

Diamix L - Compamix L



MIXING/THERMOREGULATING MOTORISED VALVES
FOR DOMESTIC HOT WATER WITH ANTI-LEGIONELLA FUNCTION



USE

Domestic hot water mixing in plants with recirculation, where it is necessary to carry out a programmed thermal disinfection according to the national guidelines for the prevention and control of legionellosis.

FUNCTIONS

- domestic hot water mixing
- programmable disinfection thermal cycle
- completed cycle storage
- Comparato's LegioTool software for PC communication and mixing valve with data download 
- remote management with Modbus-RTU protocol 
- recirculation return temperature regulation with Pulse-Width Modulation (PWM) of the pump recirculation pump hourly schedule



APPLICATIONS

- blocks of flats
- offices
- hospitals and nursing homes
- sports centers (swimming pools, gyms...)
- hotels and campsites
- shopping centers

TECHNICAL FEATURES	Diamix L	Compamix L
Power supply (110V on request)	230V 50/60 Hz • 24V 50/60 Hz • 110V 50/60 Hz *	
Maximum power consumption	20 VA	14 VA
Operating time (90° rotation)	12 sec	45 sec
Protection degree	IP65	
Operational room temperature	-10°C ÷ 50°C, RH max 85%	
Fluid type	Domestic water	
Fluid temperature	-10°C ÷ 100°C (-20°C ÷ 120°C with spacer)	
Temperature probes	Contact, NTC 10kΩ, length 1,6 m	
Electronic adjuster	PID	
Temperature adjustment field	30°C ÷ 65°C	
Precision	± 1°C	
Disinfection cycle programming	Daily / weekly	
Serial interface	RS485	
Communication protocol	Modbus RTU	
Clock battery	Lithium CR2032, 10 years life	
Recirculation pump relay flow rate	1A	
Pump modulating signal	PWM (DIN IEC 60469-1)	
Digital inputs	Disinfection cycle activation • Forcing towards hot • Forcing towards cold	
Digital outputs	Active Disinfection Cycle • Disinfection Cycle Alarm (max 24Vdc 50mA)	
Cable length	80 cm	
Maintenance	None	
Certification	CE	
Conformity of ball valves	DM n°174 of 06/04/2004	

* 110 V versions are available on request



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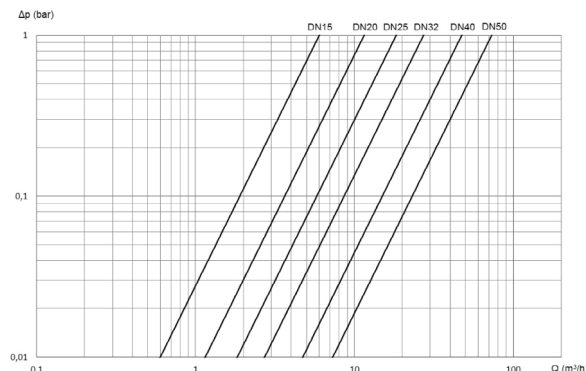


VERSIONS

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	DIAMIXPBL
	25	1" *	16	16	18,3	DIAMIXPCL
	15	Rp 1/2"	25	25	6	DIAMIXPFAL
	20	Rp 3/4"	16	16	11,5	DIAMIXPFBL
	25	Rp 1"	16	16	18,3	DIAMIXPFCL
	32	Rp 1 1/4"	10	10	27,2	COMPAMIXPDL
	40	Rp 1 1/2"	10	6	47,3	COMPAMIXPEL
	50	Rp 2"	10	4	73	COMPAMIXPFL

* with unions



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.

FLOW RATES

	Diamix L			Compamix L		
	DN 15 1/2"	DN 20 3/4"	DN 25 1"	DN 32 1 1/4"	DN 40 1 1/2"	DN 50 2"
MINIMUM FLOW [l/min]	6	9	16	40	60	82
MAXIMUM FLOW * [l/min]	120	230	370	550	960	1480

* $\Delta p = 1,5$ bar

SIZING CRITERIA

Caution!

For a proper operation, you need to choose the right ball valve diameter according to the flow. The **DimMix mixer sizing software**, which can be downloaded for free from the Download area of www.comparato.com helps you to make the right selection. When replacing thermostatic mixers in existing systems, you need to check the presence of sanitary recirculation, as per the diagram, and choose the ball valve diameter according to the K_v s values.



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



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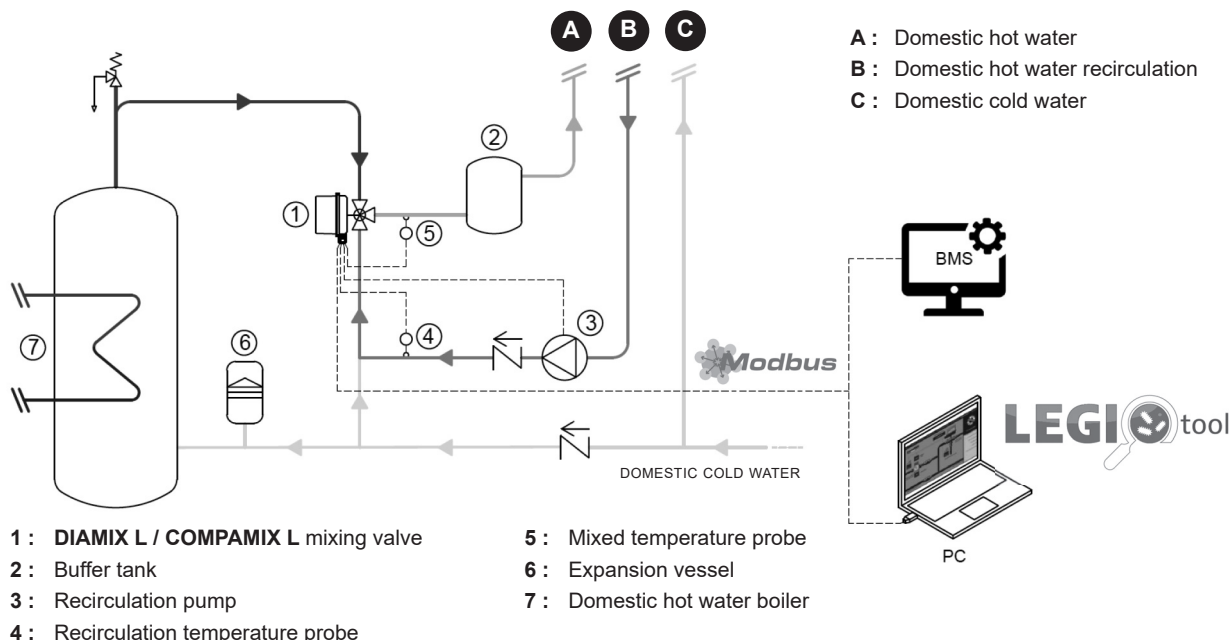
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EXAMPLE OF USE



BUFFER TANK

If necessary, to mount a buffer tank (2) on the outlet pipeline. This will avoid any fluctuation of the reference temperature value when the drawing flow is very low. Its use is recommended when the water volume inside the recirculation plant is limited. In the table you can find the capacity values of the buffer tank recommended based on the diameters of the mixing valves.

	Diamix L			Compamix L		
	DN 15 1/2"	DN 20 3/4"	DN 25 1"	DN 32 1"1/4"	DN 40 1"1/2"	DN 50 2"
INERTIAL TANK CAPACITY [liters]	10÷20	10÷20	20÷30	25÷40	30÷50	40÷60

OPERATION

The domestic hot water flow temperature is controlled by the PID regulator integrated in the actuator: using the appropriate probe, it detects the temperature of the water at the valve outlet and modifies the position of the ball inside the 3-way ball valve by suitably mixing the hot inlet with the cold inlet and thus maintaining the setpoint temperature.

ANTI-LEGIONELLA THERMAL DISINFECTION CYCLE

Diamix L and **Compamix L** manage the thermal disinfection of the recirculation ring of domestic water, thanks to a special programming. Once the time of the disinfection cycle has been scheduled, you can set the daily repeat or choose a day of the week. Thermal disinfection can be disabled if required. The disinfection cycle will start at the set time: the mixing temperature control is disabled and the 3-way valve rotates completely over the hot water inlet and sends it directly to the system. The temperature is detected by probe on the return of the recirculation ring, the "pump control" relay and the "anti-legionella cycle" digital outlet are activated. During the cycle, the display on the mixer shows the water temperature reached on the return ring and the cycle progress as a percentage.

TEMPERATURE	CYCLE DURATION
Above 70°C	30 minutes
Between 65°C and 70°C	1 hour
Between 60°C and 65°C	2 hours
Between 57,5°C and 60°C	3 hours
Between 55°C and 57,5°C	4 hours

The disinfection times are automatically calculated according to the characteristics of the system: the cycle time depends on the temperature measured by the probe on the return of the recirculation ring, as per the table shown here. In this way it is possible to optimize the cycle with important advantages in terms of energy saving.

Caution! The variables connected to the construction of plants where **DIAMIX L** and **COMPAMIX L** can be installed are so numerous that it is impossible to totally rule out all the risks.



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DISINFECTION CYCLE ALARMS

If the hot water temperature is not high enough (temperature below 55°C for 60 minutes) the alarm "ALbt" is activated, the cycle fails and the regulator automatically resumes the mixing function. If there is no power supply, the "ALd" alarm is activated, the cycle fails and the regulator automatically resumes the mixing function. The disinfection cycle can not last more than 300 minutes: if the cycle does not finish in time, the "ALot" alarm is activated, the disinfection cycle fails and the regulator automatically resumes the mixing function.

STORAGE OF ANILEGIONELLA DISINFECTION DATA

This function allows to store sensitive data about disinfection cycles. Each time the cycle is started, the following data are stored:

- cycle start date (day/month/year)
- cycle time (hours/minutes)
- maximum temperature (°C) detected by the anti-legionella probe
- minimum temperature (°C) detected by the anti-legionella probe
- average temperature (°C) detected by the anti-legionella probe
- status at end of cycle

The memory can contain information about 52 disinfection cycles, after which the data is overwritten starting from the oldest ones. The data is stored even if the electronic board is not powered by the embedded buffer battery. All the stored data can be downloaded from the mixer valve memory via serial RS485 with Modbus-RTU communication protocol.

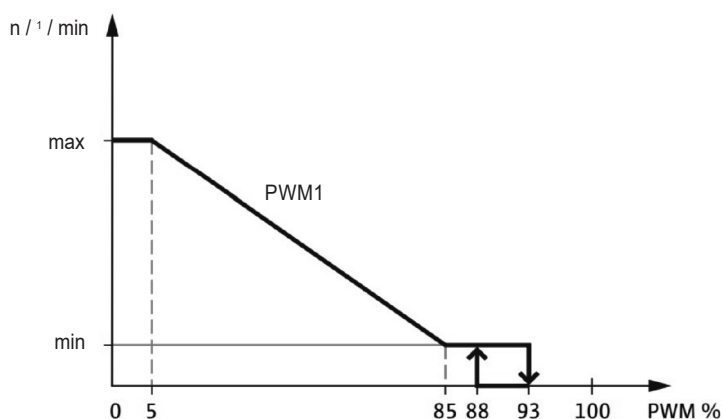
RECIRCULATION PUMP MANAGEMENT

It is possible to set time intervals at which the recirculation pump should be active (pump relay on). The programming can be daily or weekly.

- daily programming: up to 7 programmable time slots that repeat each day.
- weekly programming: 1 different time slot per day can be programmed for 7 days.

RECIRCULATION RETURN TEMPERATURE REGULATION WITH PWM PUMP MODULATION

This function regulates the pump flow by modulating the PWM signal (defined by DIN IEC 60469-1) in order to maintain a constant temperature difference between the flow and the return of the recirculation ring. In this way it is possible to increase the efficiency in the management of the domestic recirculation network, minimizing the energy losses due to thermal dispersions.

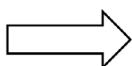


The recirculation return temperature is detected by the same probe used to manage the disinfection cycle. The value of the temperature differential ΔT that the system must maintain between recirculation flow and return is programmable. E.g.:

SET DATA

DHW setpoint temperature = 50°C

$\Delta T = 5^\circ\text{C}$



Recirculation return temperature = $50^\circ\text{C} - 5^\circ\text{C} = 45^\circ\text{C}$

The function is active according the time intervals provided by the recirculation pump management function.



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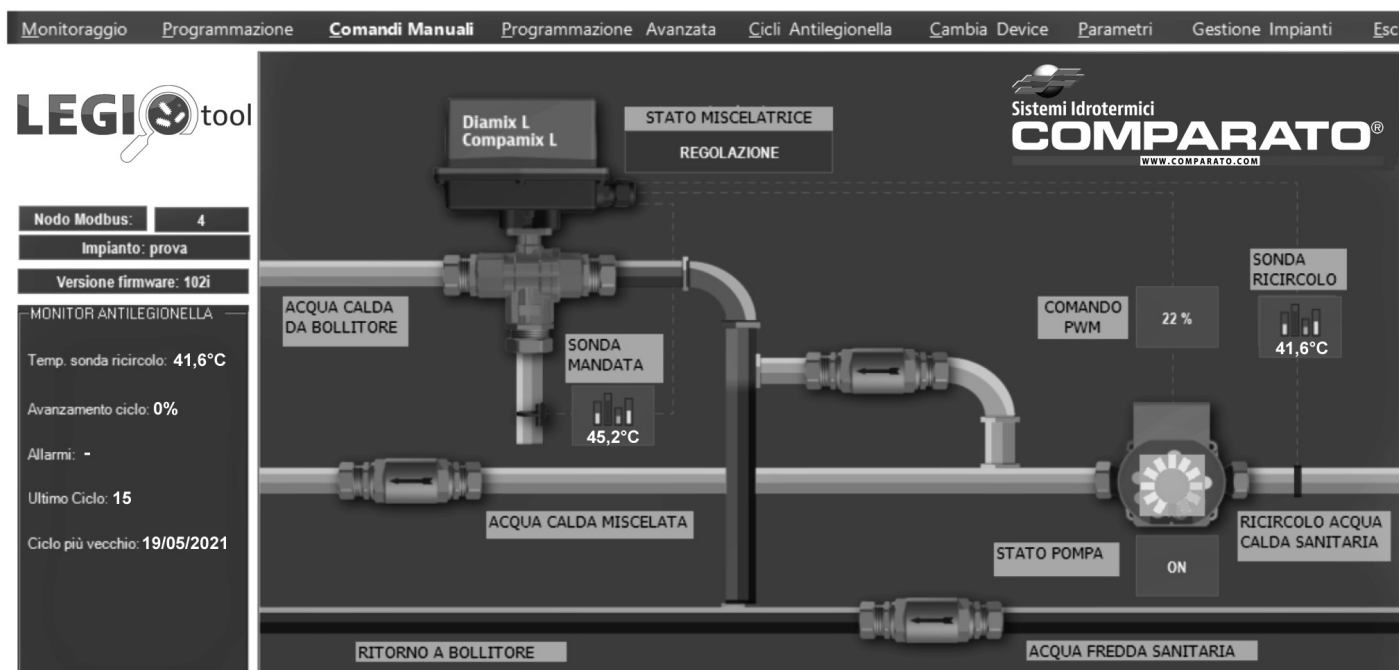


REMOTE MANAGEMENT - Modbus RTU

Diamix L and **Compamix L** are equipped with RTU MODBUS interface and it is possible to modify all the operating parameters, send commands to the valve, receive information on the operating status and download the data of the stored thermal disinfection cycles using the RS485 serial connection. **Diamix L** and **Compamix L** mixing valves are suitable for connection with modern Building Management Systems (BMS). The Modbus address table can be downloaded from www.comparato.com. Via the RS485-USB (optional) interface device and the LegioTool software, it is possible to connect locally via PC.

MANAGEMENT SOFTWARE – LegioTool

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



Each disinfection cycle information stored can be displayed as a table, a graph or exported to .xls or .csv files.



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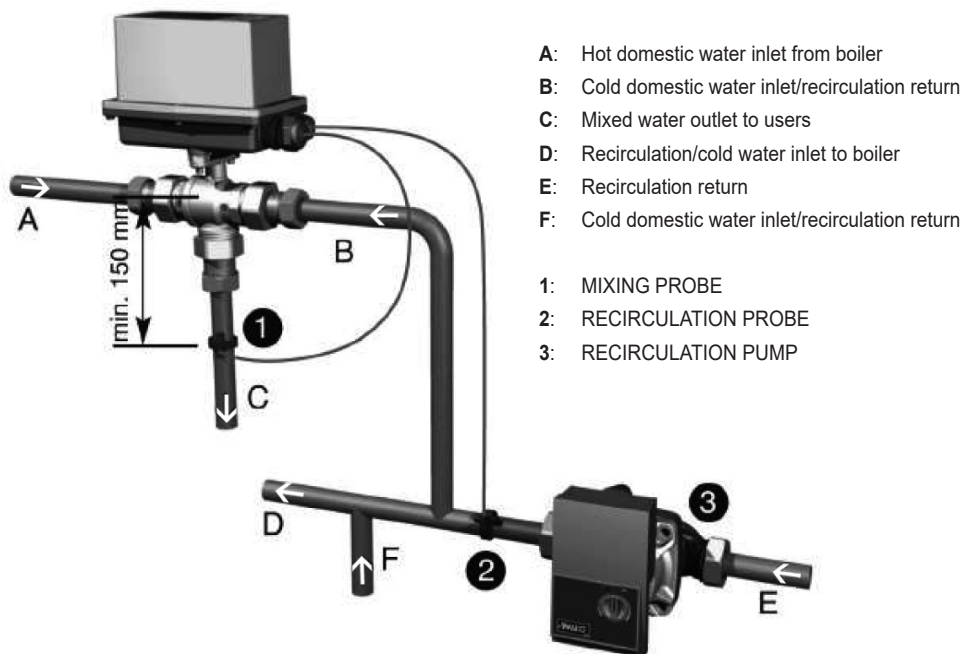
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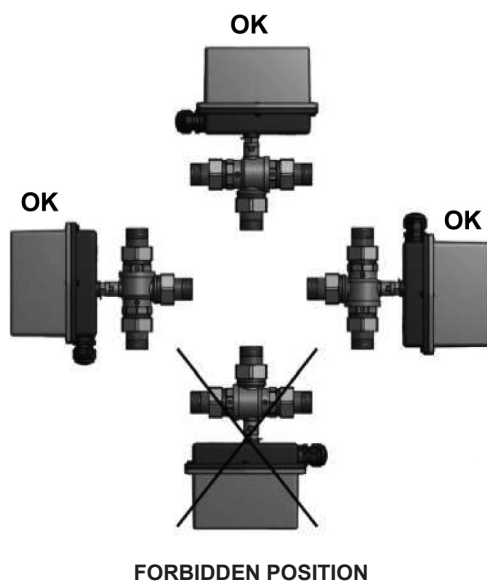
ASSEMBLY



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 valve has been installed, the actuator can be rotated 180°. The installation of the actuator facing downwards is not allowed.

INSTALLATION

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



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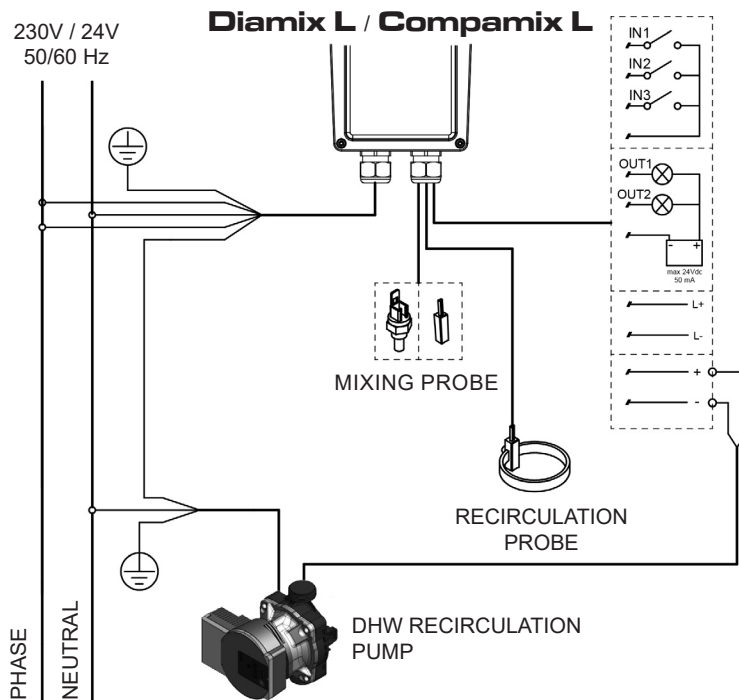
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ELECTRICAL CONNECTIONS



DIGITAL INLETS

- IN1 = ACTIVATION OF THE ANTI-LEGIONELLA CYCLE
- IN2 = FORCING TOWARDS HOT
- IN3 = FORCING TOWARDS COLD

DIGITAL OUTLETS

- OUT1 = ANTI-LEGIONELLA CYCLE: ACTIVE
- OUT2 = ANTI-LEGIONELLA CYCLE ALARM

MODBUS RS485 SERIAL

PUMP PWM CONTROL

CAUTION!

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

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



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ACCESSORIES

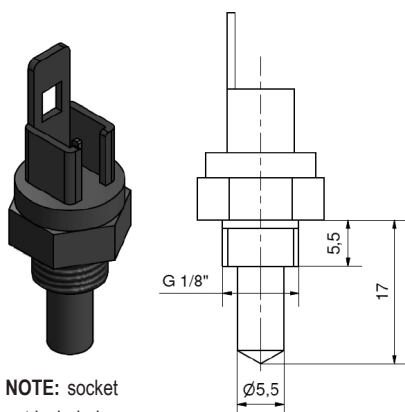
INSULATION SPACER • Add "D1" to the end of the code



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



NOTE: socket
not included

RS485-USB INTERFACE • Code USBMOD



Code USBMOD

EXAMPLE OF SPECIFICATIONS

DIAMIX L MIXING MOTORISED VALVE ANTI-LEGIONELLA • electronic PID regulator, domestic hot water mixing, programmable thermal disinfection cycle, data storage of completed cycle, recirculation pump hour scheduling, remote management with Modbus-RTU protocol, adjustment range: 30°C ÷ 65°C, accuracy: ±1°C, operating time: 12 sec, operational room temperature: -10°C ÷ +50°C, contact temperature probes type ntc 10kΩ, power supply: 230V - 50/60Hz, operating angle: 90°, degree of protection: IP65, brass ball valve in accordance with Ministerial Decree 174, 06/04/2004.

Vertical mixed outlet with unions G3/4" MMM - DN20 - Kvs 11,5 - PN16.

Brand: **COMPARATO**

Code: **DIAMIXPBL**

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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