Diatech PDC

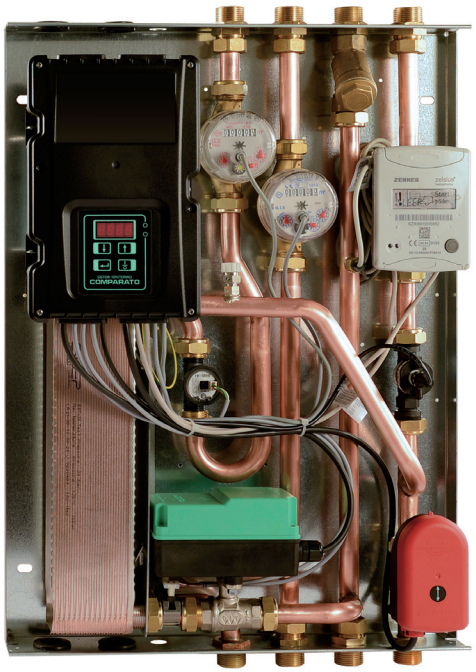
Accounting, heating and production of domestic hot water for HEAT PUMP plants

DESCRIPTION

DIATECH PDC is an Hydraulic Interface Unit (HIU) for direct metering and management for central heating systems with heat pump generator.

Thanks to the special highly efficient plated heat exchanger, the HIU is able to produce instantly up to 15 l/min of domestic hot water (thermal gradient 10/45°C) with a primary fluid temperature of only 50°C.

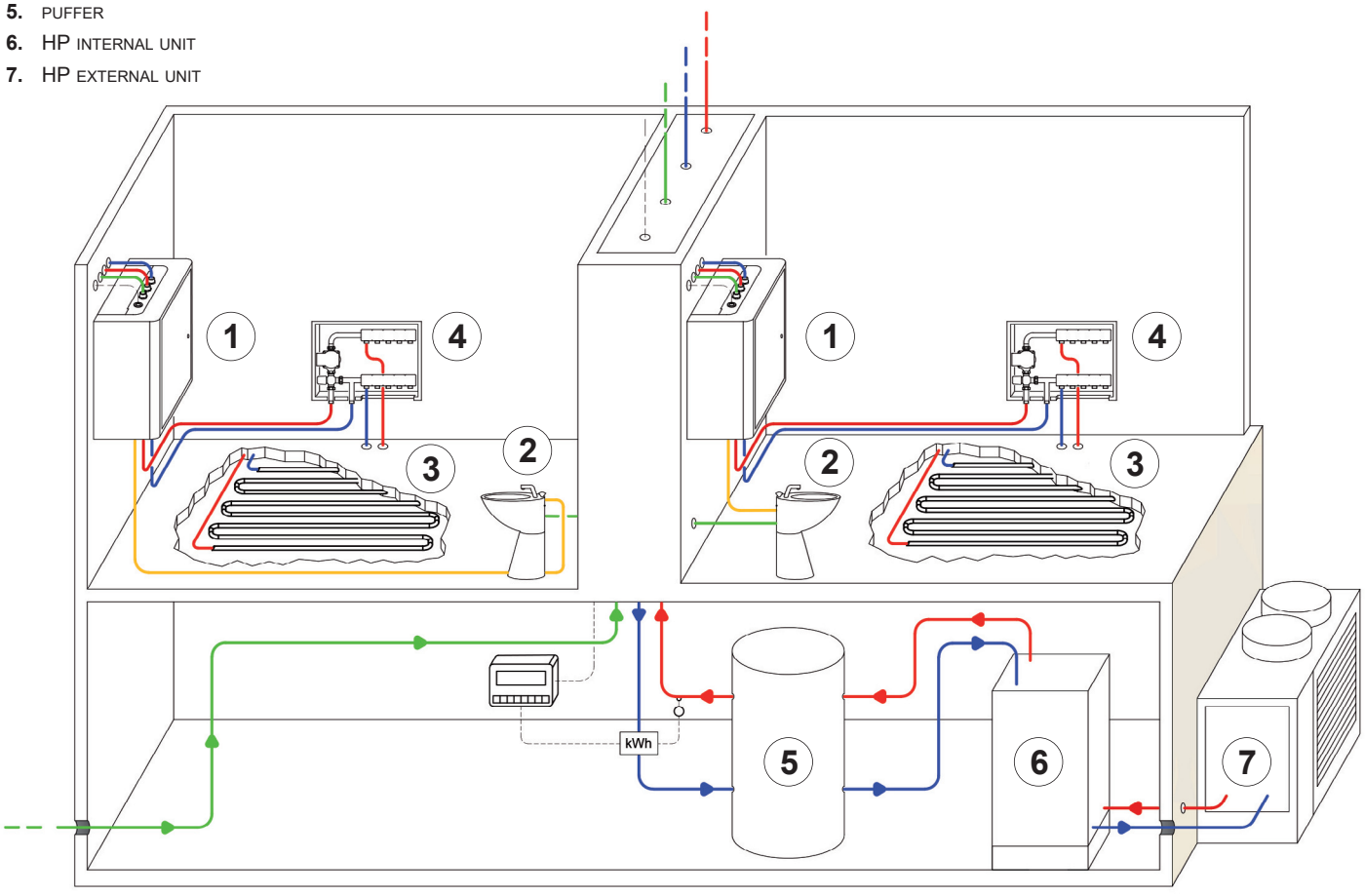
DIATECH PDC is available in a wall-mounted or built-into-wall version with opposing hydraulic connections, upper to the centralised system and lower to the housing unit, and can be equipped with different balancing systems.



- **DHW instant production with low temperature primary unit**
- **Plants with heat pump generator**
- **Management independence**
- **Costs breakdown according to real consumptions**
- **Total security**
- **Energy saving**

EXAMPLE OF USE

1. DIATECH PDC
2. DOMESTIC UNITS
3. RADIANT PANEL
4. MIXING UNIT
5. PUFFER
6. HP INTERNAL UNIT
7. HP EXTERNAL UNIT



Diatech PDC

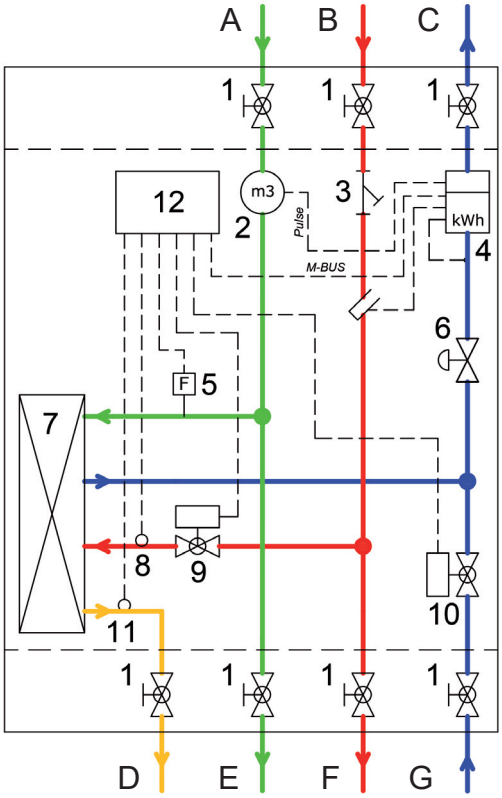
COMPONENTS AND FLOWS

A : Domestic cold water inlet
B : Outlet from centralised system
C : Return to centralised system
D : Domestic hot water outlet
E : Domestic cold water outlet
F : Heating outlet
G : Heating return

1 : Manual interception valve (flush-mounted version)
2 : Domestic cold water meter * (accessory)
3 : Y-filter
4 : Heat meter * (accessory)
5 : DHW flow meter
6 : Balancing valve / ModFlow
7 : Braze welded plate exchanger
8 : Heat exchanger temperature sensor
9 : 2-way motorised valve modulating domestic
10 : 2-way on/off motorised valve, heating
11 : DHW temperature probe
12 : Electrical box with user interface

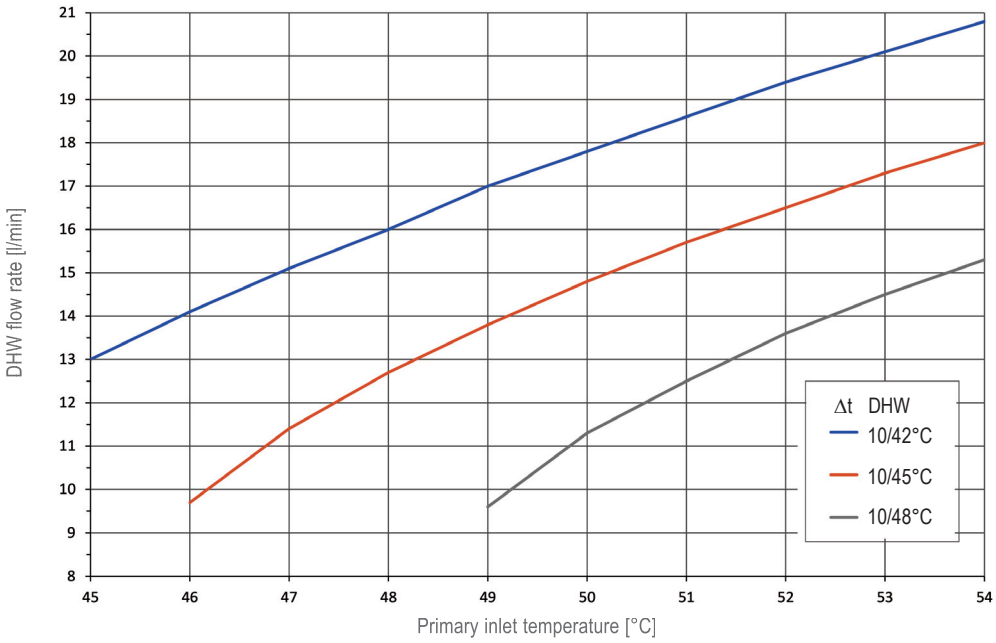
* The module is supplied with plastic sockets that temporarily replace the meters to allow flushing of the system before installation of the components.

UPPER CONNECTIONS
Centralised system side



LOWER CONNECTIONS
Housing unit side

DOMESTIC HOT WATER PRODUCTION



Diatech PDC

TECHNICAL FEATURES

ENERGY METER	
Type	mechanical (1)
Nominal capacity Qp	1,5 m³/h
Minimum flow rate	0,015 m³/h
Maximum flow rate	3,0 m³/h
DN	15
PN	16
Power supply	lithium battery
Protection	IP54
Interface	M-bus (2)
Certification	MID

DOMESTIC WATER VOLUMETRIC METER	
Type	mechanical
Permanent flow rate Q	1,5 m³/h
Minimum flow rate	0,03 m³/h
Maximum flow rate	3,0 m³/h
DN	15
PN	16
Interface	pulsed output
Certification	MID

MOTORISED VALVES	
On/OFF type (90°)	heating - 15 sec.
Modulating type (90°)	domestic - 4 sec.

DHW ELECTRONIC CONTROL SYSTEM	
Type	P.I.D algorithm
Deadband	±1°C
Display approximation	1°C
Adjustment range	40-60°C

TEMPERATURE PROBE	
Type	NTC 10kΩ

HEATING – PRIMARY CIRCUIT OF THE EXCHANGER	
Exchanger	closed-cell polyethylene foam shell

HEATING and PRIMARY CIRCUIT OF THE EXCHANGER	
Type of fluid	water - VDI 2035 (3)
Max temperature	90°C
Max working pressure	6 bar (4)

SECONDARY DOMESTIC HOT WATER PRODUCTION	
Type of fluid	water (5)
Max temperature	80°C
Max working pressure	6 bar (4)
DHW activation flow rate	2,5 l/min
DHW cut-off flow rate	1,5 l/min
Maximum flow rate	31 l/min

PIPELINES	
Material	copper
Size	Ø 18 mm

HYDRAULIC CONNECTIONS	
Material	brass
Size	G3/4"M ISO228/1

HYDRAULIC SUPPORT / TEMPLATE BOX	
Material	galvanized sheet metal 10/10

SHELL / FRAME AND HATCH	
Material	material black sheet 10/10
Color	RAL 9010

POWER SUPPLY	
Voltage	230V ± 10%
Frequency	50 Hz
Max power consumption	20W

USAGE	
Installation	indoor
Room temperature	5 - 55°C
Environmental humidity	25 - 85%
Degree of electrical protection	IP40

WEIGHT	
Wall-mounted, for technical compartment	15 kg
Built-in, with template box	27 kg
Wall unit with shell	23 kg

1 Ultrasound on request.
2 Impulsive / Wireless M-bus on request.
3 For glycol solutions, contact the Technical Office.
4 For higher pressures, contact the Technical Office.
5 For water with a hardness higher than 15°f, the use of softeners is recommended.

PLATE EXCHANGER CHARACTERISTICS

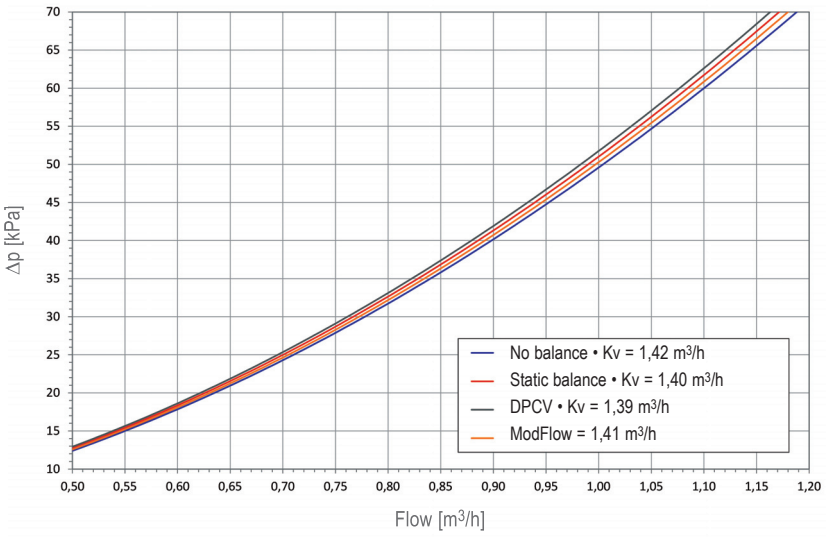
Thermal gradient DHW 10/45°C

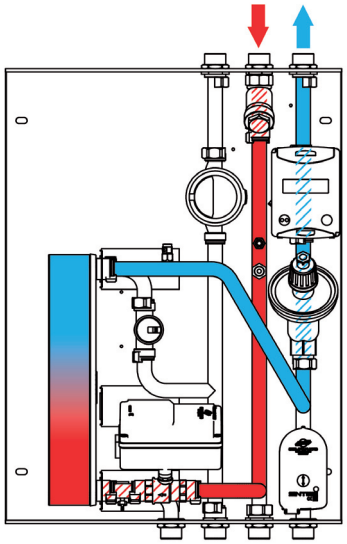
PRIMARY INPUT TEMPERATURE	DOMESTIC HOT WATER FLOW	PRIMARY CIRCUIT FLOW	PRIMARY OUTPUT TEMPERATURE	POWER
°C	l/min	m³/h	°C	kW
48 °C	8,0	0,62	20,6	19
	10,0	0,80	21,7	24
	12,7	1,08	23,0	31
50 °C	10	0,68	19,0	24
	12,0	0,84	19,9	29
	14,8	1,08	21,0	36
52 °C	12	0,75	18,0	29
	14	0,89	18,7	34
	16,5	1,08	19,6	40

Diatech PDC

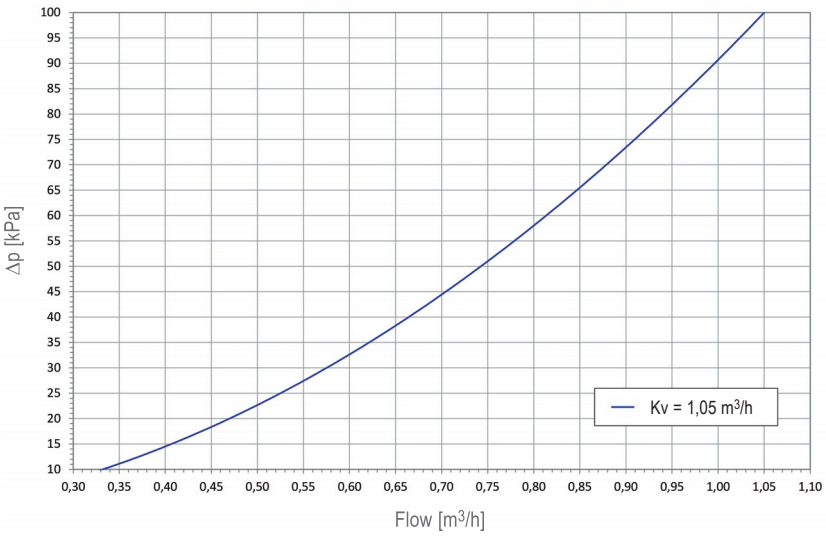
HYDRAULIC FEATURES

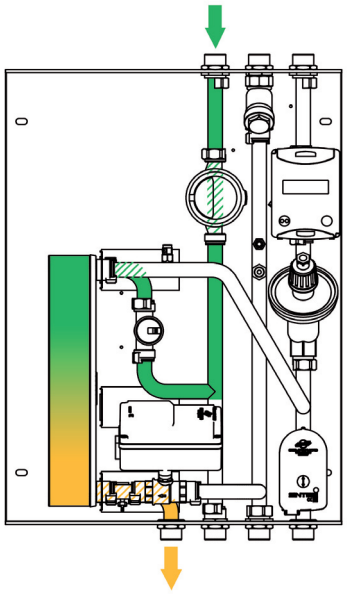
DHW production - primary



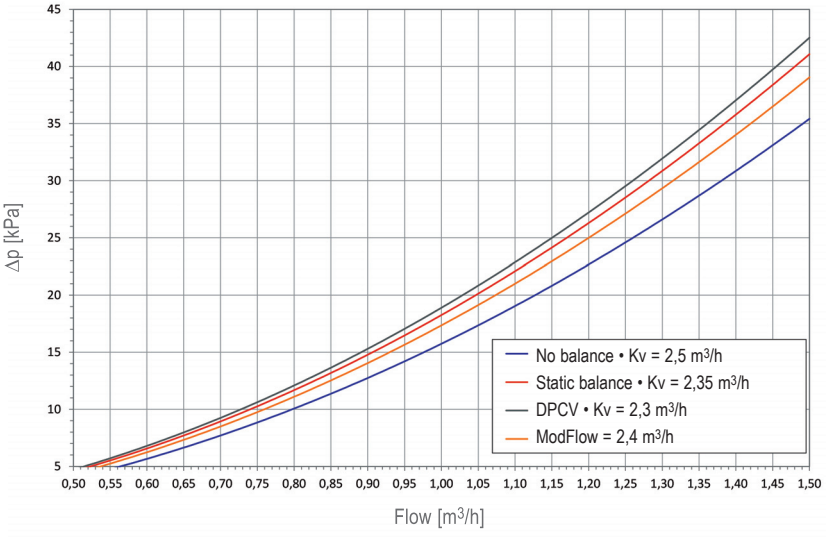


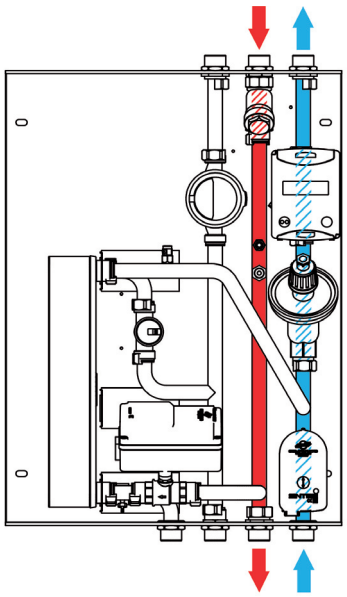
DHW production - secondary





Heating





Diatech PDC

OPERATION

HEATING:

The **DIATECH PDC** allows the fluid to be intercepted by means of a SINTESI 2-way ON/OFF motorised valve controlled by a room thermostat (not included) and the flow rate to be regulated by means of a balancing valve, if present. It is possible to choose between a static balancing valve, a differential pressure control valve (DPCV) and an electronic flow control system (ModFlow) ModFlow is Comparato's electronic flow control system: the control system instantaneously detects the flow rate value from the flowmeter with Vortex technology and compares it with the set value: if these two values are different, the system moves the motorised control valve until the value detected coincides with the desired value.

Advantages of the ModFlow system:

- pressure-independent flow control: precise and automatic flow control is achieved. The valve reacts to pressure changes and the controller modulates the actuator to maintain the flow setpoint
- direct flow measurement: unlike pressure-independent mechanical valves - PICVs that provide an approximate/calculated flow rate - the ModFlow balancing system provides a real flow rate as feedback. The flow verification is simple and immediate
- easy flow rate setting directly through the keypad and display
- rapid response in case of flow rate change
- reliability over time

For temperature control of the radiant system of the housing unit, it is advisable to install a mixing group with distribution manifolds downstream of the **DIATECH PDC** HIU.

DOMESTIC HOT WATER PRODUCTION:

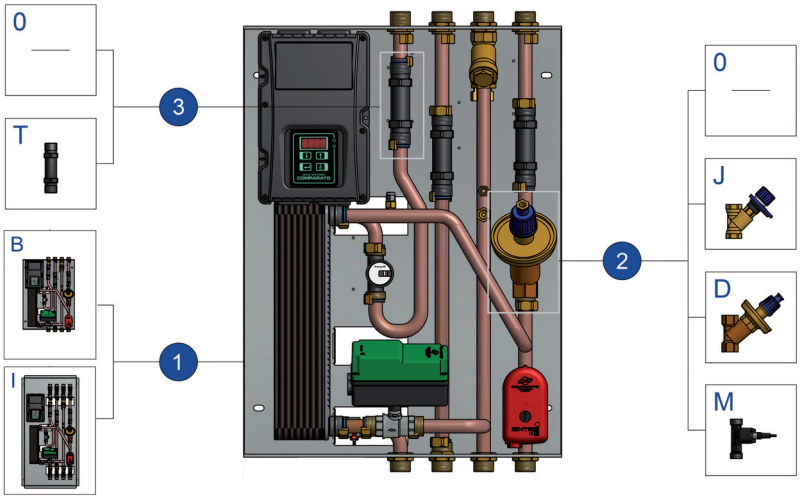
The control of the temperature of the domestic hot water is electronically regulated by modulating the flow rate on the primary circuit according to the temperature measured by means of a suitable sensor.

DIATECH PDC operates according to traditional domestic priority logic: this means that if domestic hot water production is required during operation in heating mode, this request has priority over the heating function.

HEAT EXCHANGER FUNCTION:

If this function is activated, when there is no domestic hot water withdrawal, a small amount of fluid taken from the thermal energy distribution system is used to keep the primary circuit piping and heat exchanger at temperature. In this way, the response time to the opening of the first health utility is reduced. A temperature probe allows direct and effective control while minimising energy consumption.

MODULE CONFIGURATION



VERSIONS AND CODE BUILDER

1	2	3
PC	B	M	0

SERIES
PC = Diatech PDC

INSTALLATION
B = base (without shell)
I = embedded, with temporary door

TREATED DOMESTIC LINE
0 = not required
T = counter replacement stub

BILANCIAMENTO
0 = not required
J = static balance
D = DPCV
M = ModFlow electronic flow control

Diatech PDC

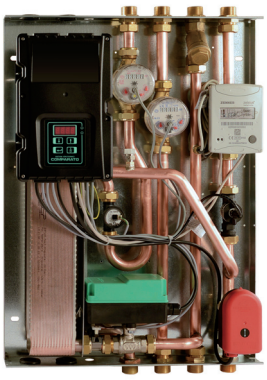
ACCESSORIES

ACCESSORY	DESCRIPTION	CODE
ENERGY METER 	Mechanical, DN15, Qp = 1,5 mc/h, battery powered, M-bus interface MID approved	CFCENM34B
	Ultrasonic, DN15, Qp = 1,5 mc/h, battery powered, M-bus interface MID approved	CFCENU34B
DOMESTIC WATER METER 	Volumetric for CHW, DN15, Qp = 2,5 mc/h with pulse output	CFCAFSI15
	Volumetric for DHW, DN15, Qp = 2,5 mc/h with pulse output	CFCACSI15
SHELL 	Cover shell in powder-coated sheet metal, white RAL 9010	DSM
	Frame and door with lock, powder-coated color white RAL 9010 - for flush-mounted version	DSCS

INSTALLATION

The **DIATECH PDC** hydraulic interface unit is designed for installation inside buildings in frost-protected rooms. The HIU is supplied with plastic sockets that temporarily replace the energy meter and domestic water meters to allow flushing of the system prior to installation of the components. In all cases, the unit must be installed vertically with the upper plumbing connections to the centralised system and the lower connections to the housing unit.

BASE version
without **SHELL**



BASE version
with **SHELL**

BUILT-IN version

Diatech PDC

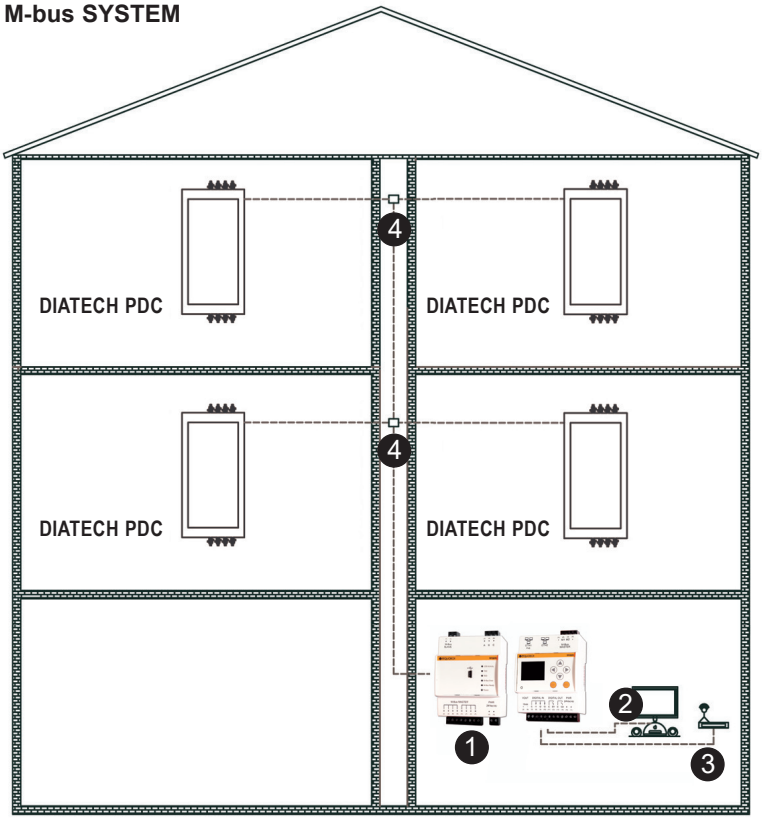
INSTALLATION WARNING

It is advisable to use flexible hydraulic connection in order to compensate for any thermal expansion and possible misalignment between the system connections.

WARRANTY AND FIRST START-UP

The guarantee runs from the date of acceptance, if required, and is valid for 24 months. If testing is not required, the warranty will start from the date of purchase.

M-bus SYSTEM



CERTIFICATIONS

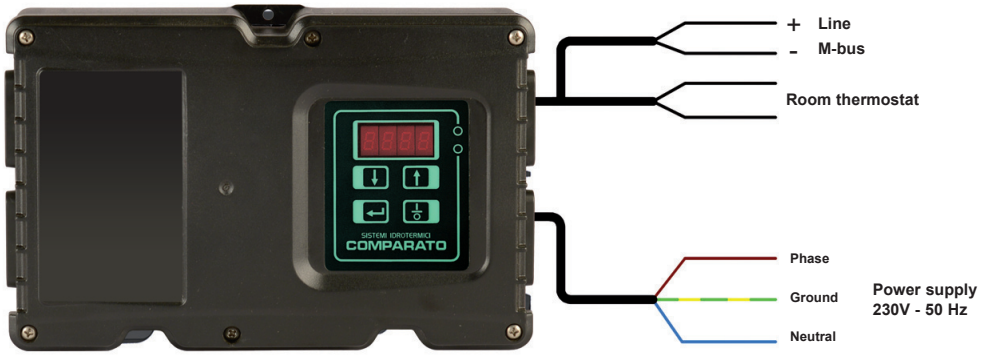
EC Machinery Directive
2006/42/EC.
EC Low Voltage Directive
2014/35/ue: 26/04/2014
EC Electromagnetic Compatibility Directive
2014/30/UE

The **M-bus** system represents a cabled means of communication among the peripheral metering units and a remote control unit which collects the consumption data registered by each peripheral unit. The consumption data can be read directly on the control unit display or by means of a PC connected to the control unit; moreover, it is possible to interface the control unit with a modem in order to be able to query the control unit from a remote position.

For further information, please contact our Technical Office.

1 : M-bus data acquisition control unit
2 : Control unit-to-PC connection
3 : Control unit-to-modem connection
4 : Concentric nodes

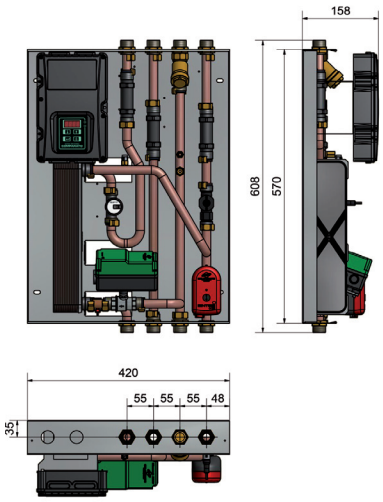
ELECTRICAL CONNECTIONS



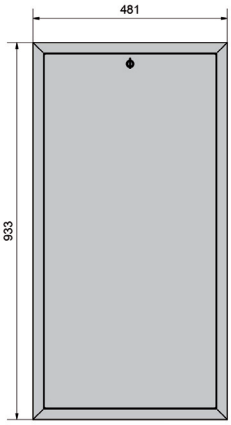
M-bus line
• Unshielded twisted 2 x 1,5 mm² cable (for connections from the extension nodes to the individual satellite units).
Room thermostat (TA)
• Free contact, without tension.
• Cable 2 x 0,75 mm² (cable length not exceeding 30 m).
Power supply
Cable 3 x 1,5 mm²
• phase (brown);
• neutral (blue);
• ground (yellow/green).

OVERALL SIZE

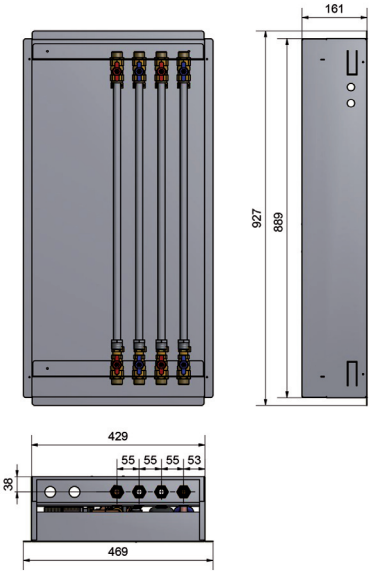
BASIC version without **SHELL**



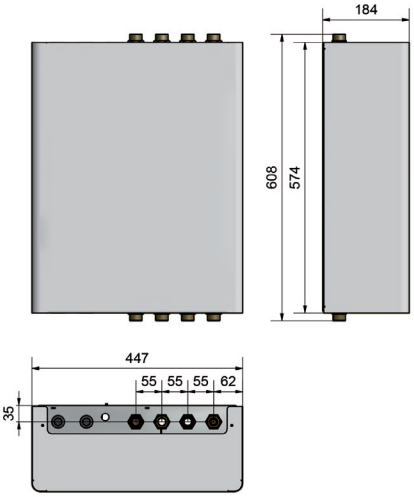
FRAME and **DOOR**



TEMPLATE CASE for **FLUSH-MOUNTED** version



BASIC version with **SHELL**



EXAMPLE OF SPECIFICATIONS

DIATECH PDC HYDRAULIC INTERFACE UNIT for direct metering and management of central heating systems with heat pump generator. Instantaneous domestic hot water production via plate heat exchanger controlled by a pre-tuned three-action electronic system (PID) and motorised control valve on primary exchanger circuit. Main components: • DHW meter replacement socket - Energy meter replacement socket - Y-strainer - Flow meter - Plate heat exchanger - **Diamant** 2-way modulating motorised valve on primary exchanger circuit - **SINTESI** 2-way ON/OFF motorised valve - ModFlow electronic flow control - DHW flow temperature probe - Hot exchanger function temperature probe - Control panel with electronic control board and digital display. Copper piping Ø18 mm, opposing hydraulic connections (upper on centralised system side, lower on housing unit side) G3/4"M (ISO 228/1 standard). Maximum pressure 6 bar, maximum temperature 90°C. Nominal output 36 kW, nominal primary circuit flow rate 1.08 m³/h and secondary circuit flow rate 14.8 l/min, primary thermal gradient 50/21°C and secondary thermal gradient 10/45°C. Electrical connections: power supply, room thermostat and M-bus line. Power supply: 230 V - 50Hz, maximum power consumption 20 W. Flush-mounted installation with template case.

Brand: **COMPARATO**

Code: **PCBM0**

UPDATED DATA SHEETS AVAILABLE AT www.comparato.com