Diamant CLIMA PDC
Compact CLIMA PDC

3-WAY MOTORISED VALVES FOR AUTOMATIC SWITCHING BETWEEN HEAT PUMP AND BOILER

USE AND FUNCTIONS

- **automatic switching between the heat pump (HP) and the boiler according to the external temperature**
- **control of a diverter valve to regulate the temperature of the domestic hot water boiler**
- **daily storage of heat pump and boiler operating hours**
- **interface with Building Management Systems (BMS) via Modbus-RTU communication**

  protocol *Modbus*

- **ClimaPDCtool software** CLIMA PDC tool
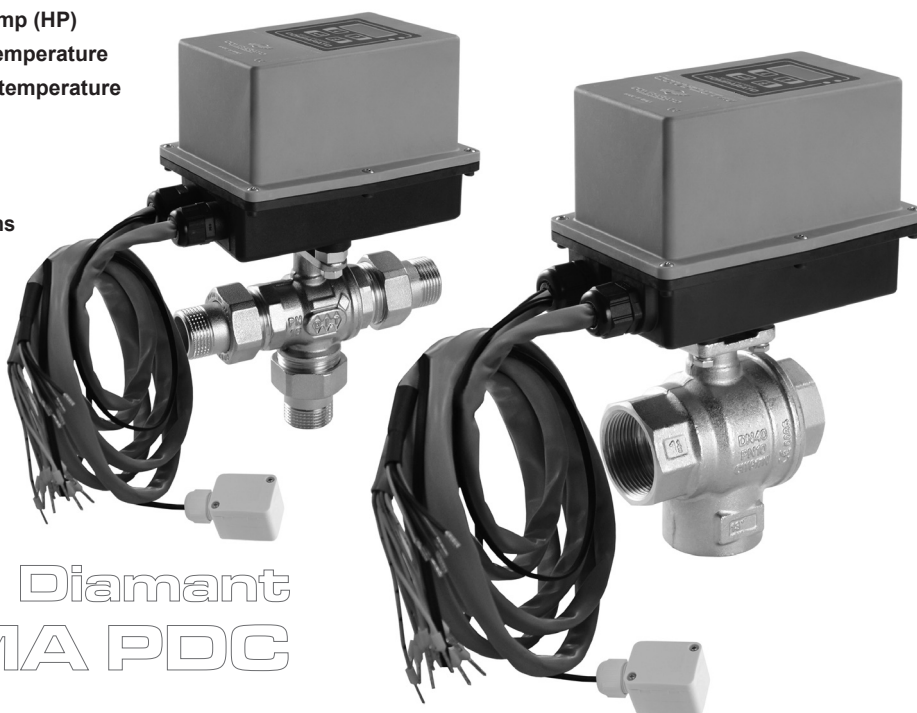
Diamant
CLIMA PDC

Compact
CLIMA PDC

TECHNICAL FEATURES	Diamant CLIMA PDC	Compact CLIMA PDC
Power supply	230V 50/60 Hz • 24V 50/60 Hz • 110V 50/60 Hz *	
Maximum power consumption	15 VA	14 VA
Operating time (90° rotation)	35 sec	45 sec
Protection degree	IP65	
Operational room temperature	-10°C to + 50°C, UR max. 85%	
Type of fluid	Water, water with glycol max. 30%	
Fluid temperature	-10°C to +100°C	
External temperature probe	NTC sensor, IP65	
External temperature adjustment range for HP / Boiler switching	0°C to 25°C	
DHW deviation temperature adjustment range	25°C to 65°C	
Precision	± 1°C	
Serial interface	RS485	
Communication protocol	Modbus RTU	
Digital inputs	HP forcing • Boiler forcing • Room thermostat	
Analogue inputs	DHW (NTC) boiler probe	
Digital outputs	HP operation • Boiler operation • DHW deviation	
Cable length	80 cm	
Maintenance	None	
Certification	CE	

* 110 V versions are available on request

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OPERATION

CLIMA PDC 3-WAY diverter motorised valves operate thanks to integrated electronics that allow easy and intuitive programming, directly on board the actuator.

- **HP / BOILER SWITCHING**

    By means of the appropriate sensor, the controller detects the outside temperature and diverts the system return flow to the heat pump or boiler depending on the set switching value. In this way, the system is always supplied by most convenient generator in terms of efficiency under varying outside air temperature conditions. In addition to the value of the switching set-point, it is possible to set the value of the hysteresis that intervenes when the temperature is falling.

    Example:

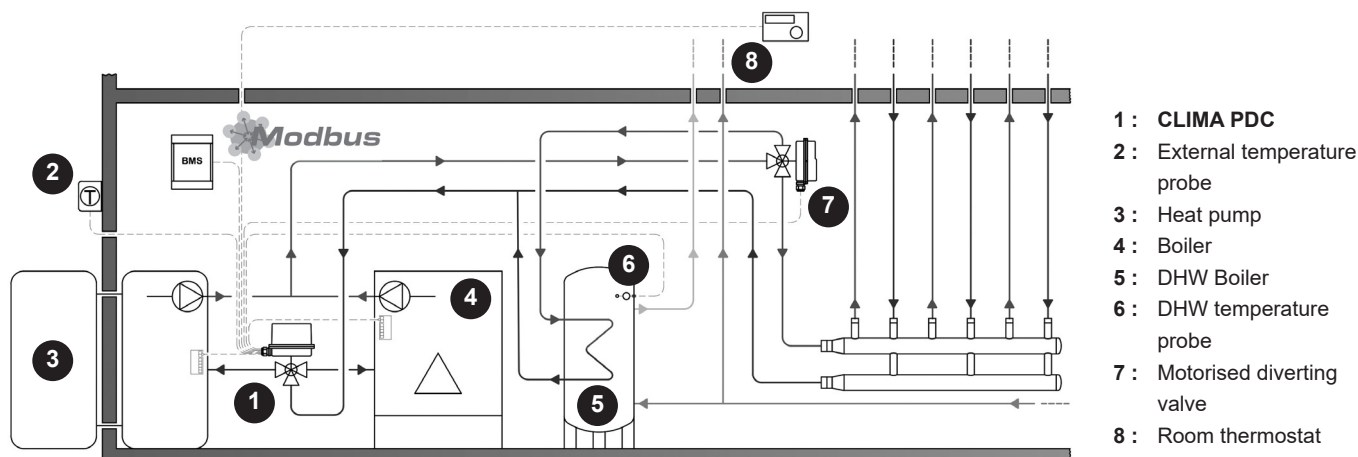   Switching set-point temperature = 8°C

    Hysteresis = 2°C

    With these operating parameters, the 3-way valve switches to the HP when the outside temperature exceeds 8°C and switches back to the boiler when the outside temperature drops to 8°C - 2°C = 6°C. This prevents any fluctuation between the two generators.

1 : **CLIMA PDC**
2 : External temperature probe
3 : Heat pump
4 : Boiler
5 : Room thermostat
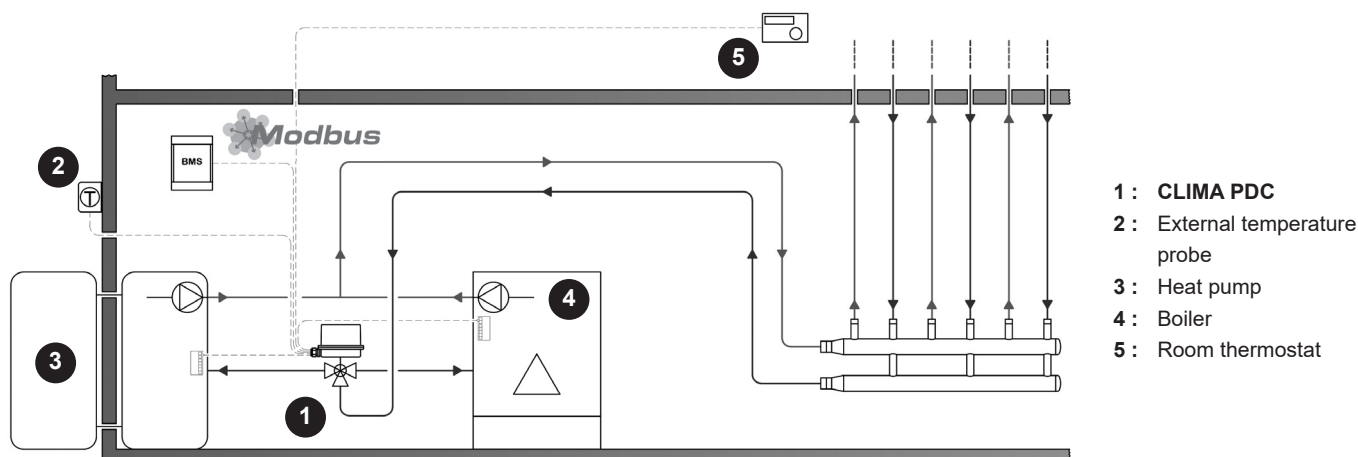
- **DHW BOILER DIVERTER VALVE CONTROL**

    If this function is activated, **CLIMA PDC** detects the temperature of the domestic hot water inside the storage tank (optional immersion probe) and controls the motorised valve to divert the flow from the heating system to the cylinder coil, according to the set set-point temperature.

1 : **CLIMA PDC**
2 : External temperature probe
3 : Heat pump
4 : Boiler
5 : DHW Boiler
6 : DHW temperature probe
7 : Motorised diverting valve
8 : Room thermostat

The system works giving priority to the DHW storage and a digital outlet signals the DHW call. In addition to the DHW set-point temperature value, it is possible to set the hysteresis value which intervenes when the cylinder temperature is falling.

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3-WAY MOTORISED VALVES FOR AUTOMATIC SWITCHING BETWEEN HEAT PUMP AND BOILER

• **STORAGE OF HP AND BOILER ACTIVATION TIME**

This function stores the boiler running time and the heat pump running time. When the room thermostat contact is closed, the controller counts the hours:minutes according to the status of the switching valve.

Each day, when 24:00 hours are reached, the following information packet is stored:

• Date (day/month/year)

• Heat Pump ON time (hours: minutes)

• Boiler ON time (hours: minutes)

When the memory runs out (52 days), new information packets are overwritten on the existing ones, starting with the oldest.

Thanks to the backup battery integrated on the electronic board, the data are kept stored even in the event of a power failure. All the stored data are made available through the RS485 serial connection with Modbus-RTU communication protocol.

REMOTE MANAGEMENT - Modbus RTU

CLIMA PDC is equipped with a Modbus-RTU interface and it is possible, using the RS485 serial connection, to modify all operating parameters, send commands to the valve, receive information on operating status and download stored data.

CLIMA PDC Valves can be connected with modern Building Management Systems (BMS). The Modbus address table can be downloaded from www.comparato.com. Using the RS485-USB interface device and the **COMPARATO climaPDCTool software**, it is possible to connect locally via PC.

climaPDCTool MANAGEMENT SOFTWARE

The free climaPDCTool software (downloadable from the website www.comparato.com) has a simple, complete and intuitive interface with all the functions of the diverter valve.
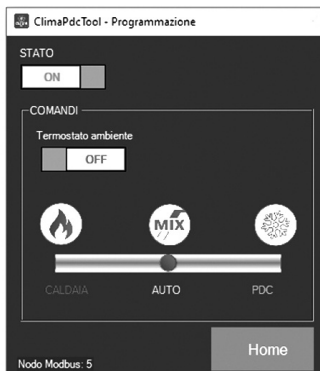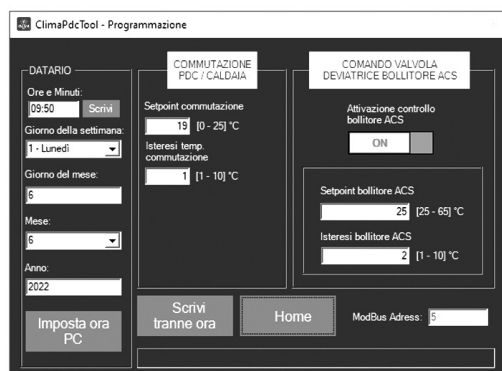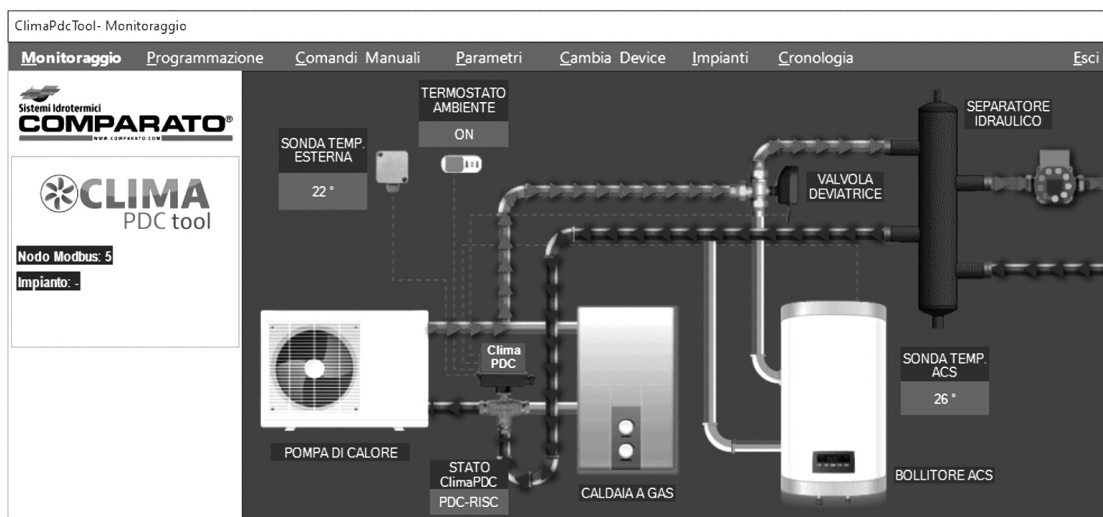
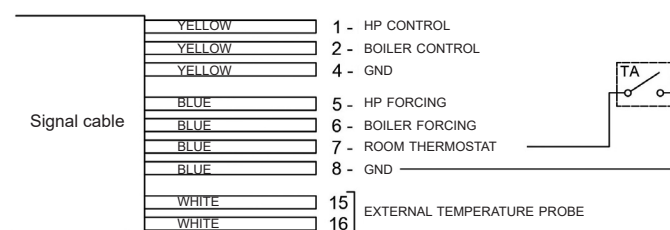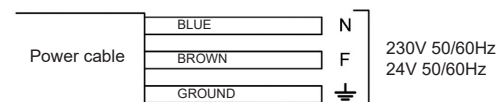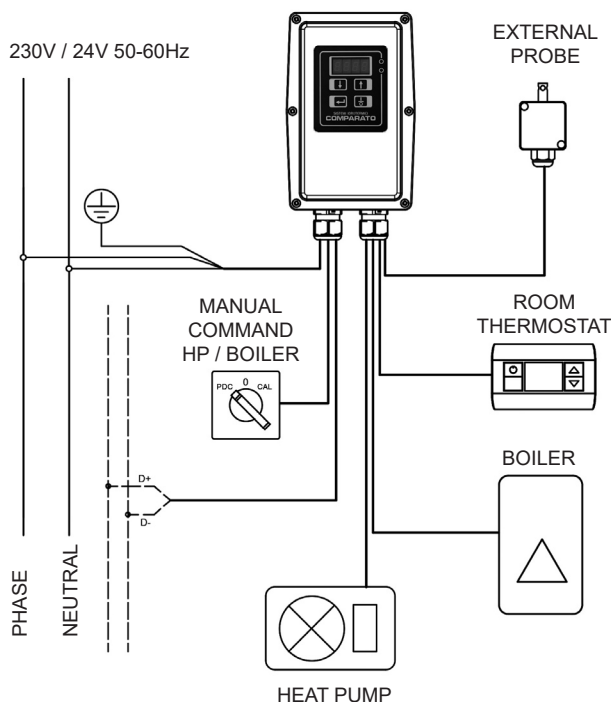# Diamant CLIMA PDC
Compact CLIMA PDC

3-WAY MOTORISED VALVES FOR AUTOMATIC SWITCHING BETWEEN HEAT PUMP AND BOILER
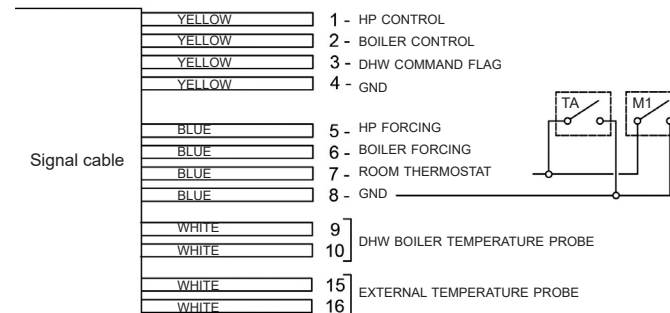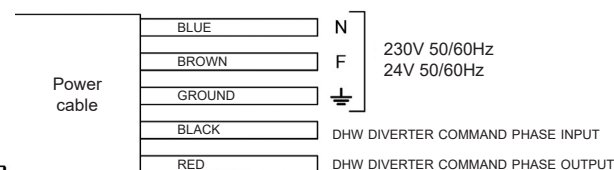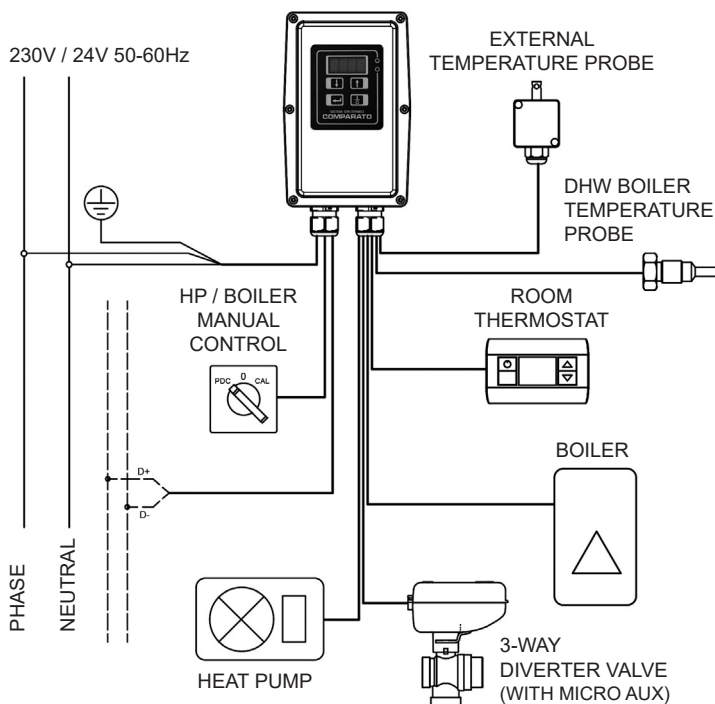
PDC

ELECTRICAL CONNECTIONS

HP AND BOILER SWITCHING

230V / 24V 50-60Hz

EXTERNAL PROBE

Power cable	BLUE	N	230V 50/60Hz
	BROWN	F	24V 50/60Hz
	GROUND	⏚	

MANUAL COMMAND HP / BOILER

PDC 0 CAL

ROOM THERMOSTAT

BOILER

Signal cable	YELLOW	1 - HP CONTROL
	YELLOW	2 - BOILER CONTROL
	YELLOW	4 - GND
	BLUE	5 - HP FORCING
	BLUE	6 - BOILER FORCING
	BLUE	7 - ROOM THERMOSTAT
	BLUE	8 - GND
	WHITE	15 EXTERNAL TEMPERATURE PROBE
	WHITE	16

TA

PHASE   NEUTRAL

D+
D-

HEAT PUMP

TA = ROOM THERMOSTAT

HP AND BOILER SWITCHING

DHW BOILER DIVERTER VALVE CONTROL

230V / 24V 50-60Hz

EXTERNAL TEMPERATURE PROBE

DHW BOILER TEMPERATURE PROBE

Power cable	BLUE	N	230V 50/60Hz
	BROWN	F	24V 50/60Hz
	GROUND	⏚	
	BLACK	DHW DIVERTER COMMAND PHASE INPUT
	RED	DHW DIVERTER COMMAND PHASE OUTPUT

HP / BOILER MANUAL CONTROL

PDC 0 CAL

ROOM THERMOSTAT

BOILER

Signal cable	YELLOW	1 - HP CONTROL
	YELLOW	2 - BOILER CONTROL
	YELLOW	3 - DHW COMMAND FLAG
	YELLOW	4 - GND
	BLUE	5 - HP FORCING
	BLUE	6 - BOILER FORCING
	BLUE	7 - ROOM THERMOSTAT
	BLUE	8 - GND
	WHITE	9 DHW BOILER TEMPERATURE PROBE
	WHITE	10
	WHITE	15 EXTERNAL TEMPERATURE PROBE
	WHITE	16

TA   M1

PHASE   NEUTRAL

D+
D-

HEAT PUMP

3-WAY DIVERTER VALVE (WITH MICRO AUX)

TA = ROOM THERMOSTAT
M1 = 3-WAY DIVERTER VALVE WITH MICRO AUX

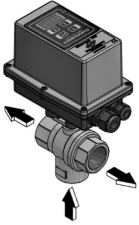**WARNING! ELECTRICAL CONNECTIONS MUST BE MADE INSIDE A SUITABLE DERIVATION BOX (not included)**

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3-WAY MOTORISED VALVES FOR AUTOMATIC SWITCHING BETWEEN HEAT PUMP AND BOILER

PDC

VERSIONS

3-WAY diverter	DN	Connections	PN	Δp max [bar]	Kv_s [m³/h]	Code
	20	3/4" *	16	16	11,5	CLIMAPCDCB
	25	1" *	16	16	18,3	CLIMAPCDCC
	15	Rp 1/2"	25	25	6	CLIMAPCDFA
	20	Rp 3/4"	16	16	11,5	CLIMAPCDFB
	25	Rp 1"	16	16	18,3	CLIMAPCDFC
	32	Rp 1"1/4	10	10	27,2	CLIMAPCCFD
	40	Rp 1"1/2	10	6	47,3	CLIMAPCCFE
	50	Rp 2"	10	4	73	CLIMAPCCFF

* with unions
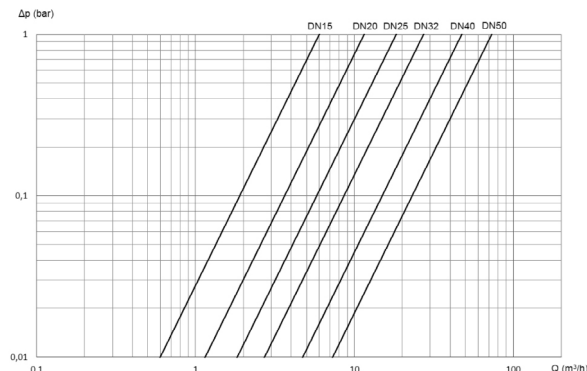
BALL VALVES

3-WAY COMPARATO CONNECTION
3/4" • 1" male with unions

BODY	BRASS CW617N
	NICKEL PLATED
BALL	BRASS CW617N UNI 5705
	NICKEL CHROME PLATED
BALL SEAL	P.T.F.E.
ANTIFRICTION SEAL	P.T.F.E.
O-RING	EPDM

ISO 5211 3-WAY CONNECTION
1/2" • 3/4" • 1"• 1"1/4 • 1"1/2 • 2" - Rp female thread to 10226-1

BODY	BRASS CW617N
BALL	BRASS CW617N
BALL SEAL	P.T.F.E.
ANTIFRICTION SEAL	P.T.F.E.
O-RING	FKM

CLIMA PDC 3-WAY ball valves are all characterised by the presence of a 3-hole ball.

This feature allows the valve to close one way while simultaneously starting to open the other: during the operating phase, all three ways are in communication with each other and therefore the flow rate is never interrupted and remains essentially constant.

FLOW RATE GRAPH ACCORDING TO THE 3-WAY VALVE DEVIATION OPERATION
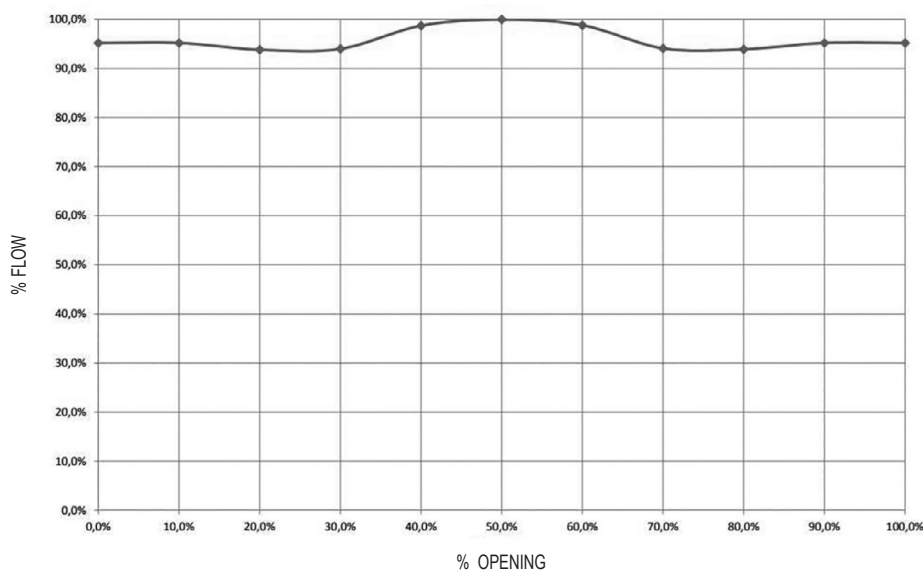
COMPARATO NELLO SRL

UNI EN ISO 9001:2015 CERTIFIED COMPANY

Diamant CLIMA PDC
Compact CLIMA PDC

3-WAY MOTORISED VALVES FOR AUTOMATIC SWITCHING BETWEEN HEAT PUMP AND BOILER

EXTERNAL TEMPERATURE PROBE • Code **RFSONDAE**

Case material • plastic	
Thermal plug material • stainless steel	
Ambient and working conditions -40°C ÷ 100°C, relative humidity: 0 ÷ 100%	
Sensor • NTC	
Minimum insulation resistance • 100Ω a 100Vdc	
Degree protection • IP65	

The sensor must be installed on an external wall in the vicinity of the heat pump in accordance with the following instructions:

- avoid direct sunlight;
- install at least 1,5 meters high;
- do not locate near doors, windows, air ducts or near flues or other heat sources;
- the electrical connection to the external probe must be made with a two-core cable with a cross-section of 0.25 to 0.5 mm2 (maximum length 30 meters);
- it is not necessary to respect the polarity of the cable to be connected to the external probe;
- any cable splices must be tinned and adequately protected;
- any cable ducts must be separated from power cables, intercom cables, burglar alarm cables and, in general, sources of electromagnetic interference

INSTALLATION

The valve should be installed in such a way that the actuator connection is not facing down.

ALLOWED POSITIONS

FORBIDDEN POSITION

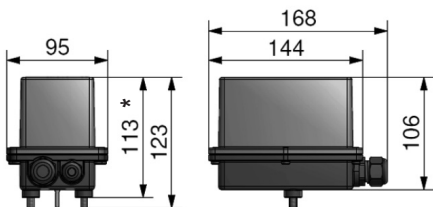**COMPARATO NELLO SRL**

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3-WAY MOTORISED VALVES FOR AUTOMATIC SWITCHING BETWEEN HEAT PUMP AND BOILER
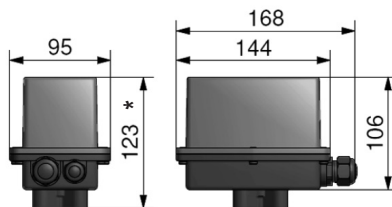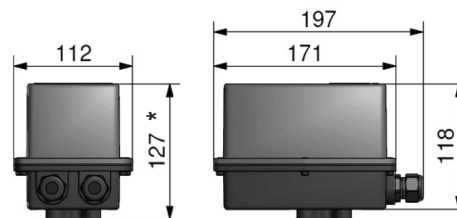
OVERALL SIZE • ACTUATOR

Diamant CLIMA PDC
COMPARATO connection

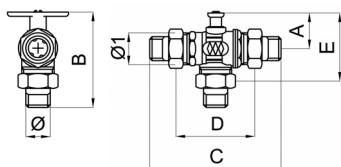### Diamant CLIMA PDC
ISO 5211 connection

Compact CLIMA PDC

* overall dimensions to be considered when coupling the actuator to the ball valve.

OVERALL DIMENSIONS • BALL VALVES

MODEL		DN	Ø UNIONS	Ø1 BALL VALVE	A	B	C	D	E
COMPARATO connection						Diamant CLIMA PDC COMPARATO connection			
						D - E: dimensions refer to the ball valve without unions.			
		20	3/4"	1"	38	105	145	84	74
		25	1"	1"1/4	42	117	164	94	82

MODEL		DN	Ø	A	B	C	
ISO 5211 connection		15	1/2"	31	65	64	Diamant CLIMA PDC ISO 5211 connection
		20	3/4"	42	82	74	
		25	1"	45	92	89	
		32	1"1/4	50	103	100	Compact CLIMA PDC
		40	1"1/2	61	123	110	
		50	2"	67	140	130	
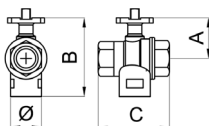
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3-WAY MOTORISED VALVES FOR AUTOMATIC SWITCHING BETWEEN HEAT PUMP AND BOILER

PDC

ACCESSORIES

SPACERS FOR INSULATION AND/OR MANUAL OPENING

Diamant CLIMA PDC COMPARATO connection	Diamant CLIMA PDC ISO 5211 connection	Compact CLIMA PDC

Add **"D1"** to the end of the code for spacer for insulation • Add **"D2"** to the end of the code for spacer for insulation and manual opening
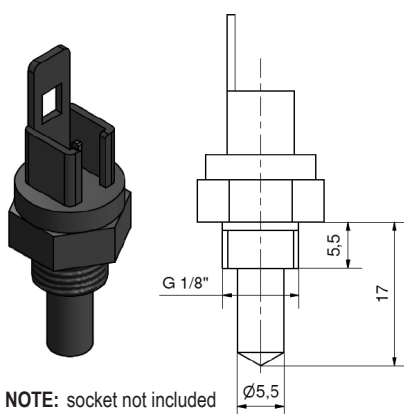
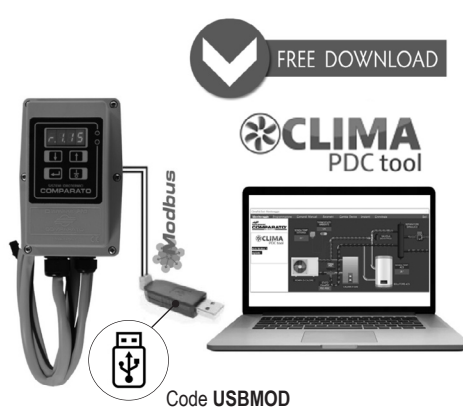h 90 mm   h 90 mm   h 66 mm

BRASS IMMERSION PROBE WITH CONNECTOR
Add **"K"** to the end of the code

INTERFACE RS485-USB
Code **USBMOD**

POWER SUPPLY 24V 50/60 Hz
Add **"04"** to the end of the code

FREE DOWNLOAD

CLIMA PDC tool

G 1/8" 5,5 17 Ø5,5

NOTE: socket not included

Code **USBMOD**

EXAMPLE OF SPECIFICATIONS

DIAMANT CLIMA PDC MOTORISED VALVE for automatic switching between heat pump (HP) and boiler, depending on outside temperature • diverter valve control for temperature control of domestic hot water cylinder, daily storage of heat pump and boiler operating hours, remote control with Modbus-RTU protocol, operating time 35 s, operational room temperature: -10°C - +50°C, external temperature probe type NTC 10kΩ, electrical power supply: 230V - 50/60Hz, operating angle: 90°, degree of protection: IP65, ball valve in brass CW617N UNI EN 12165, brass ball CW617N UNI 5705 nickel chrome plated, ball seals in P.T.F.E., O-rings in EPDM / fkn. MMM connections with G 3/4" nozzles - DN20 - kvs 11,5 – PN16.

Brand: **COMPARATO**
Code: **CLIMAPCDCB**

IMMERSION TEMPERATURE PROBE for DHW cylinder temperature control • connection G1/8"M, NTC 10kΩ type, brass material.

Brand: **COMPARATO**
Code: **CLIMAPCDCBK**

BIM BUILDING INFORMATION MODELING

UPDATED DATA SHEETS AVAILABLE AT www.comparato.com

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HYDROTHERMAL SYSTEMS
COMPARATO NELLO SRL
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