

Diamix PR - Compamix PR

MIXING/THERMOREGULATING MOTORISED VALVES FOR RADIANT SYSTEMS



USE

The specific application of **Diamix PR** and **Compamix PR** motorised valves is the temperature regulation and the control of modern radiant panel systems.

FUNCTIONS

- fixed-point or climate heating flow temperature regulation
- cooling flow temperature regulation
- fixed-point or dew-point temperature tracking
- summer/winter switching
- system circulator management with room thermostat control
- electronic protection against over-temperature
- adiabatic room dehumidification
- system control with integration function
- remote management with Modbus-RTU protocol
- Comparato's PRtool software for the communication between PC and mixing valve PRtool



Diamix
PR



Compamix
PR

APPLICATIONS

- floor, wall and ceiling radiant systems for heating and cooling

TECHNICAL FEATURES	Diamix PR	Compamix PR
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 ÷ 50°C, RH max 85%	
Fluid type	Water, water with glycol max 30%	
Fluid temperature	from -10°C to +90°C	
Temperature probe	Contact, NTC10kΩ, total length 1,6 m	
Electronic adjuster	PID	
Fixed-point temperature adjustment range	Heating: 24°C ÷ 50°C • Cooling: 10°C ÷ 30°C	
Climatic function details	25°C ÷ 45°C	
Precision	± 1°C	
Serial interface	RS485	
Communication protocol	Modbus RTU	
System pump relay flow rate	1A	
Input signals	Room thermostat • Summer/winter switch • External temperature probe • Room temperature probe • Relative humidity probe	
Output signals	Season indication • Activation of adiabatic dehumidifier Activation of integration function	
Cable length	80 cm	
Maintenance	None	
Certification	CE	

* 110 V versions are available on request



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OPERATION

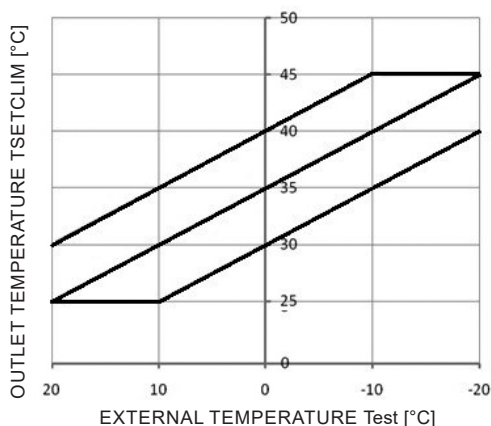
Diamix PR and **Compamix PR** electronic motorised valves can be used for the outlet temperature control in radiant heating and cooling systems with floor, wall or ceiling radiant panels. One product integrates all the regulation and control functions, thus eliminating the need for a control unit. Once installed in the system, it is possible to select the type of operation of the motorised valve, enabling or disabling the various functions.

HEATING

- **Fixed-point regulation:** the setpoint temperature for winter heating and summer cooling is set by means of the actuator keyboard and display. The motorised valve is activated by the room thermostat and keeps the outlet temperature constant on the setpoint value with an accuracy of $\pm 1^\circ\text{C}$.
- **Weather compensation:** the outlet temperature to the radiant system is automatically calculated by the software 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:

$$T_{\text{setpoint}} = - (\text{Texternal} * C1) + C2$$

EXAMPLE WITH $C1 = 0.5$



Texternal = temperature measured by the external probe.

$C1$ = slope of the weather compensation.

$C2$ = outlet temperature to the system when the outside temperature is 0°C .

The setpoint temperature is constrained to a temperature range of $[+25^\circ\text{C}; +45^\circ\text{C}]$.

COOLING

- **Fixed-point regulation:** the temperature delivered to the radiant system is kept constant according to the design value. In this configuration, the relative humidity adjustment within the air-conditioned rooms is managed by dedicated management devices. If the relative humidity and ambient temperature probe (optional) is connected, if the outlet temperature reaches the calculated dew point, the motorised valve triggers an alarm by closing a digital contact and a warning appears on the display. Moreover, the relative humidity value is constantly monitored and compared with a programmable reference value: if the threshold value is exceeded, the motorised valve activates a special alarm by closing a digital contact and a warning appears on the display.
- **Continuous cooling adjustment with relative humidity control:** the outlet temperature to the radiant system is kept close to the dew point temperature calculated by means of the relative humidity and room temperature probe (optional). In order to keep the relative humidity below a reference value, the dehumidification system is activated or deactivated depending on the maximum relative humidity set on the motorised valve. If the dehumidifiers have an integration function, it is possible to set a minimum room temperature beyond which the motorised valve activates the function in order to introduce dry air at a lower temperature than the room temperature into the housing unit.

SUMMER / WINTER SWITCHING

The summer/winter function modifies the control and management logic of the mixing valve during the transition from summertime (cooling) to wintertime (heating). The switching can be done locally using the keyboard and display or remotely by means of a digital contact.

SYSTEM MANAGEMENT

The mixing valve receives the activation command from the room thermostat (not included). The system pump (not included) starts and the electronic system, which operates by means of PID algorithm, controls the outlet temperature according to the pre-set values. When the room thermostat sends the signal to cut the power supply to the system, the mixing valve locks the pump, stops the regulation and connects the outlet (mixed) way to the system return: this avoids any temperature fluctuation at system restart, which could activate the thermal security devices.

ELECTRONIC SAFETY

It is possible to set two limit temperature for the fluid: one for winter heating and one for summer cooling. When these values are exceeded, the mixing valve enters the "safety" mode: it stops the pump and connects the common (mixed) way to the system return. The display shows an alarm message and the system resumes its normal operation only when the temperature returns within the normal operation temperature limits.



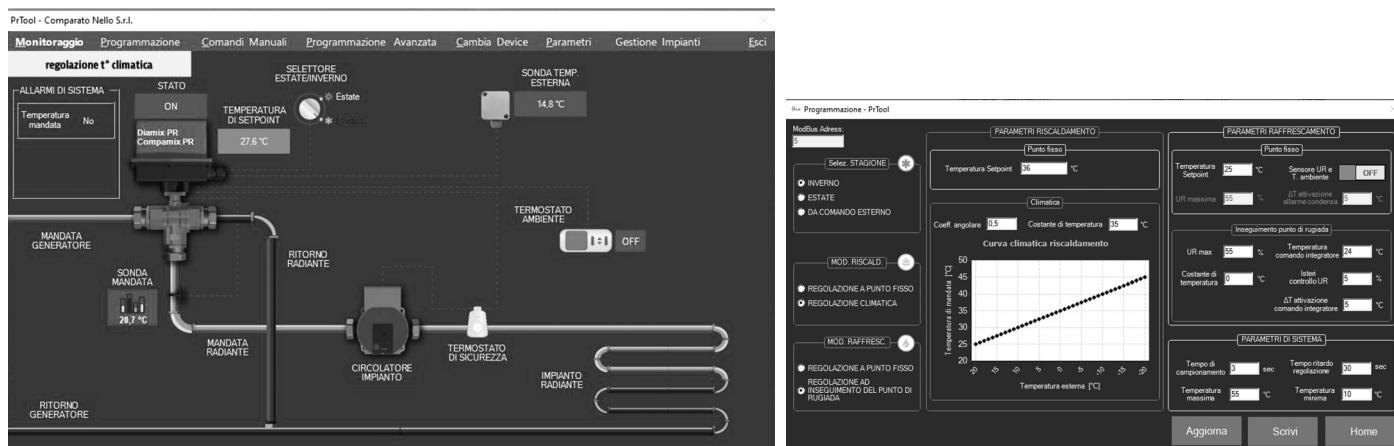
Diamix PR - Compamix PR

MIXING/THERMOREGULATING MOTORISED VALVES FOR RADIANT SYSTEMS

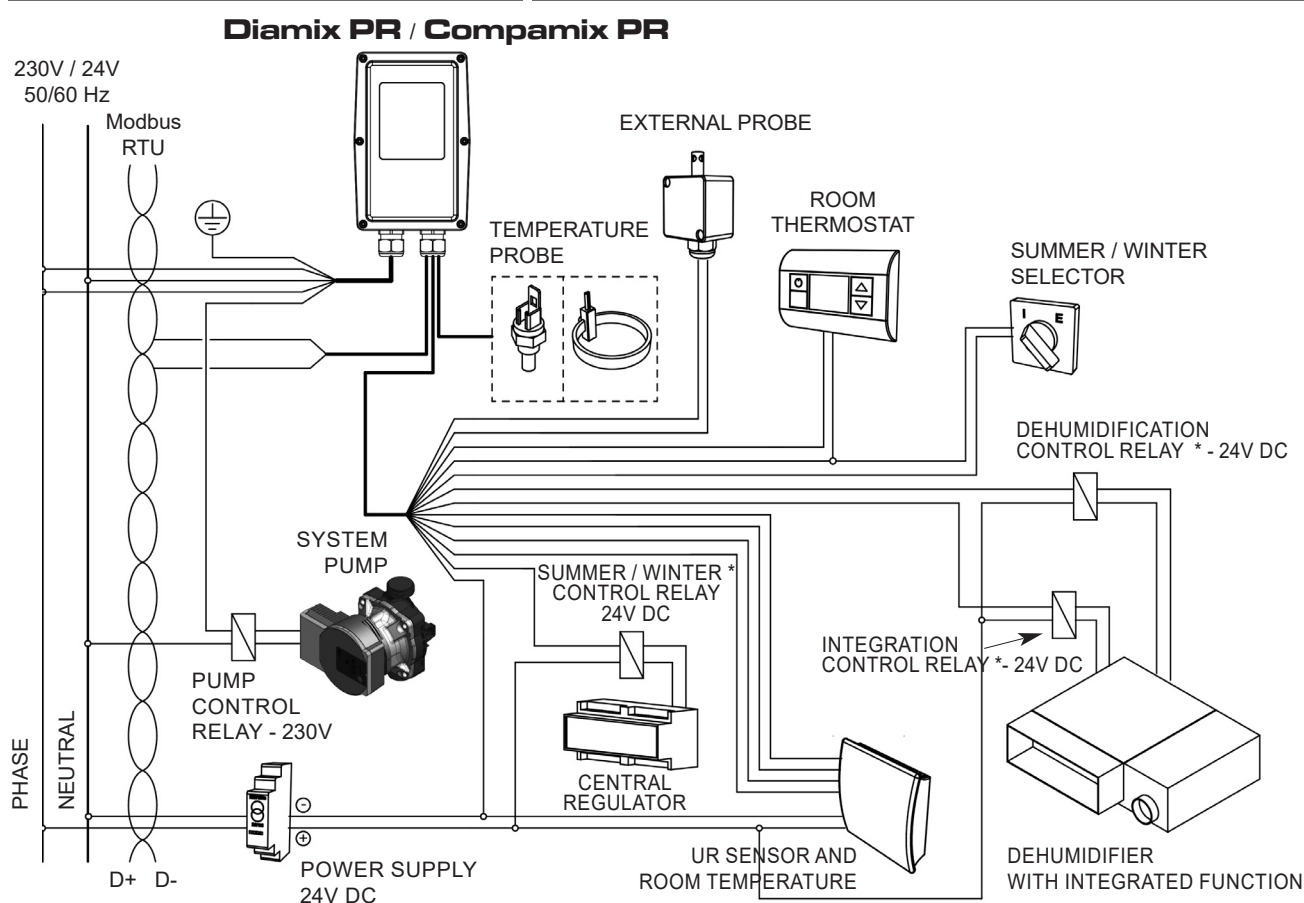


REMOTE MANAGEMENT - Modbus RTU

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



ELECTRICAL CONNECTIONS



* use the relay if the contacts of the connected devices are not voltage-free

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



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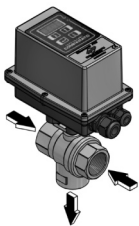
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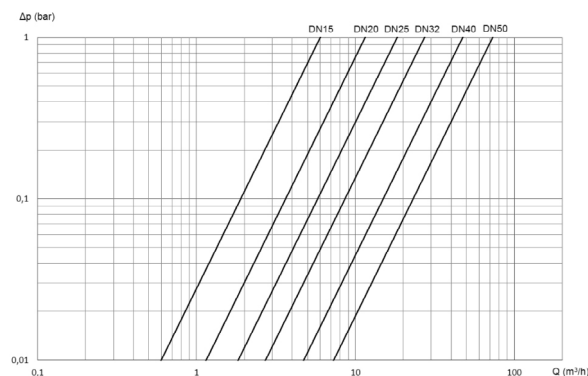
VERSIONS


Diamix PR Compamix PR

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

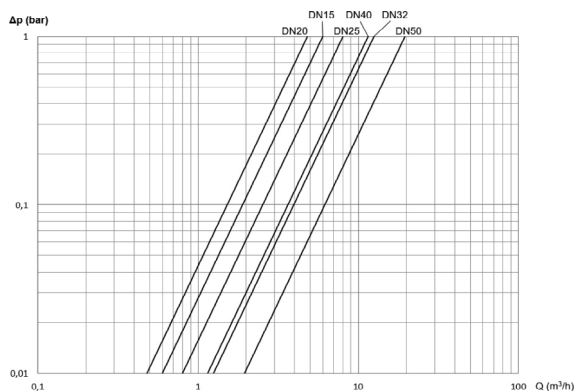
Mixing	DN	Connections	PN	Δp max [bar]	K_v [m ³ /h]	Code
	20	3/4" *	16	16	11,5	DIAMIXPBPR
	25	1" *	16	16	18,3	DIAMIXPCPR
	15	Rp 1/2"	25	25	6	DIAMIXPFAPR
	20	Rp 3/4"	16	16	11,5	DIAMIXPFBPR
	25	Rp 1"	16	16	18,3	DIAMIXPFCPR
	32	Rp 1 1/4"	10	10	27,2	COMPAMIXPDPR
	40	Rp 1 1/2"	10	6	47,3	COMPAMIXPEPR
	50	Rp 2"	10	4	73	COMPAMIXPFPR

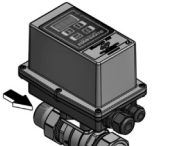
* with unions



Mixing	DN	Connections	PN	Δp max [bar]	K_v [m ³ /h]	Code
	15	Rp 1/2"	16	3,4	6 **	DIAMIXPFAPRM
	20	Rp 3/4"	16	3,4	4,8 **	DIAMIXPFBPRM
	25	Rp 1"	16	3,4	8,6 **	DIAMIXPFCPRM
	32	Rp 1 1/4"	16	3,4	12,8 **	DIAMIXPFDPRM
	40	Rp 1 1/2"	16	3,4	11,5 **	DIAMIXPFEPRM
	50	Rp 2"	16	3,4	19,5 **	DIAMIXPFEPRM

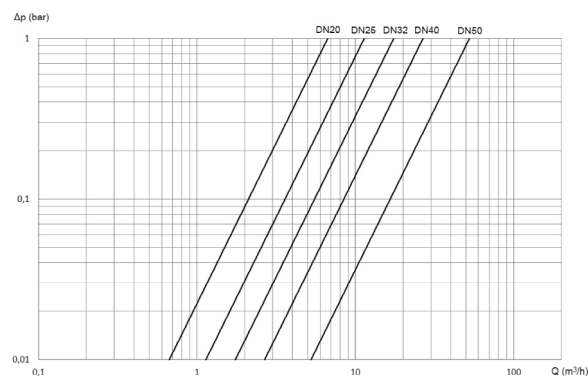
** value referring to the most disadvantaged way (L)



Mixing	DN	Connections	PN	Δp max [bar]	K_v [m ³ /h]	Code
	20	3/4" *	16	3,5	6,7 **	DIAMIXPFBPRV
	25	1" *	16	3,5	11,4 **	DIAMIXPFCPRV
	32	1 1/4" *	16	3,5	17,5 **	DIAMIXPFDPRV
	40	Rp 1 1/2"	16	3,5	26,8 **	DIAMIXPFEPV
	50	Rp 2"	16	3,5	52,6 **	DIAMIXPFEPV

* with unions

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



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BALL VALVES

3-WAY VERTICAL MIXED OUTLET, COMPARATO CONNECTION

3/4" • 1" male with unions



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



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



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

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

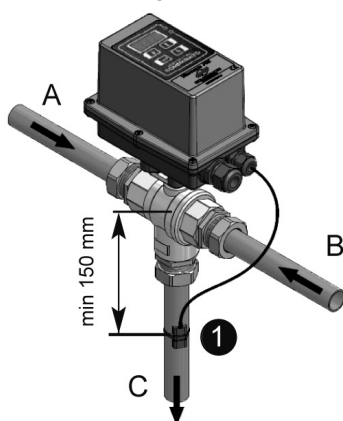
3/4" • 1" • 1 1/4" male thread with unions
1 1/2" • 2" Rp female thread 10226-1 approved



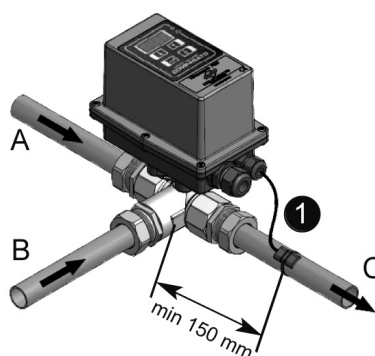
BODY	BRASS CW617N
BALL	BRASS CHROMED CW617N
CONTROL ROD	BRASS CW617N
BALL SEAL	P.T.F.E.
ISO FLANGE	ALUMINUM UNI EN 1706
O-RING	EPDM

ASSEMBLY

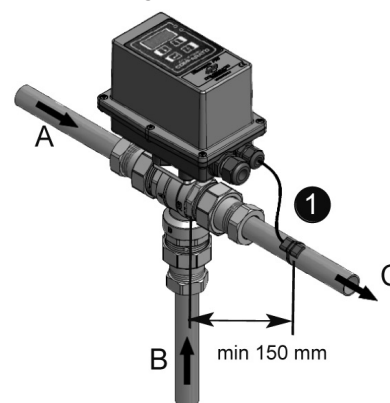
VERTICAL MIXED



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.

OK

OK

OK

FORBIDDEN POSITION



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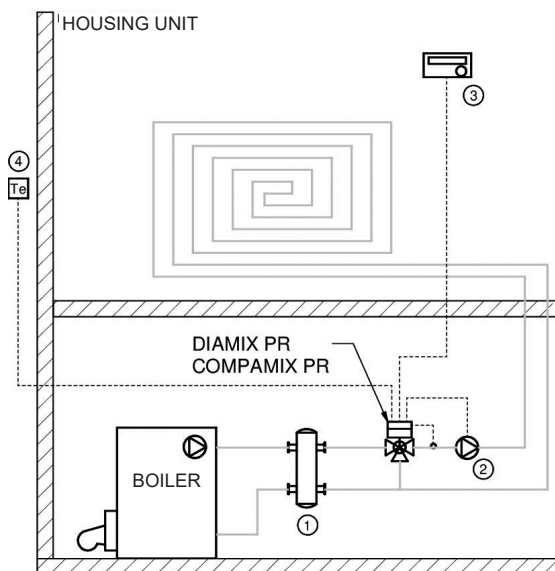
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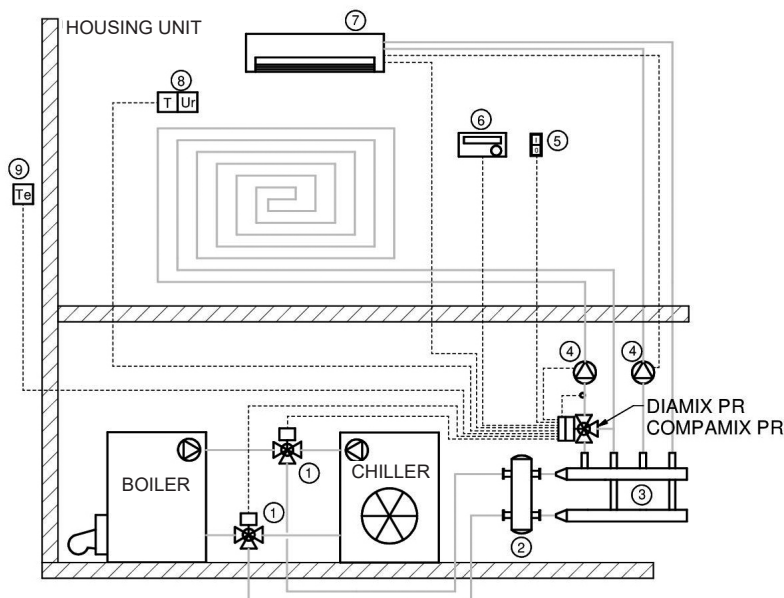
APPLICATION EXAMPLES

RADIANT HEATING SYSTEM WITH EXTERNAL TEMPERATURE PROBE FOR WEATHER COMPENSATION

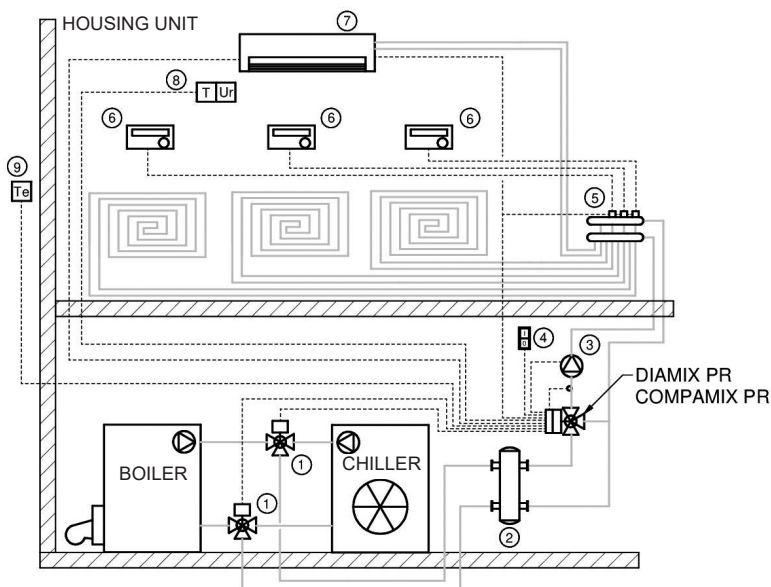


- 1 HYDRAULIC SEPARATOR
- 2 SYSTEM PUMP
- 3 ROOM THERMOSTAT
- 4 EXTERNAL PROBE

RADIANT HEATING AND COOLING SYSTEM WITH HUMIDITY CONTROL BY MEANS OF A DEHUMIDIFIER SUPPLIED WITH COLD WATER AT LOW TEMPERATURE



- 1 DIVERTER MOTORISED VALVE
- 2 HYDRAULIC SEPARATOR
- 3 DISTRIBUTION MANIFOLDS
- 4 SYSTEM PUMP
- 5 SUMMER / WINTER CONTROL
- 6 ROOM THERMOSTAT
- 7 ADIABATIC DEHUMIDIFIER / INTEGRATOR
- 8 TEMPERATURE AND RELATIVE HUMIDITY PROBE
- 9 EXTERNAL PROBE



RADIANT HEATING AND COOLING SYSTEM WITH HUMIDITY CONTROL BY MEANS OF A DEHUMIDIFIER SUPPLIED WITH REFRIGERATED WATER FOR THE RADIANT PANELS



- 1 DIVERTER MOTORISED VALVE
- 2 HYDRAULIC SEPARATOR
- 3 SYSTEM PUMP
- 4 SUMMER / WINTER CONTROL
- 5 DISTRIBUTION MANIFOLD WITH ELECTROTHERMAL HEADS
- 6 ROOM THERMOSTAT
- 7 ADIABATIC DEHUMIDIFIER / INTEGRATOR
- 8 TEMPERATURE AND RELATIVE HUMIDITY PROBE
- 9 EXTERNAL PROBE



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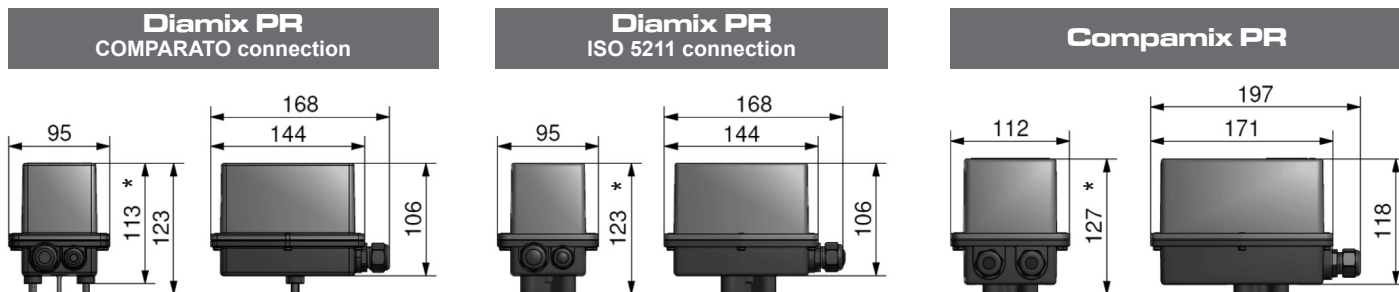
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MIXING/THERMOREGULATING MOTORISED VALVES FOR RADIANT SYSTEMS



OVERALL SIZE • ACTUATORS



* 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 PR COMPARATO connection

D - E: imensions 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 PR ISO 5211 connection
	20	3/4"	42	82	74	Diamix PR ISO 5211 connection
	25	1"	45	92	89	Diamix PR ISO 5211 connection
	32	1"1/4	50	103	100	Compamix PR
	40	1"1/2	61	123	110	Compamix PR
	50	2"	67	140	130	Compamix PR

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

D - E: dimensions referred to the ball valve without unions

Diamix PR ISO 5211 connection



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ACCESSORIES

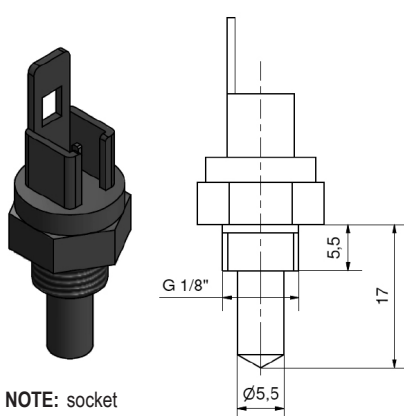
INSULATION SPACER • Add "D1" to the end of the code



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



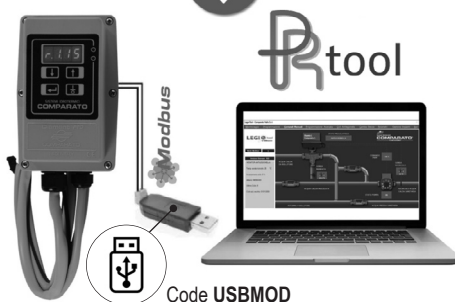
RS485-USB INTERFACE

Code USBMOD



FREE DOWNLOAD

PR tool



Code USBMOD

24V DC POWER SUPPLY

Code AL24VDC

EXTERNAL TEMPERATURE PROBE • Code RFSONDAE

Case material: plastic

Thermal well material: stainless steel

Operating environmental conditions

-40°C ÷ +100°C, relative humidity: 0 ÷ 100%

Sensor: NTC

Minimum insulation resistance: 100Ω to 100Vdc

Degree of protection: IP65

TEMPERATURE AND RELATIVE HUMIDITY PROBE

Code RFTRUEE10

Wall mounting, IP30

Humidity working range = 0÷95% Rh

Analog output 0-10V relative humidity

Temperature sensor: NTC

Power supply 15 - 40V DC / 24V AC

EXAMPLE OF SPECIFICATIONS

DIAMIX PR MOTORISED MIXING VALVE • radiant panel adjustment, PID electronic regulator, fixed-point or weather compensation heating, fixed-point or dew-point cooling, summer/winter switching, room dehumidification system control, remote management with Modbus-RTU protocol, adjustment range: 24°C÷+50°C heating / 10°C÷+30°C cooling, accuracy: ±1°C, operating time: 35 sec / 90°, operational room temperature: -10°C÷+50°C, NTC 10kΩ type contact temperature probes, power supply: 230V – 50Hz, operating angle: 90°, degree of protection: IP65, brass ball valve, p.e. ball seals, epdm / fkn o-ring. Mixed horizontal in-line output G1" FFF - DN25 - Kvs 8,6 - PN16 - ΔPmax 3,4 bar.

Brand: **COMPARATO**

Code: **DIAMIXPFCPRM**

UPDATED DATA SHEETS AVAILABLE AT 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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HYDROTHERMAL SYSTEMS
COMPARATO NELLO S.r.l.

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