1” universal hydronic utility module PLURIMOD® EASY - Centralized DHW. CONTECA metering

7003 series

01356/19 GB

Specifications

The PLURIMOD® EASY user module performs thermoregulation and consumption metering for heating/cooling and for domestic hot and cold water.

PLURIMOD® EASY is a hydraulically **self-balanced solution which uses an automatic flow rate regulator** ideal for installation in **variable flow rate systems**.

Basic functions

- ON/OFF control with two-way zone valve.
- Heat metering in compliance with Directive 2014/32/EU suitable for centralised transmission.
- All-over insulation incorporating shut-off valves.
- Dynamic balancing by means of adjustable automatic flow rate regulator.

Optional functions

- Option of integrating 2 domestic water outlets.
- Centralisation of consumption data with 7550/750 series controllers.

The insulation supplied as standard guarantees low heat loss and adequate anti-condensation protection, thanks to the complete absence of thermal bridges.

Product range

700306	Hydraulic module with max. flow rate 1,8 m³/h, CONTECA EASY Ultra metering and recessed box template 480x480 mm for indoor use, RAL9010.
750725	Ultrasonic CONTECA EASY heat meter for 7003 series. Includes 230 V (ac) ON/OFF thermo-electric actuator.
750745	Ultrasonic CONTECA EASY heat meter for 7003 series. Includes 24 V (ac) ON/OFF thermo-electric actuator.

Characteristic components

Reversible installation type hydraulic module composed of:
- Pressure independent control valve 145 series, flow rate regulator, adjustable.
- Thermo-electric actuator for ON/OFF zone control, 6565 series.
- Pocket for immersion probe on flow side with stainless steel strainer cartridge.

CONTECA® EASY 7507 series metering (electric supply 24 V (ac) and centralised transmission over RS-485 Bus in M-BUS or MODBUS RTU protocol (option 750811).

Technical specifications

Materials

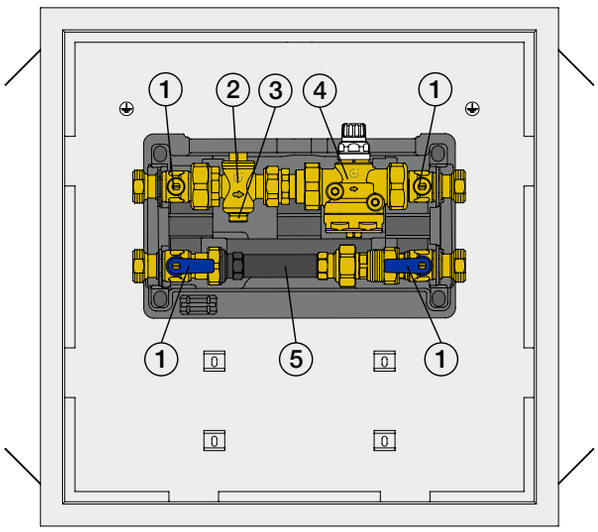
Components:	brass EN 12165 CW614N brass EN 12165 CW617N brass EN 12165 CB753S

Performance

Max. working pressure:	10 bar
Primary side minimum Δp:	5 m w.g. (50 kPa) for flow rate 1,6 m³/h 6 m w.g. (60 kPa) for flow rate 1,8 m³/h
Primary side maximum Δp:	1,2 bar (120 kPa)
Working temperature range:	3–90 °C
Medium:	water, glycol solutions
Max. percentage of glycol:	30 %
Connections:	1” M

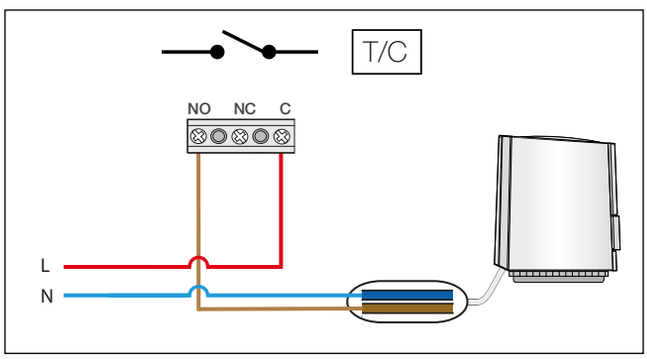
Insulation

Material:	Closed cell expanded EPP
Minimum thickness:	approx. 10 mm
Average thickness:	approx. 15 mm
Density:	50 kg/m³
Thermal conductivity:	0,037 W/(m·K) (at 10 °C)
Reaction to fire (UL94):	class HBF

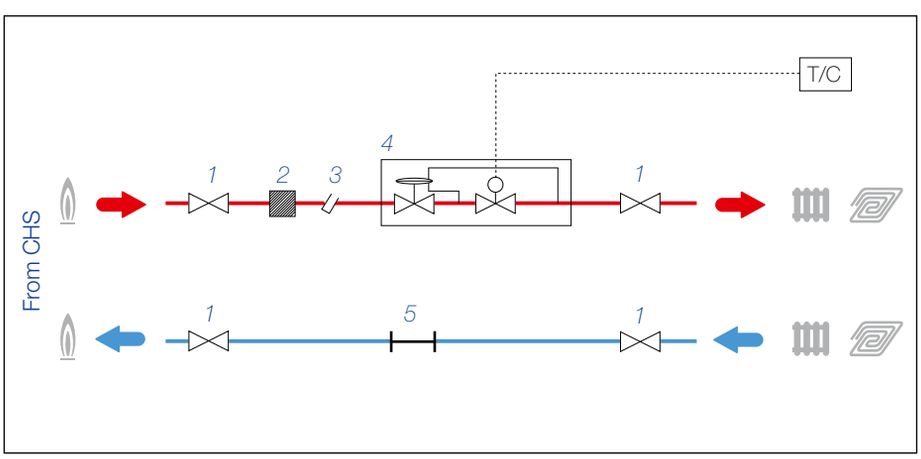


Specifications of 6565 series thermo-electric actuator

Voltage:	230 V (ac) / 24 V (ac) (blue and brown wire)
Power consumption:	1 W
Ambient temperature range:	0–60 °C
Protection class:	IP 54
Starting current:	< 1 A



Hydraulic-functional diagram



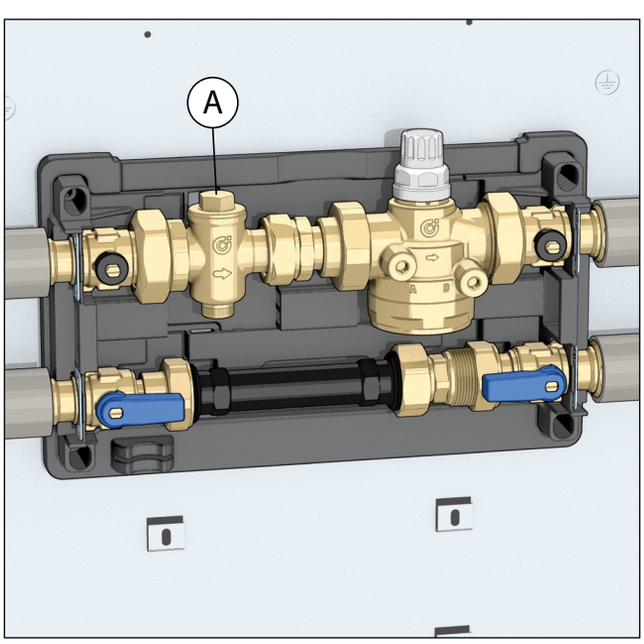
1. Ball shut-off valves
2. Strainer
3. Flow probe connection M10 x 1
4. Automatic flow rate regulator valve
5. Heat meter template L = 130 mm

T/C: Chrono-thermostat/Clock (not supplied)

Maintenance

Inspecting the strainer

Unscrew cap (A) to gain easy access to the strainer for periodic inspections and maintenance. The strainer is only present on the flow pipe.

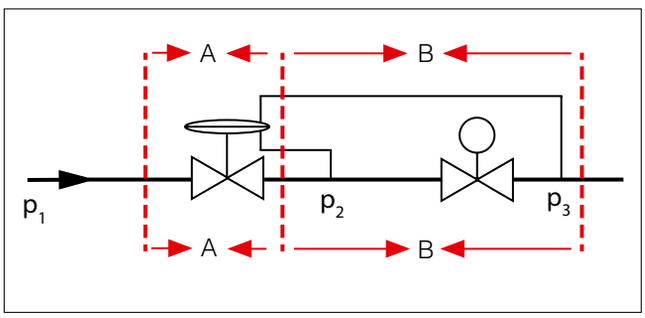


Operating principle

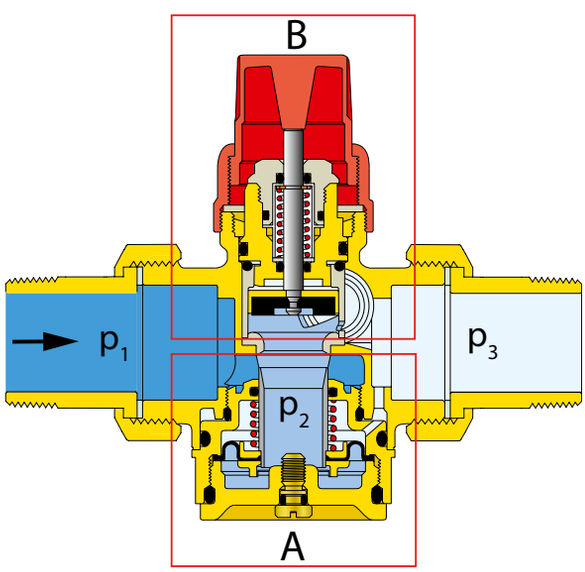
The pressure independent control valve (PICV) is designed to regulate a flow rate of fluid that is:

- adjustable in accordance with the requirements of the part of the circuit controlled by the device;
- constant despite any variation in differential pressure conditions in the circuit.

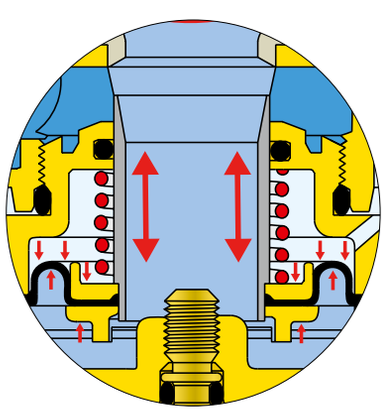
The device layout is shown in the diagram below:



Where:
p_1 = upstream pressure
p_2 = intermediate pressure
p_3 = downstream pressure
(p_1 - p_3) = total valveΔp

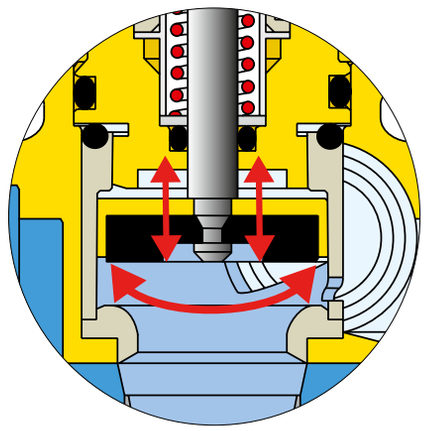


a) Device **(A)** regulates Δp_i (p_2-p_3) and keeps it constant across device **(B)** by means of an automatic action (balancing between the force generated by the differential pressure and the internal counter-spring). If (p_1-p_3) increases the internal Δp regulator reacts to close the core and maintains (p_2 - p_3) = constant; in these conditions the flow rate will remain constant.



b) Device **(B)** regulates flow rate G by changing its bore cross section. The change in bore cross section determines hydraulic coefficient value (Kv) of control device **(B)**, which remains constantly at:

- a manually pre-set value;
- the value determined by the actuator's regulating action.

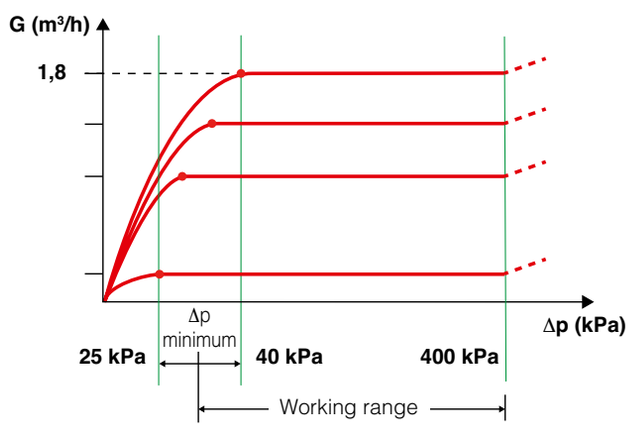


Concisely: Since $G = Kv \times \sqrt{\Delta p}$

- by manually or automatically adjusting device B, the Kv value and consequently value G can be set;
- once value G has been set, it remains constant thanks to the action of **(A)** in response to circuit pressure changes.

Working range

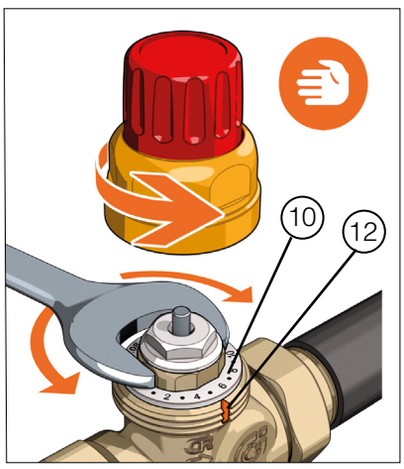
For the device to keep the flow rate constant independently from the circuit's differential pressure conditions, total valve Δp (p_1-p_3) must be in the range from the minimum Δp value (see “Flow rate adjustment tables”) and the maximum value of 400 kPa.



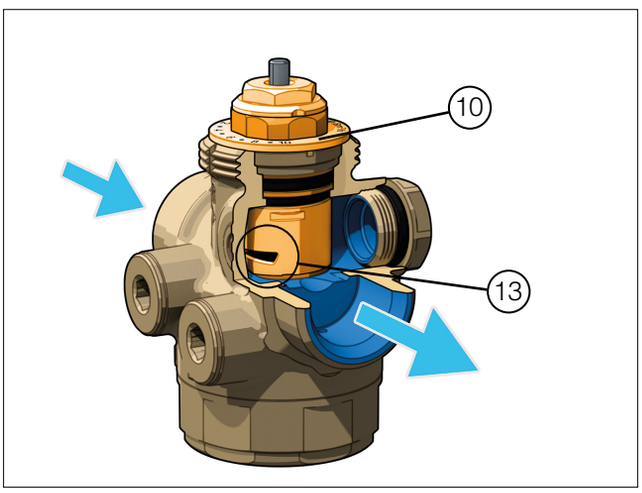
Adjustment procedure

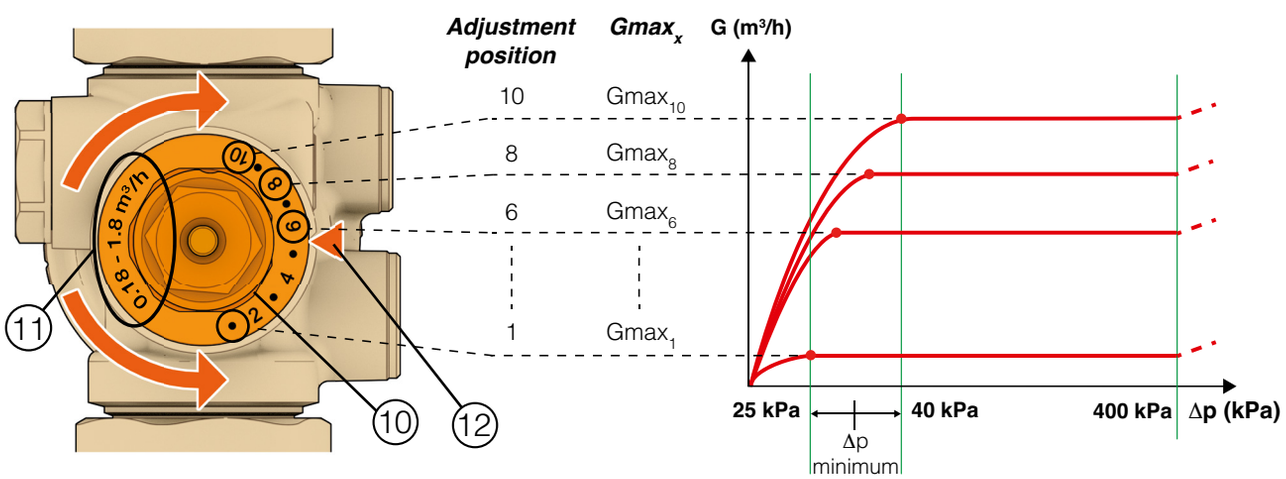
Maximum flow rate adjustment

Unscrew the protective cap by hand to gain access to the maximum flow rate adjustment nut (10), which can be turned with a hexagonal key. The locking nut is fixed to a 10-position graduated scale, divided into steps corresponding to 1/10 of the maximum available flow rate, which is also shown on the scale (11). Turn the locking nut to the numerical position corresponding to the desired flow rate value (each unit corresponds to one tenth of the Gmax = 180 l/h). The notch (12) on the valve body is the physical positioning reference.



Turning the locking nut (10), which determines the number associated with the "**Adjustment position**", results in opening/closing of the bore cross section in the external obturator (13). Hence, each bore cross section set on the locking nut corresponds to a specific **$Gmax_x$** value.





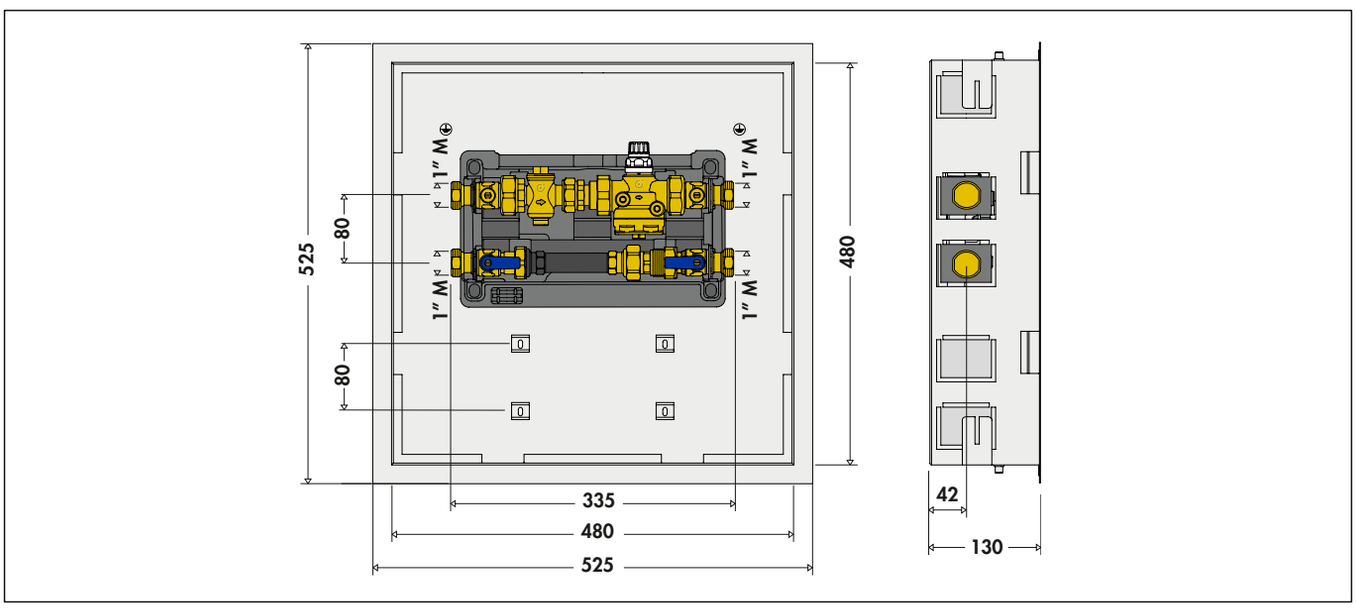
N.B.:
The module is supplied with a factory setting of 1,8 m^3/h (setting position 10).

Recessed box with PLURIMOD® EASY module code 700306

Recessed box with galvanised backplate and painted door 480x480 mm **for interiors,** RAL9010; fitted with finishing frame with adjustable depth from 130 to 160 mm.

Template box (code 700306) is supplied complete with:
- technopolymer mounting bracket with thermal break
- 2 pairs of 1" M standard ball valves
- adhesive label indicating the flow direction (to be applied)
- positioning guides for the **dual domestic water function** code 700050/700051/700052/700053 and template for volume meter code 700009
- PLURIMOD® EASY hydraulic module.

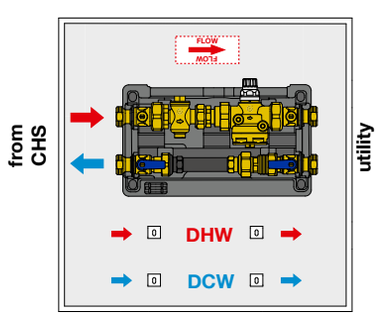
Dimensions



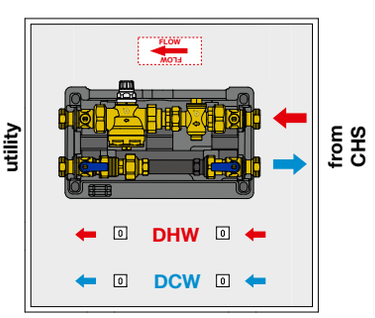
Positioning template box

The special shape of the template box means it can be installed in a variety of positions making it universal.
CAUTION: observe the installation diagrams provided. Different positioning, for example in a false ceiling, is not possible.

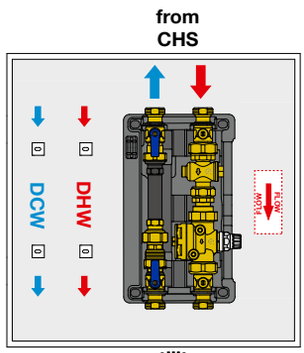
1 - Horizontal (left-side connection)



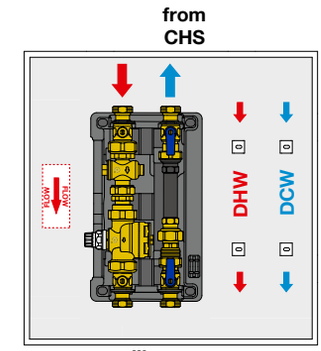
2 - Horizontal (right-side connection)



3 - Vertical (connection on top, right-side flow)



4 - Vertical (connection on top, left-side flow)



PLURIMOD® EASY is fitted with all-over insulation (no thermal conduction on the brackets), making it absolutely compatible for combined heating and cooling systems.

CONTECA® EASY METERING

7507 series CONTECA® EASY heat meter

Compliance with Directive 2014/32/EU
Accuracy class: 2 according to EN 1434

Note: for more options refer to tech. broch. 01307

Technical specifications

Temperature probe

Type	NTC
Temperature difference limit:	3 - 80 K
Measurement sensitivity:	≤ 0,05 °C

Ultrasonic meter

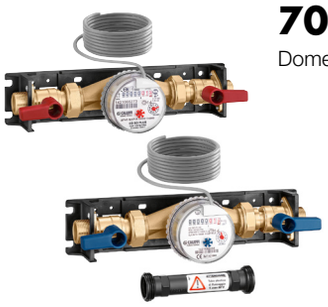
Nominal pressure:	PN 10
Max. temperature of the medium:	90 °C
Minimum flow rate Q_i :	10 l/h
Nominal flow rate Q_p :	2500 l/h

Calculation unit

Metrological specifications: in compliance with EN 1434-1 MID 2014/32/EU
Centralised transmission: on RS-485 bus
(with M-BUS or optional MODBUS RTU protocol)

Ambient classification:	MID 2014/32/EU E1-M1
Electric supply:	24 V (+ 10 %/-5 %) (ac) - 1 W - 50 Hz
Protection class according to DIN 40050:	IP 54

HYDRAULIC OPTIONS



7000

Domestic water meter kit consisting of:
- ball shut-off valve with BALLSTOP check valve and **telescopic tailpiece**;
- water meter (MI001);
- shut-off ball valve with male terminal;
- flushing pipe.

Code	
700050	DHW 3/4" with local reading
700051	DHW 3/4" with pulse output
700052	DCW 3/4" with local reading
700053	DCW 3/4" with pulse output

7942

Domestic hot/cold water meter (MI001).
With **pulse output**.

Domestic cold water (max. 30 °C)

Code		G_{nom} m³/h	Pulse weight l/pulse
794205	3/4"	2,5	10
794215	3/4"	2,5	Without pulse output

Domestic hot water (30–90 °C)

Code		G_{nom} m³/h	Pulse weight l/pulse
794205/C	3/4"	2,5	10
794215/C	3/4"	2,5	Without pulse output

700009

Template with 3/4" valves for domestic water meter.
(for completion with 7942 series)

Domestic water meter
Conforms to directive 2014/32/EU (MI001)

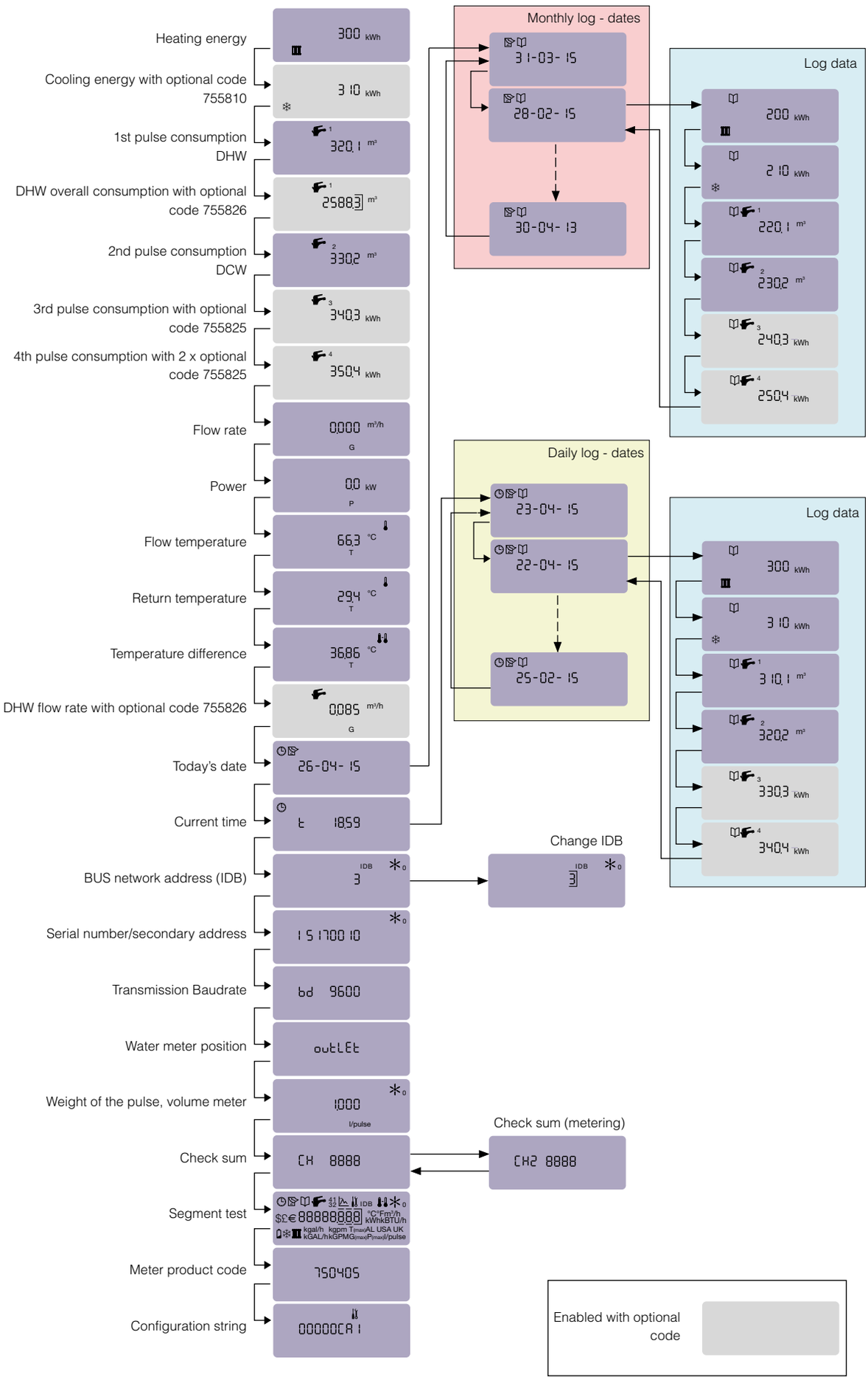
	COLD WATER	HOT WATER
Size	**3/4"**	**3/4"**
Single jet meter	PN 16	
Permanent flow rate Q_3	**2500 l/h**	**2500 l/h**
Overload flow rate Q_4	3125 l/h	3125 l/h
Working temperature range	**0,1-30 °C**	**30-90 °C**
Horizontal installation		
Minimum flow rate Q_1	50 l/h	50 l/h
Transitional flow rate Q_2	200 l/h	200 l/h
Vertical installation		
Minimum flow rate Q_1	100 l/h	100 l/h
Transitional flow rate Q_2	250 l/h	250 l/h
Max. % error for $Q_2 \le Q \le Q_4$	±2 %	±3 %
for $Q_1 \le Q \le Q_2$	±5 %	±5 %

Note:
- Before bracketing the domestic water kit to the template supports, check the direction of flow indicated on the BALLSTOP valve body.
- Before bracketing the water meter, check the direction of flow indicated on the meter body.

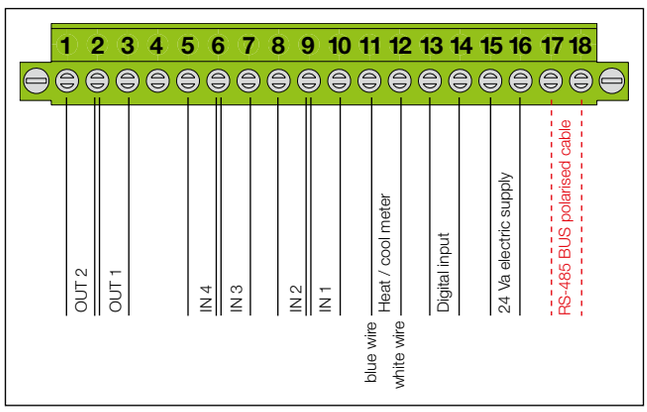
Note: The DHW/DCW functions are supplied separately. The template stub pipe allows **flushing of the water system during the initial installation phase (Tmax 55 °C)**. The water flow meter is **provided** for subsequent hydraulic bracketing and electrical wiring to the CONTECA® EASY electronic panel.

User information cycle

The heat meter is equipped with a liquid crystal display. The display is activated by pressing the key on the front PUSH. By repeatedly pressing the key briefly, it is possible to scroll through the various information windows.



ELECTRICAL-ELECTRONIC OPTIONS



1) Heating and/or cooling unit metering

11 - 12 Heating water meter
(11 - blue wire, 12 - white wire)

2) Domestic water and/or general pulse acquisition (OA-OC type)

2.1) Single pulse flow meter

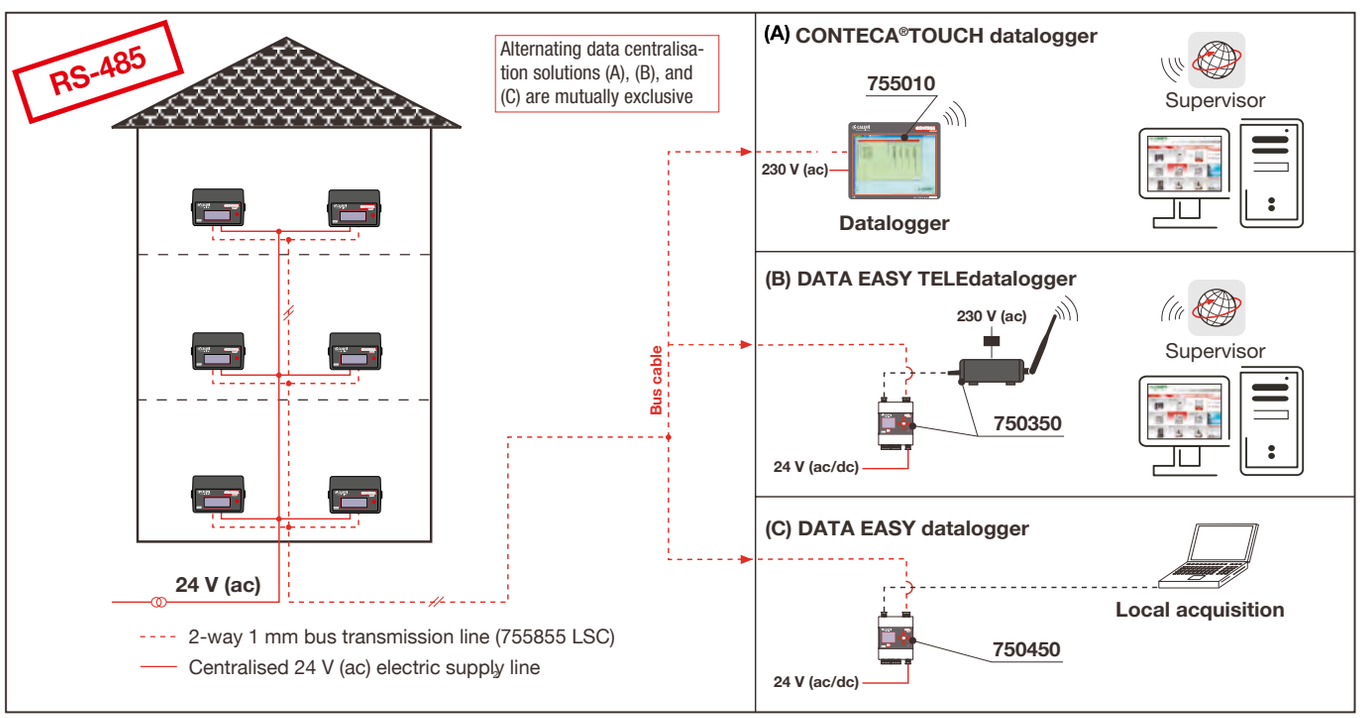
9 - 10 DHW or DCW (1st pulse consumption - IN 1)

2.2) Two pulse flow meters

9 - 10 DHW (1st pulse consumption - IN 1)
8 - 9 DCW (2nd pulse consumption - IN 2)

The CONTECA® EASY heat meter features a variety of metering and pulse acquisition settings which determine the predefined connection positions. The main settings are shown in the diagram.

DATA CENTRALISATION



N.B.: The transmission bus, code 755855 LSC, is two-way (cross-section 2 x 1 mm^2). The controller allows **max. 250 users**. The **maximum** length of each individual section is **1200 m**. Up to **4 separate sections** can be laid if using datalogger code 755010 in conjunction with multiplexer code 755005.

Note: for more information on metering refer to tech. broch. 01307

755810 Cooling metering

The CONTECA® EASY meter can be activated via software to keep a record of **consumption in heating and cooling mode in separate registers, by evaluating the sign of the temperature difference.**

Code
755810

750811 MODBUS transmission option

Table of registers and communication specifications available on the Caleffi Sistemi Calore website.

Code
750811

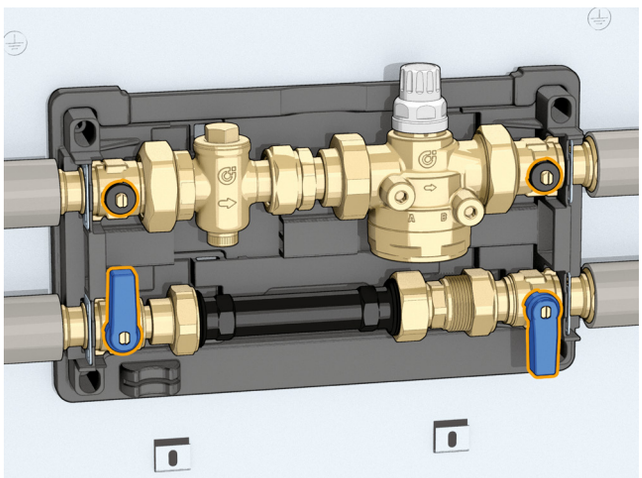
7558. Pulse output

The pulse output enables transferral of the heating and/or cooling unit energy values to a generic logger. **The pulse weighs 1 kWh**.
The pulse output with no potential is **open collector** with pulse time 120 ms - Vmax 24 V(dc).

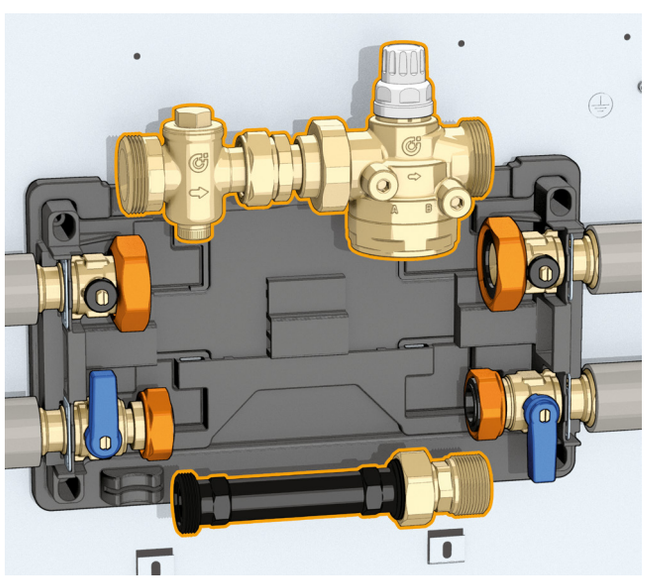
Code	
755881	single pulse output - HEATING
755882	double pulse output - HEATING/COOLING

PLURIMOD® EASY installation

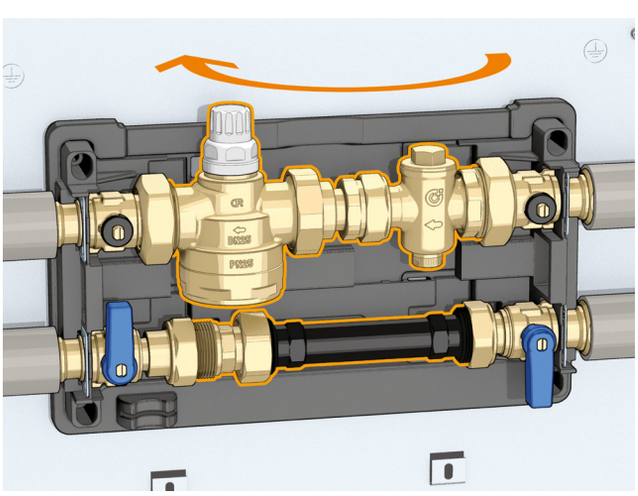
Preliminary operations
(Only for installation with rhs riser column or inlet from the central heating system from above).
Close the 4 ball valves indicated in the figure.



Adjust the 4 caps shown so that you can remove the two sections of the hydraulic module



Re-fit the two parts, rotated by 180°, as shown in the figure

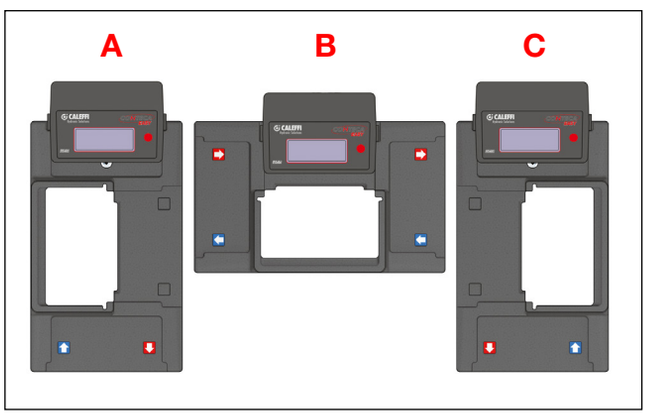


PHASE 1 - Flushing the system

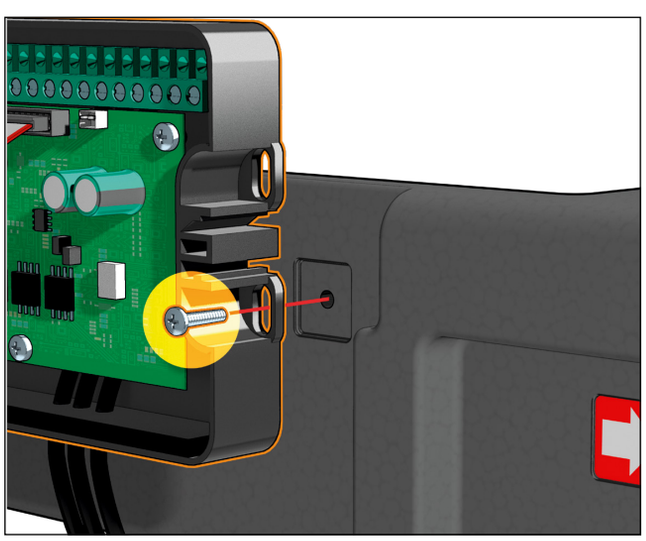
Flushing the circuit is critically important to ensure correct operation of the system and avoid outages and potential metering errors.
Proceed as instructed below:

- Perform the hydraulic connections for the module, observing the flow and return directions (the return line corresponds to the two valves with a blue lever and the flow direction is indicated on the body of the regulating valve);
- Make sure the 4 ball valves are fully open;
- Flush the system;
- Close the 4 ball valves again;
- Clean the flow strainer (see page 2).

PHASE 2 -
Mounting the CONTECA EASY electronics panel on the insulation

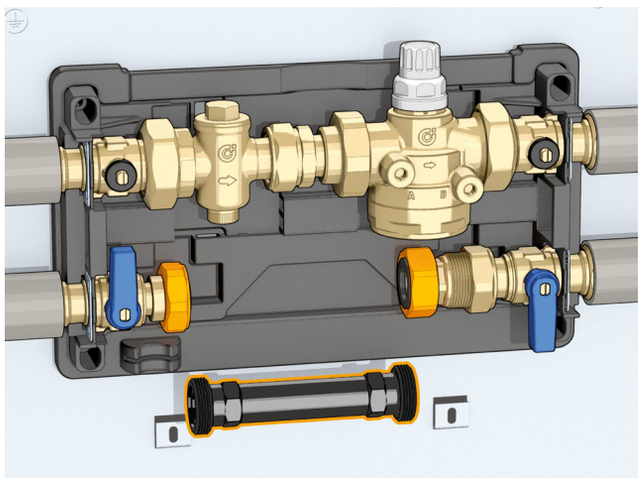


- Identify the CONTECA® EASY electronics panel installation position on the front of the insulation in accordance with the type of installation of PLURIMOD® EASY:
  - position A for vertical installation with right-hand side flow and downward flow direction (position 3 page 5);
  - position B for horizontal installation (pos. 1-2 page 5);
  - position C for vertical installation with left-hand side flow and downward flow direction (position 4 page 5).

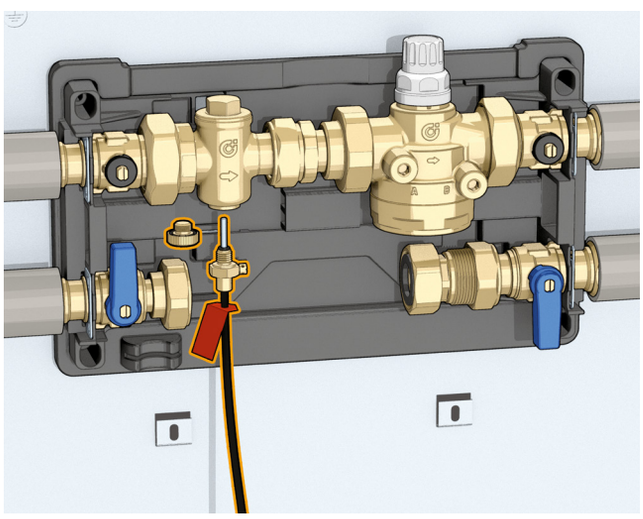


- Open the CONTECA® EASY electronics panel using a flat-tip screwdriver to work on the side tabs;
- Secure the back of the CONTECA® EASY electronics panel using the screws provided;
- Wire the heating water meter on terminals 11 and 12 (11- blue wire and 12 - white wire);
- Connect the 24 V (ac) electric supply and any RS-485 Bus in accordance with the diagram on page 8;
- Proceed with any **wiring of the water meters,** in accordance with the diagram on page 9;
- Close the CONTECA® EASY electronics panel again;
- Seal the electronics panel.

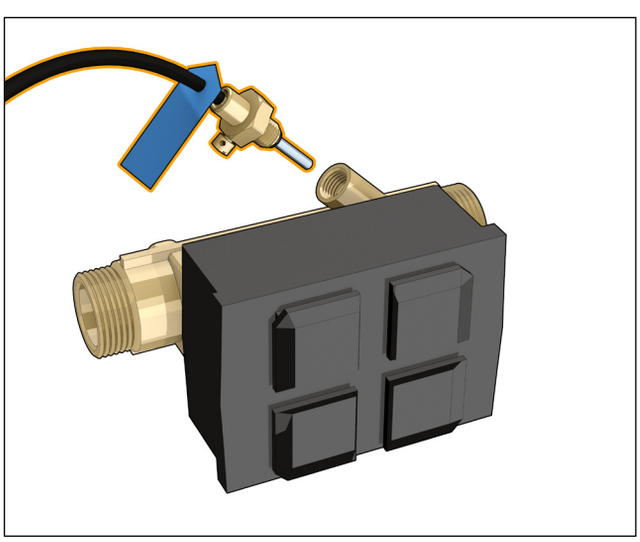
PHASE 3 - Heat meter installation
Remove the plastic template by working on the caps shown



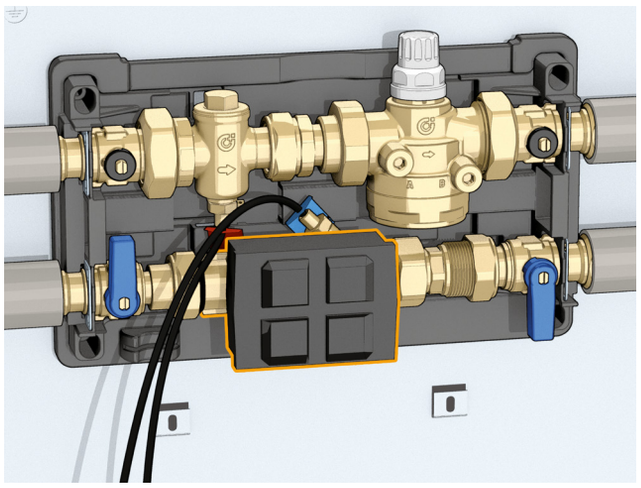
Fit the heat meter flow probe as indicated in the figure and seal it.



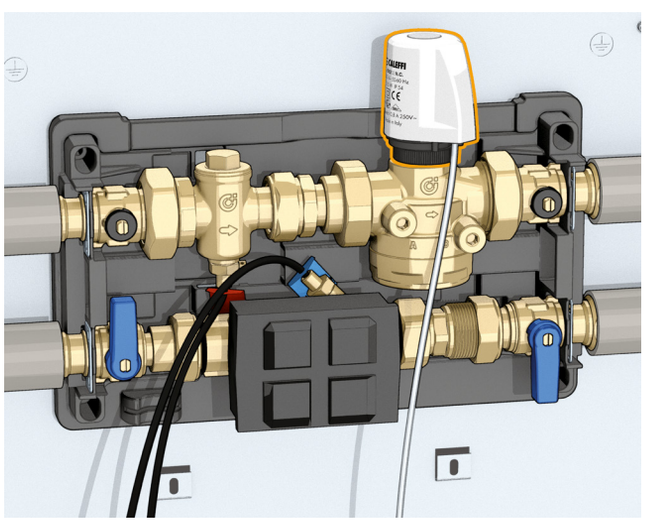
Fit the return probe to the relevant connection on the ultrasonic water meter as shown in the figure, then seal it.



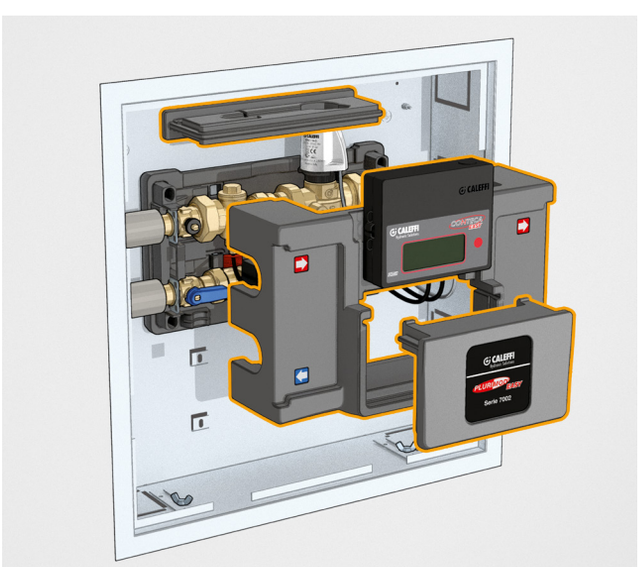
Fit the water meter in place of the template removed previously and tighten the nuts. Seal the ultrasonic water meter.



PHASE 4 -
Thermo-electric actuator installation and insulation closure
Remove the protective cap from the regulating valve and fit the actuator, as shown in the figure



Open the 4 ball valves and check the hydraulic seal visually;
Close the insulation as instructed previously.



SPECIFICATION SUMMARY

Code 700306
Universal positioning recessed box with galvanised backplate and adjustable depth finishing frame composed of:
- Painted sheet metal box for interiors (RAL9010), with door fitted with universal closure system (l = 480 mm - h = 480 mm - d = 130–160 mm)
- 2 pairs of 1” M ball valves
- Plurimod Easy 1” hydraulic module, including 145 series pressure independent control valve and adjustable flow rate regulator.
- All-over insulation, rear and front, in black EPP (density 50 g/l, thermal conductivity 0,037 W/(mK) at 10 °C), suitable for installation in heating and cooling systems
- Technopolymer mounting bracket with thermal break
- Guides for positioning 2 domestic water meters (DHW - DCW).

Code 750725
CONTECA® EASY ULTRA direct heat meter, compliant with directive 2014/32/EU (MID), for use in heating and cooling systems, with the following specifications: ultrasonic water meter for hot water (maximum temperature 90 °C) with pulse output, Qp = 2,5 m^3/h, Qi = 10 l/h, NTC type temperature probe, data viewing on 8-digit display, working temperature range 10-90 °C, protection class IP 54, transmission via TWO-WAY Bus in accordance with MBus protocol over RS-485 or MODBUS RTU over RS-485, electric supply 24 V (ac) 50 Hz - 1 W. Options: up to 2 additional pulse inputs - up to 2 pulse outputs.
Includes ON/OFF thermo-electric actuator at 230 V (ac).

Code 750745
CONTECA® EASY ULTRA direct heat meter, compliant with directive 2014/32/EU (MID), for use in heating and cooling systems, with the following specifications: ultrasonic water meter for hot water (maximum temperature 90 °C) with pulse output, Qp = 2,5 m^3/h, Qi = 10 l/h, NTC type temperature probe, data viewing on 8-digit display, working temperature range 10-90 °C, protection class IP 54, transmission via TWO-WAY Bus in accordance with MBus protocol over RS-485 or MODBUS RTU over RS-485, electric supply 24 V (ac) 50 Hz - 1 W. Options: up to 2 additional pulse inputs - up to 2 pulse outputs.
Includes ON/OFF thermo-electric actuator at 24 V (ac).

Code 755810
Metering of refrigeration units. Upon activation of the software module, CONTECA® EASY is able to meter the thermal units and refrigeration units, on the evaluation of the temperature difference reversal, in separate registers for both the current values and for the logged files.

Code 750811
Communication according to Modbus-RTU protocol over RS-485. The CONTECA® EASY meter is factory set to manage communication according to Modbus protocol rather than Meter-Bus.

Code 700050-**7000**51-**7000**52-**7000**53
Domestic cold water (DCW) function, domestic hot water (DHW) function, consisting of:
- water meter (MI001) Ø 3/4”, without pulse output code 700050 (for hot water)/700052 (for cold water); with pulse output (K 10) code 700051 (for hot water)/700053 (for cold water);
- ball shut-off valve with integrated BALLSTOP check valve and telescopic tailpiece with 3/4” male terminal;
- ball shut-off valve with 3/4” male terminal;
- flushing pipe;
- mounting bracket.

Code 700009
Template for domestic water volume meter equipped with:
- ball shut-off valve with integrated BALLSTOP check valve and telescopic tailpiece with 3/4” male terminal;
- ball shut-off valve with 3/4” male terminal;
- flushing pipe;
- mounting bracket.

Code 794205-**7942**15-**7942**05/C-**7942**15/C
Water meter (MI001) Ø 3/4”, with pulse output (k=10) code 794205/C (for hot water)/794205 (for cold water); without pulse output code 794215/C (for hot water)/794215 (for cold water).

Caleffi S.p.A.
S.R. 229, no. 25 · 28010 Fontaneto d'Agogna (NO) - Italy -
Tel. +39 0322 8491 · Fax +39 0322 863723
info@caleffi.com · www.caleffi.com