Tender specification:

Oventrop “Unibox E” in surface heating systems

– for temperature balance of floor and wall surfaces by limiting the return temperature
  or
– for individual room temperature control and limitation of return temperature

Technical data:

Max. operating temperature t_S:	100 °C
Max. operating pressure p_S:	10 bar
Max. differential pressure:	1 bar
Depth:	57 mm

“Unibox E T” installation set for individual room temperature control with thermostatic valve (room temperature control) in surface heating systems consisting of:

Wall box unit with presettable thermostatic valve, venting and flushing valve, valve insulation, cover plate and thermostat with ‘0’ setting. Valve connection G ¾ for Oventrop compression fittings.

Temperature range: 7-28 °C (room temperature)

0 = complete shut off

❄ = about 7 °C, frost protection symbol

1 = about 12 °C

2 = about 16 °C

3 = about 20 °C

4 = about 24 °C

5 = about 28 °C

} The minor graduations between the figures 2 – 4 represent a change of the room temperature of about 1 °C.

Item no.: see below table

“Unibox E RTL” installation set for temperature limitation of heating surfaces with return temperature limiter consisting of:

Wall box unit with integrated return temperature limiter, venting and flushing valve and closed cover plate. Valve connection G ¾ for Oventrop compression fittings.

Temperature range: 20-40 °C (return temperature)

Graduation 0 - 40; the figures indicate the maximum return temperature in °C.

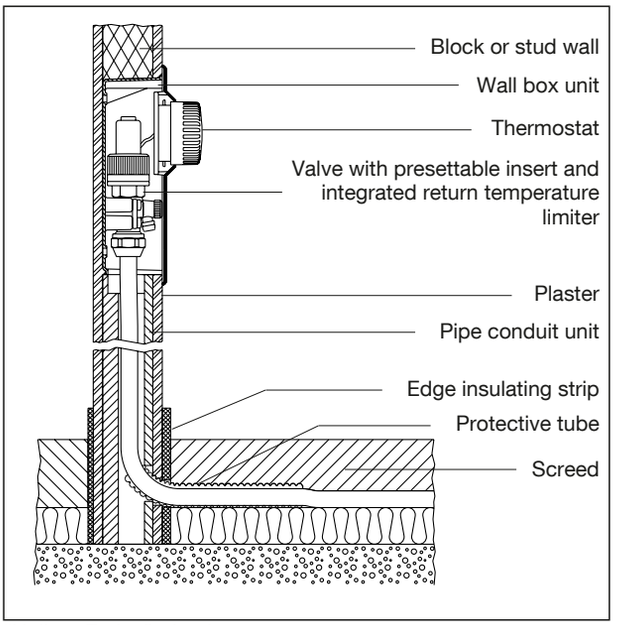
Item no.: see below table

“Unibox E plus” installation set for room temperature control with thermostatic valve (room temperature control) and for temperature limitation of heating surfaces with return temperature limiter consisting of:

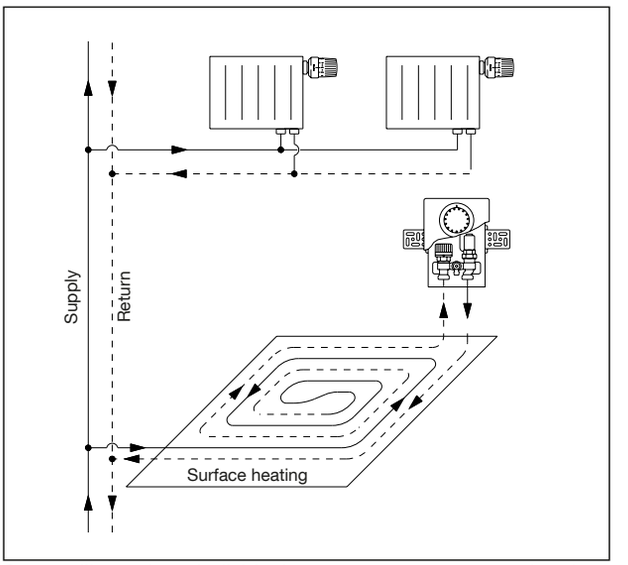
Wall box unit with presettable thermostatic valve and integrated return temperature limiter, venting and flushing valve, valve insulation, cover plate and thermostat with ‘0’ setting. Valve connection G ¾ for Oventrop compression fittings.

Temperature range: 7-28 °C (room temperature)
20-40 °C (return temperature)

Item no.: see below table



“Unibox E plus”, depth 57 mm



System illustration - Individual room temperature control and limitation of return temperature

	Item no.:	Thermostat	Return temperature limiter	Cover plate			Visible thermostat		
				white	chrome plated	stainless steel finish	white	chrome plated	stainless steel finish
“Unibox E T”	1022632	X		X			X		
	1022642	X			X			X	
“Unibox E RTL”	1022631		X	X					
	1022641		X		X				
“Unibox E plus”	1022633	X	X	X			X		
	1022643	X	X		X			X	
	1022673	X	X			X			X
“Unibox E vario”	1022634		X	X					
	1022644		X		X				

Installation set **“Unibox E vario”** as basic model for temperature limitation of heating surfaces with return temperature limiter consisting of:

Wall box unit with presettable thermostatic valve and integrated return temperature limiter, venting and flushing valve and closed cover plate. Valve connection G ¾ for Oventrop compression fittings.

Temperature range: 20-40 °C (return temperature)

Item no.: see table on page 1

Room temperature control is possible by mounting the following components:

– Thermostat with remote control “Uni FH” (see Oventrop catalogue “Products”)

or

– Room thermostat and actuator (see Oventrop catalogue “Products”)

Pipe conduit unit, L = 1 m, completely insulated, including fixing material, for “Unibox”, depth 57 mm
Item no.: 1022650
Fixing channel, height extendible between 275 mm and 350 mm, width: 130 mm, for “Unibox”, depth 57 mm
Item no.: 1022652
Fixing channel, height extendible between 440 mm and 490 mm, width: 160 mm, for “Unibox”, depth 57 mm
Item no.: 1022653
Compression fittings (see Oventrop catalogue “Products”)

Application:

The different models of the “Unibox E” are suitable for the operation of a surface heating in a room with a heating surface up to 20 m². They are designed for the connection of one surface heating circuit. Two circuits are required for larger heating surfaces. In this case, the pipes must be of the same length and have to be connected with the help of the Duo connection piece, item no. 1022655 or the “h” fitting, item no. 1028750 and the fitting, item no. 1016304 before entering the “Unibox”. The pressure loss can be reduced with the help of a larger sized return pipe. When installing heating pipes with an inner diameter of 12 mm, a pipe length of 100 m per surface heating circuit should not be exceeded.

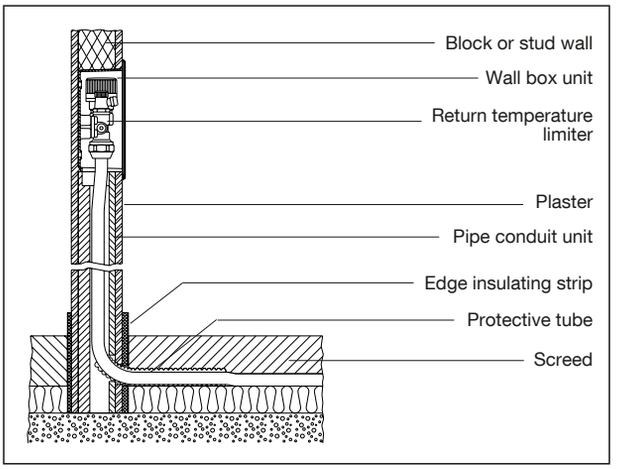
When laying the pipe, it is to be observed that the supply and the return pipe are alternately laid side by side. See, for instance, the spiral laying in the installation sketches. The examples of calculation on page 6 show some examples of laying.

The **“Unibox E RTL”** allows for the temperature limitation of heating surfaces with a return temperature limiter. The room temperature is controlled via the radiator. Installation is carried out in combination with a radiator heating with a maximum flow temperature of 70 °C.

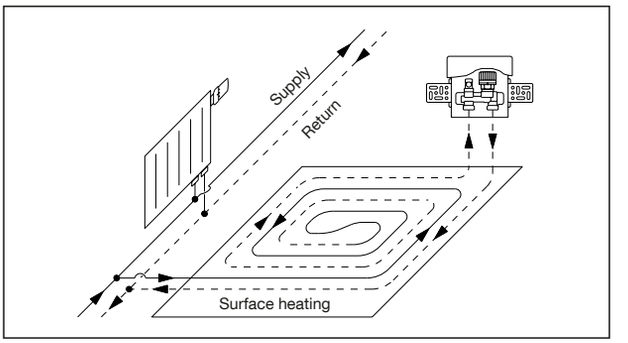
The **“Unibox E T”** allows for the control of the room temperature via a heating surface. It is used in combination with a low temperature heating installation with a maximum flow temperature of 55 °C.

The **“Unibox E plus”** allows for the individual room temperature control with a thermostatic valve and the temperature limitation of the heating surfaces with a return temperature limiter. As for the “Unibox E RTL”, installation is carried out in combination with a radiator heating with a maximum flow temperature of 70 °C.

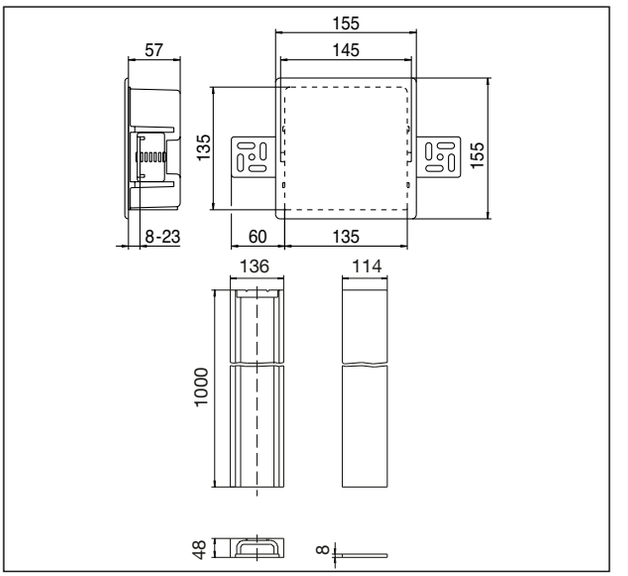
The **“Unibox E vario”** is used like a “Unibox E plus” when mounting a thermostat with remote control or a room thermostat and an actuator, and without these additions like a “Unibox E RTL”.



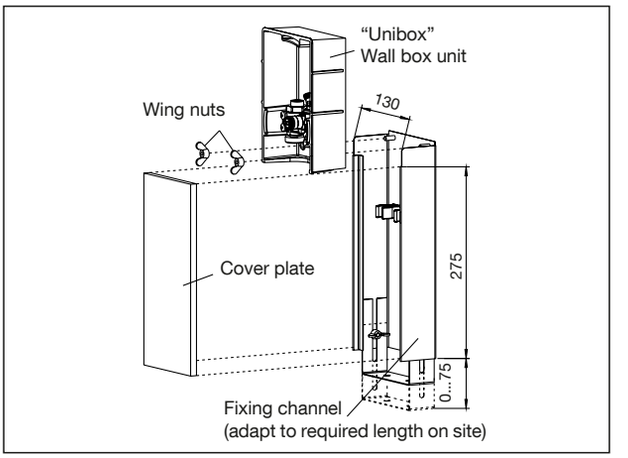
“Unibox E RTL”, depth 57 mm



System illustration - Limitation of return temperature



Dimensions “Unibox E RTL”, depth 57 mm and pipe conduit unit



Dimensions fixing channel

Function:

The **“Unibox E RTL”** serves to limit the return temperature of a surface heating. The “Unibox E RTL” should be installed in such a position that the heating medium passes through the surface heating circuit first and then through the valve. On its way from the entry into the heating surface to the return temperature limiter, the heating medium cools down.
The flow is automatically controlled by a sensor element being in touch with the heating fluid. The return temperature is set at the handwheel. The guidelines regarding heating up and commissioning on page 5 are to be observed.
The temperature of the surface heating can be corrected by turning the handwheel.
Normally, the “Unibox E RTL” is operated in a room with an additional radiator. The surface heating covers the basic heat demand whereas the radiator takes over the control of the room temperature.

The **“Unibox E T”** may only be operated with a maximum flow temperature of the surface heating of 55 °C (low temperature heating installation). It offers a fully-fledged individual room temperature control via the surface heating. It is recommended to install the “Unibox E T” in such a position that the heating medium passes through the surface heating circuit first and then through the valve. This way, the automatic thermostat controls the required room temperature exactly. Hydronic balancing is carried out a the presettable valve insert.
The “Unibox E T” can be operated without an additional radiator provided that the heat output of the surface heating is sufficient.

The **“Unibox E plus”** serves to control the temperature of individual rooms via the surface heating and to limit the temperature of the heating surface with the help of the return temperature limiter at the same time.
The “Unibox E plus” is installed in the same position as the “Unibox E RTL”. The heating medium passes through the surface heating circuit first and then through the valve. On its way from the entry into the heating surface to the return temperature limiter, the heating medium cools down.
The flow is automatically controlled by a sensor element being in touch with the heating fluid.
The return temperature is set at the handwheel. The guidelines regarding heating up and commissioning on page 5 are to be observed.
The temperature of the surface heating can be corrected by turning the handwheel.
The automatic thermostat controls the required room temperature. Hydronic balancing is carried out at the presettable valve insert.
The “Unibox E plus” can be operated without an additional radiator provided that the heat output of the surface heating is sufficient.

The **“Unibox E vario”** offers the same function as the “Unibox E plus” when mounting a thermostat with remote control or a room thermostat and an actuator. The return temperature is limited with the help of the integrated return temperature limiter.
To operate it as room temperature control, the basic model of the “Unibox E vario” has to be upgraded with the following components (to be ordered separately):

1. Room thermostat and electrothermal actuator
The electrothermal actuator is mounted onto the vertical connection inside the “Unibox E vario”.
To lead the connecting cable towards the room thermostat, drill a hole (Ø of about 8 mm) at the marked point (sticker) on the outer wall of the wall box unit.
The regulations for electrical installations, especially in humid locations, must be observed.

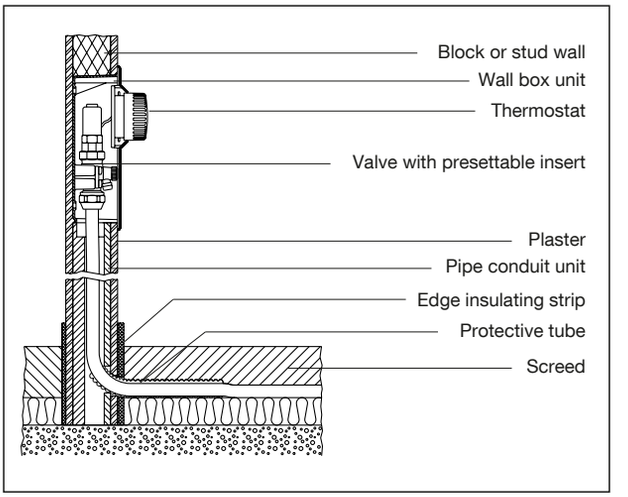
Temperature range: 5-30 °C (room temperature)
20-40 °C (return temperature)

2. Thermostat with remote control “Uni FH”
The actuator is mounted onto the vertical connection inside the “Unibox E vario”.
The capillary towards the room temperature sensor can be lead downwards out of the “Unibox E vario”. Laying through an empty pipe is advantageous.

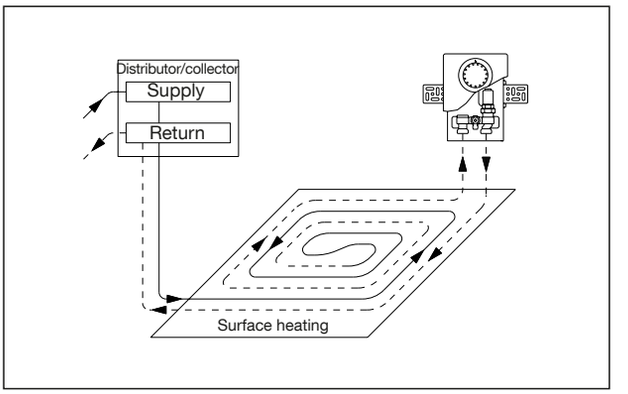
Temperature range: 7-28 °C (room temperature)
20-40 °C (return temperature)

Without these additional components (basic model). the control corresponds to that of the “Unibox E RTL”. Hydronic balancing can be carried out with the help of the presettable valve insert.

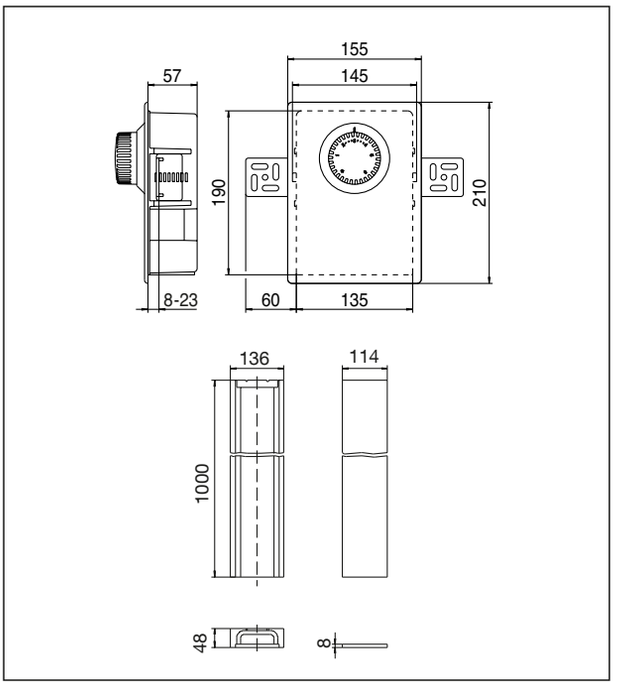
Temperature range: 20-40 °C (return temperature)



“Unibox E T”, depth 57 mm



System illustration - Individual room temperature control



Dimensions “Unibox E T”, “Unibox E plus”, “Unibox E vario”, depth 57 mm and pipe conduit unit

Installation and assembly:

If the floor is used as surface heating, the lower edge of the “Unibox E” should be at least 20 cm above the finished floor, the leading edge should be level with the finished wall. The thickness of plaster and tiles has to be observed. A comfortable operation is given if the “Unibox E” is installed at the height of the light switches.

The thermostat should not be influenced by other heat sources:

– Do not install near other heat sources, such as radiators.

– Protect the thermostat from direct sunlight.

– Do not install at a location exposed to draught.

The wall box unit is to be installed with the opening pointing downwards.

Alignment and fixing are made by using the enclosed elbows. They can be fixed at the side of the wall box unit in different positions.

The wall box unit is fixed into the wall. The valve is protected by a cover made of corrugated cardboard.

For a simple installation of the vertical pipework, place the pipe conduit unit, item no. 1022650, into the wall below the wall box unit, shorten if required. Later, the front cover of the pipe conduit unit will be under plaster.

The fixing channel, item no. 1022652 or 1022653, can be used for the installation of the “Unibox E” right above the floor level. The fixing channel which is adjustable in height is screwed to the wall box unit of the “Unibox E”. The fixing channel is flush with the wall and the cover made of gypsum plaster board can be wallpapered or painted.

If required, lay an empty pipe for the cable between the room thermostat and the actuator respectively for the capillary of the thermostat with remote control.

If the “Unibox E vario” is equipped with an electric room thermostat and an actuator in the bathroom, electrical connections must be carried out in accordance with the local Electricity Regulations and Standards for humid locations.

When designing the floor as a surface heating, the construction e.g. regarding thermal and sound insulation, has to comply with the valid rules, standards and regulations.

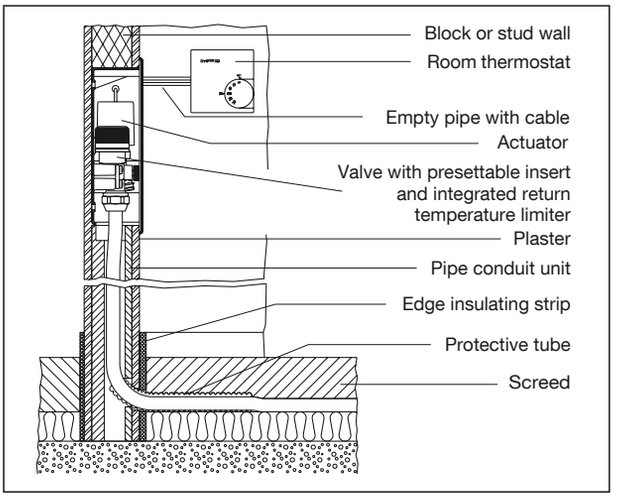
When installing the pipework, the correct sequence has to be observed to ensure a perfect functioning of the “Unibox E”:

– Provide a derivation from the supply pipe of the two pipe heating system.
– Laying of the surface heating circuit. When installing a “Unibox E” with limitation of return temperature, the pipes have to be laid spiral patterned (see installation sketch). This way, a constant temperature distribution is achieved.
– Connection of the pipework to the “Unibox E” with due consideration of the marked direction of flow. **Valve always <u>behind</u> the surface heating circuit**. Remove the protection cover of the “Unibox E” as well as the front cover of the pipe conduit unit or the fixing channel.
– Provide the connecting pipe to the return pipe of the two pipe heating system.

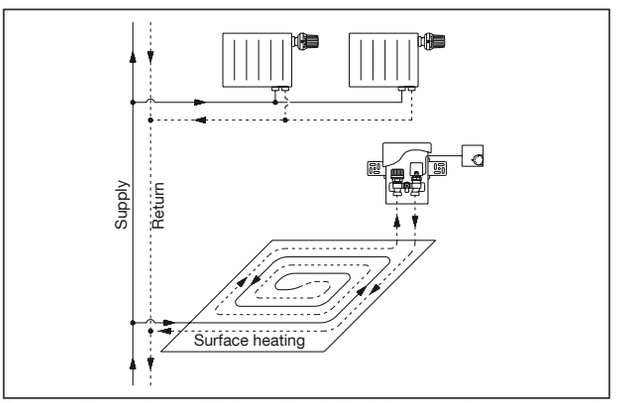
The surface heating can be installed with any standard pipe material.

The Oventrop programme includes suitable compression fittings. The corresponding installation instructions must be observed. **Insert the copper pipe a maximum of 5 mm deeper than the fitting.** An open ring spanner 30 mm is recommended to tighten the fittings, e.g. Oventrop item no. 1401091.

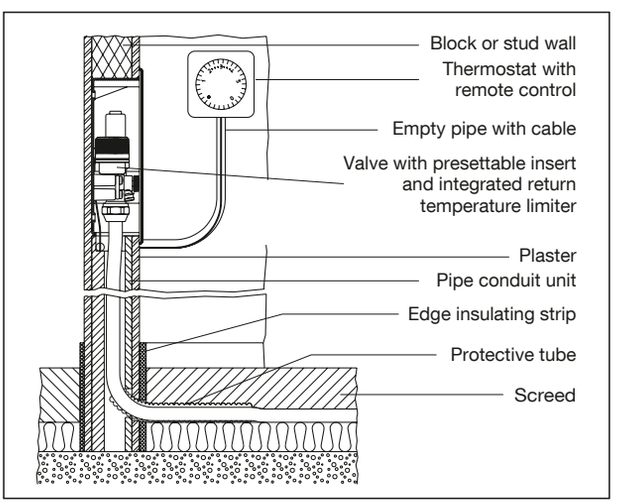
The heating installation is filled and bled, for instance at the valve. Carry out leakage test and refit the protection cap of the valve as well as the front cover of the pipe conduit unit or the fixing channel.



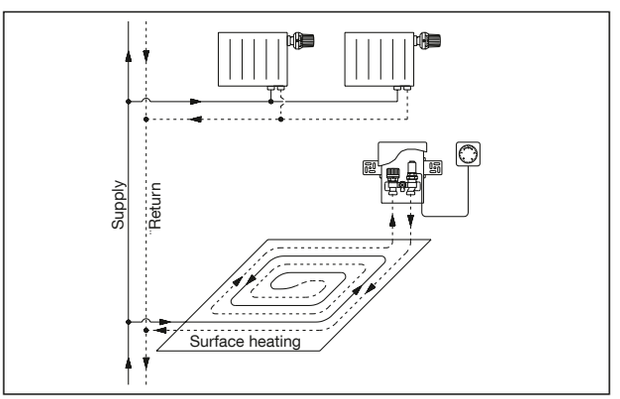
“Unibox E vario” with room thermostat and actuator



System illustration - “Unibox E vario” with room thermostat and actuator



“Unibox E vario” with thermostat with remote control “Uni FH”



System illustration - “Unibox E vario” with thermostat with remote control “Uni FH”

Important advice regarding heating up:

After all plastering has been completed, a concrete screed which conforms to the relevant standards has to be laid. Heating up of concrete and calcium sulphate screed has to be carried out according to EN 1264-4.

Heating up at the earliest:

– 21 days after laying of concrete screed
– 7 days after laying of calcium sulphate screed

Heat up slowly!
3 days with a flow temperature of approx. 25 °C, then
4 days at maximum design temperature.
The flow temperature is only controlled via the boiler control.
Open the valve of the “Unibox E”: Turn the handwheel of the return temperature limiter to the maximum position and/or open the presettable valve insert by turning the protection cap about 1 turn.
The instructions of the screed manufacturer are to be observed.
After having completed all building work, the protection cover is removed.
For the “Unibox E T” and “Unibox E plus”, mount the actuator of the thermostat with remote control “Uni FH” on the right hand side valve insert, lead the capillary downwards and fit the enclosed valve insulation inside the box. The capillary may not be kinked or damaged.
For the “Unibox E vario”, mount the actuator of the thermostat with remote control “Uni FH” or an actuator on the right hand side valve insert.

Mount and adjust the cover plate (front cover) in white, chrome plated or stainless steel finish.

Important advice regarding commissioning:

The recommended control range of the return temperature limiter is between 25 °C and 40 °C.
The maximum permissible screed temperature near the heating pipes must not be exceeded:

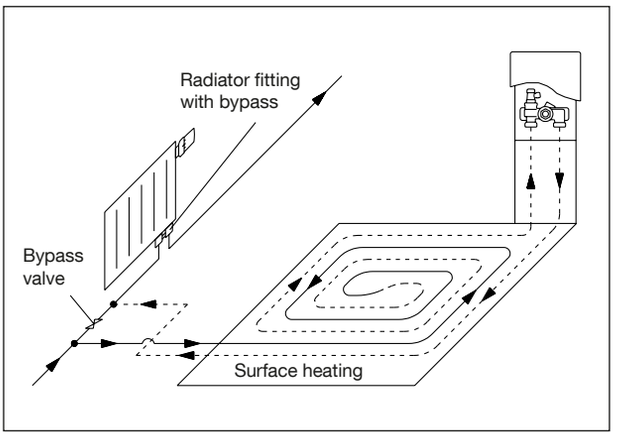
– 55 °C for concrete and calcium sulphate screed
– 45 °C for mastic asphalt screed
– or according to the instructions of the screed manufacturer

Note:

Surface heating with “Unibox” in <u>one pipe heating systems:</u>

Option 1:

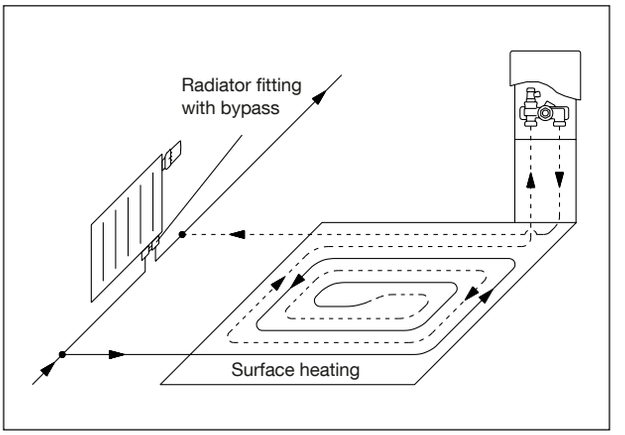
– an increased volume flow and pressure loss is to be expected
– the pressure loss- and noise characteristic lines of the radiator fittings must be observed
– the radiator has to be regulated so that enough water passes through the surface heating with the radiator valve in the open position and no noise problems emerge at the radiator with the valve of the “Unibox” in closed position



System illustration - Option 1

Option 2:

– an increased volume flow and pressure loss is to be expected
– the pressure loss- and noise characteristic lines of the radiator fittings must be observed



System illustration - Option 2

Examples of calculation:
“Unibox E RTL” or “Unibox E plus”
Application: Bathroom
Pipe material: Composition pipe “Copipe” 16 x 2 mm
Room temperature: 24 °C
Room temperature of the room below: 20 °C
Max. heating surface temperature: 33 °C
R_{λ} = 0.02 m² K/W (tiles)
Set return temperature: 35 °C

Laying distance [mm]	Pipe length [m]	Heating surface [m²]	Specific heat output [W/ m²]	Pressure loss pipework [mbar]	Flow rate [l/s]
75	100	7.5	93	55	0.2
150	80	12	76	75	0.26
150	100	15	76	137	0.33
225	80	18	63	110	0.32
225	89	20	60	115	0.31
300	67	20	51	81	0.30

“Unibox E T”
Application: Living area
Pipe material: Composition pipe “Copipe” 16 x 2 mm
Room temperature: 20 °C
Room temperature of the room below: 20 °C
Max. heating surface temperature: 29 °C
R_{λ} = 0.1 m² K/W (parquet)
Flow temperature: 50 °C

Laying distance [mm]	Pipe length [m]	Heating surface [m²]	Specific heat output [W/ m²]	Pressure loss pipework [mbar]	Flow rate [l/s]
75	100	7.5	100	83	0.25
150	80	12	85	113	0.33
150	100	15	80	118	0.30
225	80	18	70	114	0.33
225	89	20	67	108	0.30
300	67	20	61	104	0.34

For the design of the installation it has to be observed that the pressure loss of the pipework and the valve may not exceed a sum of 300 mbar.

The models “Unibox E plus” and “Unibox E T” comply with the German Energy Saving Directive valid since July 2007 (EnEV §14).

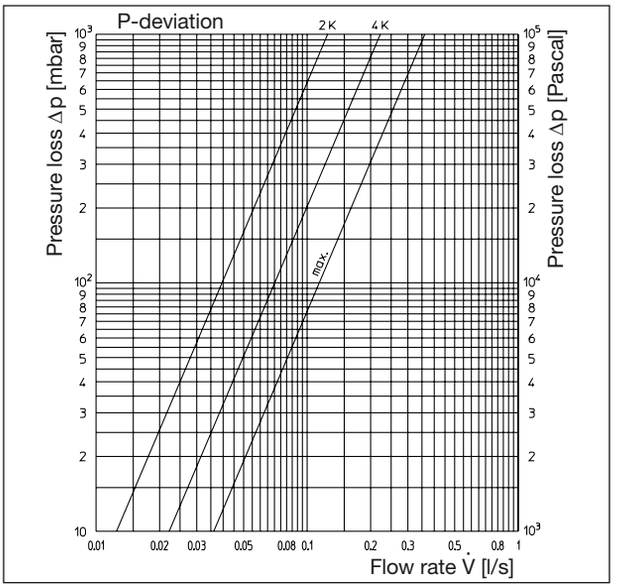
Advantages:
- simple installation
- best possible control characteristics
- stylish unit (flat model)
- comfortable height for use of control
- smart optical integration into the wall
- cover plate in modern colours: white RAL 9016, chrome plated and stainlessel finish
- rotating plastic cover plate which can be fitted without screws
- the strong pipe conduit unit also serves as insulation
- suitable for the connection to any standard pipes for surface heating systems
- no auxiliary energy (current) required
- economical installation of a surface heating
- higher living comfort
- optimum control even of combined installations (surface heating/radiator connection)
- integrated deaeration

Performance data “Unibox E T” and “Unibox E plus”

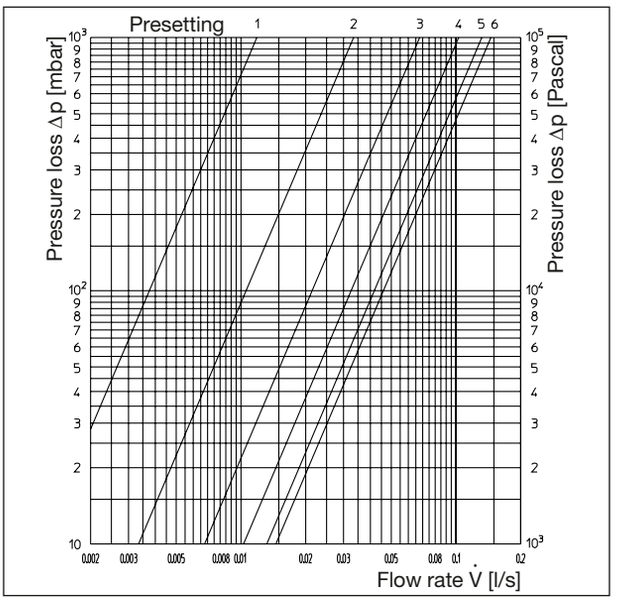
Presetting	1	2	3	4	5	6	7	8	9
k_V value at 1 K P-deviation	0.05	0.09	0.12	0.17	0.20	0.23	0.27	0.31	0.34
k_V value at 2 K P-deviation	0.05	0.09	0.12	0.18	0.22	0.28	0.38	0.49	0.57
k_{VS}									0.81

Subject to technical modifications without notice.

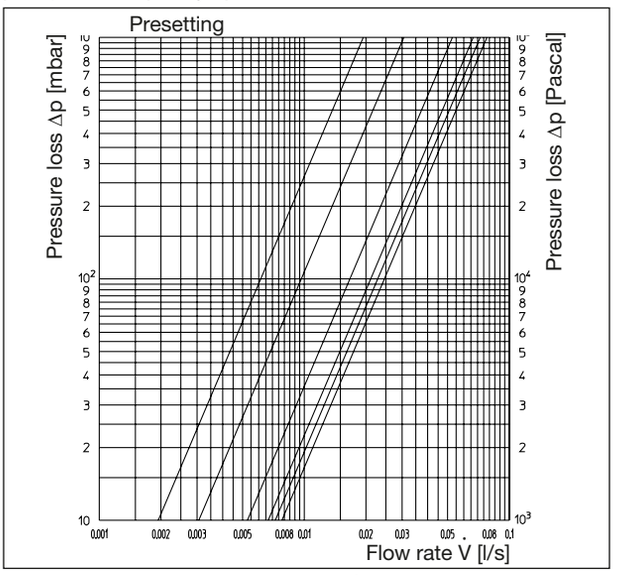
Product range 2
ti 152-EN/20/MW
Edition 2018



Pressure loss chart “Unibox E RTL”



Pressure loss chart “Unibox E T” at 2 K P-deviation and “Unibox E plus”, RTL completely open



Pressure loss chart “Unibox ET” at 1K P-deviation and “Unibox E plus”, RTL completely open