

# Advanced electronic mixing valve with connectivity

6003 series (24 V - 230 V)



LEGIOMIX<sup>®</sup>evo



## Technical documentation:



## Function

The electronic mixing valve is used in centralized systems that produce and distribute domestic hot water.

Its function is to guarantee and maintain the temperature of the domestic hot water delivered to the user when there are variations in the temperature and pressure of the hot and cold water at the inlet or in the draw-off flow rate.

This particular series of electronic mixing valves is equipped with a specific regulator that controls a set of programs for circuit thermal disinfection against Legionella.

In addition it enables checking the temperature and time for thermal disinfection are actually reached and undertaking the appropriate corrective action.

All parameters are constantly updated and logged.

Depending on the type of system and habits of the user, it is possible to program temperature levels and operation times in the most appropriate manner.

The regulator is designed for remote management via Caleffi Cloud and using specific transmission protocols used in BACS (Building Automation and Control Systems).

PATENT

## European directive compliance

CE mark directives 2014/35/EU and 2014/30/EU.



## Product range

6003 series Advanced electronic mixing valve with connectivity. Threaded version \_\_\_\_\_ sizes DN 20 (3/4"), DN 25 (1"), DN 32 (1 1/4"), DN 40 (1 1/2"), DN 50 (2")  
6003 series Advanced electronic mixing valve with connectivity. Flanged version \_\_\_\_\_ sizes DN 65, DN 80

## Technical specifications

### Valve body

Materials:

Body: - 24 V threaded versions: "LOW LEAD" dezincification resistant alloy **CR** EN 12165 CW724R  
- 230 V threaded versions: brass EN 12165 CW617N  
- flanged versions: "LOW LEAD" dezincification resistant alloy **CR** EN 12165 CW724R

Ball: - 24 V threaded versions:  
3/4"-1 1/4": "LOW LEAD" dezincification resistant alloy **CR** EN 12165 CW724R, chrome plated  
1 1/2" and 2": "LOW LEAD" dezincification resistant alloy **CR** EN 12165 CW724R, chrome plated, POM

- 230 V threaded versions:  
3/4" - 1 1/4": brass EN 12165 CW614N, chrome plated  
1 1/2" - 2": brass EN 12165 CW614N, chrome plated, POM  
- flanged versions: AISI 316 stainless steel

Hydraulic seals: threaded versions: EPDM - flanged versions: NBR

Body nominal pressure: PN 16

Maximum working pressure: 10 bar

Maximum differential pressure: 5 bar

Medium working temperature range: 5-100 °C

Temperature gauge scale: 0-80 °C

Hot and cold water connections: 3/4"-2" M (EN 10226-1) with union

Mixed water connection: 3/4"-2" F (EN 10226-1) with union

Flanged connections: DN 65 and DN 80, PN 16 can be coupled with counterflanges EN 1092-1

## System specifications

Electric supply: 24 V ~ (AC) ± 10 % 50/60 Hz  
230 V ~ (AC) ± 10 % 50/60 Hz

Average power consumption: 5 VA

Stand-by power consumption: 3,5 VA

Maximum power consumption	Regulator	Actuator	Total
Threaded	9 VA	6 VA	15 VA
Flanged		10 VA	19 VA

Ambient temperature:

- Operation: 0-50 °C EN 60721-3-3 Cl. 3K4, max. humidity 95 %

- Transportation: -30-70 °C EN 60721-3-2 Cl. 2K3, max. humidity 95 %

- Storage: -20-70 °C EN 60721-3-1 Cl. 1K2, max. humidity 95 %

Adjustment temperature range: 20-85 °C

Disinfection temperature range: 40-85 °C

Charge reserve: 15 days date/time preservation in the event of electric supply failure

Battery recharging time: 12 h

## Cable for connection to the electricity mains

Use a cable with insulation that is the equivalent of H05VVF or higher, and with conductors that have a minimum cross-section of 0,75 mm<sup>2</sup> (1,5 mm<sup>2</sup> max.).

## Individual component specifications

### Digital regulator

Display:	Touch screen, capacitive colour, 4.3"
Box material:	self-extinguishing ABS V0
Electric supply:	24 V ~ (AC) ± 10 % 50/60 Hz 230 V ~ (AC) ± 10 % 50/60 Hz
Maximum power consumption:	9 VA
Average power consumption:	5 VA
Stand-by power consumption:	3,5 VA
Protection class:	IP 54 (class II appliance)

#### Ambient temperature:

- Operation: 0–50 °C EN 60721-3-3 Cl. 3K4, max. humidity 95 %
- Transportation: -30–70 °C EN 60721-3-2 Cl. 2K3, max. humidity 95 %
- Storage: -20–70 °C EN 60721-3-1 Cl. 1K2, max. humidity 95 %

### Additional digital regulator specifications 24 V (EN 60730-1)

Control type:	Type 1
Environmental pollution grade:	grade 2
Nominal pulse voltage:	500 V peak for overvoltage category II

### Additional electrical specifications

Contact rating (24 V):	
- 3-point mixing valve control:	1 A / 24 V ~ (AC)
- Mixing valve control (0-10 V):	signal 0-10 V == (DC) / 500 mA
Relay:	10(2) A / 24 V ~ (AC)
PTC self-recovery fuse:	30 V / 3,5 A
Contact rating (230 V):	
- 3-point mixing valve control:	100 mA / 230 V ~ (AC)
Relay:	10(2) A / 230 V ~ (AC)
PTC self-recovery fuse:	240 V ~ (AC) / 3,5 A

### Compliant with Directives

24 V version:	CE, UKCA, FCC, IC
230 V version:	CE, UKCA

### Flow and recirculation temperature probes

Body material:	stainless steel
Type of sensitive element:	NTC
Working temperature range:	-10–125 °C
Resistance:	10 kΩ at 25 °C
Cable length:	1 m

### Storage temperature probe (OPTIONAL)

Body material:	stainless steel
Type of sensitive element:	NTC
Size:	Ø 6 mm
Working temperature range:	-25–110 °C
Resistance:	100 kΩ at 25 °C
Cable length:	1,9 m

## 24 V version actuators:

### Actuator for threaded version with Failsafe\*

Electric supply:	24 V ~ / == (AC/DC) ± 15 %- 50/60 Hz directly from the regulator
Control signal:	0–10 V
Power consumption:	6 VA
Ambient temperature:	
- Operation:	0–55 °C EN 60721-3-3 Cl. 3K4, max. humidity 95 %
- Transportation:	-30–70 °C EN 60721-3-2 Cl. 2K3, max. humidity 95 %
- Storage:	-20–70 °C EN 60721-3-1 Cl. 1K2, max. humidity 95 %
Supply cable length:	0,8 m

### Actuator for threaded version without Failsafe\*

Electric supply:	24 V ~ (AC) ± 10 %- 50/60 Hz directly from the regulator
Control signal:	3-point
Power consumption:	6 VA
Ambient temperature:	
- Operation:	-10–55 °C EN 60721-3-3 Cl. 3K4, max. humidity 95 %
- Transportation:	-30–70 °C EN 60721-3-2 Cl. 2K3, max. humidity 95 %
- Storage:	-20–70 °C EN 60721-3-1 Cl. 1K2, max. humidity 95 %
Supply cable length:	0,8 m

### Actuator for flanged version with/without Failsafe\*

Electric supply:	24 V ~ / == (AC/DC) ± 15 %- 50/60 Hz directly from the regulator
Control signal:	0–10 V
Power consumption:	10 VA
Ambient temperature:	
- Operation:	0–55 °C EN 60721-3-3 Cl. 3K4, max. humidity 95 %
- Transportation:	-30–70 °C EN 60721-3-2 Cl. 2K3, max. humidity 95 %
- Storage:	-20–70 °C EN 60721-3-1 Cl. 1K2, max. humidity 95 %
Supply cable length:	1,9 m

\*The Failsafe function allows automatic closure of the hot line in the event that the electricity supply is cut off.

### Additional actuator specifications (EN 60730-1/-2-14)

Protection cover:	self-extinguishing V0
Protection class:	IP 65
Compliance with Directives:	CE, UKCA, FCC, IC
Control type:	Type 1
Environmental pollution grade:	grade 2
Activation type:	multi-position
Nominal pulse voltage:	500 V peak for overvoltage category II
Dynamic torque (threaded versions):	15 Nm
Dynamic torque (flanged versions):	35 Nm

## 230 V version actuators:

### Actuator for threaded version

Electric supply:	230 V ~ (AC) ± 10 %- 50/60 Hz directly from the regulator
Control signal:	3-point
Power consumption:	6 VA
Ambient temperature:	
- Operation:	-10–55 °C EN 60721-3-3 Cl. 3K4, max. humidity 95 %
- Transportation:	-30–70 °C EN 60721-3-2 Cl. 2K3, max. humidity 95 %
- Storage:	-20–70 °C EN 60721-3-1 Cl. 1K2, max. humidity 95 %
Supply cable length:	0,8 m

### Actuator for flanged version

Electric supply:	230 V ~ (AC) ± 15 %- 50/60 Hz directly from the regulator
Control signal:	3-point
Power consumption:	10 VA
Ambient temperature:	
- Operation:	0–55 °C EN 60721-3-3 Cl. 3K4, max. humidity 95 %
- Transportation:	-30–70 °C EN 60721-3-2 Cl. 2K3, max. humidity 95 %
- Storage:	-20–70 °C EN 60721-3-1 Cl. 1K2, max. humidity 95 %
Supply cable length:	1,9 m

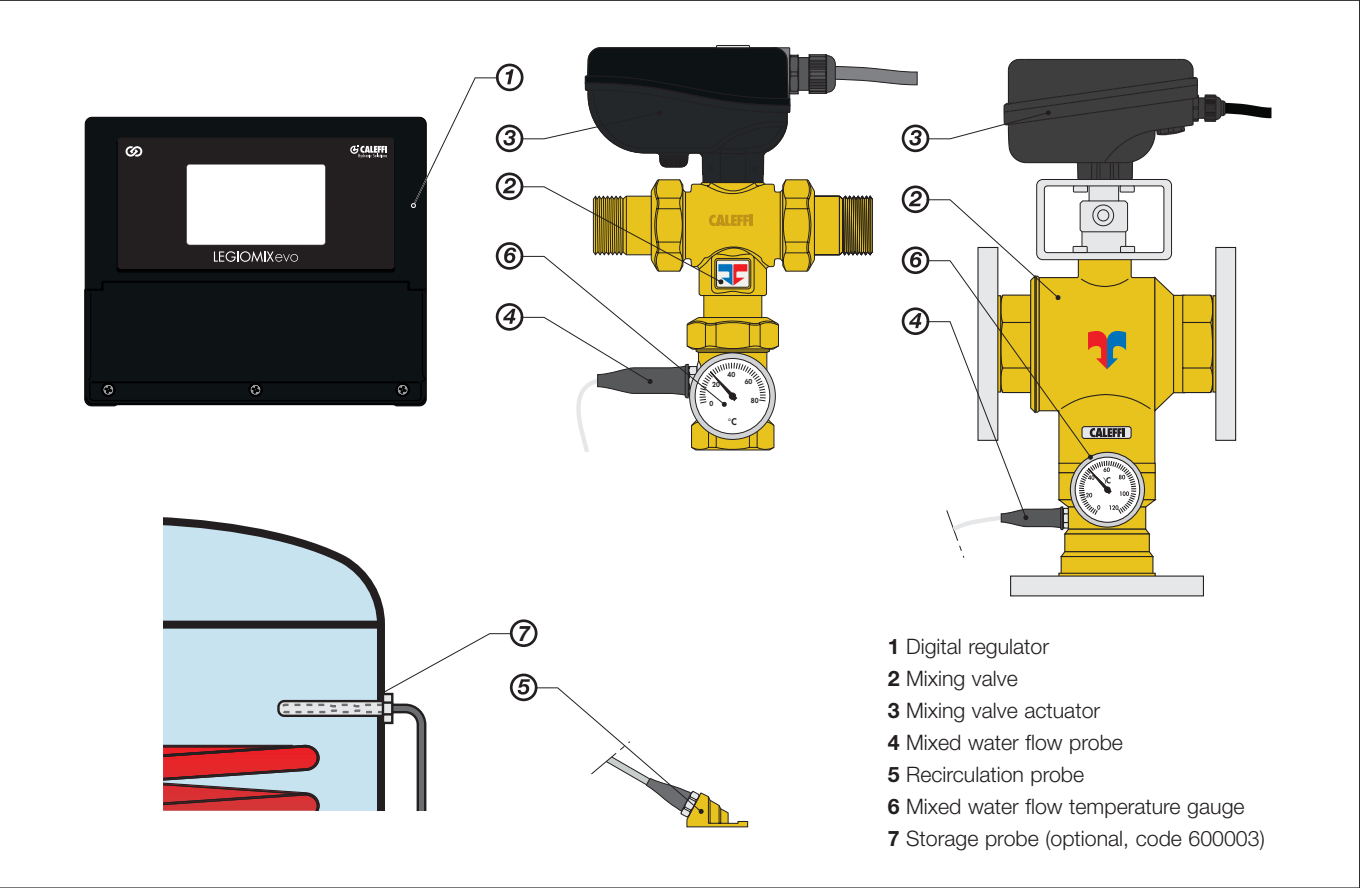
### Additional actuator specifications (EN 60730-1/-2-14)

Protection cover:	self-extinguishing V0
Protection class:	IP 65
Compliance with Directives:	CE, UKCA
Control type:	Type 1
Environmental pollution grade:	grade 2
Activation type:	multi-position
Nominal pulse voltage:	2500 V peak for overvoltage category II
Dynamic torque (threaded versions):	15 Nm
Dynamic torque (flanged versions):	35 Nm

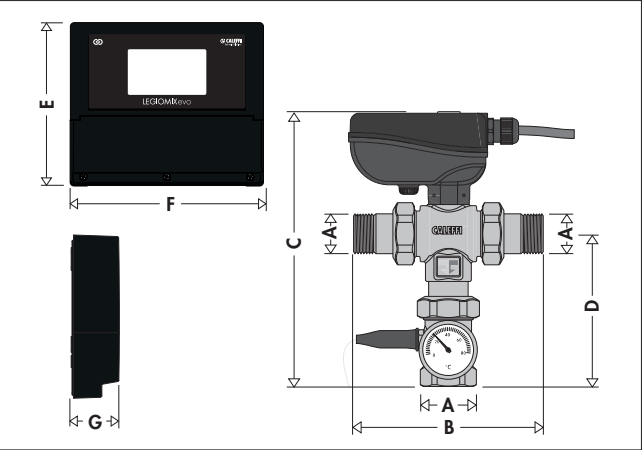
#### N.B. Cable extensions:

if necessary, extend the probe and actuator cables (24 V and 230 V); contact the manufacturer.

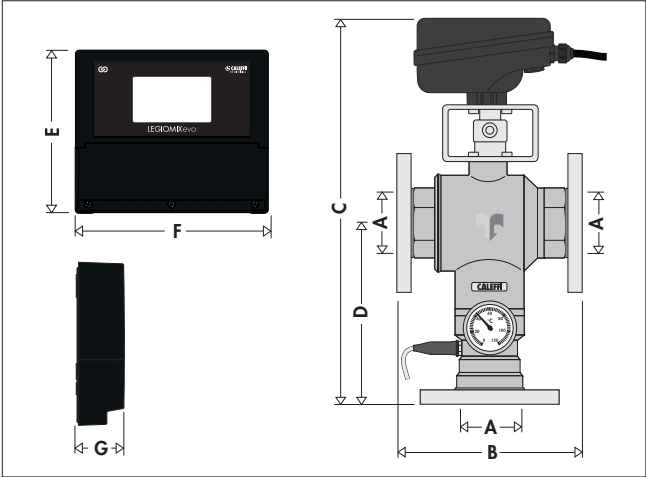
Characteristic components



Dimensions



Code	A	B	C	D	E	F	G	Mass (kg)
600351/53/54	3/4"	135	216	114	207	246	61	2,4
600361/63/64	1"	159	233	127	207	246	61	3,3
600371/73/74	1 1/4"	184	257	144	207	246	61	3,7
600381/83/84	1 1/2"	232	306	181	207	246	61	9,5
600391/93/94	2"	240	311	186	207	246	61	9,7



Code	A	B	C	D	E	F	G	Mass (kg)
600316/36/56	DN 65	235	600	275	207	246	61	31
600318/38/58	DN 80	235	600	275	207	246	61	35

## Legionella-distribution temperature

In central systems that produce hot water with storage for domestic purposes, in order to prevent the proliferation of dangerous *Legionella* bacteria, the hot water must be stored at a temperature of at least 60 °C. At this temperature it is certain that the proliferation of the bacteria that cause Legionnaire's disease will be totally inhibited.

These temperatures, however, are too high for direct use by the user; water at these levels can cause severe burns. It is therefore necessary to reduce the temperature of the hot water distributed to the user to a lower value suitable for use.

Moreover, not only the storage but also the entire distribution network requires thermal disinfection at regular intervals. Otherwise the bacteria would develop quickly in there too.

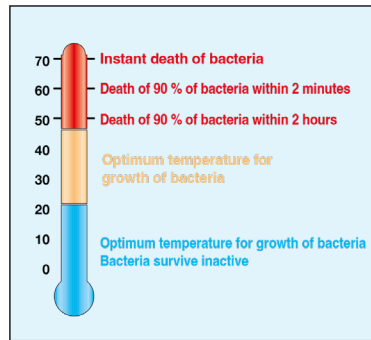
In view of the above, it is therefore necessary to use an electronic mixing valve able to:

- reduce the temperature of the distributed water to an adjustable value which is lower than the storage temperature
- keep the mixed water temperature constant despite any variation in inlet temperature and pressure, or in the drawn-off flow rate.
- program thermal disinfection with a higher temperature than the regulation value, within the necessary time and during periods with less frequent consumption (night-time).

## Energy saving

Energy savings are governed in Italy by Presidential Decree no. 412/93 making it compulsory to use mixing valves on domestic water distribution systems with storage, which are not otherwise regulated, in order to limit the temperature of the water at the inlet of the distribution network to 48 °C with a tolerance of +5 °C. The purpose of limiting the temperature is to reduce passive thermal losses through the distribution network as much as possible and to prevent the delivery of water at a higher temperature than necessary.

## Thermal disinfection



The adjacent diagram shows the behaviour of *Legionella Pneumophila* bacteria as the temperature conditions of the water containing the bacteria vary, in laboratory cultures.

To ensure correct thermal disinfection, it is necessary to go up to values of at least 60 °C.

## Reference documents

The new "**Guidelines for the Prevention and Control of Legionella**" were published on May 7, 2015 with the aim of bringing together, updating and integrating in a single text all the indications included in the previous national and regulatory guidelines and replacing them in their entirety.

In addition to the 2000 Guidelines, the 2005 guidelines for tourist-receptive and spa facilities and those for analysis laboratories were incorporated.

## Applications

The electronic mixing valve is typically used in centralized systems serving hospitals, nursing homes, sports centres, shopping centres, hotels, campsites and boarding schools. In these structures with their collective use, it is more than ever necessary to control and prevent legionnaire's disease in a programmed manner, managing the disinfection times in the best possible way.

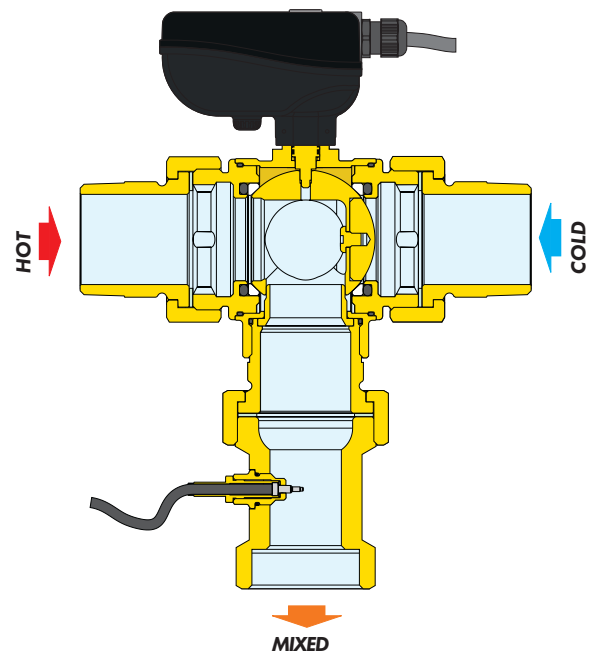
## Operating principle

At its inlet the mixing valve has hot water from the storage and cold water from the water mains. The outlet supplies the mixed flow water. By means of a specific probe, the regulator measures the temperature of the mixed water at the valve outlet and actuates the mixing valve in order to maintain the set temperature.

The appliance incorporates a digital clock, which can be used to set anti-legionella programs to disinfect the water system. The system is disinfected by raising the water temperature to a specific value for a set time duration.

For the best thermal disinfection control, in this type of system it may also be necessary to measure the temperature of the water returning from the distribution network, using the recirculation probe. When this measurement is available, it is used to check and control the temperature reached over all or part of the network, since the probe may be located at a significant remote point of the system.

For complete monitoring of the system, the temperature inside the storage can also be measured, using the relevant probe (optional).

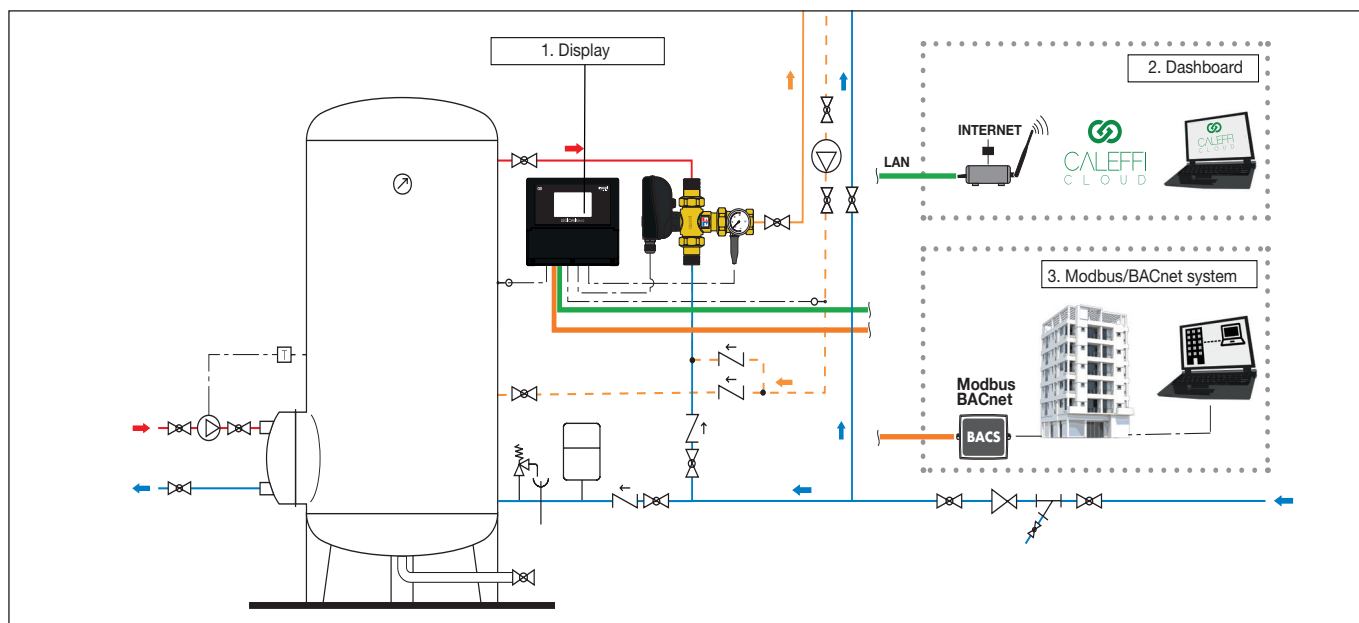


The appliance is equipped with RS-485 and Ethernet interfaces with Modbus/BACnet\* protocol for remotely setting the operating parameters and monitoring the functions. Dedicated relays can activate alarm signals and commands for other system devices.

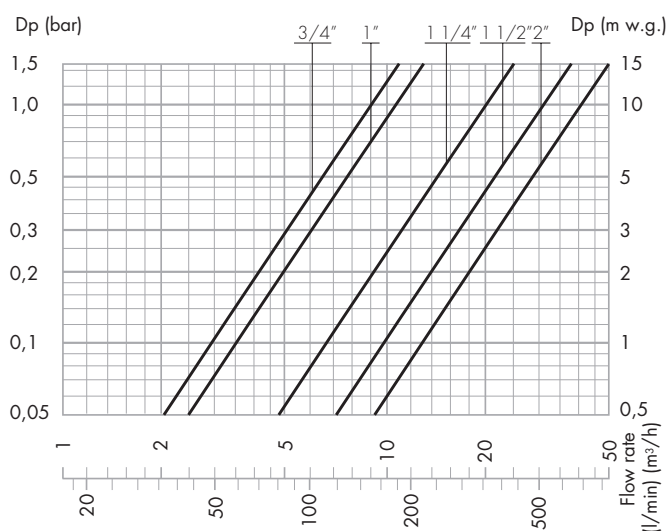
## Control types

1. Display;
2. Dashboard (Caleffi Cloud via Ethernet interface 1 (Eth1));
3. Modbus/BACnet\* system (external Building Automation system management via Ethernet interface 2 (Eth2) or RS-485 interface).

\*BACnet: available at completion of the certification process



## Hydraulic characteristics

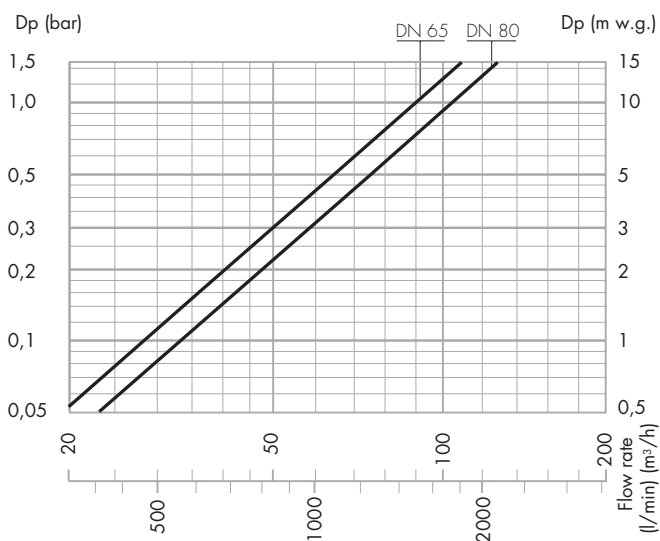


**RECOMMENDED flow rates to ensure stable operation**

Size	Kv (m³/h)
3/4"	8,4
1"	10,6
1 1/4"	21,2
1 1/2"	32,5
2"	41

Size	G <sub>min</sub> (m³/h)	G <sub>max</sub> * (m³/h)
3/4"	0,5	10,3
1"	0,7	13,2
1 1/4"	1,0	28,1
1 1/2"	1,5	39,0
2"	2,0	48,3

\* Δp = 1,5 bar



**RECOMMENDED flow rates to ensure stable operation**

Size	Kv (m³/h)
DN 65	90,0
DN 80	105,0

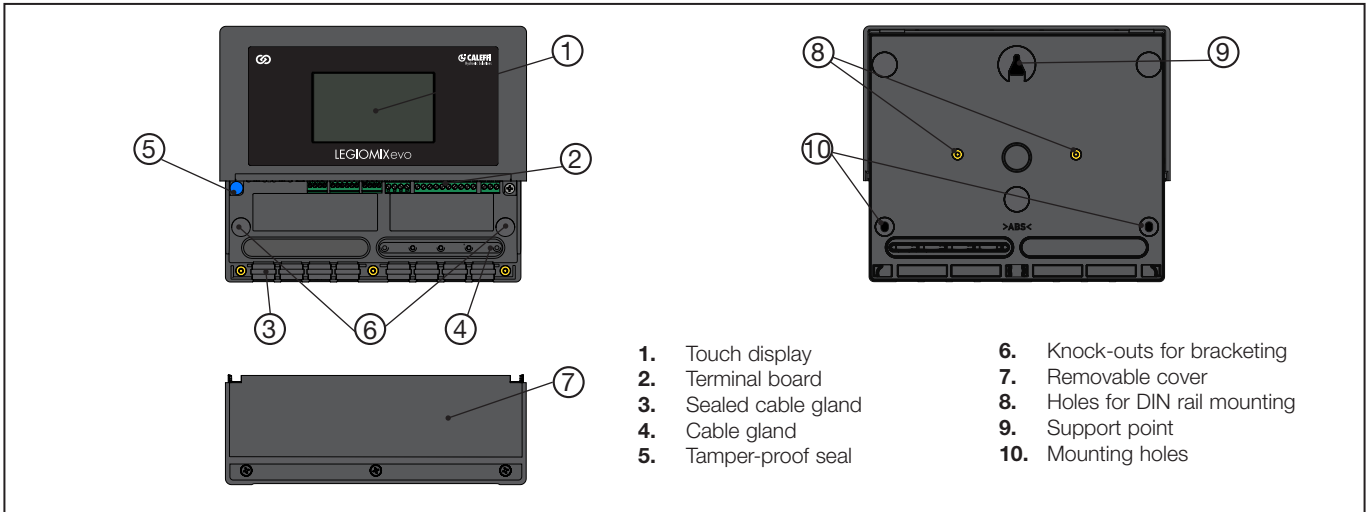
Size	G <sub>min</sub> (m³/h)	G <sub>max</sub> * (m³/h)
DN 65	4,0	110,0
DN 80	5,0	150,0

\* Δp = 1,5 bar

## Mixing valve performance

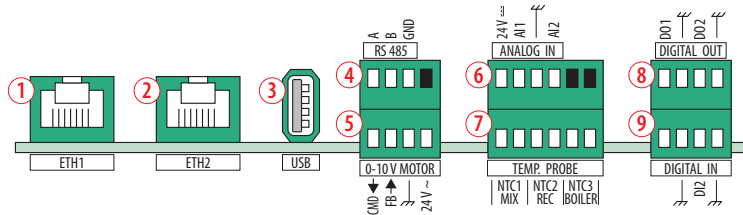
Accuracy: ± 2 °C  
 Maximum differential pressure (dynamic): 5 bar  
 Maximum inlet pressure ratio (H/C or C/H) with G > 0,5 Kv: 2:1

## Digital regulator

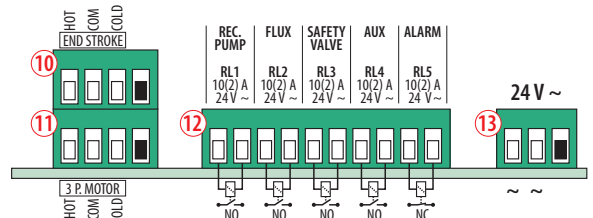


## Terminal board description

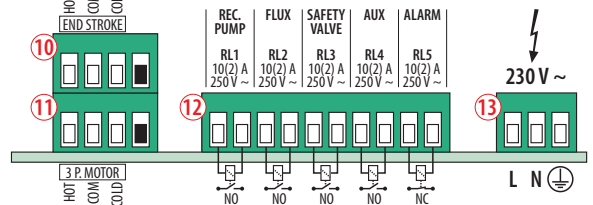
### 24 V - 230 V version



### 24 V version



### 230 V version



1. Ethernet port 1 (Caleffi Cloud connectivity)
2. Ethernet port 2 (Modbus/BACnet communication protocol)
3. USB port
4. RS-485
5. 0-10 V actuator control
6. Analogue input
7. NTC type probes:
  - 1) NTC1 flow probe
  - 2) NTC2 recirculation probe
  - 3) NTC3 storage probe
8. Digital output
9. Digital input

10. 3-point motor end stroke
11. 3-point motor control
12. Relays (voltage-free)
  - 1) RL1 RECIRCULATION PUMP relay - NO
  - 2) RL2 FLUSH relay - NO
  - 3) RL3 SAFETY relay - NO
  - 4) RL4 AUXILIARY relay - NO
  - 5) RL5 ALARM relay - NC
13. Electric supply

### Important:

Alternative connections depend on actuator type for 24 V version.  
Terminal 5 (0-10 V) is not enabled for the 230 V version.

### Caution:

Alternative connections depend on the connection type.

### USB port

The USB port is to be used for downloading data only (refer to "Programming Manual" code 04750).  
It cannot be used to supply devices.



**CAUTION:** Electric shock risk. The regulator and mixing valve contain live circuits.  
Cut off the electric supply before carrying out any work. Failure to follow these instructions may result in injury of persons or damage to property and the electronics in use.



## Main features

### Touch display

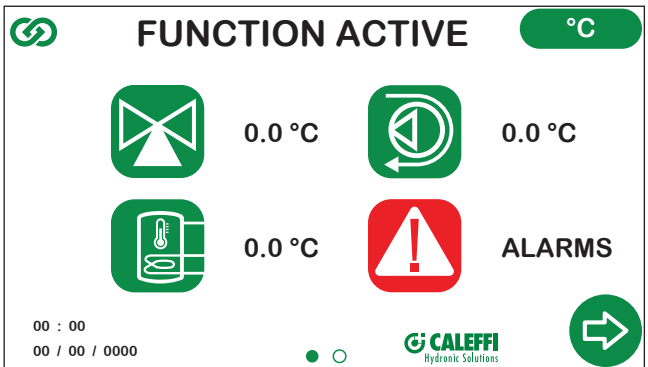
The touchscreen display makes it easy and intuitive to adjust all regulator settings and to read the data required to ensure the system is working properly. Rapid navigation within the various screens makes it easy to view and set operating parameters.

### Home screen

The digital regulator **Home** screen appears with a description of the active function (Mixing, Disinfection, Flush, Anticlog, Shock, Safety valve) and four main icons: three of these indicate the temperatures detected by the flow, recirculation and storage probes, while one corresponds to the system alarm status.

The icon corresponding to the temperature of the mixed water can be selected and is used to quickly set the temperature value, while the icon relating to alarm status may appear in two modes:

-  no alarm.
-  alarms present (in this case the icon can be selected and can be used to access the **Alarms** screen quickly).



Further indications correspond to the connection to Caleffi Cloud, the unit of measurement for temperature values (select between °C and °F) and the date/time.

### Failsafe function

The Failsafe function built into specific actuators allows automatic closure of the hot line to avoid endangering the system and users in the event that the electricity is cut off.

### Temperature probes

The system is designed to detect temperature values using three different probes: the flow probe monitors the temperature of the mixed water, the recirculation probe measures the temperature of the water returning from the distribution circuit, and the storage probe (optional) monitors the hot water storage temperature.

### Recirculation pump management

The regulator can be used to set activation time bands for the recirculation pump only during periods in which it is actually necessary: in fact, up to 3 pump activation slots can be set, so as to guarantee scheduled distribution that can be customised according to requirements. The versatile operation of the recirculation pump makes it possible to optimise electricity and heat consumption across the entire system. During the disinfection and thermal shock phases, the pump is kept constantly active.

## Operating status

Depending on the times and the programs that have been set, the appliance may be in one of the following operating modes:

- Mixing;
- Disinfection;
- Flush;
- Anticlog;
- Shock;
- Safety valve (temperature restriction).

### Mixing

In this mode the appliance continually checks the temperature detected by the flow probe and adjusts the mixing valve accordingly so that the flow temperature is maintained at the programmed set point.

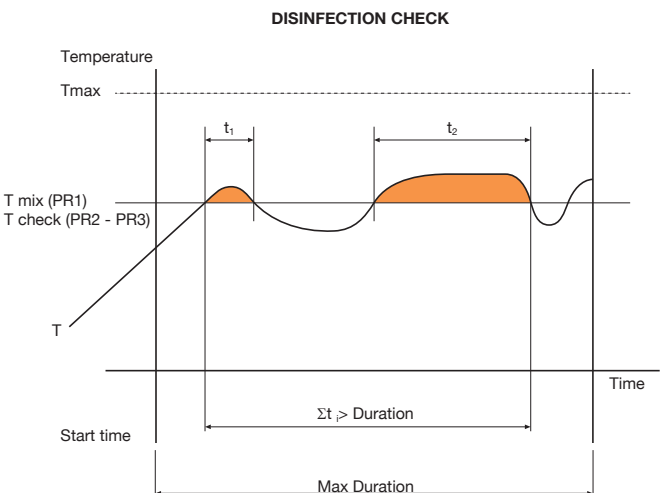
### Disinfection

In this mode the appliance carries out a disinfection phase, which consists of raising the water temperature to a pre-set value for a specific time duration, by operating the mixing valve as required.

You can choose whether to set disinfection on a daily or weekly basis, by selecting on which days the treatment should be carried out.

At the end of disinfection, the information relating to the disinfection that has just been concluded is logged.

This mode is accessed and exited automatically in relation to the *Max Duration* set on the regulator by the user.



If, during the *Max Duration* period, the effective disinfection time corresponding to the set *Duration* is reached, disinfection is stopped and concluded with a positive result.

If, during the *Max Duration* period, the effective disinfection time corresponding to the set *Duration* is not reached, disinfection ends without success and the alarm corresponding to an unsuccessful disinfection appears on the display. As soon as a subsequent disinfection takes place successfully, the alarm disappears.

### Example:

*Start time:* 2:00  
*Duration:* 30 min  
*Max Duration:* 1 hour  
*Program:* 1  
*Tmix:* 60 °C

If, in the time span of 1 hour, the temperature remains over 60 °C for at least 30 minutes, disinfection concludes with a positive result. Otherwise, disinfection ends in any case at 3:00.

## Programs

Regulator operation during **Disinfection** can be set according to different programs, selected depending on the type of system and its management.

### Program 1

In this program the flow temperature is maintained at a value which is at least equal to  $T_{mix}$  for a time period which is at least equal to the set *Duration*; if this occurs the disinfection will have a positive result. The recirculation probe is not used.

### Program 2

This program can only be set if the recirculation probe is enabled. The flow temperature is maintained at the set  $T_{mix}$  temperature, but disinfection is checked in line with  $T_{check}$  using the recirculation probe.

### Program 3

This program can also only be set if the recirculation probe is enabled. It is the same as the previous program, but if after a specified time following the start of disinfection the return temperature does not reach  $T_{check}$ , the flow temperature  $T_{mix}$  is increased by a value equal to  $(T_{check} - T_{return})$ .  $T_{mix}$  cannot however exceed the  $T_{max}$  limit. This compensation procedure is iterative.

Program	Use of recirculation probe	Disinfection check	Disinfection temperature	Alarm	History
1	NO	Flow probe	$\geq T_{mix}$	YES	YES
2	YES	Recirculation probe	$\geq T_{check}$	YES	YES
3	YES	Recirculation probe	$\geq T_{check}$ (+ $T_{mix}$ compensation)	YES	YES

## Stopping disinfection

During the disinfection phase none of the operating parameters can be changed. The settings icons cannot be selected, with the exception of the *Advanced* menu, which can be used to stop the disinfection in progress using the option *Disinfection stop*.

## Flush

The appliance access this mode automatically at the end of the disinfection phase. It is used to control a flush valve to drain the water at a high temperature and return to the set point temperature more quickly.

## Anticlog

The regulator is configured so that it executes a daily mixing valve ball movement cycle, to ensure efficient valve operation and cleaning. This procedure is carried out after disinfection (if active), or in any case at 3:00 am if the disinfection is not active.

This function can be enabled/disabled in the Settings -> Advanced menu, via the option *Anticlog*. Disabling this function increases the risk of deposits forming on moving parts of the valve.

## Shock

In this mode, the appliance adjusts the flow temperature  $T_{mix}$  to the set shock value, for an adjustable *Duration*.

To start thermal shock, you need to press *START*: the function will begin at the end of the adjustable *Countdown*. Once the procedure has been activated, it can still be paused by pressing the *STOP* button. At the end of the thermal shock phase, the device returns to **Mixing** mode.

The Shock procedure does not include a check to confirm correct completion; it will be the user's responsibility to check the temperature values.

## Safety valve (temperature restriction)

If the temperature value rises above a hazardous value (this can be set), the system can control the closure of a two-way valve installed on the hot inlet of the mixing valve.

## Electric supply failure

If there is no electric supply, the regulator battery ensures the date and time are maintained for up to 15 days. After this period, the date and time will be lost, meaning at the next power-on the dedicated Wizard will appear so that this information can be set again.

## Reboot

The regulator can be restarted by pressing the *Reboot* button on the display. This function is available in the Settings -> Advanced menu, under the *Reboot* option. On restarting the system the saved settings will be retained.

## Restoring the factory settings

The regulator's factory settings can be restored using the relevant button on the display, located in the Settings -> Advanced menu, under the option *Factory reset*. When the system is restarted, all settings will be restored to their default values and logs will be deleted.

If the regulator is connected to Caleffi Cloud, the data in the cloud will be retained.

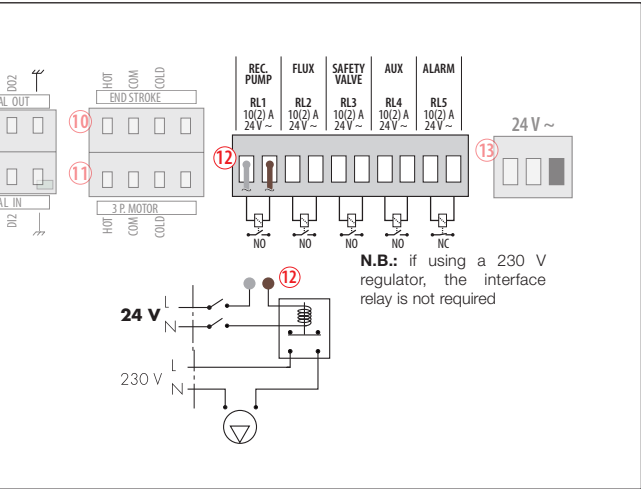
**N.B.:** if necessary, download logs before restoring the factory settings.



Actuation relays

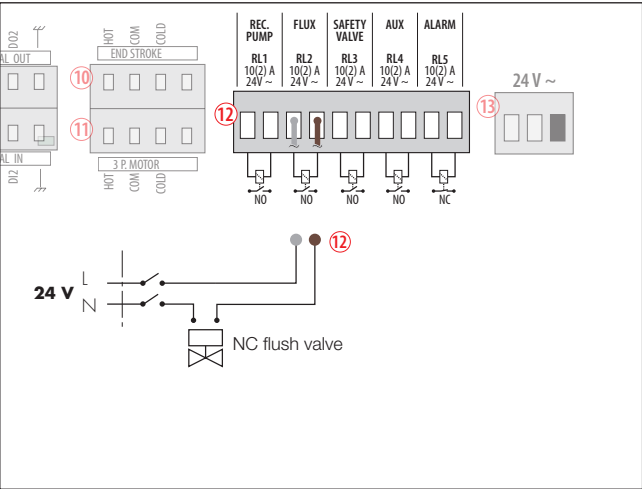
Contact for recirculation pump (RL1)

The contact closes to start the pump according to the time slots set on the digital regulator or during the disinfection and thermal shock phases.



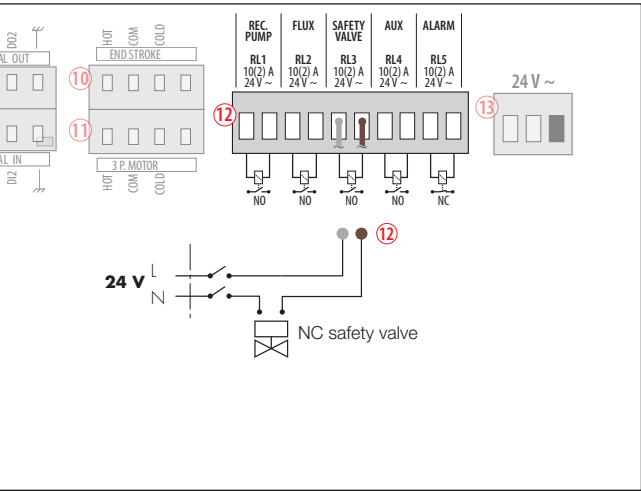
Contact for flush valve (RL2)

The contact closes to open the flush valve at the end of the disinfection phase in order to restore the circuit temperature to its operating value faster.



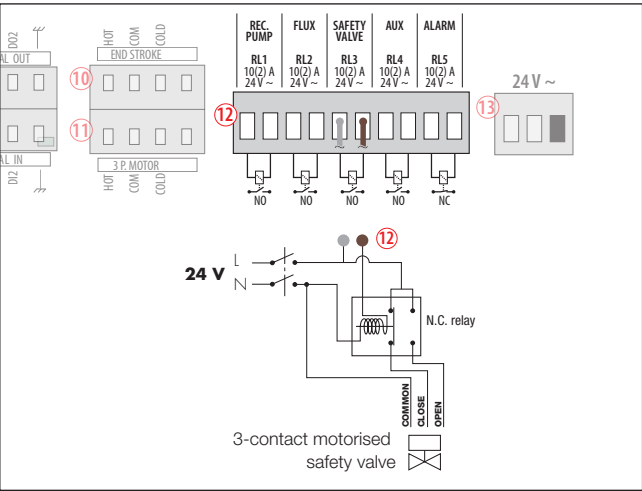
Contact for temperature restriction safety valve (RL3)  
Solenoid valve

The regulator keeps the contact closed during normal operation. If the temperature rises above the danger level, the contact opens to activate the temperature restriction valve. If the solenoid valve is of the normally open type, an SPDT switch relay must be fitted.



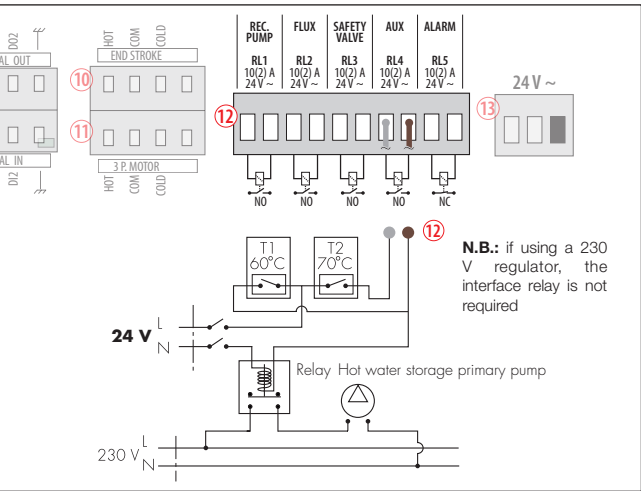
Contact for temperature restriction safety valve (RL3)  
3-contact motorised valve

The regulator keeps the contact closed during normal operation. If the temperature rises above the danger level, the contact opens to activate the temperature restriction valve. Fit a changeover switch relay to ensure the three-contact motorised valve operates correctly.



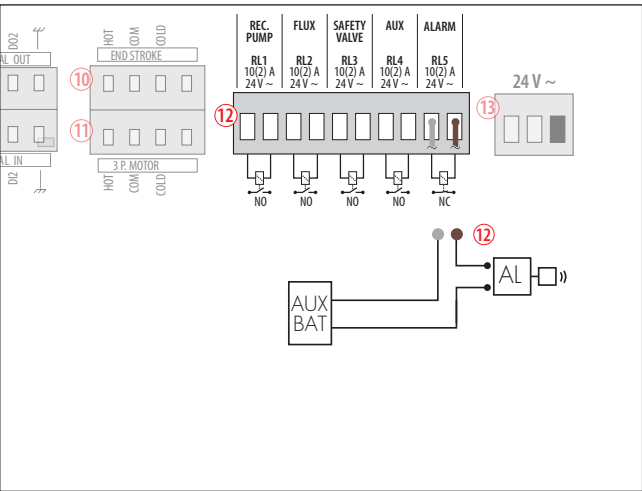
Auxiliary contact for second storage thermostat (RL4)

The auxiliary contact can be used to raise the storage temperature during the disinfection phases.



Contact for alarm management (RL5)

The contact remains open during normal operation. In the event of an alarm or electric supply failure, the contact closes to activate a warning buzzer and/or light.



## Connectivity

LEGIOMIXeVo can be used to manage settings and to view all temperature and disinfection logs directly via the regulator display. When the device is online, these procedures can also be carried out remotely, via Caleffi Cloud. A dedicated Dashboard can be used to view detailed graphs and tables, and to manage the regulator settings. Regulator operating parameters can also be viewed via the Caleffi View app. The device is also designed for remote management with specific transmission protocols that can be used in BACS (Building Automation and Control Systems).

### Caleffi View app

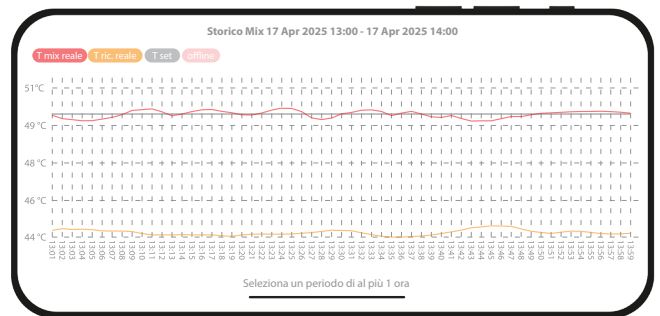
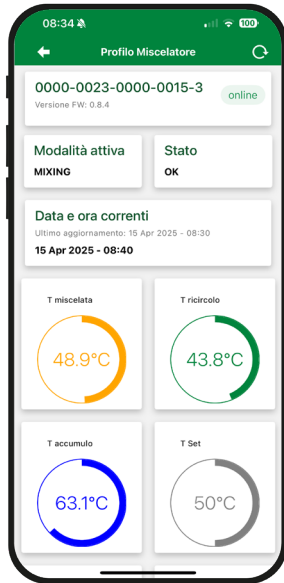
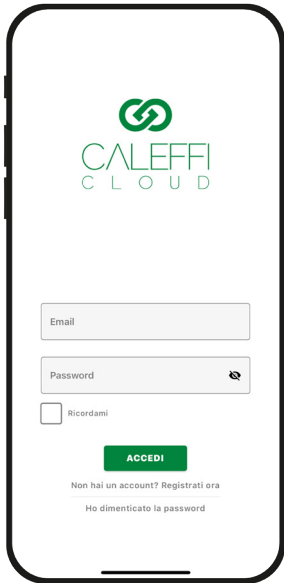


If the device is online, it can access the Caleffi View app, which can be used to view regulator operating parameters. During commissioning, the app allows the registration of the device on the Caleffi Cloud. Proceed as follows:

1. Download the Caleffi View App from the relevant store.
2. Follow the registration procedure.
3. Follow the wizard on the app to create a building, users and branches and to add the LEGIOMIXeVo(s).



**N.B.:** if you already have an account, log in with the credentials you usually use and move on to step 3.



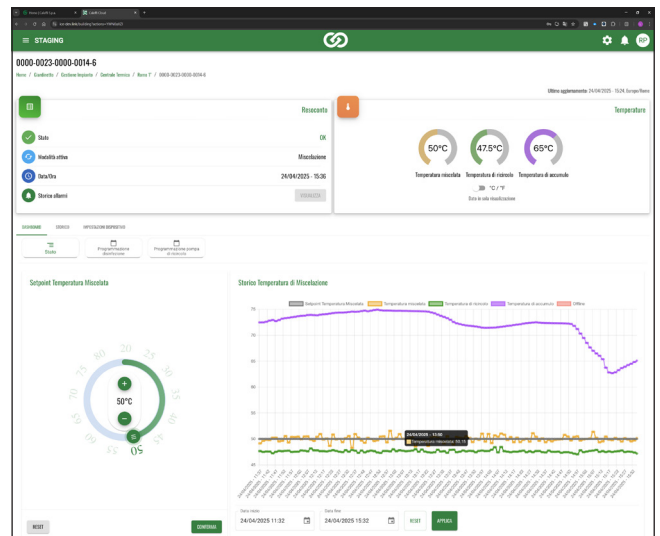
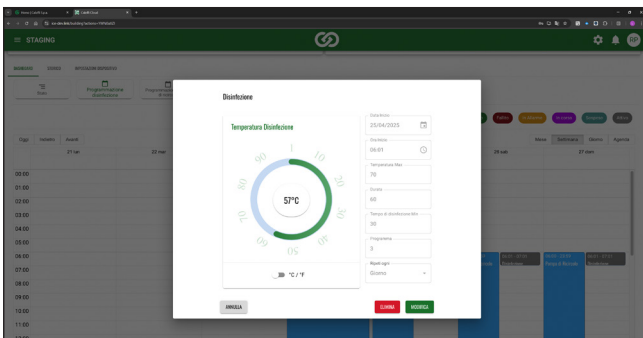
**When the LEGIOMIXeVo is commissioned, a year's free access to Caleffi Cloud begins. At the end of this period, an annual subscription fee is required to continue using the service, through the activation of a contract with Caleffi S.p.A. For further information, please refer to the terms and conditions provided in your account section of the Dashboard.**

### Dashboard – Caleffi Cloud

If the device is online, Caleffi Cloud can be accessed via a web browser.

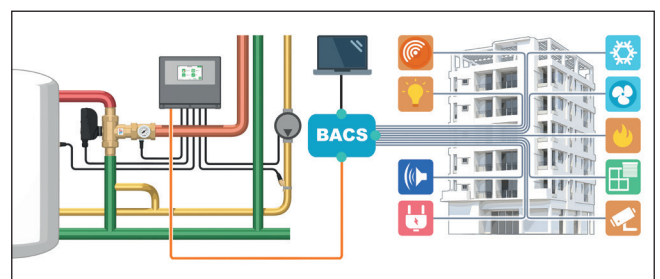
The dedicated Dashboard can be used to:

1. Monitor and analyse regulator parameters in real time;
2. Manage, configure and view the device remotely;
3. Consult the function log.



### Modbus/BACnet in BACS

The device can be managed via its connection with an RS-485 or Ethernet 2 (Eth2) interface, through Modbus/BACnet protocols which can be used in BACS (Building Automation and Control Systems) to remotely set the operating parameters and control the functions.



Logs

The digital regulator can be used to view a series of information saved on the device. The Download function can be used to download data on external units.

Disinfection history

This section can be used to view the log of the disinfection cycles carried out. The last 32 disinfections are saved, after which the data relating to the least recent disinfection is overwritten.

The parameters saved in this section are:

- DATE: disinfection date;
- TIME: disinfection end time;
- PR: disinfection program;
- TM: mixed temperature;
- TC: control temperature;
- TR: return temperature;
- TS: storage temperature;
- RSL: disinfection result.

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DISINF. HISTORY

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DATE	TIME	PR	TM	TC	TR	TS	RSL
20/10/2025	11:04	03	67	60	62	77	OK
06/10/2025	11:03	03	67	60	61	76	OK
28/09/2025	11:08	03	68	60	63	76	OK
24/09/2025	11:34	03	68	60	63	77	OK
23/09/2025	09:47	03	67	60	63	74	OK
08/09/2025	10:14	03	68	60	62	72	OK
22/08/2025	08:54	03	67	60	59	49	FAIL
15/08/2025	08:31	03	69	60	62	76	OK

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Alarm history

This section can be used to view the last 10 alarms that arose in the system. Each alarm is represented by a 3-digit code.

The parameters saved in this section are:

- ERROR: error description;
- CODE: error code;
- TIME: time at which the error occurred;
- DATE: date on which the error occurred.

For alarm encoding, please refer to the specific section in the “Programming Manual” (code 04750).

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ALARM HISTORY

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ERROR	CODE	TIME	DATE
Hot water storage probe fault	030	11:04	20/10/2025
Recirculation probe fault	020	11:03	06/10/2025
Hot water storage probe fault	030	11:08	28/09/2025
Hot water storage probe fault	030	11:34	27/09/2025
Hot water storage probe fault	030	09:47	26/09/2025
Disinfection error	001	10:14	08/09/2025
Hot water storage probe fault	030	08:54	22/08/2025
Flush error	004	08:31	15/08/2025
Disinfection error	001	09:22	03/08/2025
Mix probe fault	010	10:43	20/07/2025

Data download via USB

The regulator can be used to download operational data, alarms and disinfections saved on the device, in .csv format.

The following files can be downloaded:

- LEVOALR.csv (alarm log);
- LEVOHISR.csv (timed operation log);
- LEVODISE.csv (disinfection settings);
- LEVODISU.csv (disinfection summary);
- LEVODISD.csv (disinfection detail log).

For the correct download procedure, please refer to the specific section in the “Programming Manual” (code 04750).

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ADVANCED

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Download

Reboot

Factory reset

Disinfection stop

Anticlog

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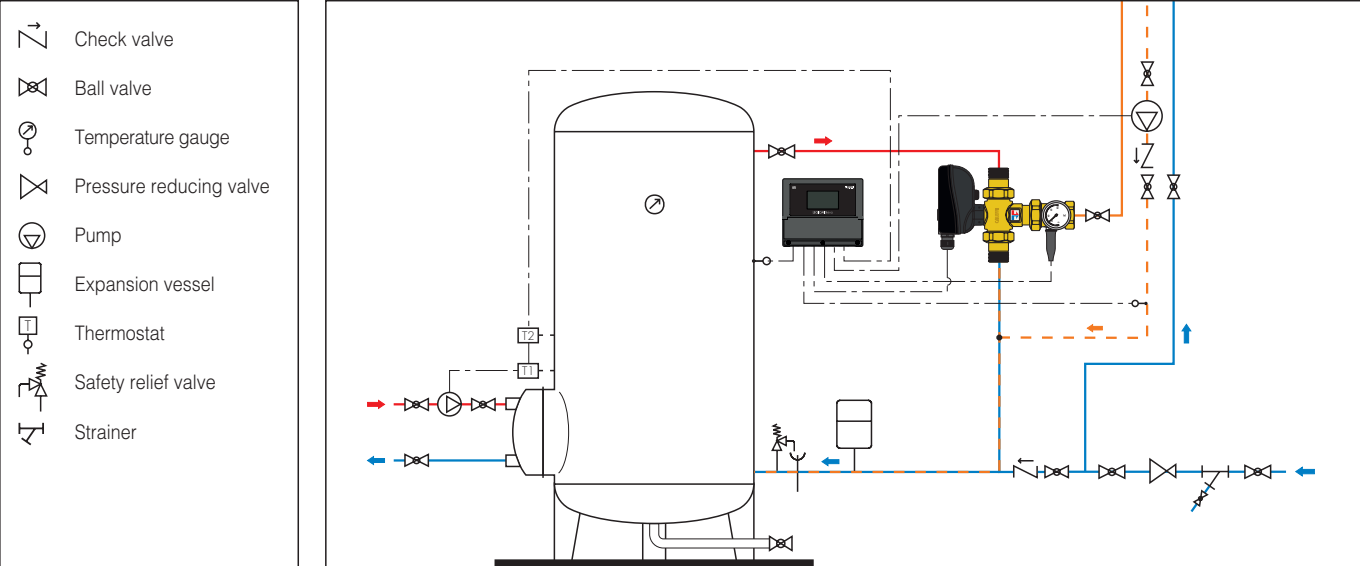
Reset

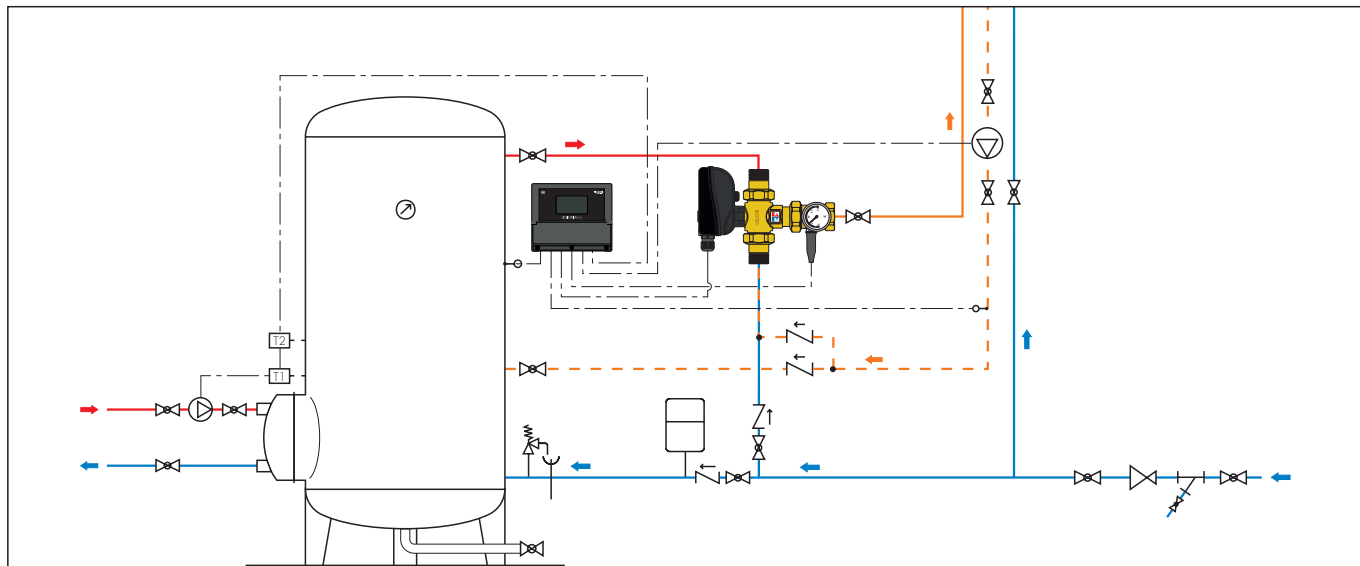
STOP

Enabled

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Application diagrams





## SPECIFICATION SUMMARY

### 6003 series threaded version

Advanced electronic mixing valve with connectivity. Consisting of: **Valve body.** Hot and cold water connections threaded 3/4" (from 3/4" to 2"), with union, mixed water connection 3/4"F (from 3/4" to 2"). Brass body (230 V versions), "LOW LEAD" dezincification resistant alloy DR (24 V versions). Ball in chrome-plated brass (230 V versions 3/4"-1 1/4"), chrome-plated brass with POM insert (230 V versions 1 1/2" and 2"), "LOW LEAD" dezincification resistant alloy DR, chrome-plated (24 V versions 3/4"-1 1/4"), "LOW LEAD" dezincification resistant alloy DR, chrome-plated with POM insert (24 V versions 1 1/2" and 2"). EPDM hydraulic seals. Maximum working pressure (static) 10 bar. Medium temperature range 5-100 °C. Temperature gauge scale 0-80 °C. **Actuator.** Electric supply 24 V or 230 V (AC) - 50/60 Hz directly from the regulator. 3-Point control signal without Failsafe (24 V and 230 V versions), 0-10 V with Failsafe (24 V versions). Running power consumption 6 VA. Protection class IP 65. Ambient temperature range -10-55 °C (24 V and 230 V versions, 3-point control signal without Failsafe), 0-55 °C (24 V versions, 0-10 V control signal with Failsafe). VO self-extinguishing protection cover. Electric supply cable length 0,8 m. **Mixing valve.** Accuracy  $\pm 2$  °C. Maximum working pressure (dynamic) 5 bar. Maximum inlet pressure ratio (H/C or C/H), with  $G > 0,5$  Kv, 2:1. **Digital regulator.** Electric supply 24 V or 230 V (AC) - 50/60 Hz. Maximum power consumption 9 VA. Average power consumption 5 VA. Stand-by power consumption 3,5 VA. Adjustment temperature range 20-85 °C. Disinfection temperature range 40-85 °C. Ambient temperature range 0-50 °C. With program for checking whether the thermal disinfection temperatures and times are actually achieved; equipped with a system for logging the recorded parameters. Protection class IP 54 (appliance in Class II). Compliance with Directives CE, UKCA (230 V versions), CE, UKCA, FCC, IC (24 V versions). **Temperature probes.** Body material stainless steel. NTC type temperature-sensitive element. Working range -10-125 °C (flow, recirculation), -25-110 °C (storage). Resistance 10 k $\Omega$  at 25 °C (flow, recirculation), 100 k $\Omega$  at 25 °C (storage).

### 6003 series flanged versions

Advanced electronic mixing valve with connectivity. Consisting of: **Valve body.** Flanged connections DN 65 (DN 65 and DN 80), PN 16 to be coupled with counterflanges EN 1092-1. "LOW LEAD" dezincification resistant alloy body DR. Stainless steel ball. NBR hydraulic seals. Maximum working pressure (static) 10 bar. Medium temperature range 5-100 °C. Temperature gauge scale 0-80 °C. **Actuator.** Electric supply 24 V or 230 V (AC) - 50/60 Hz directly from the regulator. 3-Point control signal without Failsafe (230 V versions), 0-10 V with/without Failsafe (24 V versions). Running power consumption 10 VA. Protection class IP 65. Ambient temperature range 0-55 °C. Self-extinguishing VO protection cover. Electric supply cable length 1,9 m. **Mixing valve.** Accuracy  $\pm 2$  °C. Maximum working pressure (dynamic) 5 bar. Max. inlet pressure ratio (H/C or C/H), with  $G = 0,5$  Kv, 2:1. **Digital regulator.** Electric supply 24 V or 230 V (AC) - 50/60 Hz. Maximum power consumption 9 VA. Average power consumption 5 VA. Stand-by power consumption 3,5 VA. Adjustment temperature range 20-85 °C. Disinfection temperature range 40-85 °C. Ambient temperature range 0-50 °C. With program for checking whether the thermal disinfection temperatures and times are actually achieved; equipped with a system for logging the recorded parameters. Protection class IP 54 (appliance in Class II). Compliance with Directives CE, UKCA (230 V versions), CE, UKCA, FCC, IC (24 V versions). **Temperature probes.** Body material stainless steel. NTC type temperature-sensitive element. Working range -10-125 °C (flow, recirculation), -25-110 °C (storage). Resistance 10 k $\Omega$  at 25 °C (flow, recirculation), 100 k $\Omega$  at 25 °C (storage).

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