

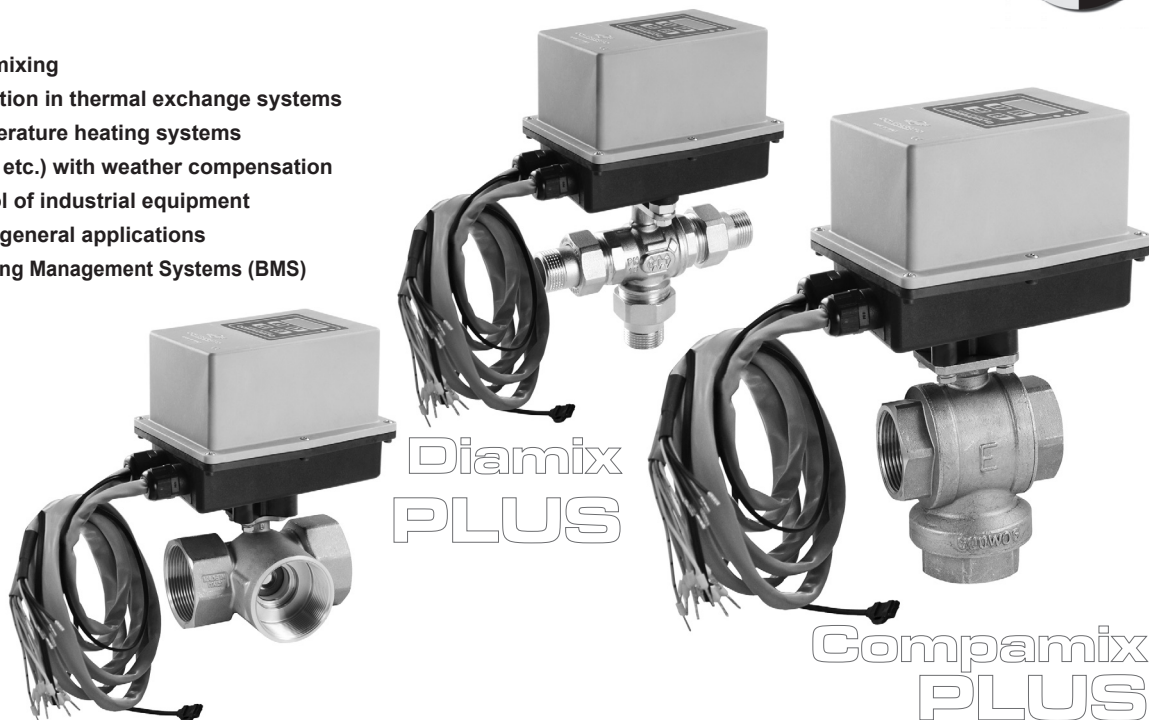
# Diamix PLUS - Compamix PLUS

MIXING / THERMOREGULATING VALVES  
TEMPERATURE CONTROLLER  
SELECTION OF THE TYPE OF OPERATION





## USE

- hot and cold fluid mixing
- temperature regulation in thermal exchange systems
- high/medium temperature heating systems (radiators, fan coil, etc.) with weather compensation
- temperature control of industrial equipment
- civil and industrial general applications
- interface with Building Management Systems (BMS)



## FUNCTIONS

- fixed-point temperature control
- weather compensation function with external probe reading for high/medium temperature heating systems
- remote setting of the temperature setpoint by means of a 0-10V signal
- remote control with Modbus-RTU protocol 
- Comparato's MixTool software for the communication between PC and mixing valve 

TECHNICAL FEATURES	Diamix PLUS	Compamix PLUS
Power supply	230V 50/60 Hz • 24V 50/60 Hz • 110V 50/60 Hz *	
Maximum power consumption	15 VA (20 VA <b>Fast</b> version)	14 VA
Operating time (90° rotation)	35 sec (4 sec <b>Fast</b> version)	45 sec
Protection degree	IP65	
Operational room temperature	-10°C ÷ 50°C, RH max 85%	
Fluid type	Water, water with glycol max 30%	
Fluid temperature	-10°C ÷ 100°C (-20°C ÷ 120°C with spacer)	
Temperature probe	Contact-type, NTC 10kΩ, total length 1,6 m	
Electronic adjuster	PID	
Temperature adjustment field	-15°C ÷ +90°C	
Weather compensation details	Adjustable (min 40°C max 90°C)	
Precision	± 1°C	
Serial interface	RS485	
Communication protocol	Modbus RTU	
System pump relay flow rate	1A	
Signal input impedance 0-10V	20 kΩ	
Digital inputs	Room thermostat • Forcing towards hot • Forcing towards cold	
Analog inputs	External probe for climatic type NTC 10 kΩ	
Cable length	80 cm	
Maintenance	None	
Certification	CE	

\* 110 V versions are available on request



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## OPERATION

**Diamix PLUS** and **Compamix PLUS** thermoregulating/mixing motorised valves operate thanks to a built-in electronics which allows an easy and user-friendly programming, directly from the actuator. Using the appropriate probe, the regulator detects the temperature of the water at the valve outlet and modifies the position of the sphere inside the 3-way ball valve by suitably mixing the hot inlet with the cold inlet. The outlet temperature is kept constant according to the set value with an accuracy of  $\pm 1^\circ\text{C}$ .

In case of power failure, the actuator remains in the same position. When the power is restored, the actuator resumes its normal operation keeping the programmed settings.

**Note:** for a proper operation, there should always be a closed hydraulic circuit ensuring a flow on the mixing valve by means of a pump.

## THREE SELECTABLE TYPES OF OPERATION

### 1. FIXED-POINT REGULATION

The actuator mixes the hot inlet and the cold inlet via the ball valve to maintain the outlet temperature constant and equal to the set fixed value.

Adjustment range  $-15^\circ\text{C}$  to  $+90^\circ\text{C}$



### 2. WEATHER COMPENSATION FUNCTION FOR HIGH AND MEDIUM TEMPERATURE HEATING SYSTEMS

The outlet temperature to the heating system is automatically calculated according to the external temperature detected by the relevant probe (optional) following programmable climatic curves. The setpoint value is calculated by means of the following equation:

**Tsetpoint = - (Texternal \* C1) + C2** Where:

Texternal = temperature measured by the external probe.

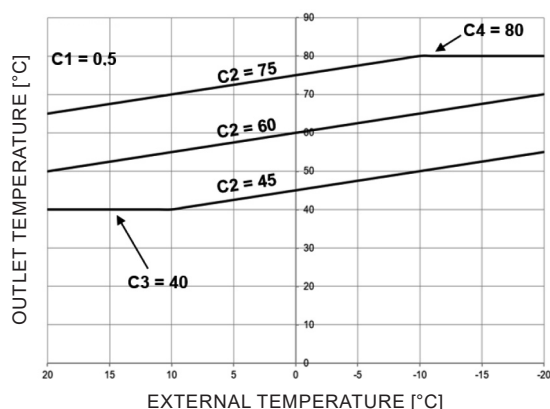
C1 = slope of the climatic curve.

C2 = outlet temperature to the system when the outside temperature is  $0^\circ\text{C}$ .

C3 = lower limit of climatic curve.

C4 = upper limit of climatic curve.

E.G.:



The digital control from the room thermostat activates the system circulator and starts the weather compensation.

### 3. ANALOGICAL SETPOINT SETTING

This function allows to change the temperature setpoint by means of a proportional input of 0-10V. You can set the extremes of the setpoint change interval. The function is active when the temperature detected by the probe is displayed on the mixed output with a dot at the bottom right. The setpoint temperature set via the 0-10V proportional input can be displayed on the display.



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## REMOTE MANAGEMENT - Modbus RTU

**Diamix PLUS** and **Compamix PLUS** are equipped with MODBUS RTU interface and it is possible, using the RS485 serial connection, to modify all operating parameters, send commands to the valve and receive information on the operating status. **Diamix PLUS** and **Compamix PLUS** mixing valves are suitable for the connection with modern Building Management Systems (BMS). The Modbus address table can be downloaded from [www.comparato.com](http://www.comparato.com). Thanks to the RS485-USB (optional) interface device and **COMPARATO MixTool software** it is possible to connect locally via a PC.

## MixTool MANAGEMENT SOFTWARE

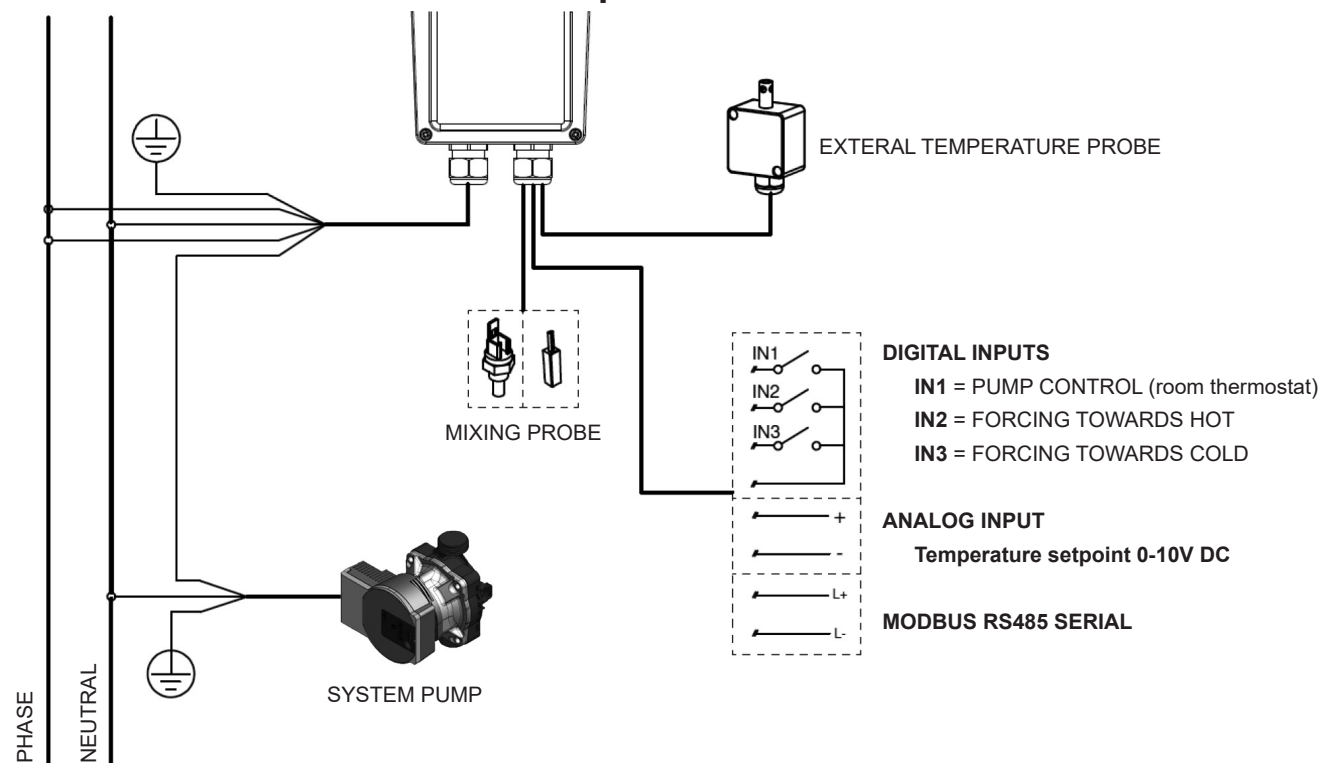
Comparato's free software **MixTool** (downloadable from [www.comparato.com](http://www.comparato.com)) offers a simple, complete and intuitive interface with all the functions of the mixing valve.



## ELECTRICAL CONNECTIONS

230V / 24V 50-60 Hz

### Diamix PLUS / Compamix PLUS



CAUTION! THE ELECTRICAL CONNECTIONS NEED TO BE DONE INSIDE A PROPER BRANCH BOX (not included)



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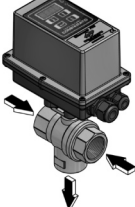
## VERSIONS

### Diamix PLUS

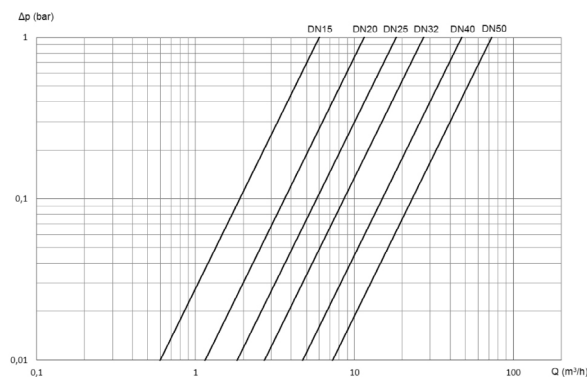
### Compamix PLUS


**Diamix PLUS Fast** available for 1/2" diameter FFF • cod. DIAMIXPFAQ

The codes shown refer to the basic 230V version, for a 24V 50/60Hz supply voltage, please add "04" to the end of the code.

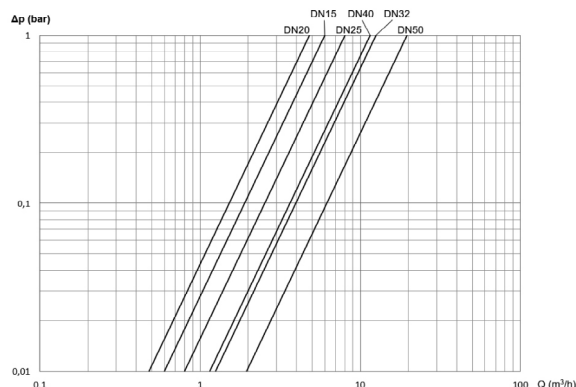
Mixing	DN	Connections	PN	$\Delta p_{max}$ [bar]	$K_v$ [m³/h]	Code
	20	3/4" *	16	16	11,5	DIAMIXPB
	25	1" *	16	16	18,3	DIAMIXPC
	15	Rp 1/2"	25	25	6	DIAMIXPFA
	20	Rp 3/4"	16	16	11,5	DIAMIXPFB
	25	Rp 1"	16	16	18,3	DIAMIXPFC
	32	Rp 1 1/4"	10	10	27,2	COMPAMIXPD
	40	Rp 1 1/2"	10	6	47,3	COMPAMIXPE
	50	Rp 2"	10	4	73	COMPAMIXPF

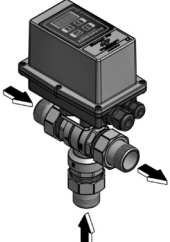
\* with unions



Mixing	DN	Connections	PN	$\Delta p_{max}$ [bar]	$Kv_s$ [m <sup>3</sup> /h]	Code
	15	Rp 1/2"	16	3,4	6 **	DIAMIXPFAM
	20	Rp 3/4"	16	3,4	4,8 **	DIAMIXPFBM
	25	Rp 1"	16	3,4	8,6 **	DIAMIXPFCM
	32	Rp 1 1/4"	16	3,4	12,8 **	DIAMIXPFDm
	40	Rp 1 1/2"	16	3,4	11,5 **	DIAMIXPFEM
	50	Rp 2"	16	3,4	19,5 **	DIAMIXPFFM

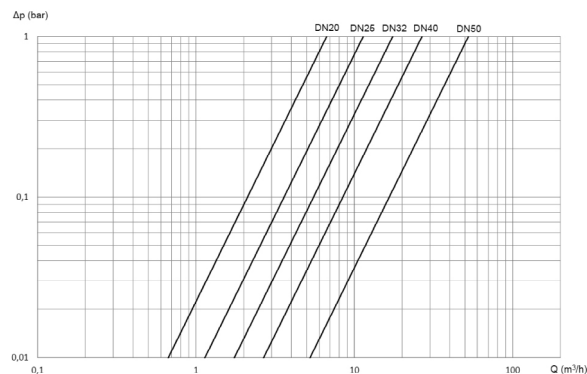
\*\* value referring to the most disadvantaged way (L)



Mixing	DN	Connections	PN	$\Delta p_{max}$ [bar]	$Kv_s$ [m <sup>3</sup> /h]	Code
	20	3/4" *	16	3,5	6,7 **	DIAMIXPFBV
	25	1" *	16	3,5	11,4 **	DIAMIXPFCV
	32	1 1/4" *	16	3,5	17,5 **	DIAMIXPFDV
	40	Rp 1 1/2"	16	3,5	26,8 **	DIAMIXPFEV
	50	Rp 2"	16	3,5	52,6 **	DIAMIXPFFV

\* with unions

\*\* value referring to the most disadvantaged way (L)



Note: In order for the mixing process to run properly, make sure that the pressure values at the two inlets of the mixing valve are as constant and similar as possible.



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## BALL VALVES

### 3-WAY VERTICAL MIXED OUTLET, COMPARATO CONNECTION

3/4" • 1" male with unions



<b>BODY</b>	BRASS CW617N NICKEL-PLATED
<b>BALL</b>	BRASS CW617N UNI 5705 CHROMED NICKEL
<b>BALL SEAL</b>	P.T.F.E.
<b>ANTIFRICTION SEAL</b>	P.T.F.E.
<b>O-RING</b>	EPDM

### 3-WAY VERTICAL MIXED OUTLET, ISO 5211 CONNECTION

1/2" • 3/4" • 1" • 1"1/4 • 1"1/2 • 2" - 10226-1 approved Rp female thread



<b>BODY</b>	BRASS CW617N
<b>BALL</b>	BRASS CW617N
<b>BALL SEAL</b>	P.T.F.E.
<b>ANTIFRICTION SEAL</b>	P.T.F.E.
<b>O-RING</b>	FKM

### 3-WAY HORIZONTAL IN-LINE MIXED OUTLET, ISO 5211 CONNECTION

1/2" • 3/4" • 1" • 1"1/4 • 1"1/2 • 2" - Rp female thread, 10226-1 approved



<b>BODY</b>	BRASS CW617N
<b>BALL</b>	BRASS CHROMED CW617N PTL
<b>CONTROL ROD</b>	BRASS CW614N
<b>BALL SEAL</b>	P.T.F.E. 15% GRAPHITE
<b>ANTIFRICTION SEAL</b>	P.T.F.E. 15% GRAPHITE
<b>O-RING</b>	EPDM

### 3-WAY VERTICAL IN-LINE MIXED OUTLET, ISO 5211 CONNECTION

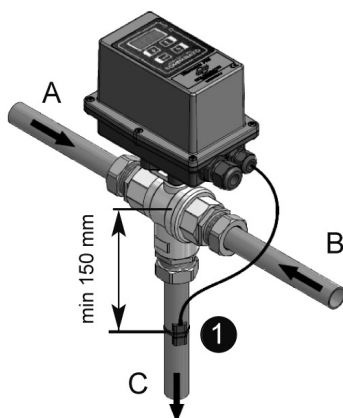
3/4" • 1" • 1"1/4 male thread with unions  
1"1/2 • 2" Rp female thread 10226-1 approved



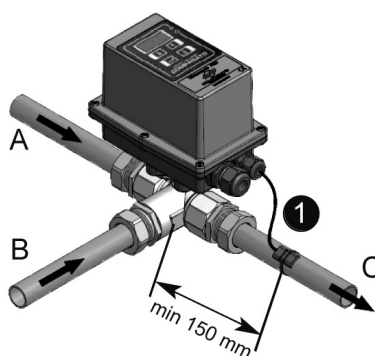
<b>BODY</b>	BRASS CW617N
<b>BALL</b>	BRASS CHROMED CW617N
<b>CONTROL ROD</b>	BRASS CW617N
<b>BALL SEAL</b>	P.T.F.E.
<b>ISO FLANGE</b>	ALUMINUM UNI EN 1706
<b>O-RING</b>	EPDM

## ASSEMBLY

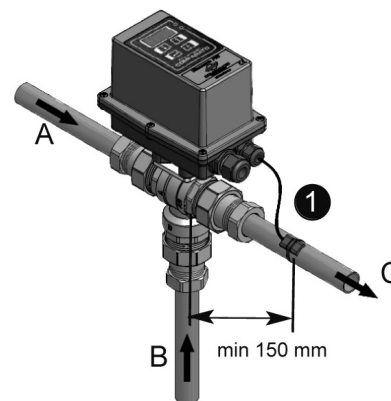
### VERTICAL MIXED



### HORIZONTAL IN-LINE MIXED



### VERTICAL IN-LINE MIXED

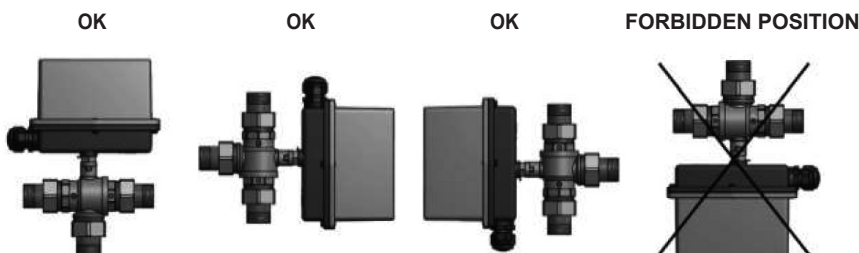


1 : Temperature probe    A : Hot fluid inlet    B : Cold fluid inlet    C : Mixed outlet

**NOTES:** The pipe section where the temperature probe will be placed must be made of metal. The following part of the pipe can be of any type, provided it is suitable to the use. Once the ball valve has been installed, the actuator can be rotated 180°.

## INSTALLATION

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



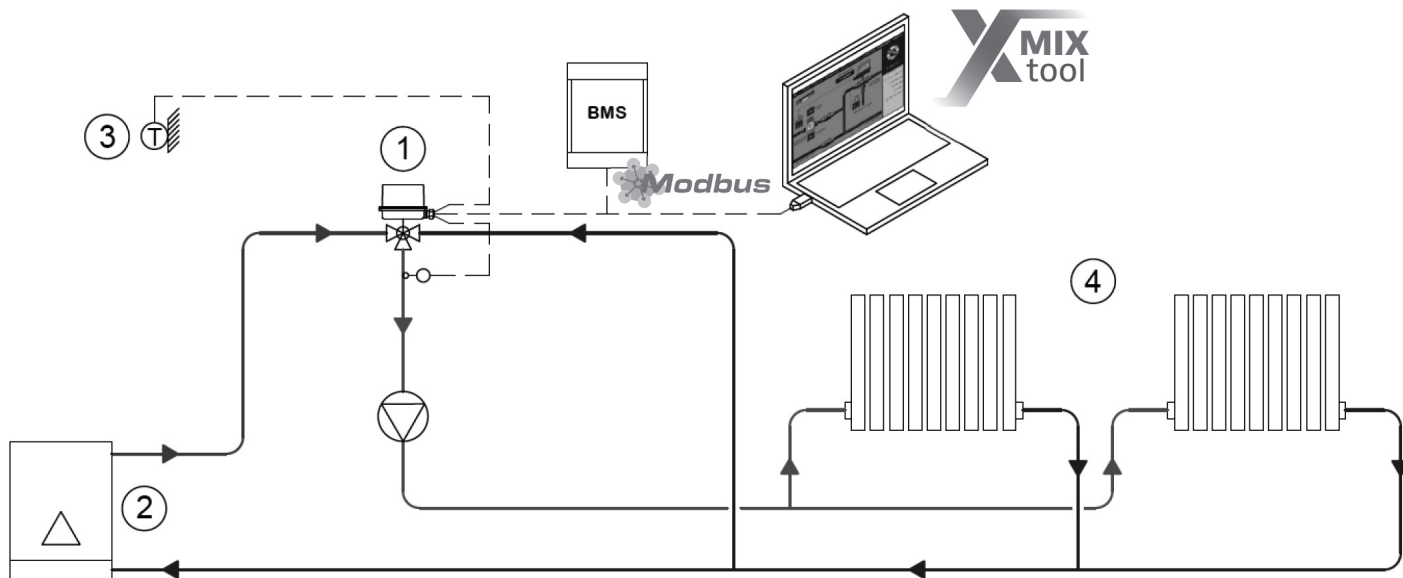
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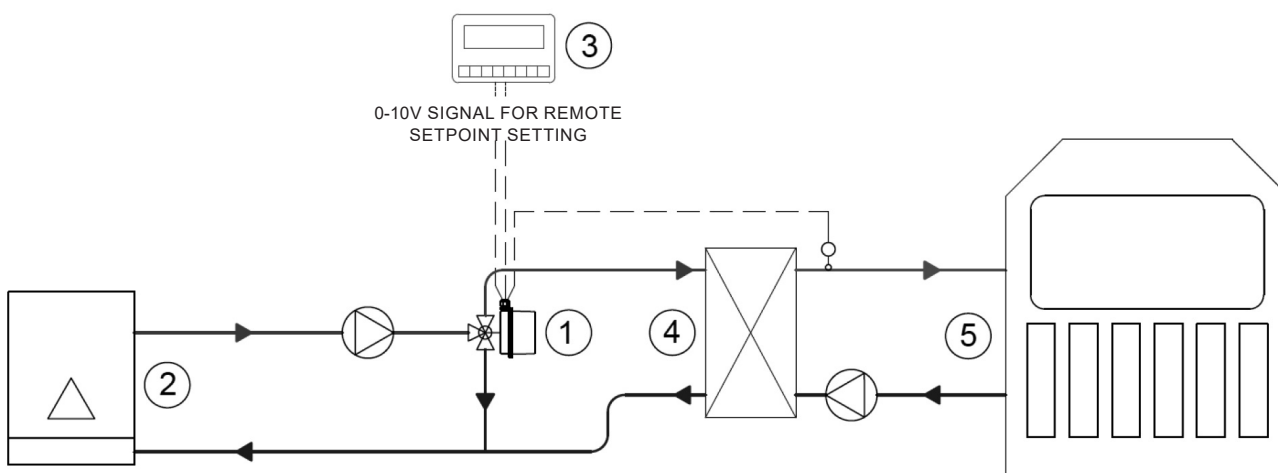
## APPLICATION EXAMPLES

### WEATHER COMPENSATION FUNCTION, HIGH TEMPERATURE



- 1 : DIAMIX PLUS/ COMPAMIX PLUS mixing valve
- 2 : Boiler
- 3 : External temperature probe for weather compensation
- 4 : Heating system

### PLATE HEAT EXCHANGER TEMPERATURE REGULATION



- 1 : DIAMIX PLUS/ COMPAMIX PLUS mixing valve
- 2 : Boiler
- 3 : External management electronics
- 4 : Plate exchanger
- 5 : Utilities



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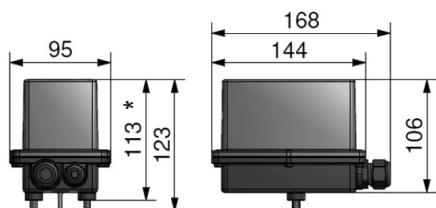
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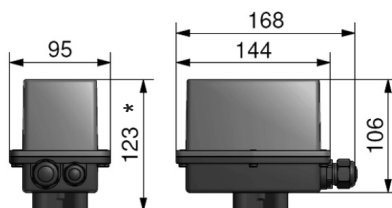


## OVERALL SIZE • ACTUATORS

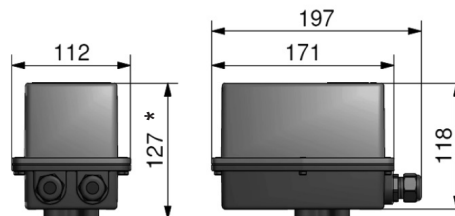
### Diamix PLUS COMPARATO connection



### Diamix PLUS ISO 5211 connection



### Compamix PLUS



\* the size is to be taken into account when coupling the actuator to the ball valve

## OVERALL SIZE • BALL VALVES

MODEL	DN	Ø UNIONS	Ø1 BALL VALVES	A	B	C	D	E
VERTICAL mixed COMPARATO connection	20	3/4"	1"	38	105	145	84	74
	25	1"	1"1/4	42	117	164	94	82

Diamix PLUS COMPARATO connection  
D - E: dimensions referred to the ball valve without unions

MODEL	DN	Ø	A	B	C	
VERTICAL mixed ISO 5211 connection	15	1/2"	31	65	64	Diamix PLUS ISO 5211 connection
	20	3/4"	42	82	74	Diamix PLUS ISO 5211 connection
	25	1"	45	92	89	Diamix PLUS ISO 5211 connection
	32	1"1/4	50	103	100	Compamix PLUS
	40	1"1/2	61	123	110	Compamix PLUS
	50	2"	67	140	130	Compamix PLUS

MODEL	DN	Ø	A	B	C	
HORIZONTAL IN-LINE mixed ISO 5211 connection	15	1/2"	71	31	38	Diamix PLUS ISO 5211 connection
	20	3/4"	77	31	40	Diamix PLUS ISO 5211 connection
	25	1"	91	33	47	Diamix PLUS ISO 5211 connection
	32	1"1/4	104	44	55	Diamix PLUS ISO 5211 connection
	40	1"1/2	105	44	55	Diamix PLUS ISO 5211 connection
	50	2"	127	48	65	Diamix PLUS ISO 5211 connection

MODEL	DN	Ø UNIONS	Ø1 BALL VALVES	A	B	C	D	E
VERTICAL IN-LINE mixed ISO 5211 connection	20	3/4"	1"	30,5	115,2	134,4	75	85
	25	1"	1"1/4	34,3	135,6	156,6	87	100,8
	32	1"1/4	1"1/2	39,8	154,7	178,2	102,6	116,6
	40	1"1/2		53	130	96		
	50	2"		61	153	113		

Diamix PLUS ISO 5211 connection  
D - E: dimensions referred to the ball valve without unions

Diamix PLUS ISO 5211 connection



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## ACCESSORIES

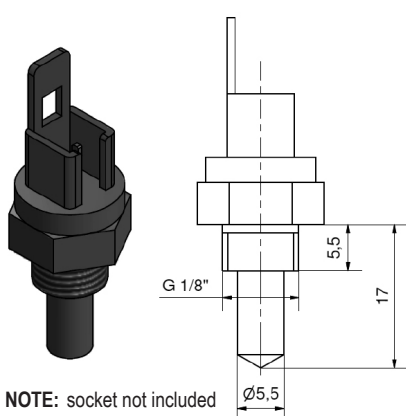
**INSULATION SPACER** • Add "D1" to the end of the code



**INSULATION SPACER AND MANUAL OVERRIDE** • Add "D2" to the end of the code



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



**RS485-USB INTERFACE** • Code USBMOD



**EXTERNAL TEMPERATURE PROBE** • Code RFSONDAE



## EXAMPLE OF SPECIFICATIONS

**DIAMIX PLUS MOTORISED MIXING VALVE** • electronic PID regulator, fixed-point, weather compensation or 0-10V signal setpoint temperature control, remote control with Modbus-RTU protocol, adjustment range: -15°C ÷ +90°C, accuracy: ±1°C, operating time: 35 sec / 90°, operational room temperature: -10°C ÷ +50°C, ntc 10kΩ type contact temperature probe, electrical power supply: 230V - 50/60Hz, operating angle: 90°, degree of protection: IP65, brass ball valve CW617N UNI EN 12165, brass ball. Mixed vertical outlet with 3/4" MMM - DN20 unions - Kvs 11,5 - PN16

Brand: **COMPARATO**  
Code: **DIAMIXPB**

**UPDATED DATA SHEETS AVAILABLE AT [www.comparato.com](http://www.comparato.com)**

In order to provide an up-to-date service, Comparato Nello S.r.l. reserves the right to modify technical data, drawings, graphs and photos of this data sheet at any time, without prior notice.

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INFORMATION  
MODELING



**HYDROTHERMAL SYSTEMS**  
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