful impacts of thermal expansion can be avoided by constructing expansion zones. Where underfloor heating pipes cross dilatation, protection pipes have to be used in both directions, in length of 10-10 cm.

Layout of heating circuit

- layout in spiral form – equal heat division on the complete heating surface
- layout in serpentine (or snake) form – unequal heat division – not recommended
- layout in spiral form with border zone – if higher temperature is needed in border zone (e.g. by outer walls)
- applying smaller spacing along the wall to reach higher temperatures (than by border zone)
- it is desirable to have a maximum pipe length of 100 m per circuit, but in no case should it exceed 120 m.



Concrete floor with fluxing additives

The concrete floor above the pipe should be at least 5 cm thick. It is recommended to apply a cement smoothing layer – recommended cement content is 300-350 kg/m³, water/concrete ratio is 0,45; particle dimension of gravel: less than 8 mm. In order to improve the plasticity and thermo-technical features, fluxing additive to the concrete mixture is advisable. By preparing the concrete mixture the system has to be filled up with water, and kept under 0,3 MPa (3 bar) pressure.

Pressure test and installation

The pressure test of the underfloor heating has to be accomplished before placing the concrete on the pipes, with a pressure of 6 bar, 24 hours long. Leave the concrete to solidify and dry under natural circumstances (3-4 weeks), then start the first heating with 25°C of water temperature. Keep this temperature up for 3 days, and then increase it daily with 5°C, until the biggest working temperature is reached.

5. INSTALLATION

Mount the expansion insulation strips along the walls (they are in "L" form breakable and can be set on the base). Then roll out the insulations, fix them to each other with adhesive tape at the overlappings.



At the wall, floor insulation should be placed on the "bottom" part of the dilatation strip.

Laying the pipes is possible in two layouts:

serpentine (snake line) or spiral (because of equal surface temperature the spiral layout is recommended).

Fasten the fixing clips on the straight sections every half meter, by the curves – at their beginnings and ends – double (tightly next to each other).

The pipes crossing the dilatation should be lead through the expansion clearance in a protection pipe so the length of the protection pipe is at least 10 cm on both sides. For standing up with pipe to the manifold, bend supports should be used.



The pipes are connected to the flow metered manifold with eurocone connectors.

By keeping the rules of the pressure test and concreting under pressure, there has to be at least 5 cm concrete covering the pipes, counting from their upper edges.

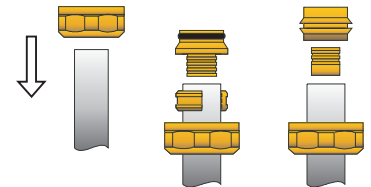
Set the designed flow on each circuit on the return side regulation valve with the blue wrench key (provided in the box) and read the actual value on supply side flowmeter.

Connection to the manifold

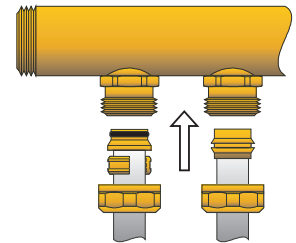
The end of each manifold has an outer thread of 1", where the ball valves and the filling-draining-aerating valves are connected. These are industrial armatures and can be mounted with the flat sealing attached to the sleeve nuts. We can only guarantee failure-free work in case of using such armatures.

Connection with pipes

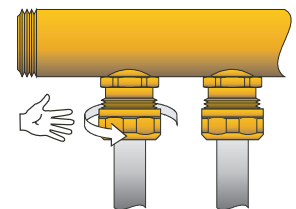
1. Cut the underfloor heating pipe perpendicularly, cut the burrs and calibrate it. Pull the sleeve nut onto the pipe. 2. Pull the clamp ring onto the pipe, and stick the conical connector into the pipe.



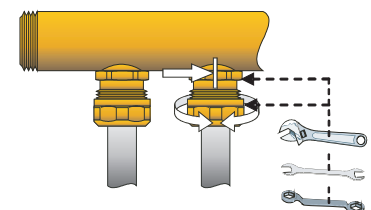
2. Push the mounted pipe end into the connector with thread.



3. Screw the sleeve nut onto it manually. Push the pipe in until the block.

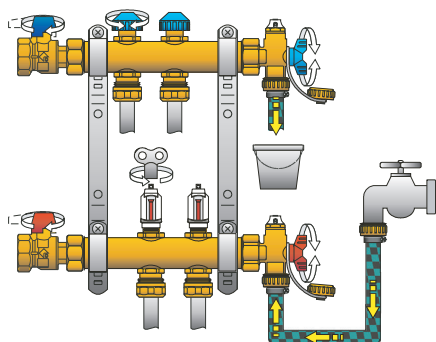


5. Hold against it with a 24 mm open-end wrench by the connection collar, and fasten the sleeve nut with a 30 mm open-end wrench (with a torque of approximately 25-30Nm).



Washing through and filling the heating circuits

For the filling and washing through connect a hose to the 1/2" or 3/4" thread of the filling cock. Open / close the filling cock with the help of the arm or the square axis. Each and every circuit has to be rinsed separately. Avoid too great a pressure, by keeping the draining cock open. The manifold can only be used with water.



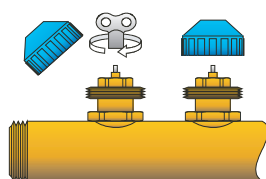
Close the ball valves in the main circuit. Close all the regulating valves with the help of the protection caps. Connect the hose to the filling and draining cock. The draining tap of the return circuit should be open! All the flow meters should be completely open! Close the regulating valves of the circuits in the return line, and leave only the one completely open that you wish to rinse! Rinse each one of the circuits separately with clear water. Dismount the hoses from the cocks after the filling and rinsing.

The heating circuits can be marked easily with the stickers attached to the manifold. This can ensure that the circuits of the relevant rooms will be connected to the relevant place on the manifold. The manifold has undergone a pressure test in the producing factory, and its function is controlled. The value of the test pressure is 6 bar.

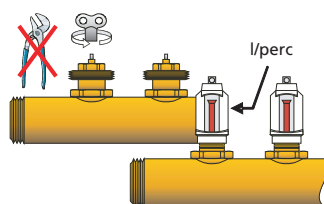
Adjusting the flow

The aim is to let heating water of the planned quantity (l/min) into each underfloor heating circuit. This is typically different for each circuit.

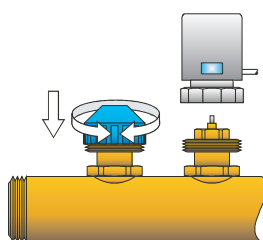
1. Screw off the plastic cap, and close the regulating valve rotating it to the right with the help of an adjusting wrench (closed = smallest quantity).



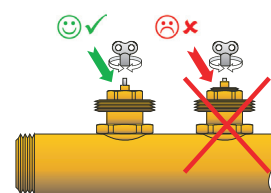
2. Adjust the desired flow by rotating the adjusting wrench to the left. Read the displayed value from the flow meter. After setting every circuit, check the values and adjust them, if still needed.



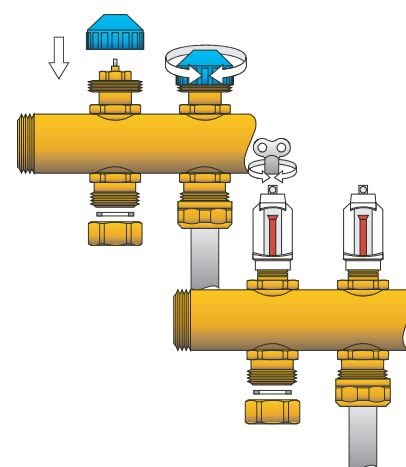
3. After the setting turn back the protection cap or mount the actuator in order to protect the valves from contamination or unintended misadjusting.



4. The thick thread on the setting spindle of the regulating valve should not be visible after the upper plane of the hexa-hedral part. As compared to the completely closed position, the valve is in a completely open position after 2,5-3 left turns.



5. The return regulating valves can be closed, e.g. for the sake of filling and rinsing the circuits. Here the plastic cap has to be rotated clockwise for closing. The flow meters can be closed with the help of the adjusting wrench. These meters are not capable of regulating.



For the permanent closure of a circuit always use a blind cap with 3/4" thread and sealing.

By using an actuator, the adjusting spindle should be open for a 0,5-1 turn, independent from the adjustable flow. This way the room temperature will be set by the actuator.

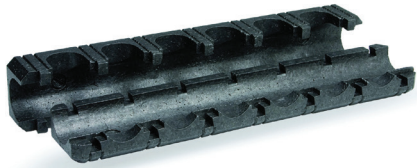
Pressure test

After the whole system is securely pressed, a pressure test to ensure tightness of the complete system has to be carried out. For this, each circuit has to be separately filled with water and afterwards bled to release the air from the system. The test pressure is twice the operating pressure but at least 5 bars. Maximum allowed pressure drop after 24 hours is 0.2 bars. In case of bigger deviation, it is very likely that there is an untight connection in the system and the leak has to be localized and repaired immediately.

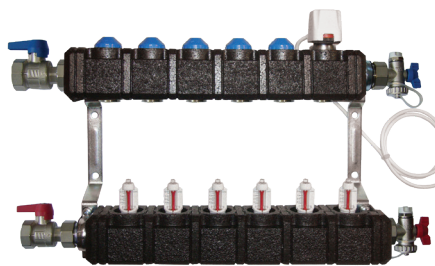
After the pressure test, the pressure in the system shall be lowered to and maintained at the planned operating pressure, as plastering should be carried out when pipes are pressurized. This way, the pipes align to their final position and reach their operating size as they extend (very slightly) when pressurized.

Thermal insulation of pipes and fittings

For heat insulation preferably choose closed cell material, as this type of insulation will not take up water from the fresh concrete covering it and thus will keep its insulating capacity. Fittings should be covered all over with self adhesive insulating strips. In addition to thermal insulation, this covering also provides mechanical protection for the fittings, needed during concreting.



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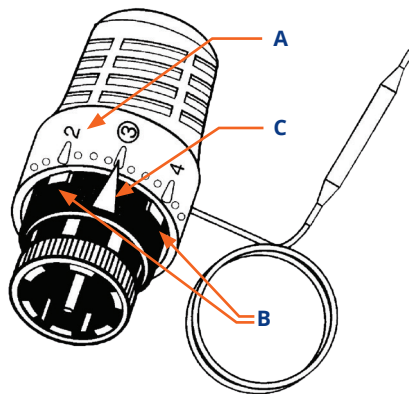


23.

The surface of the manifold is also exposed to heat loss so it should be insulated as well. This can be carried out easily with the help of a closed cell foam insulation panel that can be cut to the desired size and snapped onto the manifold.

Adjustment of supply temperature

The flow temperature may be adjusted gradually between 20 to 70°C (68 to 158°F). The regulating hand wheel of the thermostat is supplied with a scale 1-7 (A). Please see the temperatures set on the scale in the table below:



1	2	3	4	5	6	7
20°C	28°C	37°C	45°C	53°C	62°C	70°C
68°F	82.4°F	98.6°F	113°F	127.4°F	143.6°F	158°F

Limitation of the floor heating flow temperature

As a rule, the flow temperature in floor heating systems should not be higher than 50°C (120°F). However, the data of the floor heating system can deviate and should be considered. The flow temperature of the system is often lower than the adjustable maximum value of the thermostat. To avoid

damages in the floor structure caused by excess temperature, the flow temperature set value may be defined and limited on the thermostatic head.

Therefore, it is most important to set the determined value and check it by means of thermometer during operation of the floor heating system. If it is correct, place the blocking elements (B) right before and behind the pointer (C).

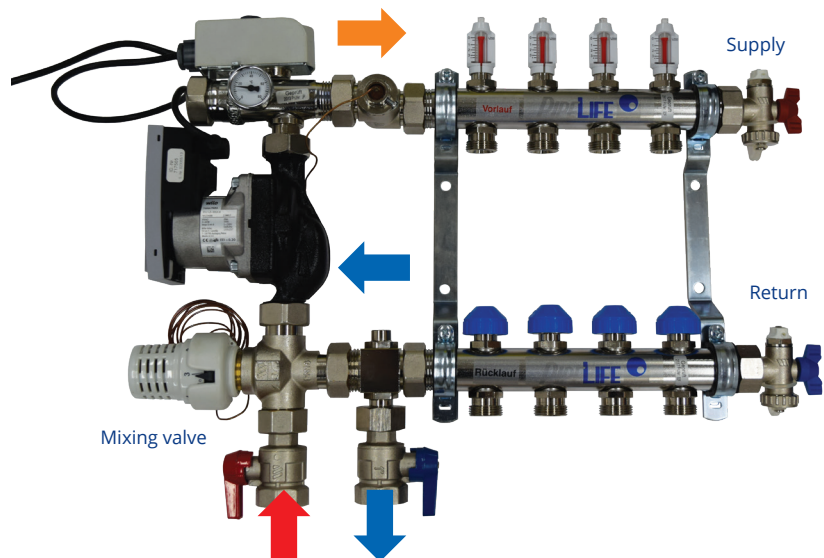
Furthermore the temperature set value can be protected against inadvertent manipulation using the tamper-proof cover.

Mode of operation of the control unit

The mixing valve is designed as a proportional controller and operates without auxiliary energy. The thermostat situated in the supply is in continuous contact with the flow temperature at all times.

Deviations from the target value result in an immediate change in valve stroke and, accordingly, a change in the volume of the hot water injected from the boiler circuit.

The injected water volume is mixed with the return water from the manifold at the inlet to the circulation pump and, in this way, keeps the flow temperature constant within a narrow temperature range.



6. REGULATION

Depending on the complexity of regulation requirements, Radopress Watt offers several solution options including the important possibility of optimising related costs.

- wall/ceiling cooling and heating, wired
- wall/ceiling cooling and heating, wireless

Generally speaking, regulation of a heating system is simpler and less expensive than that of cooling systems which require sensor(s) to continuously monitor the air's relative humidity, embedded into a suitable regulation environment. The following sections present the regulation options offered by Radopress Watt.

Elements of the regulation system

All heating installations require an accurate and properly functioning regulator system that allows settings for thermal comfort and energy efficient operation according to the relevant construction regulations. To get the most out of a heating system, we ideally recommend independent regulation for each room. The valves of the specific heating circuits are opened or closed by a thermoelectric actuator controlled by the room thermostat. The room thermostat takes into account the total amount of heat generated in the room, including sunshine. From boiler control to air temperature regulation in the room and radio frequency versions, several different types of regulation devices are available. Some thermostats offer special options such as night program, weekly program, exterior installation, etc. The system also includes a connecting box that provides connections between the different components of the regulation.

Description of control elements

Valve actuator

The thermoelectric valve actuator opens or closes the control valves of the heating circuits depending on the heating level set by the user. Using its M30x1.5 thread, it can be mounted directly on the control valves of the manifold. The currently opened or closed position can be seen through a small sight glass. The actuator operated with 230 V, with a 2-core cable is IP54 protected, and is built with approx. 1 m cable, and can be used in ambient temperatures of up to 50°C. It is closed by default.



Electronic room thermostat (with dial)

The room thermostat is used to control the room temperature. Adjustable temperature range: 5 to 30°C. Sensitivity: 0.5 K, noiseless triac switching, to be used at an ambient temperature of max. 50°C. Output power: 15 W, IP protection: 30. Available in simple or 3 mode version.



Electronic room thermostat with LCD display and floor sensor

Electronic room thermostat with 3 detecting methods:

- with room temperature sensor
- with floor temperature sensor
- with room temperature sensor and floor temperature limiter

The floor temperature limitation can be set in the range of 10 to 40°C and is delivered with a 3 m cable.

Adjustable temperature range: 5 to 30°C. Sensitivity: 0.5 K, noiseless triac switching, to be used at an ambient temperature of max. 50°C. Output power: 15 W, IP protection: 30. Normal, reduced or timer modes. (Only for heating)



Room thermostat with weekly program

Electronic thermostat that can be programmed separately for each day of the week, with LCD screen, 3 x 1.5 V (AA) batteries and low battery display. Adjustable temperature range: 5 to 35°C. Normal and reduced mode. 9 selectable basic programs, 4 user defined programs, antifreeze mode, holiday mode, code protection, reset function. Output signal: 8 A – 50 V AC, IP protection: 30.



Electronic Room Thermostat with cover preventing unauthorised adjustment

A closed panel protects the front plate of the thermostat from unauthorised access. Electronic room thermostat with 3 detecting methods:

- with room temperature sensor
- with floor temperature sensor
- with room temperature sensor and floor temperature limiter

The floor temperature limitation can be set in the range of 10 to 40°C and is delivered with a 3 m cable. Adjustable temperature range: 5 to 30°C. Sensitivity: 0.5 K, noiseless triac switching, to be used in an ambient temperature of max. 50°C. Output power: 15 W, IP protection: 30. Normal, reduced or timer modes (only for heating).



Connecting box Master

It provides connection between the different control elements (thermostat, valve actuator or controller). Proportional integral regulation. It controls 6 zones altogether with up to 2 valve actuators per zone. 6 additional zones can be added as an extension. The box should be mounted on the wall, near the manifold. To be used in an ambient temperature of max. 50°C, having IP30 protection, pump relay output (to control switching on and off the pump): 8A.



Connecting box extender

To be used together with the Master junction box with single-handed attachment. It controls 6 zones altogether with up to 2 valve actuators per zone. To be used in an ambient temperature of max. 50°C, having IP30 protection.



Program controller

To be used together with the Master junction box. Allows complex multi-channel programming. Using this unit means you can choose the simplest of thermostats as most of the functions are provided by the controller. 7-day programming capability, autonomous power source for 3 hours in case of power outage. To be used in an ambient temperature of max. 50°C, having IP30 protection. The program set on the controller overrides the program set on the room thermostat (if suitable).



Wireless (RF) control elements

As radio frequency thermostats and control elements do not require any cables between the room thermostat and the controller/junction box, they can be freely installed anywhere (respecting the rules of positioning) even in a later phase. Each room thermostat communicates with the RF junction box/controller at a different frequency. Their range is approx. 50 m (in open space) and they receive signals through an antenna. They are triggered by the radio signal coming from the thermostat to open or close the valve actuators (or to start or stop the pump) that are cable connected (similarly to wired versions) so they also have to be installed near the manifold.

Wireless room thermostat with LCD display

Adjustable temperature range: 5 to 30°C. Sensitivity: 0.3K, to be used in an ambient temperature of max. 50°C. Range: 50 m (in open space), frequency: 433 MHz. Works with 2 AAA batteries. (For heating and cooling).



Wireless room thermostat with weekly program

Electronic thermostat that can be programmed separately for each day of the week, with LCD screen, 3x1.5V (AA) batteries and low battery display. Adjustable temperature range: 5 to 35°C. Normal and reduced mode. 9 selectable basic programs, 4 user defined programs, antifreeze mode, holiday mode, code protection, reset function. Output signal: 8 A-50V AC, IP protection: 30.

Range: 40 m (in open space), frequency: 433 MHz. Delivered with RF receiver.



RF-Connecting box- Master with Receiver and Timer

Wireless connecting box controlling 6 zones, 2 actuators per zone. Can be extended with 6 additional zones. To be mounted on the wall, near the manifold. Can be used in an environment of max. 50°C, has a protection of IP 30, pump relay output 8A (for controlling the pump switching on and off). The radio signal is received by the controller with an external antenna. There is a controller with radio frequency, programmable for every day of the week. LED display in two colors for easy radio and program setup, with an own power source enough for 3 hours. Adjustable temperature 5-35°C. Normal and decreased mode of operation. 9 selectable basic programs, 12 user programs, frost-free operating mode, holiday operating mode, protectable with code, reset function. Output signal 8A-50VAC, IP protection 30. Frequency 433 MHz, open space range 50 m. Suitable for heating and cooling.



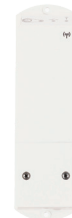
RF-Connecting box - Slave

6-zone extension for RP-CBSRF; extends Connecting box – Master with 6 zones, 2 actuators per zone. Operation only when used with RF-Connecting box. Can be used in an environment of max. 50°C, has a protection of IP 30. Operating temperature 0-50°C, IP 30, for normally open (NO) or normally closed (NC) actuators.



RF Receiver for one zone

Control unit to be used with Connecting box - master RP-CBM. Normal and decreased mode of operation. 9 selectable basic programs, 12 user programs, frost-free operating mode, holiday operating mode, protectable with code, reset function.



EASY mixing modul

Responsible for providing the optimal supply water temperature to all circuits by controlling mixing valve actuator. LCD display for configuring connected 3-point actuator and operating modes by enclosed manual.

Inputs: outside temperature sensor, supply temperature sensor, room temperature and relative humidity sensor, voltage free connection for receiving pump operation signal and heating/cooling change over signal.

Outputs: thermoelectric actuators 24 or 230 V, mixing valve actuator

Features: heat curves for heating and cooling, optional 0-10 V or 3-point actuator, Power supply: 12 V

Compatible with 24 V and 230 V thermoelectric actuator



REGULATING UNDERFLOOR HEATING

Underfloor heating as an independent heating

For regulating rooms independently choose any of the thermostats listed in the catalogue. Thermostats send signals to connecting box placed near the manifold, which transmits it to the thermoelectric actuators. These open and close valves belong to the heating circuits. So the circuits open or close independently from each other according to the heating demand based on the signals coming in from the thermostats in the single rooms. If there is one actuator opened the connection box switches the boiler and the circulating pump on and off.

If you wish to control the function of a single room according to a program, choose room thermostats capable

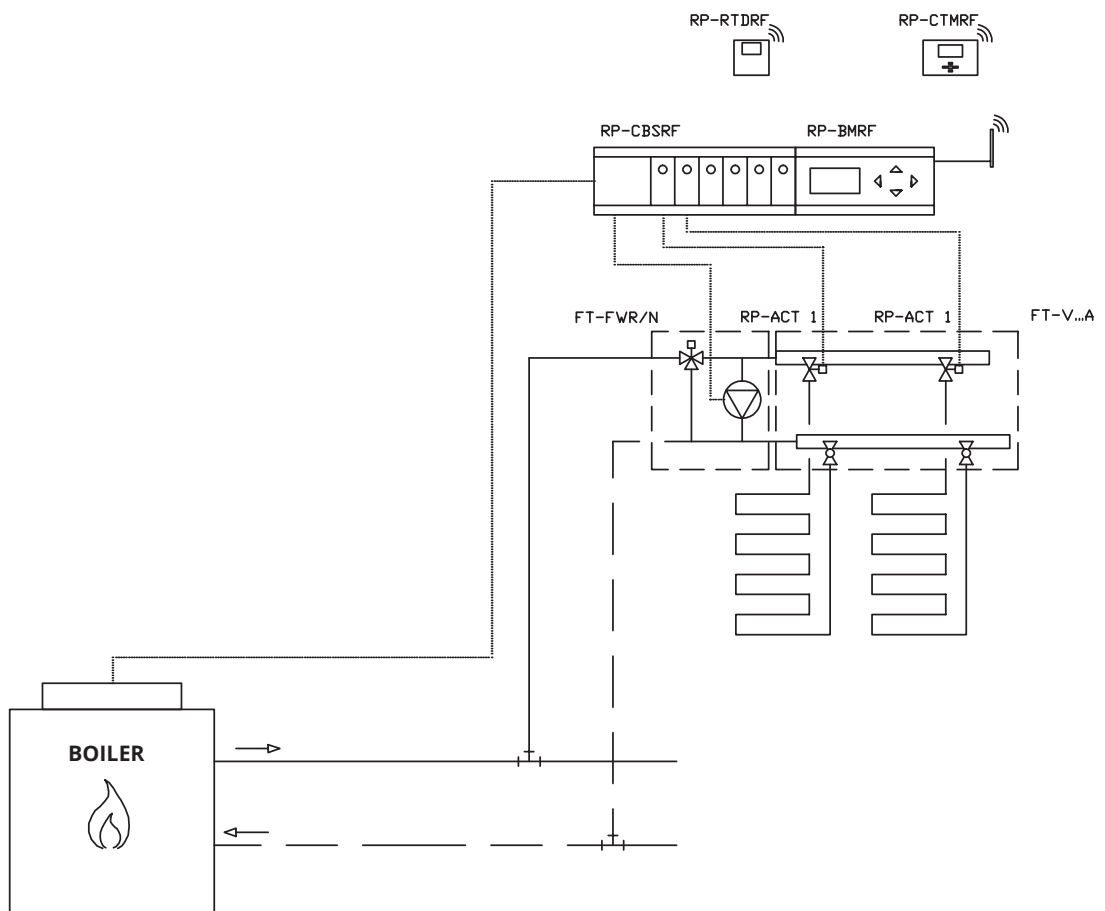
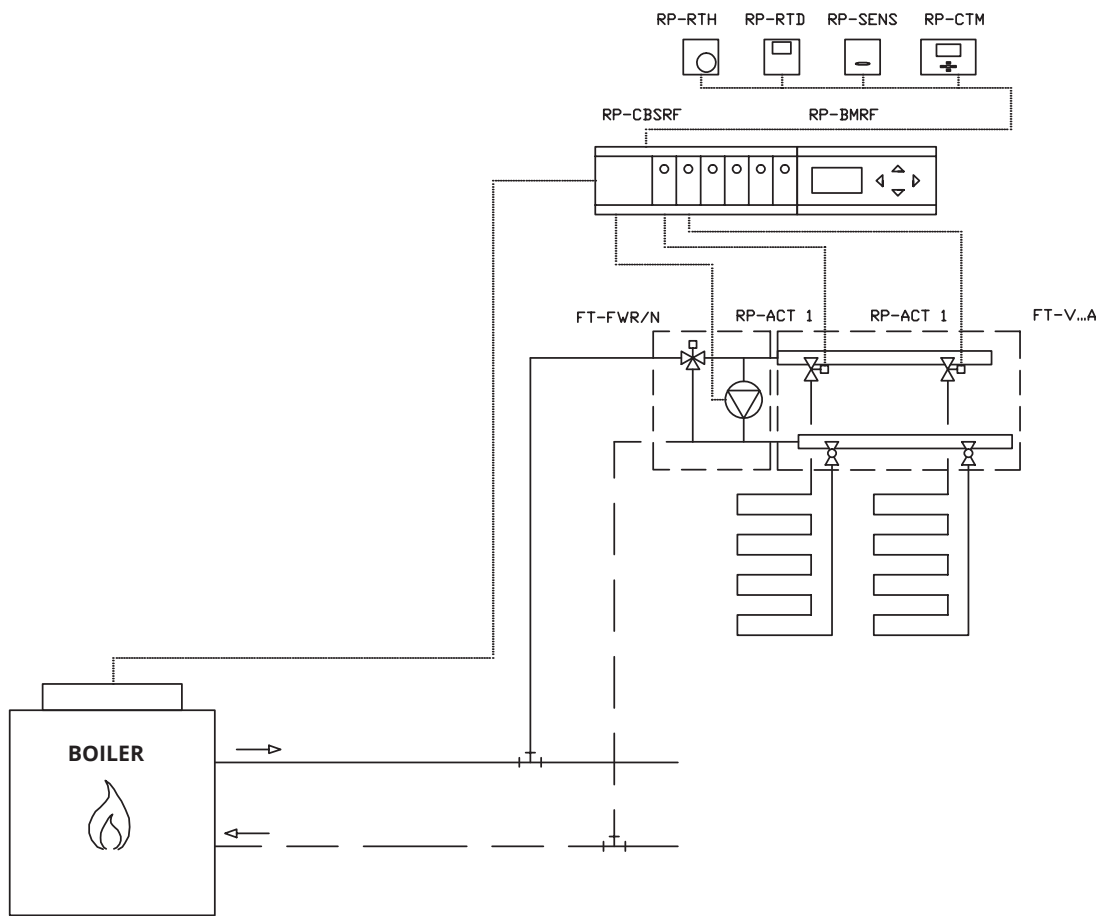
of this, or a timer with connection box, where every room parameter can be adjusted. In case of using a timer there is no need for "smart" room thermostats. Should you apply thermostats functioning according to a program, timer (attached to connecting box) will overwrite it, i.e. the control function will take place according to the program set in the timer.

The use of timer allows of course a number of other system parameter adjustments optimizing heating system's operation.

Besides the facts described previously, the hydraulic system includes a mixing unit (FT-FWR/N), that keeps constant underfloor heating supply water temperature regardless of the primary water temperature from boiler. The

mixing unit is simply connected to the manifold with a sleeve nut and contains the circulating pump and the temperature limiter.

In the following schematic drawings a wired regulating system and a wireless are shown. (Next to the regulating elements the product codes can be seen necessary for the solution. Different room thermostats represent different choices for particular room thermostats.)



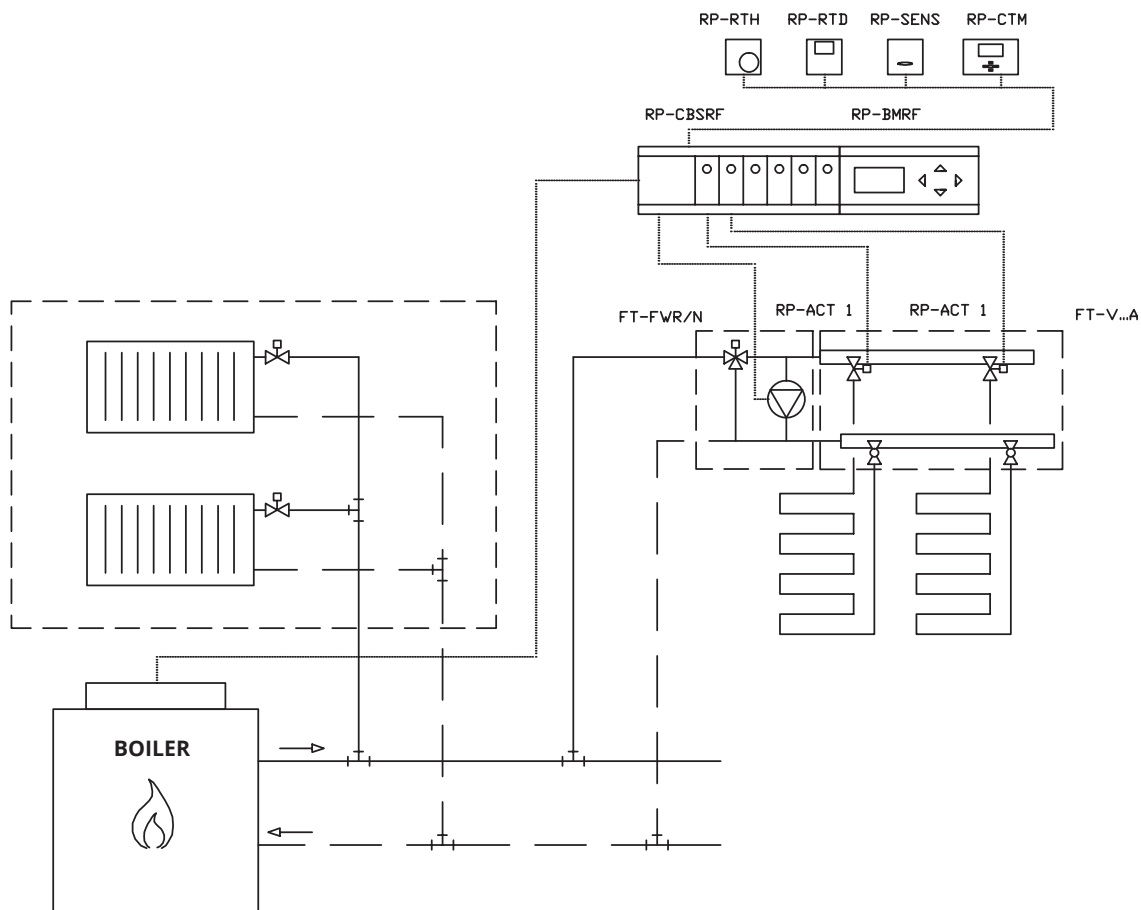
Underfloor heating combined with radiator heating

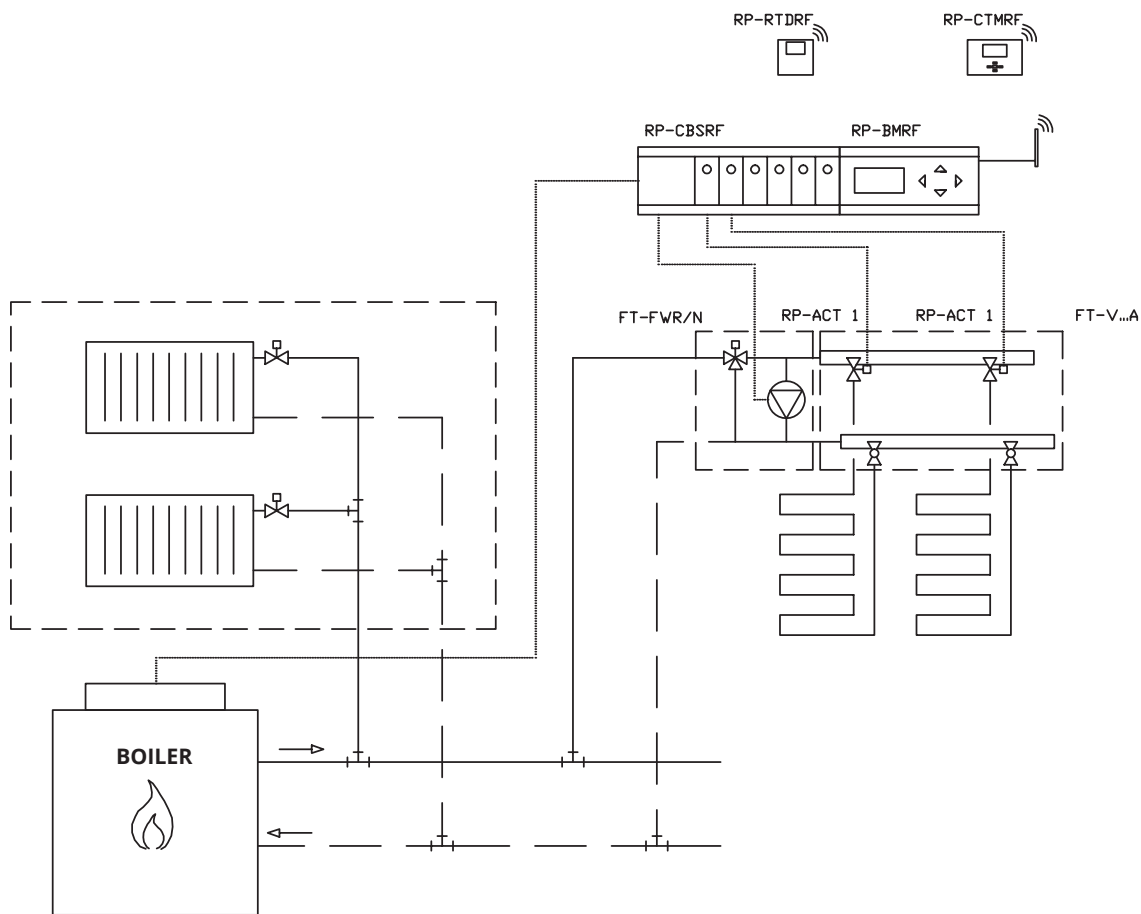
In mixed heating system, radiators with smaller heat inertia make underfloor heating more flexible, especially in transition periods when satisfying regulation is difficult. (If it is still cold at night, but warm during the day, overheating can happen.) Due to the facts mentioned above, for those who choose mixed heating method it is recommended to cover 30-40% of the heat demand with radiator heating.

The regulation does not differ from previously mentioned ones. If the heat source (boiler) produces water of high temperature necessary for the radiators, then the temperature step is bigger between the primary and secondary (mixed) circuits.

Note: The radiators can be fed also by a supply line of low temperature, but in this case ones with bigger dimensions have to be chosen (according to calculation).

In the following schematic drawings a wired regulating system and a wireless system are shown.





7. WARRANTY

According to joint decree No. 11/1985 (VI.22.) of ÉVM-IpM-KM-MÉN-BKM, Pipelife Hungária Műanyagipari Kft. provides a statutory warranty of 10 years on all components of the FLOORTHERM system. According to Act X of 1993 on product responsibility, the company recovers damages resulting from justified other defects of any system components for a period of 10 years. This warranty is valid for FLOORTHERM systems that were constructed using FLOORTHERM system components, i.e. exclusively FLOORTHERM pipes and fittings, and only if the user followed storage and installation requirements, as well as relevant technical regulations and standards. To validate this warranty, please send us a copy of the report on the pressure test subsequent to installation, right after it was carried out e-mail (radopress@pipelife.com).

8. HANDLING AND STORING

- Components of the RADOPRESS WATT system should not be stored outdoors or exposed to continuous direct sunlight and climatic factors. System components should be deposited in a storage room, in a dry and dust free environment.
- The system should not be stored together with organic solvents, products containing solvents or other chemicals, unless inactivity of the stored product (gasoline, oils, chemicals containing sulphur, etc.) is guaranteed.
- System components should not be exposed to heat radiation; a minimum distance of 1 m should be guaranteed from radiators with a temperature of 40°C or higher.
- Pipes should be stored in the coils or cardboard boxes used for delivery.
- Storage temperature should not exceed +40°C.
- The pipes should not be placed on

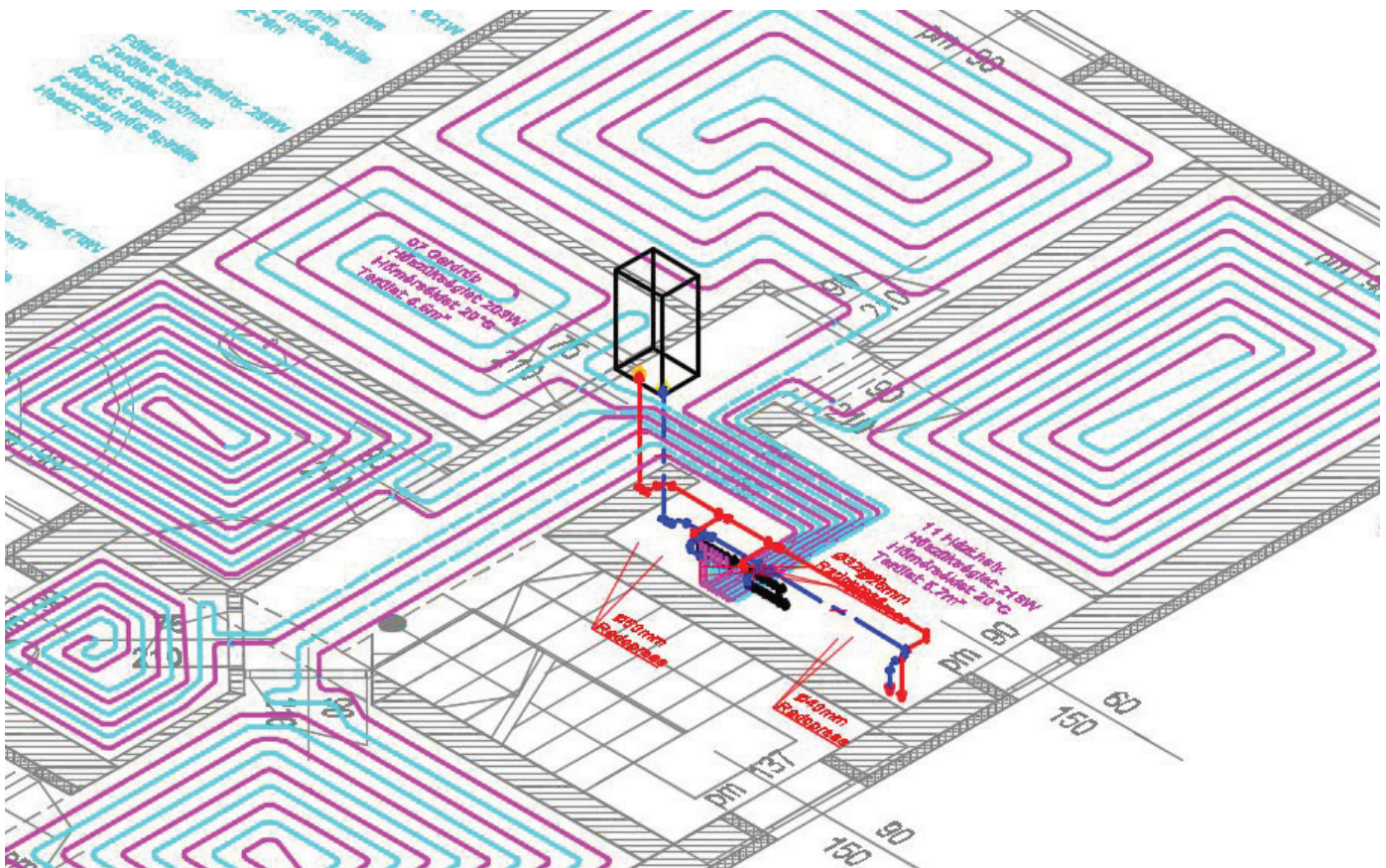
sharp supporting surfaces during storage and handling.

- Pipes delivered in coiled up form should be stored in horizontal position, at least 0.10 m above floor level; a maximum of 10 coils should be stacked on top of one another.
- Be careful not to damage packaging when handling FLOORTHERM system components.
- Pipes and other components should not be slid across the floor or touch sharp objects, and components should not be subject to strong mechanical impacts (shocks, cuts).
- When taking over the delivery, check the following:
 - Material quantities, accuracy of the data in the documentation
 - Apparent integrity of the goods and packaging
 - Compliance of the specified dimensions

9. DESIGN SUPPORT

Our HVAC consulting centre provides professional support for the RADOPRESS WATT and FLOORTHERM system to be installed.

Our HVAC consulting centre is always at your disposal. Based on the information you provide, our designers will make a proposal and design the heating & cooling system composed of elements of the RADOPRESS, FLOORTHERM and RADOPRESS WATT system. Technical specifications and schematic diagrams are available for all system components. Our designers provide access to the diagram(s) used for calculation as well. If you find this opportunity interesting, do not hesitate to contact our sales representatives or directly our HVAC consulting centre using the following e-mail: something@pipelife.com.



10. DESIGN DATA

Pressure loss data

By planning the system the pressure loss of the elements has to be taken into consideration in connection with flow rate. The pressure loss values of FLOORTHERM pipes can be seen in the charts below.

16×2.0 mm			
Heating 40/35°C			
Specific pressure loss	Velocity	Dynamic pressure	Flow rate
Pa/m	m/s	Pa	kg/h
50	0,165	13,450	66,550
60	0,183	16,660	74,070
70	0,201	19,960	81,075
80	0,217	23,330	87,655
90	0,232	26,770	93,890
100	0,247	30,280	99,850
110	0,261	33,800	105,500
120	0,274	37,410	110,990
130	0,288	41,060	116,280
140	0,300	44,740	121,380
150	0,312	48,450	126,300
160	0,324	52,200	131,100
170	0,336	56,010	135,800
180	0,347	59,790	140,310
190	0,358	63,670	144,790
200	0,369	67,510	149,100
220	0,390	75,370	157,540
240	0,410	83,280	165,600
260	0,429	91,320	173,400
280	0,447	99,390	180,900
300	0,465	107,600	188,200
320	0,483	115,800	195,300
340	0,500	124,200	202,190
360	0,517	132,500	208,900
380	0,533	141,000	215,450
400	0,549	149,500	221,840
420	0,564	158,000	228,100
440	0,579	166,600	234,200
460	0,594	175,200	240,200
480	0,609	183,900	246,100
500	0,623	192,600	251,860

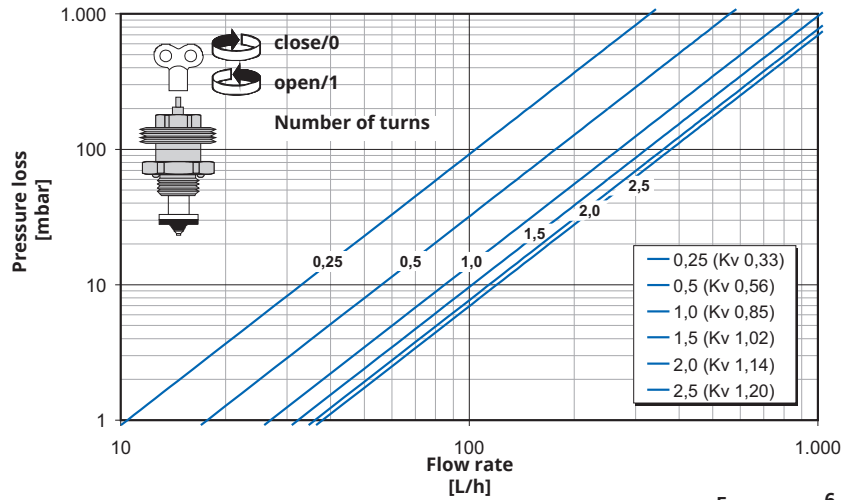
16×2.0 mm			
Cooling 17/20°C			
Specific pressure loss	Velocity	Dynamic pressure	Flow rate
Pa/m	m/s	Pa	kg/h
50			
60			
70			
80	0,201	20,110	81,605
90	0,215	23,120	87,490
100	0,229	26,200	93,130
110	0,242	29,310	98,500
120	0,255	32,470	103,680
130	0,267	35,670	108,670
140	0,279	38,910	113,500
150	0,291	42,190	118,180
160	0,302	45,480	122,700
170	0,313	48,820	127,130
180	0,323	52,220	131,480
190	0,334	55,620	135,700
200	0,344	59,030	139,800
220	0,364	65,980	147,800
240	0,382	73,020	155,480
260	0,401	80,130	162,870
280	0,418	87,330	170,040
300	0,435	94,610	176,980
320	0,452	101,900	183,700
340	0,468	109,300	190,260
360	0,484	116,800	196,670
380	0,499	124,400	202,900
400	0,514	131,900	209,000
420	0,529	139,600	214,990
440	0,543	147,300	220,840
460	0,557	155,100	226,570
480	0,571	162,800	232,180
500	0,585	170,700	237,700

20×2.0 mm			
Heating 40/35°C			
Specific pressure loss	Velocity	Dynamic pressure	Flow rate
Pa/m	m/s	Pa	kg/h
50	0,205	20,850	147,290
60	0,228	25,760	163,730
70	0,249	30,790	179,010
80	0,269	35,930	193,380
90	0,288	41,170	206,990
100	0,306	46,510	220,000
110	0,323	51,850	232,300
120	0,340	57,350	244,300
130	0,356	62,830	255,700
140	0,371	68,400	266,800
150	0,386	74,050	277,600
160	0,401	79,700	288,000
170	0,415	85,450	298,200
180	0,429	91,220	308,100
190	0,442	97,020	317,750
200	0,455	102,900	327,200
220	0,481	114,700	345,480
240	0,505	126,600	363,000
260	0,528	138,700	379,900
280	0,551	150,800	396,200
300	0,573	163,100	412,000
320	0,595	175,500	427,400
340	0,615	188,000	442,300
360	0,636	200,600	456,850
380	0,655	213,200	471,000
400	0,675	225,900	484,900
420	0,693	238,700	498,400
440	0,712	251,600	511,700
460	0,730	264,600	524,700
480	0,748	277,500	537,400
500	0,765	290,600	549,900

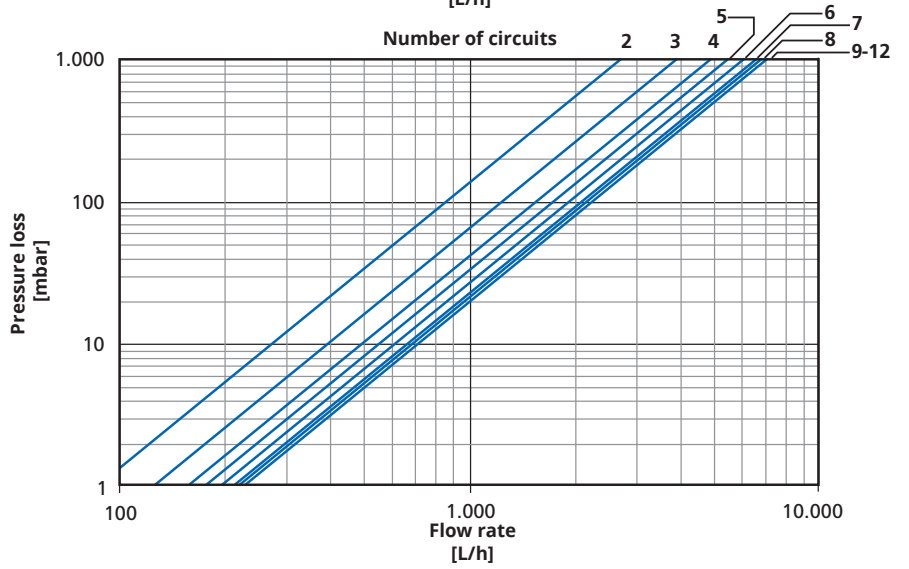
20×2.0 mm			
Cooling 17/20°C			
Specific pressure loss	Velocity	Dynamic pressure	Flow rate
Pa/m	m/s	Pa	kg/h
50	0,190	18,060	137,450
60	0,212	22,370	153,000
70	0,232	26,800	167,470
80	0,251	31,340	181,080
90	0,268	35,960	193,980
100	0,285	40,680	206,300
110	0,302	45,420	218,000
120	0,317	50,290	229,400
130	0,332	55,190	240,300
140	0,347	60,120	250,800
150	0,361	65,150	261,100
160	0,375	70,190	271,000
170	0,388	75,300	280,700
180	0,401	80,430	290,100
190	0,414	85,610	299,300
200	0,427	90,840	308,300
220	0,451	101,400	325,700
240	0,474	112,100	342,450
260	0,496	122,900	358,600
280	0,518	133,800	374,200
300	0,539	144,800	389,300
320	0,559	156,000	404,000
340	0,579	167,200	418,300
360	0,598	178,500	432,150
380	0,617	189,900	445,750
400	0,635	201,400	459,000
420	0,653	212,900	472,000
440	0,671	224,500	484,700
460	0,688	236,200	497,100
480	0,705	247,900	509,350
500	0,721	259,700	521,300

Diagrams of manifold with flow meter

Adjustment of regulating valve



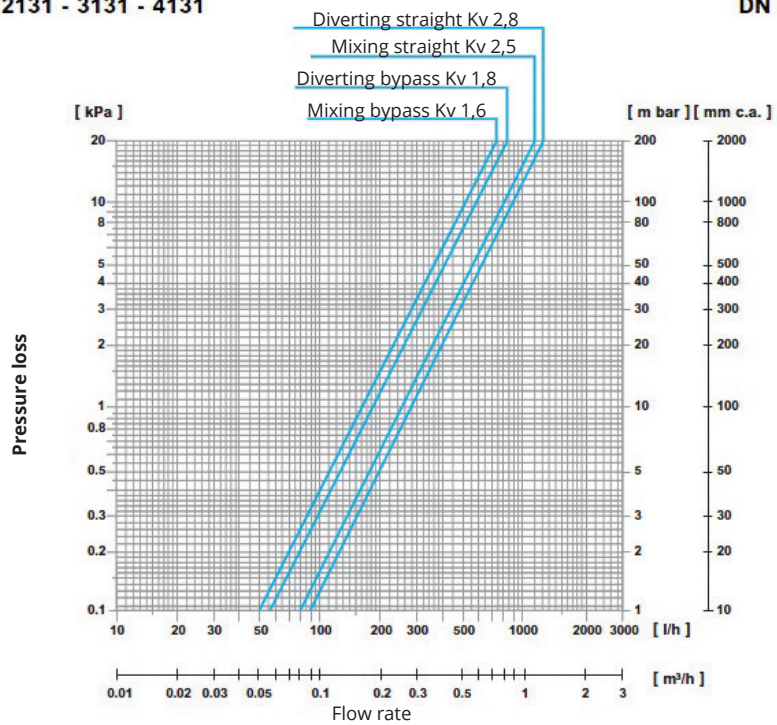
Total pressure loss



Flow rate/pressure loss diagram for 3 way mixing valve

2131 - 3131 - 4131

DN 3/4"



11. PRODUCT OVERVIEW

PERT-EVOH-PERT UNDERFLOOR HEATING PIPE



FT-R18L3Q

Ø18X2 MM PERT-EVOH-PERT PIPE, 300 M

FT-R18L4Q

Ø18X2 MM PERT-EVOH-PERT PIPE, 400 M

5 LAYER PERT-EVOH-PERT PIPE FOR UNDERFLOOR HEATING, ACC.TO: EN ISO 22391-2, PIPE APPLICATION, CLASS 4, 20-60°C DESIGN TEMPERATURE, 6 BAR DESIGN PRESSURE.

PERT-AL-PERT UNDERFLOOR HEATING PIPE



FT16x2-200PERT

Ø16X2 MM PERT-ALU-PERT PIPE, 200 M

FT16x2-400PERT

Ø16X2 MM PERT-ALU-PERT PIPE, 400 M

5 LAYER PERT-ALU-PERT PIPES FOR UNDERFLOOR HEATING, ACC.TO: EN ISO 21003-1, PIPE APPLICATION, CLASS 4, 20-60°C DESIGN TEMPERATURE, 10 BAR DESIGN PRESSURE.

EUROCONE CONNECTOR



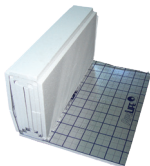
RP-KVA16/3/4

EUROCONE SCREW CONNECTOR

FT-KVA18/3/4

CONNECTS PIPE TO MANIFOLD WITH ONLY USE A WRENCH. NO POWER TOOL NEEDED.

UNDER FLOOR HEATING INSULATION



FT-ROLLE+

30 MM EPS GLASS FIBER REINFORCED, HEAT MIRROR LAMINATED FLOOR INSULATION 2X5 M2/ROLL

INSULATES HEAT AND FACILITATES PIPE FIXING. EPS 100, 2X5 M2/ROLL, LOAD CAPACITY: 2,4 T/M2, ROLLED IN BRICK SHAPE FOR EASY TARSPORTATION.

EXPANSION INSULATION STRIP



FT-RAND16KF

EXTRUDED PE DILATATION STRIP, 25 M

PROVIDES THE ABSORPTION OF THE HEAT EXPANSION OF THE CONCRETE. 10 MM THICK, 130 MM WIDE, 25 M LONG. CAN BE USED TOGETHER WITH FT-ROLLE+.

FT-TACKNAD-600



FT-TACKNAD-600

FIXING CLIP FOR STAPLE GUN, 600 PCS/BOX

FASTEN PIPES ON FLOOR INSULATION. TO BE USED WITH FT-ROLLE+ AND FT-TACKGERAT.

STAPLE GUN



FT-TACKGERAT

STAPLE GUN

FOR EFFORTLESS AND QUICK FIXING OF PIPES ON FLOOR INSULATION.
AVOIDS BENDING AND KNEELING.

ADHESIVE TAPE



FT-SZ

ADHESIVE TAPE FOR FT-ROLLE+

SEALS GAP BETWEEN ADJECING FLOOR INSULATIONS
APPLY ON OVERLAPING FLAPS.

TAPE DISPENSER



FT-SZA

ADHESIVE TAPE DISPENSER

USE IT FOR EASY AND QUICK SEALING WITH ADHESIVE TAPE

MOUNTING RAIL

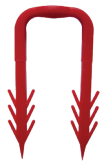


WH-FR16/2M

MOUNTING RAIL FOR 16X2 MM FLOOR HEATING PIPE

FOR LAYING PIPES ON FLOOR INSULATION WITH MOUNTING RAILS.
FOR FIXING, APPLY FT-NADEL ANCHORING PINS ON EACH 0,5 M.

ANCHORING PIN



FT-NADEL

ANCHORING PIN FOR WH-FR16/2M

ANCHORING PIN FOR FIXING THR MOUNTING RAIL (WH-FR16/2M) ONTO THE INSULATION; 500 PCS PER BOX

LOW PROFILE FLOOR PLATE



FT-NOPPLA10

FORM PLATE FOR LOW HEIGHT UNDERFLOOR HEATING

SUITABLE FOR 30 MM THICK UNDER FLOOR HEATING.
HOLDS Ø10 MM PIPE WITH 50 MM DISTANCE.
1 M2/PIECE, 10 PCS/BOX.
CONNECTS WITH CLICK TO EACH OTHER.



PERT WALL HEATING PIPE, WITH OXYGEN BARRIER - CLASS 4, 10 BAR, 60°C

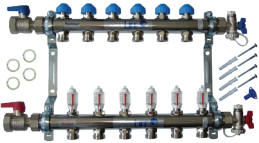


WH-10X1,3-120	Ø10X1,3 MM PERT-EVOH-PERT PIPE, 120 M
WH-10X1,3-240	Ø10X1,3 MM PERT-EVOH-PERT PIPE, 240 M

SMALL DIAMETER PIPE, FITS INTO LOW PROFILE FLOOR PLATE. 5 LAYER PERT-EVOH-PERT PIPE ACC.TO: EN ISO 22391-2 PIPE APPLICATION, CLASS 4 20-60°C DESIGN TEMPERATURE, 10 BAR DESIGN PRESSURE

MANIFOLDS

MANIFOLD FOR SURFACES FOR HEATING



FT-V2A	2 CIRCUITS
FT-V3A	3 CIRCUITS
FT-V4A	4 CIRCUITS
FT-V5A	5 CIRCUITS
FT-V6A	6 CIRCUITS
FT-V7A	7 CIRCUITS
FT-V8A	8 CIRCUITS
FT-V9A	9 CIRCUITS
FT-V10A	10 CIRCUITS
FT-V11A	11 CIRCUITS
FT-V12A	12 CIRCUITS

EVERY CIRCUIT HAS A FLOWMETER (4 L/MIN). CONTAINS EVERY ARMATURE NECESSARY FOR FASTENING AND OPERATING. WITH A SPACING OF 50 MM. DELIVERED WITH FLAT SEALING.

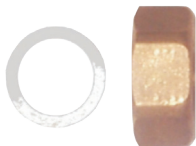
INSULATION KIT FOR MANIFOLD



RP-MI-6	1", FOR 6-CIRCUIT, WITH A SPACING OF 50 MM
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SNAP-ON EPP INSULATION ELEMENT. THE KIT CONTAINS 2 PIECES OF INSULATION ELEMENT (1 FOR SUPPLY AND 1 FOR RETURN CIRCUIT), AND A KNIFE. THE EXCESS CIRCUITS SHOULD BE CUT OFF. FOR BIGGER MANIFOLDS ADDITIONAL PIECE SHOULD BE USED.

BLIND PLUG WITH THREAD FOR MANIFOLD 3/4"



RP-BP3/4	3/4" DELIVERED WITH FLAT SEALING
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SERVES FOR PERMANENT SHUTTING OFF THE UNUSED CIRCUITS.

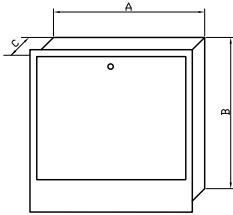
MANIFOLD CABINET – BEHIND THE PLASTER



- FT-VK1 2-3 CIRCUITS. ZINK PLATED STEEL BODY, WHITE PLASTIC (ABS) DOOR AND RIM.
- FT-VK2 4-6 CIRCUITS. ZINK PLATED STEEL BODY, WHITE PLASTIC (ABS) DOOR AND RIM.
- FT-VK3 7-12 CIRCUITS (2-8 CIRCUITS WITH MIXING UNIT), WHITE STEEL
- FT-VK4 9-12 CIRCUITS WITH MIXING UNIT, WHITE STEEL

DEPTH: 110-165 MM
 HIGHT OF LOWER EDGE:
 100-250MM

ATTENTION! PRECISE MEASUREMENTS OF CABINETS MAY VARY. PLEASE ALWAYS CHECK ACTUAL MEASUREMENTS ON OUR WEBSITE BEFORE ORDERING.



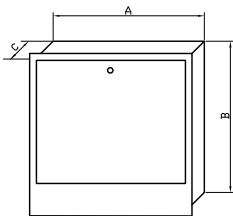
MEASURES IN MM		
A	B	C
520	755	110
670	755	110
1030	560	110
1130	560	110

MANIFOLD CABINET – ABOVE THE PLASTER



- SF-WEK0 MANIFOLD CABINET, ABOVE THE WALL WITH 2-3 CIRCUITS, WHITE
- SF-WEK1 MANIFOLD CABINET, ABOVE THE WALL WITH 4-5 CIRCUITS, WHITE
- SF-WEK2 MANIFOLD CABINET, ABOVE THE WALL WITH 6-10 CIRCUITS, WHITE

DEPTH: 110 MM
 CAN BE CLOSED WITH A KEY OR A COIN. 4 MOUNTING RAIL + SCREWS (B) FOR THE OPTIONAL FASTENING OF THE MANIFOLD. BORES (A) FOR THE FASTENING ONTO THE WALL. REMOVABLE DOOR FOR EASY ASSEMBLY.



MEASURES IN MM		
A	B	C
550	585	110
650	585	110
800	585	110

ATTENTION! PRECISE MEASUREMENTS OF CABINETS MAY VARY. PLEASE ALWAYS CHECK ACTUAL MEASUREMENTS ON OUR WEBSITE BEFORE ORDERING.

ACCESSORIES

BEND SUPPORT



- FT-IV18 BEND SUPPORT Ø16-18 MM

ALLOWS AN EASY AND SPACE-SAVING BEND CONSTRUCTION; FOR PIPE Ø16-18 MM. MATERIAL: GLASS FIBER REINFORCED NYLON.

MIXING UNIT WITH PUMP FOR UNDERFLOOR HEATING



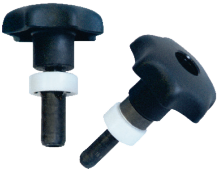
FT-RST/F

MIXING UNIT FOR UNDERFLOOR HEATING

ELECTRONICALLY CONTROLLED, HIGH EFFICIENCY MIXING UNIT FOR UNDERFLOOR HEATING SYSTEMS, INCL. PUMP AND 2-WAY VALVE; SELF CONTROLLED PUMP - RED KNOB TECHNOLOGY; UNIQUE LED USER INTERFACE; SELF-PROTECTING MODES; DESIGNED FOR OPTIMISED INTEGRATION; WATER TEMPERATURE RANGE: 0°C TO 95°C; AMBIENT TEMPERATURE RANGE: 0°C TO 70°C

TOOLS

CALIBRATOR



WH-EK10

RP-EK16

RP-RK18

RP-EK20

SINGLE CALIBRATOR FOR CALIBRATING AND CHAMFERING RADOPRESS AND FLOORTHERM MLCP. IF HANDLE REMOVED, CAN ALSO BE APPLIED TO DRILLING TOOLS.

THREE BRANCH CALIBRATOR



PRO-CAL16-26

UPER ERGONOMIC CALIBRATOR FOR PIPE Ø16, 20, 26 MM

FOUR BRANCH CALIBRATOR



RP-EK16/26

FOR PIPE Ø16, 18, 20, 26 MM

PIPE CUTTER



VAGOOLLOD35

SHEAR UP TO Ø35 MM

CUTS PLASTIC PIPES WITH RATCHET MECHANISM UP TO Ø35 MM

PROFESSIONAL PIPE CUTTER



PRO-CUT16-26

PREMIUM PIPE CUTTER WITH REPLACABLE BLADE FOR PIPE Ø16-26 MM

PRO-CUT2

SPARE BLADE FOR PIPE CUTTER

REGULATION

THERMOELECTRIC ACTUATOR



RP-ACT1

2-CORE CABLE

NORMALLY CLOSED THERMOELECTRIC ACTUATOR WITH POSITION INDICATOR FOR OPENING AND CLOSING CIRCUITS ON THE MANIFOLD. OPERATING VOLTAGE 230V, POWER CONSUMPTION 1.8 W, CABLE 1 M - 2X0,5 MM², PROTECTION CLASS IP54, STROKE 3.5 MM, MAX. AMBIENT TEMPERATURE 50°C, CONNECTING RING M30 × 1,5. THE ACTUATOR KEEPS THE VALVE CLOSED (NC) WHEN CURRENTLESS. SEE PAGE 10.

RADOPRESS WATT BASIC REGULATION RANGE

ELECTRONIC ROOM THERMOSTAT



RP-RTH1

RP-RTH2

3 OPERATING MODES

RP-RTH1
User Manual



RP-RTH2
User Manual



ELECTRONIC ROOM THERMOSTAT FOR HEATING TO REGULATE THE ROOM TEMPERATURE. ADJUSTMENT RANGE 5 - 30°C, DIFFERENTIAL GAP 0,5 K, OPERATING TEMPERATURE 0 - 50°C, NOISELESS TRIAC CONTACT, NTC TEMPERATURE SENSOR, OUTPUT 15/75 W, IP 30. WITH SELECTION MODE, SEE PAGE 10.

ELECTRONIC ROOM THERMOSTAT WITH LCD DISPLAY and floor sensor



RP-RTD

SEE PAGE 11.

User Manual



ELECTRONIC ROOM THERMOSTAT TO REGULATE THE ROOM TEMPERATURE. ADJUSTMENT RANGE 5 - 30°C, DIFFERENTIAL GAP 0,5 K, OPERATING TEMPERATURE 0 - 50°C, NOISELESS TRIAC CONTACT, NTC TEMPERATURE SENSOR, OUTPUT 15/75 W, IP 30. MODE SELECTION NORMAL, REDUCED OR PILOT WIRE (CLOCK TIMER). FLOOR SENSOR WITH ADJUSTABLE TEMPERATURE LIMITATION 10 - 40°C, 3 M SENSOR CABLE.

3 CONTROL MODES:

- 1) VIA INTERNAL ROOM SENSOR.
- 2) VIA EXTERNAL ROOM SENSOR (FLOOR SENSOR).
- 3) VIA INTERNAL ROOM SENSOR AND FLOOR TEMPERATURE LIMITATION.

ROOM THERMOSTAT WITH WEEKLY PROGRAM



RP-CTM

SEE PAGE 12.

User Manual



ELECTRONIC CLOCK THERMOSTAT WITH LCD DISPLAY. ADJUSTMENT RANGE 5 - 35°C. FOR NORMAL OR REDUCED MODE, 9 INTEGRATED STANDARD PROGRAMS AND 4 VARIABLE USER PROGRAMS, FROST PROTECTION AND HOLIDAY FUNCTION, KEY LOCK, RESET FUNCTION. OUTPUT 8 A - 250 V, 3 BATTERIES 1,5 V (AA), BATTERIES WEAK DISPLAY, PROTECTION CLASS IP 30.

ELECTRONIC ROOM THERMOSTAT WITH TAMPER PROOF SETTINGS



RP-SENS

SEE PAGE 12.

User Manual



TEMPER-PROOF ELECTRONIC ROOM THERMOSTAT. ADJUSTMENT RANGE 5 - 30°C, DIFFERENTIAL GAP 0,5 K, OPERATING TEMPERATURE 0 - 50°C, NOISELESS TRIAC CONTACT, NTC TEMPERATURE SENSOR, OUTPUT 15/75 W, IP 30. INTERNAL SWITCH FOR NC/NO-ACTUATORS. MODE SELECTION NORMAL, REDUCED OR PILOT WIRE (CLOCK TIMER). FLOOR SENSOR WITH ADJUSTABLE TEMPERATURE LIMITATION 10 - 40°C, 3 M SENSOR CABLE.

3 CONTROL MODES:

- 1) VIA INTERNAL ROOM SENSOR.
- 2) VIA EXTERNAL ROOM SENSOR (FLOOR SENSOR).
- 3) VIA INTERNAL ROOM SENSOR AND FLOOR TEMPERATURE LIMITATION.

CONNECTING BOX, MASTER



RP-CBM

SEE PAGE 12.

User Manual



6-ZONE, PUMP LOGIC WIRING CENTRE WITH ALL MAIN CONNECTIONS FOR A HEATING SYSTEM. PROPORTIONAL INTEGRAL REGULATION. EACH ZONE HAS TWO SOCKETS FOR ACTUATORS. EXTENDABLE WITH FURTHER 6 ZONES (SLAVE), 2 ACTUATORS PER ZONE. MOUNTABLE DIRECTLY ON THE WALL OR ON A DIN-RAIL CLOSE TO THE MANIFOLD. CONNECTS THE ROOM THERMOSTATS TO THEIR CORRESPONDING ACTUATORS. FACE PANEL LED INDICATION OF THE STATES OF THE ACTUATORS, OPERATING TEMPERATURE 0 - 50°C, PUMP RELAY (OUTPUT 8 A), IP 30, MODULAR DESIGN.

CONNECTING BOX EXTENDER E



RP-CBS

SEE PAGE 12.

User Manual



6 ZONE SLAVE UNIT, USED IN COMBINATION WITH CONNECTING BOX MASTER (RP-CBM) AS EXTENSION. OPERATING TEMPERATURE 0 - 50°C, IP 30, MODULAR DESIGN.

PROGRAM CONTROLLER



RP-DCT

SEE PAGE 13.

User Manual



CONTROL UNIT TO BE USED WITH CONNECTING BOX - MASTER RP-CBM. NORMAL AND DECREASED MODE OF OPERATION. 9 SELECTABLE BASIC PROGRAMS, 12 USER PROGRAMS, FROST-FREE OPERATING MODE, HOLIDAY OPERATING MODE, PROTECTABLE WITH CODE, RESET FUNCTION.

WIRELESS - ROOM THERMOSTAT WITH LCD DISPLAY



RP-RTDRF

SEE PAGE 13.

User Manual



WIRELESS ELECTRONIC ROOM THERMOSTAT WITH LCD DISPLAY. ADJUSTMENT RANGE 5 - 30°C, DIFFERENTIAL GAP 0,3 K, OPERATING TEMPERATURE 0 - 50°C. HEATING OR COOLING FUNCTION. INPUT FOR EXTERNAL SENSOR FOR FLOOR LIMITATION ETC. OPERATES WITH 2 AAA BATTERIES, WITH ON-OFF SWITCH ON THE SIDE. RF DISTANCE WITHIN BUILDINGS APPROX. 30 M.

WIRELESS - ROOM THERMOSTAT WITH WEEKLY PROGRAM



RP-CTMRF

SEE PAGE 13.

User Manual



RF-THERMOSTAT WITH LCD DISPLAY, WEEKLY PROGRAM. HEATING AND/OR COOLING FUNCTION. ADJUSTMENT RANGE 5 - 35°C, ANTIFREEZE AND HOLIDAY FUNCTION, KEY LOCK. 3 BATTERIES WITH 1,5 V (AA), BATTERIES WEAK DISPLAY, PROTECTION CLASS IP 30. RF DISTANCE WITHIN BUILDINGS APPROX. 40 M.

WIRELESS - CONNECTING BOX MASTER WITH WIRELESS CONTROLLER



RP-CBSRF

SEE PAGE 4.

User Manual



WIRELESS CONNECTING BOX CONTROLLING 6 ZONES, 2 ACTUATORS PER ZONE. CAN BE EXTENDED WITH 6 ADDITIONAL ZONES. PROPORTIONAL INTEGRAL REGULATION. TO BE MOUNTED ON THE WALL, NEAR THE MANIFOLD. CAN BE USED IN AN ENVIRONMENT OF MAX. 50°C, HAS A PROTECTION OF IP 30, PUMP RELAY OUTPUT (FOR CONTROLLING THE PUMP SWITCHING ON AND OFF) 8A. LED DISPLAY IN TWO COLORS FOR EASY RADIO AND PROGRAM SETUP, WITH AN OWN POWER SOURCE ENOUGH FOR 3 HOURS. ADJUSTABLE TEMPERATURE 5-35°C. NORMAL AND DECREASED MODE OF OPERATION. 9 SELECTABLE BASIC PROGRAMS, 12 USER PROGRAMS, FROST-FREE OPERATING MODE, HOLIDAY OPERATING MODE, PROTECTABLE WITH CODE, RESET FUNCTION. OUTPUT SIGNAL 8A-50VAC, IP PROTECTION 30. FREQUENCY 433 MHZ, OPEN SPACE RANGE 50 M. FOR HEATING AND COOLING.

WIRELESS - CONNECTING BOX, SLAVE



RP-BMRF

SEE PAGE 12.



6 ZONE SLAVE UNIT, USED IN COMBINATION WITH CONNECTING BOX MASTER (RP-CBSRF) AS EXTENSION. OPERATING TEMPERATURE 0 - 50°C, IP 30, MODULAR DESIGN.

WIRELESS - RECIEVER FOR 1 ZONE



RP-RECRF

SEE PAGE 14.

User Manual



RECEIVER FOR ALL RF-THERMOSTATS. USING ONE RF-THERMOSTAT AS TRANSMITTER, MULTIPLE RECEIVERS CAN BE OPERATED. SWITCH FOR AUTOMATIC/MANUAL MODE AND RADIO CONFIGURATION. OUTPUT 12 A, PROTECTION CLASS IP 44. RF DISTANCE WITHIN BUILDINGS APPROX. 40 M.

RADOPRESS WATT EASY REGULATION RANGE

MIXING MODUL SET



WH-EYMIX

MIXING MODUL FOR HEATING AND COOLING. SEE PAGE 12.

PROVIDES THE OPTIMAL SUPPLY WATER TEMPERATURE TO THE CIRCUITS BY CONTROLLING 3-POINT ACTUATOR ON MIXING VALVE.
 INPUTS: OUTSIDE TEMPERATURE SENSOR, SUPPLY TEMPERATURE SENSOR, ROOM TEMPERATURE AND RELATIVE HUMIDITY SENSOR.
 OUTPUTS: THERMOELECTRIC ACTUATORS 24 OR 230 V, 3-POINT ACTUATOR.
 FEATURES: HEAT CURVES FOR HEATING AND COOLING, OPTIONAL 0-10 V OR TIME CONTROLLED 3-POINT ACTUATOR.
 POWER SUPPLY: 12 V.
 COMPATIBLE WITH 24 V AND 230 V THERMOELECTRIC ACTUATOR.
 VOLTAGE FREE CONNECTION FOR RECEIVING PUMP OPERATION SIGNAL AND HEATING/COOLING CHANGE OVER SIGNAL.

ALSO IN THE BOX



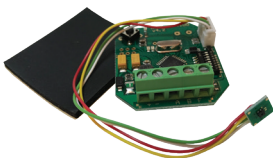
12 V POWER SUPPLY

SUPPLIES 12 V FOR THE MIXING MODUL AND ALL SENSORS



OUTSIDE TEMPERATURE SENSOR

READS OUTSIDE TEMPERATURE FOR UTILIZING HEATING CURVES.
 INSTALL ON NORTH SIDE WALL, PROTECTED FROM DIRECT SUNLIGHT AND RAIN.



TEMPERATURE AND RELATIVE HUMIDITY SENSOR

READS ROOM TEMPERATURE AND RELATIVE HUMIDITY FOR DEW POINT CALCULATION
 TO BE USED IN THE REFERENCE ROOM (EX. LIVING ROOM).



SUPPLY WATER TEMPERATURE SENSOR

READS SUPPLY WATER TEMPERATURE AS FEEDBACK FOR MIXING VALVE.
 INSTALL WITH A CABLE TIE RIGHT ON SUPPLY PIPE. WRAP IT IN INSULATION.

12. NOTES



