

LEGIOMIX®evo digital mixing valve with connectivity

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6003 series

INSTALLATION MANUAL

Technical documentation:



Function

The 6003 Series LEGIOMIX®evo digital mixing valve is designed for centralized domestic hot water systems, ensuring consistent mixed water temperature despite fluctuations in inlet temperature, pressure, or flow rate. A 3-way mixing ball valve is controlled by an electric actuator, available in 0 - 10 V proportional or 3-point floating control with fail-safe or fail-in-place options. The controller drives the actuator based off the mixed outlet temperature set point and feedback from accessory temperature sensors. Controller relays manage alarms and external devices like high-temperature shutoff valves and recirculation pumps.

Key features include precise temperature control across various flow rates, minimal pressure drop, automatic self-cleaning to prevent scale, and a user-friendly digital interface with data logging and status indication. The controller has an LCD touch interface and has automatic thermal disinfection programs to control Legionella. Parameters are updated and logged periodically, and the controller can be configured via device touchscreen or remotely via computer.

The LEGIOMIXevo supports standalone operation, control via Modbus or BACnet protocols for integration with Building Management Systems (BMS) or remote operation through the Caleffi Cloud®. All setting parameters can be set through the controller interface or via the Caleffi Cloud dashboard. The LEGIOMIXevo controller is backwards compatible for existing LEGIOMIX installations.

LEGIOMIXevo is listed and certified by ASSE to standard 1017. It is also compliant with CSA B125.3, certified by IAPMO R&T, and meets the NSF/ANSI/CAN 61 and NSF/ANSI/CAN 372 standards for low lead and lead-free materials, as certified and listed by ICC-ES. Additionally, it complies with UPC, IPC, IRC, and NPC requirements for use in accordance with U.S. and Canadian plumbing codes certified by IAPMO R&T. The product also meets the CSA Z317.1 special requirements for plumbing installations in health care facilities, certified by IAPMO R&T. The controller has an IP54 rating for protection against dust and water.



1017



NSF/ANSI/CAN 61
NSF/ANSI/CAN 372



SAFETY INSTRUCTION

This safety alert symbol will be used in this manual to draw attention to safety related instructions. When used, the safety symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.**



CAUTION: All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of systems in accordance with all applicable codes and ordinances.



CAUTION: If the digital mixing valve is not installed, commissioned and maintained properly, according to the instructions contained in this manual, it may not operate correctly and may endanger the user.



CAUTION: Make sure that all the connecting pipework is water tight.



CAUTION: When making the water connections, make sure that the pipework connecting the LEGIOMIXevo digital mixing valve is not mechanically overstressed. Over time this could cause breakages, with consequent water losses which, in turn, could cause harm to property and/or people.



CAUTION: Water temperatures higher than 100 °F (38 °C) can be dangerous. During the installation, commissioning and maintenance of the LEGIOMIXevo digital mixing valve, take the necessary precautions to ensure that such temperatures do not endanger people.



CAUTION: Safety measures must be in place before engaging disinfection mode. Anti-scald protection devices, certified to ASSE 1016 or ASSE 1070, at all downstream fixtures, must be installed.



CAUTION: To prevent any damage which will cause the digital mixing valve to not operate correctly, treat highly aggressive water before entering the digital mixing valve. Be sure water hardness is less than 10 grains.



CAUTION: IMPORTANT: Risk of electric shock. The back panel and mixing valve contain live circuits. Cut off the electric supply before performing work. Failure to follow these instructions may result in injury of persons or damage to property.



CAUTION: When turning on confirm the desired language. English is the default language. But, if not selected after 1 minute, the menu will go directly to the date and time choice. Language can then be selected always in “settings”.

Leave this manual for the user.



CONSIGNE DE SÉCURITÉ

Ce symbole d'avertissement servira dans ce manuel à attirer l'attention sur la sécurité concernant instructions. Lorsqu'il est utilisé, ce symbole signifie.

ATTENTION! DEVEZ-VOUS ÊTRE ALERTES ! VOTRE SÉCURITÉ EST EN JEU ! NE PAS SUIVRE CES INSTRUCTIONS PEUT PROVOQUER UN RISQUE DE SÉCURITÉ.



ATTENTION: Tous les travaux doivent être effectués par du personnel qualifié formé à la bonne application, installation et maintenance des systèmes conformément aux codes et règlements locaux.



ATTENTION: Si le réducteur de pression, mitigeur électronique, n'est pas installé, mis en service et entretenu correctement, selon les instructions contenues dans ce manuel, il peut ne pas fonctionner correctement et peut mettre en danger l'utilisateur.



ATTENTION: S'assurer que tous les raccordements sont étanches.



ATTENTION: Lorsque vous effectuez les raccordements d'eau, assurez-vous que la tuyauterie reliant le LEGIOMIXevo mitigeur électronique n'est pas mécaniquement overstressed. Au fil du temps, ceci pourrait causer des ruptures, avec pour conséquence des pertes en eau qui, à leur tour, peuvent causer des dommages à la propriété et/ou les gens.



ATTENTION: Les températures de l'eau supérieures à 100 °F (38 °C) peuvent être dangereuses. Au cours de l'installation, mise en service et l'entretien de le réducteur de pression, le LEGIOMIXevo mitigeur électronique, prendre les précautions nécessaires afin de s'assurer que de telles températures ne compromettent pas les gens.



ATTENTION: Des mesures de sécurité doivent être en place avant d'engager le mode de désinfection. Les dispositifs de protection anti-brûlure, certifié à ASSE 1016 ou 1070 l'ASSE, à tous les appareils en aval, doit être installé.



ATTENTION: Pour prévenir tout dommage qui provoque le mitigeur électronique à ne pas fonctionner correctement, le traitement de l'eau très agressive avant d'entrer dans la vanne de mélange électronique. Assurez-vous que la dureté de l'eau est inférieure à 10 grains.



ATTENTION: Risque de choc électrique. Le fond d'armoire et la vanne mélangeuse sont sous tension. Couper l'alimentation électrique avant toute intervention. Le non respect de ces règles de sécurité peut entraîner des dégâts matériels et/ou des blessures aux personnes.



ATTENTION: Lors du passage de confirmer la langue désirée. L'anglais est la langue par défaut. Si la langue n'est pas sélectionnée après 1 minute, le menu Aller directement à la date et l'heure de choix. La langue peut alors être sélectionné toujours dans "Paramètres".

LAISSEZ CE MANUEL AVEC L'UTILISATEUR



WARNING: The outer surface of the device, especially in polymer type components, must not come into contact with any chemical substance, either on purpose or accidentally. The system fluid and any chemical additives used within the water piping system – whether for washing or as protection – must be compatible with the materials used to make the device and with the function it performs.



AVERTISSEMENT: La surface extérieure de l'appareil, en particulier les composants de type polymère, ne doit pas entrer en contact avec des substances chimiques, que ce soit volontairement ou accidentellement. Le produit et les additifs chimiques utilisés dans les canalisations d'eau - que ce soit pour le lavage ou la protection - doivent être compatibles avec les matériaux utilisés pour la fabrication de l'appareil et avec la fonction qu'il remplit.



WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

AVERTISSEMENT: Ce produit peut vous exposer à des produits chimiques comme le plomb, qui est connu dans l'État de Californie pour causer le cancer, dommages à la naissance ou autre. Pour plus d'informations rendez-vous www.P65Warnings.ca.gov.

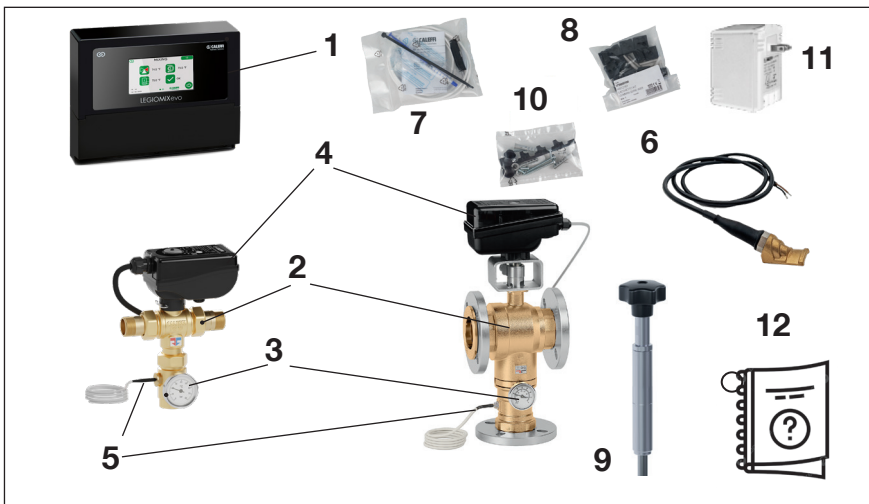
Product range

6003 series digital mixing valve with connectivity, 24 VAC with union connections, NPT male, sweat and press.....sizes ¾", 1", 1¼", 1½" & 2"

6003 series digital mixing valve with connectivity, 24 VAC with ANSI 150 RF flanged connections.....sizes 2½" & 3"

LEGIOMIXevo contents

1. Digital touch screen controller.
2. Low lead/lead free mixing valve.
3. Mixed outlet temperature gauge.
4. Mixing valve actuator.
5. Mixed outlet temperature sensor.
6. Recirculation temperature sensor.
7. Water storage temperature sensor.
8. Rubber cable gland kit.
9. Lever for manual operation (flanged versions only).
10. Controller wall mounting kit.
11. Plug-in transformer, 20 VA.
12. Manuals.



Technical specifications

Valve body

Materials*:	- Body:	DZR low-lead brass, EN 12165 CW724R
	- Ball:	AIISI 316 stainless steel
	- Slip-on flanges for sizes 2½" & 3":	galvanized carbon steel
	- Hydraulic O-ring seals:	sizes ¾" - 2": peroxide-cured EPDM sizes 2½" & 3": NBR
	- Ball seats:	PTFE

* Meets the "lead free" requirement of Section 1417 of the Safe Drinking Water Act (SDWA). This product has a weighted average lead content of less than 0.25% for its wetted surfaces contacted with consumable water.

Max. body pressure rating:	230 psi (16 bar)
Max working pressure:	150 psi (10 bar)
Max. differential pressure:	70 psi (5 bar)
Max. inlet temperature:	212 °F (100 °C)
Temperature gauge scale:	32 - 176 °F (0 - 80 °C)
Suitable fluids:	water
Max. water hardness:	10 grains
Main connections:	- NPT male, sweat and press union ¾", 1", 1¼", 1½" and 2" - ANSI B16.5 150 CLASS RF 2½" & 3"

System specifications

Electric supply:	24 V~(AC) ± 10% 50/60 Hz (115/24 VAC transformer included in package)
Average power consumption:	5 VA
Stand-by power consumption:	3.5 VA
Max. power consumption:	
- Controller:	9 VA
- Actuator:	sizes ¾" - 2": 6 VA; sizes 2½" & 3": 10 VA
- Total:	sizes ¾" - 2": 15 VA; sizes 2½" & 3": 19 VA
Ambient temperature:	
- Operation:	32 - 120 °F (0 - 50 °C) EN 60721-3-3 Cl. 3K4, max. humidity 95%
- Transportation:	-20 - 160 °F (-30 - 70 °C) EN 60721-3-2 Cl. 2K3, max. humidity 95%
- Storage:	-5 - 160 °F (-20 - 70 °C) EN 60721-3-1 Cl. 1K2, max. humidity 95%
Adjustment temperature range:	70 - 185 °F (20 - 85 °C)
Disinfection temperature range:	100 - 185 °F (40 - 85 °C)
Charge reserve:	15 days in the event of electric supply failure, with a rechargeable backup button battery
Battery recharging time:	12 h
Cable for connection to the electricity supply:	Insulated cable equivalent or greater than SJOOW, 16 - 18 AWG

Controller

Display:	Touch screen, capacitive color, 4.3"
Housing:	self-extinguishing A EN 60721-3-3 Cl. 3K4 BS VO, color black
Electric supply:	24 V ~ (AC) ± 10 % 50/60 Hz (115/24 VAC transformer included in package)
Max power consumption:	9.0 VA
Average power consumption:	5.0 VA
Stand-by power consumption:	3.5 VA
Adjustment temperature range:	70 - 185 °F (20 - 85 °C)
Disinfection temperature range:	100 - 185 °F (40 - 85 °C)
Ambient temperature:	
- Operation:	32 - 120 °F (0 - 50 °C), EN 60721-3-3 Cl. 3K4, max. humidity 95%
- Transportation:	-20 - 160 °F (-30 - 70 °C), EN 60721-3-2 Cl. 2K3, max. humidity 95%
- Storage:	-5 - 160 °F (-20 - 70 °C), EN 60721-3-1 Cl. 1K2, max. humidity 95%
Protection class:	IP 54 (Class II appliance) surface mounted, includes hardware

Contact rating:	1 A max / 24 V~(AC)
3-point mixing valve control:	0 -10 V signal = (DC) / 500 mA
Mixing valve control (0-10 V):	10(2) A / 24 V~(AC)
Relay:	30 V / 3.5 A
PTC self-recovery fuse:	FCC, IC, CE, UKCA
Conforms to directives:	

Additional controller specifications (EN 60730-1)

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

Mixed outlet and recirculation return temperature sensors

Body material:	stainless steel
Type of sensitive element:	NTC
Working temperature range:	14 - 255 °F (-10 - 125 °C)
Resistance:	10 kΩ at 75 °F (25 °C)
Cable length:	39" (1 m)

Water storage temperature sensor

Body material:	stainless steel
Type of sensitive element:	NTC
Size:	6 mm
Working temperature range:	-13 - 230 °F (- 25 - 110 °C)
Resistance:	100 kΩ at 75 °F (25 °C)
Cable length:	75" (1.9 m)

Actuator for sizes ¾" - 2" with fail-safe** function

Electric supply:	24 V ~ / = (AC/DC) ± 15 % - 50/60 Hz directly from the controller
Control signal:	0 - 10 V
Power consumption:	6 VA
Ambient temperature:	
-Operation:	32 - 130 °F (0 - 55 °C) EN 60721-3-3 Cl. 3K4, max. humidity 95 %
-Transportation:	-22 - 160 °F (-30 - 70 °C) EN 60721-3-2 Cl. 2K3, max. humidity 95 %
-Storage:	-4 - 160 °F (-20 - 70° C) EN 60721-3-1 Cl. 1K2, max. humidity 95 %
Supply cable length:	32" (0.8 m)

Actuator for sizes ¾" - 2" with fail-in-place function

Electric supply:	24 V~(AC) ± 10 % - 50/60 Hz directly from the controller
Control signal:	3-point floating
Power consumption:	6 VA
Ambient temperature:	
-Operation:	14 - 130 °F (-10 - 55 °C) EN 60721-3-3 Cl. 3K4, max. humidity 95 %
-Transportation:	-22 - 160 °F (-30 - 70 °C) EN 60721-3-2 Cl. 2K3, max. humidity 95 %
-Storage:	-4 - 160 °F (-20 - 70° C) EN 60721-3-1 Cl. 1K2, max. humidity 95 %
Supply cable length:	32" (0.8 m)

Actuator for flanged version with fail-safe** or fail-in-place function

Electric supply:	24 V ~ / = (AC/DC) ± 15 % - 50/60 Hz directly from controller
Control signal:	0 - 10 V
Power consumption:	10 VA
Ambient temperature:	
-Operation:	32 - 130 °F (0 - 55 °C) EN 60721-3-3 Cl. 3K4, max. humidity 95%
-Transportation:	-22 - 160 °F (-30 - 70 °C) EN 60721-3-2 Cl. 2K3, max. humidity 95%
-Storage:	-4 - 160 °F (-20 - 70° C) EN 60721-3-1 Cl. 1K2, max. humidity 95%
Supply cable length:	75" (1.9 m)

**The fail-safe function allows the automatic closure of the hot inlet port in case of power failure.

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

Protection cover:	self-extinguishing V0
Protection class:	IP 65
Compliance with Directives:	FCC, IC, CE, UKCA
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 (3/4" - 2" version):	11 lbf-ft (15 Nm)
Dynamic torque (2 1/2" - 3" version):	25 lbf-ft (35 Nm)

If necessary to extend the sensor and actuator cables, contact the manufacturer.

Certifications

- 1. ASSE 1017, certified and listed by ASSE.
- 2. NSF/ANSI/CAN 61 and NSF/ANSI/CAN 372, US and Canadian Low-Lead and Lead-Free materials contents laws for drinking water system components. Certified by ICC-ES.
- 3. CSA B125.3, UPC, IPC, IRC and NPC compliance for use in accordance with U.S. and Canadian plumbing codes. Certified and listed by IAPMO R&T.

Mixing valve performance

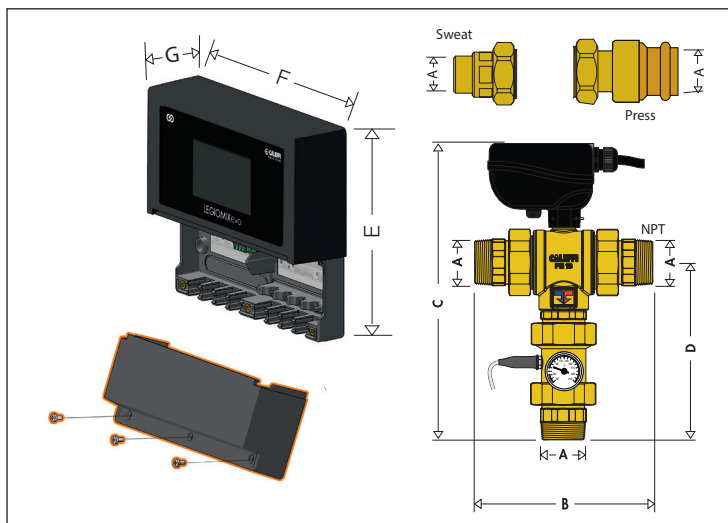
Accuracy:	± 3 ° F (± 2 ° C)
Max. operating differential pressure (dynamic):	70 psid (5 bar)
Max. ratio between inlet pressures (H/C or C/H):	2:1

Recommended Flow Rates (gpm/lpm)							
Size	¾"	1"	1¼"	1½"	2"	2½"	3"
Minimum (1)	2.2 / 8.3	3.1 / 11.7	4.4 / 16.6	6.6 / 25	8.8 / 33.3	17.0 / 64	22.0 / 83.3
Design Flow (2)	27 / 102	58 / 220	66 / 250	93 / 352	131 / 495	288 / 1,090	329 / 1,245
Flow at 10 psid	31 / 117	66 / 250	76 / 288	108 / 409	149 / 564	332 / 1,257	379 / 1,435
Maximum (3)	43 / 172	94 / 356	107 / 405	152 / 575	215 / 814	470 / 1,780	537 / 2,033
Cv	9.7	21	24	34	47	105	120

CONSULT TECHNICAL BROCHURE 1424 FOR COMPLETE GUIDANCE ON SIZING AND SELECTION.

- (1) To ensure stable operation and a ± 3 ° F accurate temperature control. Minimum flow rate is 0 gpm when recirculation flow rate is greater than or equal to the valve size minimum flow rating.
- (2) Suggested maximum flow rate for optimum modulating control (at 7.5 psid pressure drop).
- (3) Maximum recommended differential pressure is 20 psid to ensure stable operation and accurate temperature control.

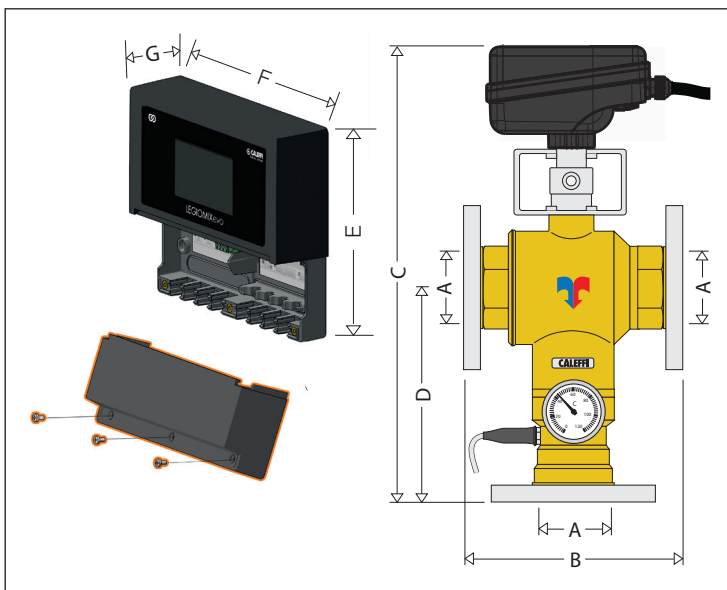
Dimensions



Code (*)	A	B	C	D	Lay length	E	F	G	Wt (lb)
600354A, AF	¾" MNPT	5"	9 ³⁄₈"	5 ³⁄₈"	--	8 ³⁄₁₆"	9 ¹¹⁄₁₆"	2 ¹¹⁄₃₂"	5.1
600359A, AF	¾" sweat	4 ¾"	9 ¼"	5 ¼"	--				5.1
600356A, AF	¾" press	5 ³⁄₈"	9 ⁹⁄₁₆"	5 ⁹⁄₁₆"	4 ¹⁄₁₆"				5.1
600364A 001** 600364AF 001**	1" MNPT	5 ⁵⁄₁₆"	9 ¹³⁄₁₆"	5 ¹³⁄₁₆"	--				5.3
600369A 001** 600369AF 001**	1" sweat	4 ⁷⁄₈"	9 ⁹⁄₃₂"	5 ⁹⁄₃₂"	--				5.3
600366A 001** 600366A 001**	1" press	6 ⁷⁄₈"	10 ¼"	6 ¼"	4 ¹³⁄₁₆"				5.2
600364A, AF	1" MNPT	6 ¼"	11"	6"	--				7.3
600369A, AF	1" sweat	4 ¾"	10 ¼"	5 ¼"	--				7.3
600366A, AF	1" press	7"	11 ³⁄₈"	6 ³⁄₈"	5 ½"				7.3
600374A, AF	1¼" MNPT	7 ¼"	11 ⁷⁄₈"	6 ¼"	--				8.2
600379A, AF	1¼" sweat		11 ¹⁄₈"	5 ½"	--				8.2
600376A, AF	1¼" press	9 ¾"	13 ¹⁄₈"	7 ½"	7 ¾"				8.2
600384A, AF	1½" MNPT	9 ¹⁄₈"	14 ³⁄₈"	9 ½"	--				21.0
600389A, AF	1½" sweat	7 ⁷⁄₈"	13 ¹⁄₈"	8 ¼"	--				21.0
600386A, AF	1½" press	10 ¹⁄₈"	14 ⁷⁄₈"	10"	7 ³⁄₈"				21.0
600394A, AF	2" MNPT	9 ½"	14 ½"	7 ⁵⁄₁₆"	--				22.0
600399A, AF	2" sweat	8"	13 ¹¹⁄₁₆"	6 ½"	--				22.0
600396A, AF	2" press	13 ¾"	16 ⁵⁄₈"	9 ⁷⁄₁₆"	10 ¾"				22.0

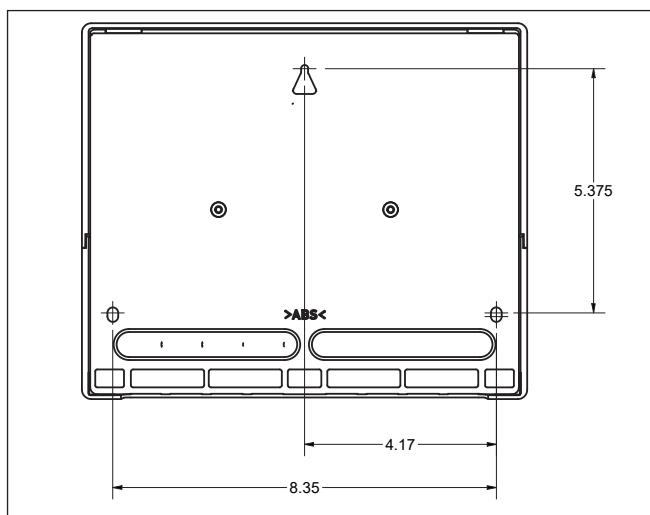
*A corresponds to 3 point floating control fail-in-place actuator; AF corresponds to 0-10 V fail-safe actuator.

**These codes are ¾" bodies (Cv=9.7) with 1" end connections as listed.



Code (*)	A	B	C	D	E	F	G	Wt (lb)
600360A, AF	2 1/2" FLG	9 1/4"	22 5/16"	9 7/16"	5 1/2"	7"	2 11/32"	30
600380A, AF	3" FLG	9 1/4"	22 5/16"	9 7/16"	5 1/2"			42

*A is 0-10V fail-in-place actuator; AF is 0-10V fail-safe actuator.



LEGIOMIXevo controller mounting locations

Operating principle

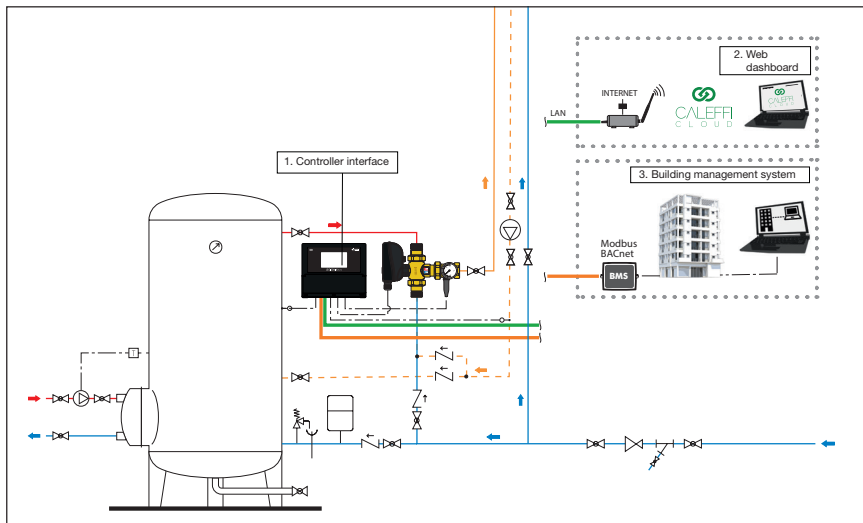
The LEGIOMIXevo mixes hot water from storage or tankless water heaters with cold water from the main supply to maintain a controlled set temperature of mixed water at the outlet. The controller monitors the mixed water temperature at the valve outlet using a temperature sensor and adjusts the ball valve position to maintain the set temperature. Regardless of variations in pressure drop, hot and cold water usage, or inlet temperature fluctuations, the LEGIOMIX automatically regulates the water temperature to match the set temperature.

The controller can be programmed to meet various disinfection cycle requirements. The LEGIOMIXevo facilitates disinfection by raising the water temperature to a specific level for a set duration to kill and reduce the concentration of bacteria in a building's water system. Using the recirculation temperature sensor, the temperature of water returning from the distribution system is measured. By monitoring the recirculation return temperature, the controller adjusts the mixing valve to maintain the necessary water temperature for a specific period to disinfect the water distribution system.

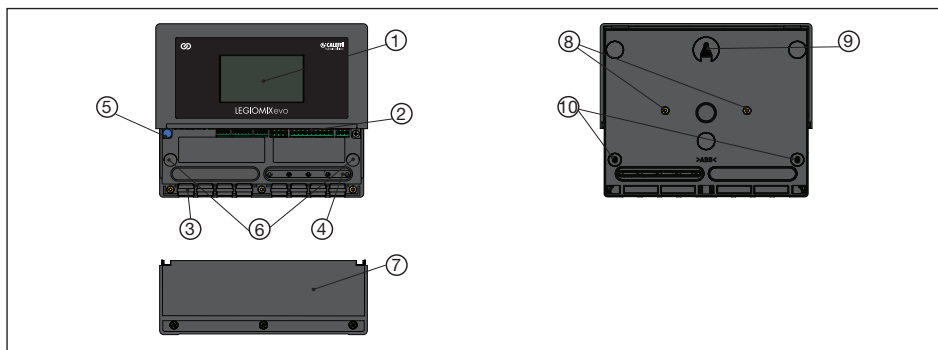
The LEGIOMIXevo controller's feedback logic and disinfection programs ensure that the correct temperature and duration for thermal disinfection are achieved before taking corrective action. Actions and system sensor readings are monitored and logged locally on the device with temperatures recorded hourly. Multiple communication options are available allowing for web based remote monitoring or local management, additional relays are available for water storage temperature monitoring, system alarms or emergency water shutoff in cases of system component failures.

Connectivity options

1. Controller interface,
2. Web Dashboard by Caleffi Cloud via ethernet port 1 (eth1),
3. Building Management System (BMS) by Modbus/BACnet communication protocol via either ethernet port 2 (Eth2) or RS-485 port.



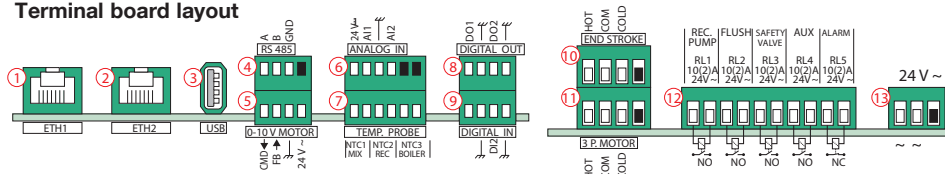
Digital controller



1. Touch display
2. Terminal board
3. Sealed cable gland
4. Cable gland
5. Anti-tampering seal

6. Knock-outs for bracketing
7. Removable cover
8. Holes for DIN rail mounting
9. Support point
10. Mounting holes

Terminal board layout



1. Ethernet port 1 (PC-Cloud connectivity)	9. Digital input
2. Ethernet port 2 (Modbus/BACnet communication protocol)	10. 3-point actuator end stroke
3. USB port	11. 3-point actuator motor control
4. RS-485	12. Relays (voltage-free)
5. 0 - 10V actuator motor control	1) RL1 RECIRCULATION PUMP relay - NO
6. Analog input	2) RL2 FLUSHING relay - NO
7. NTC temperature sensors:	3) RL3 SAFETY relay - NO
1) NTC1 mixed outlet flow sensor	4) RL4 AUXILIARY relay - NO
2) NTC2 recirculation sensor	5) RL5 ALARM relay - NC
3) NTC3 water storage sensor	13. Electric supply
8. Digital output	

Important: Alternative connections, depending on the motor type (see page 12)

Important: Alternative connections, depending on the connection type (see page 15)

USB port: The USB port is to be used for downloading data only (see the User's manual code NA11371).



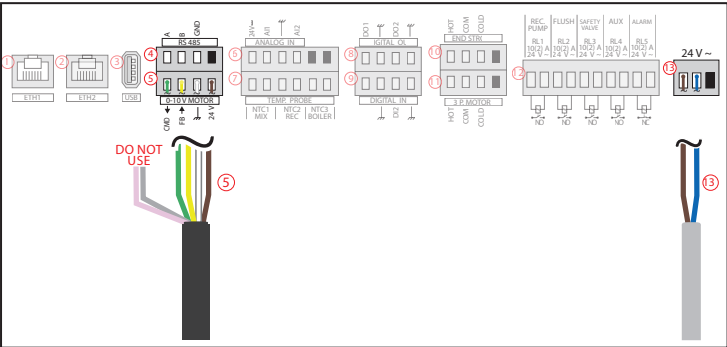
CAUTION: Electric shock risk. The regulator and mixing valve contain live circuits. Cut off the electric supply before carrying out any work. Failure to follow these instructions may result in injury of persons or damage to property and the electronics.

0-10 V and 3-point connections

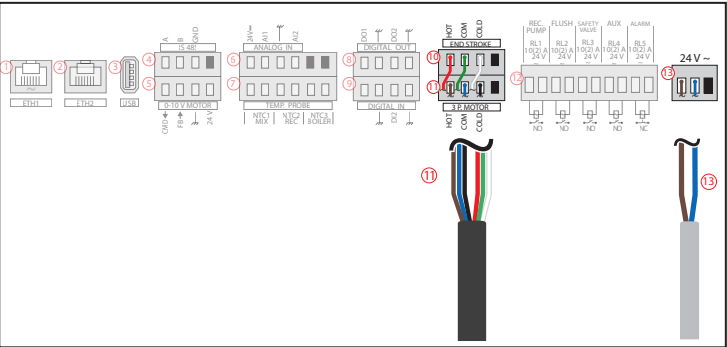


There are two options for connecting to and controlling the product actuators. It is crucial not to connect both at the same time. The connection diagrams are provided below. Please refer to the cable diagrams provided during installation. Ensuring careful attention to the cable colors and that they are connected to the correct terminals.

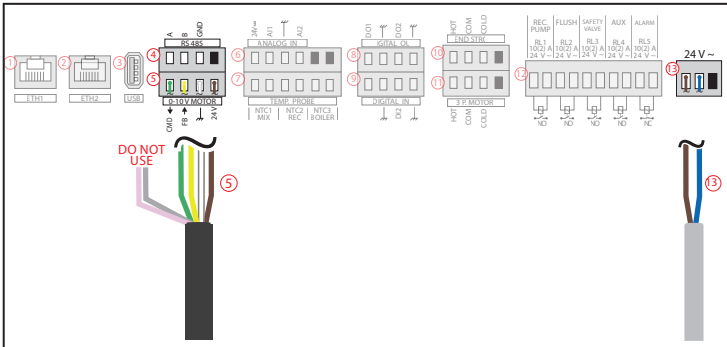
Threaded version With Fail-safe (0-10 V)



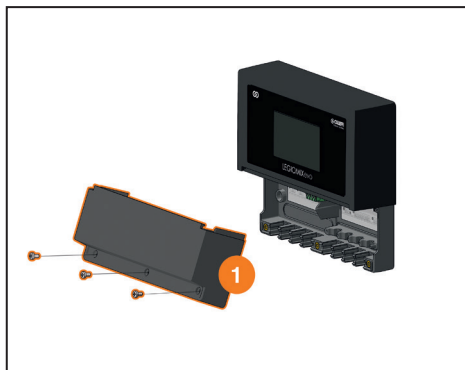
Fail-in-place (3-point)



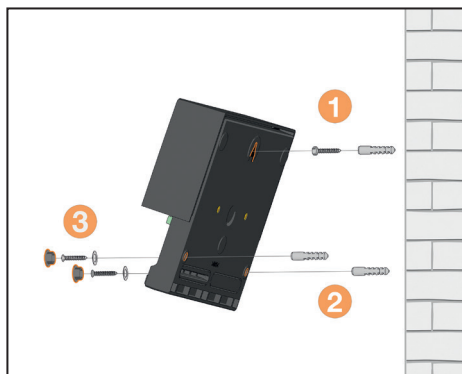
Flanged version Fail-safe and Fail-in-place (0-10 V)



Wall mounting



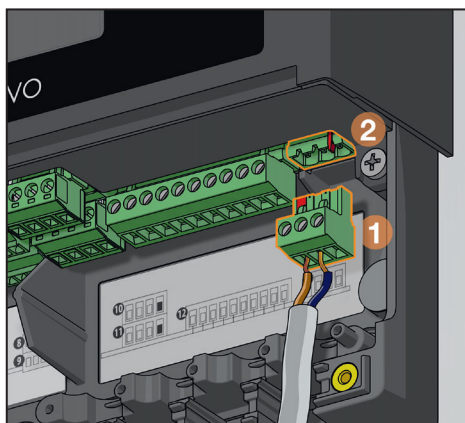
Remove the cover by unscrewing the three screws at the bottom. Then, tilt the cover and lift it off.



Secure the controller with the three wall mounting points.

1. Attach the controller to the top mounting point.
2. Secure the controller with the screws that correspond to the bracketing holes.
3. Insert the covering plugs.

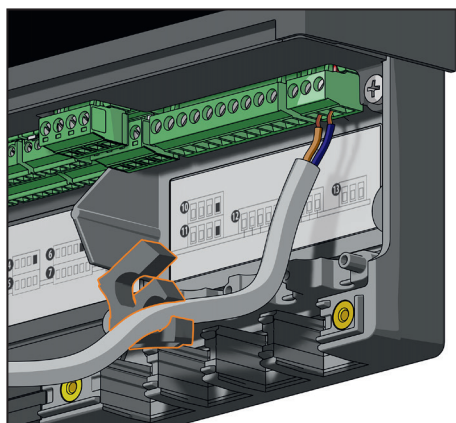
Connecting the electrical cables to the terminal board



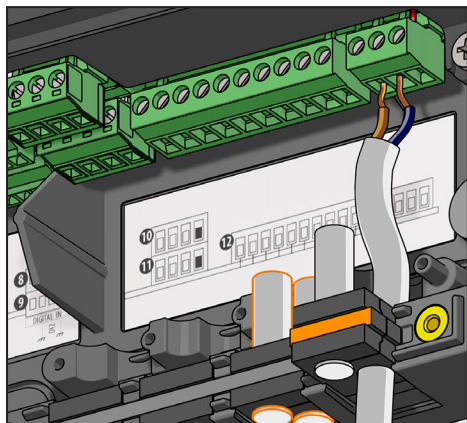
Connect the electrical cables with the corresponding removable connectors.

1. Connect the cables to the connector.
2. Insert the removable connector into its corresponding terminal board port.

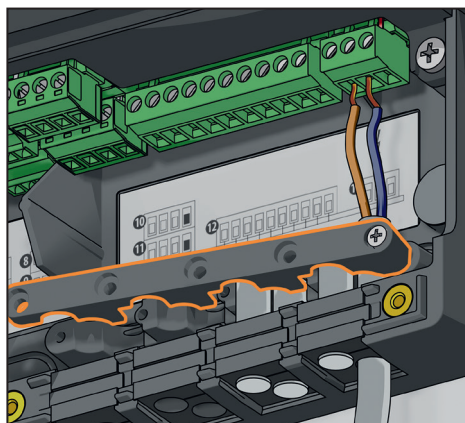
IMPORTANT: connect the electric supply last.



To ensure IP54 protection, insert the cables into the appropriate rubber cable gland as shown above.



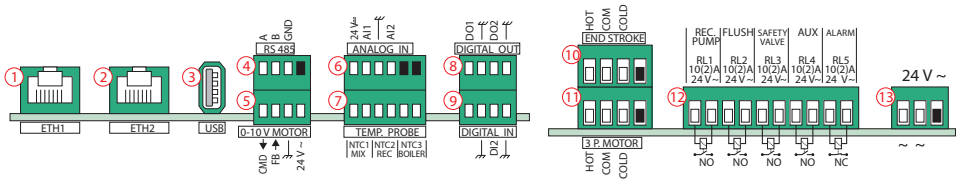
Insert the rubber cable glands into the controller housing, ensuring that the side with the groove is at the top and the cable insertion slots are on the right. This alignment is necessary to maintain the IP54 seal. Make sure the plugs are flush with the exterior.



Once the cables and rubber cable glands have been mounted, fit the strain-relief cable guard. Attach the cover and secure it with the screws to ensure that the electrical connections are protected properly.

Cable size specifications

Follow the listed connection cable cross-section diameters for proper circuit board wiring.



Connectors	Name	Cable diameter	AWG (mm ²)
1	ETH1	cat. 5 - 0.197 in (5 mm) cat. 6 - 0.236 in (6 mm)	
2	ETH2	cat. 5 - 0.197 in (5 mm) cat. 6 - 0.236 in (6 mm)	
3	USB		
4	RS-485	cat. 5 - 0.197 in (5 mm)	2 x 22 stp
5	0–10 V ACTUATOR MOTOR	cat. 7 - 0.276 in (7 mm)	6 x 20 (0.5)
6	ANALOG IN	cat. 5 - 0.197 in (5 mm)	
7	TEMP. Sensor ARRAY	cat. 5 - 0.197 in (5 mm)	2 x 20 (0.5)
8	DIGITAL OUT	cat. 5 - 0.197 in (5 mm)	
9	DIGITAL IN	cat. 5 - 0.197 in (5 mm)	
10	3-POINT ACTUATOR END STROKE	cat. 9 - 0.354 in (9 mm)	6 x 18 (0.75)
11	3 POINT ACTUATOR MOTOR		
12	RELAY ARRAY	cat. 7 - 0.276 in (7 mm)	
13	POWER SUPPLY	cat. 7 - 0.276 in (7 mm)	

Cable gland and closing plug locations

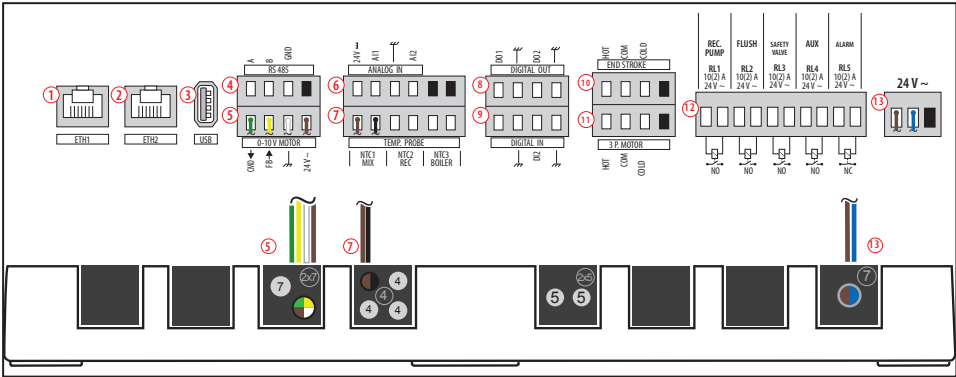
Rubber cable gland type			Plugs		
No. of holes x Diameter		Quantity	Diameter		Quantity
2 x 0.276 in (7 mm)		3	0.276 in (7 mm)	 ⑦	1
1 x 0.354 in (9 mm)		1	–	–	–
4 x 0.157 in (4 mm)		1	0.157 in (4 mm)	 ④	4
4 x 0.236 in (6 mm)		1	0.236 in (6 mm)	 ⑥	3
2 x 0.197 in (5 mm)		2	0.197 in (5 mm)	 ⑤	2
1 x 0.276 in (7 mm)		1	–	–	–
Closed rubber cable gland		4	–	–	–

There are eight slots in the bottom of the controller for inserting cable glands. Install the multi-hole cable glands in the desired configuration to ensure strain relief and maintain the IP54 seal of the device. To uphold the protection class, seal any unused holes with appropriate closed plugs.

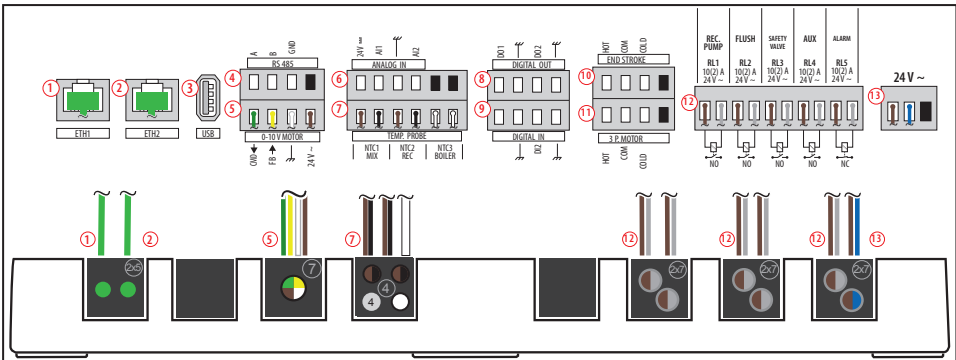
Cable glands and plugs are provided with purchase of the LEGIOMIXevo.

Configuration examples

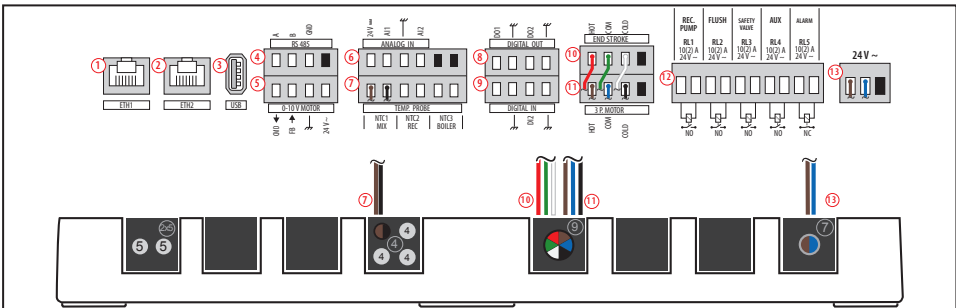
Minimum 0–10 V actuator configuration



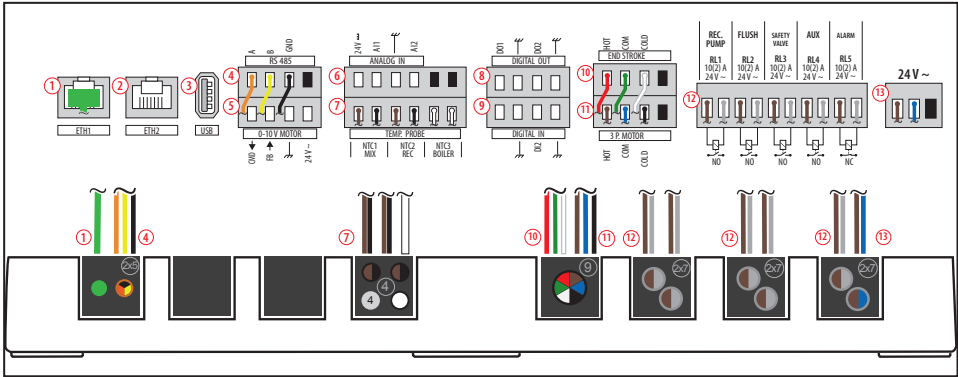
Complete 0-10 V actuator with ETH2 configuration



Minimum 3-point actuator configuration



Complete 3-point actuator - RS-485 configuration



Connecting sensors:

The cable connecting the mixing outlet flow and recirculation sensors and to the controller must be installed in a dedicated conduit.

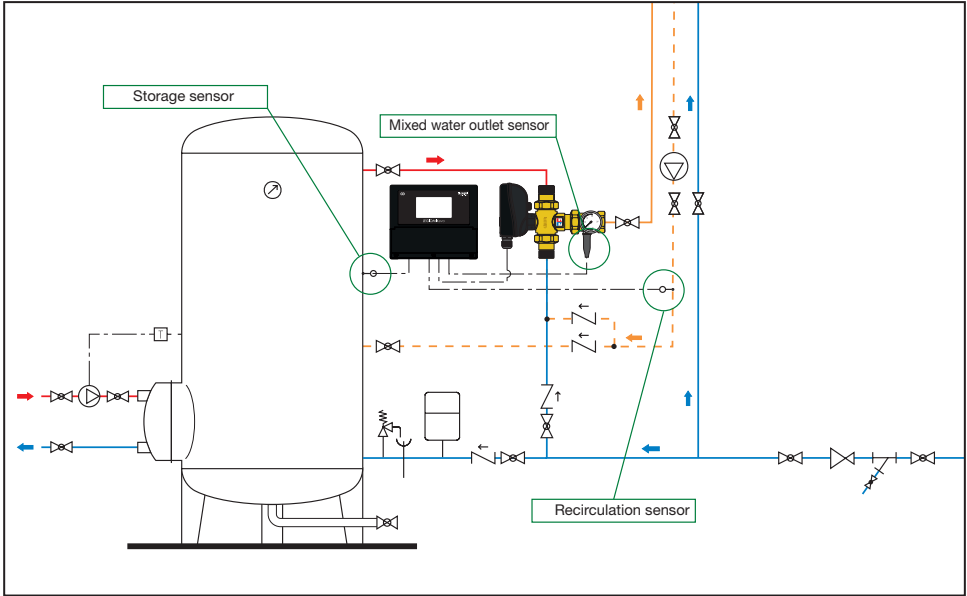
Sensor resistance table (mixed outlet flow and recirculation return)

°F (°C)	Ω	°F (°C)	Ω	°F (°C)	Ω	°F (°C)	Ω
-5 (-20)	97060	70 (21)	12493	150 (65)	2488	230	680
5 (-15)	72940	80 (27)	10000	160 (71)	2083	(110)	592
15 (-10)	55319	90 (32)	8056	170 (77)	1752	240	517
25 (-4)	42324	100 (38)	6530	180 (82)	1480	(115)	
32 (0)	32654	110 (43)	5327	190 (88)	1255	250	
40 (4)	25396	120 (49)	4370	200 (93)	1070	(121)	
50 (10)	19903	130 (54)	3603	210 (99)	915		
60 (15)	15714	140 (60)	2986		787		

Sensor resistance table (water storage)

°F (°C)	kΩ	°F (°C)	kΩ	°F (°C)	kΩ	°F (°C)	kΩ
-13 (-25)	1527	50 (10)	208	120 (49)	41.3	190 (88)	10.8
-5 (-20)	1118	60 (15)	162	130 (54)	33.5	200 (93)	9.2
5 (-15)	826	70 (21)	127	140 (60)	27.5	210 (99)	7.7
15 (-10)	616	80 (27)	100	150 (65)	22.6	220	6.6
25 (-4)	464	90 (32)	79.4	160 (71)	18.7	230	5.6
32 (0)	352	100 (38)	63.5	170 (77)	15.5	240	4.8
40 (4)	269	110 (43)	51	180 (82)	12.9	250	4.1

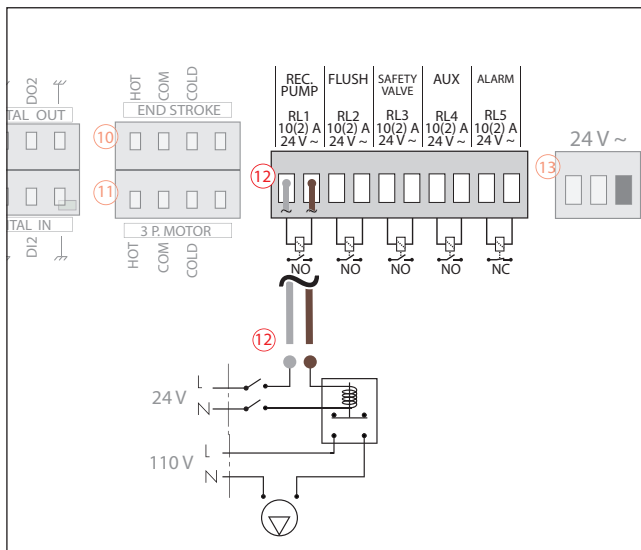
Temperature sensor locations



Actuation relays

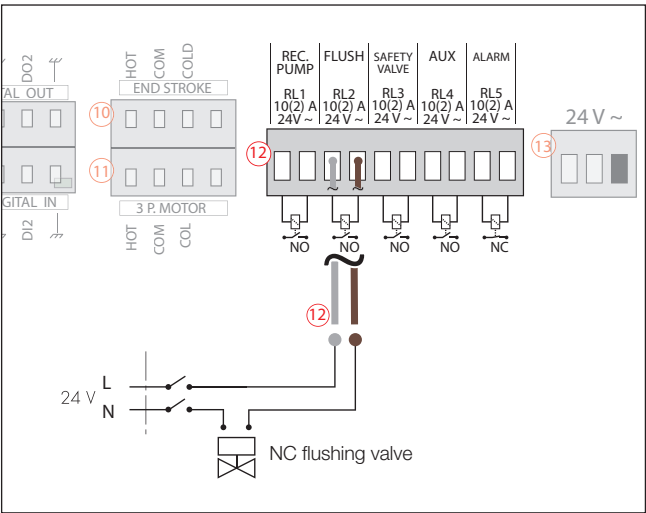
Contact for recirculation pump (RL1)

This contact closes to start the recirculation pump according to the schedule set on the controller or controlling the pump during system disinfection.



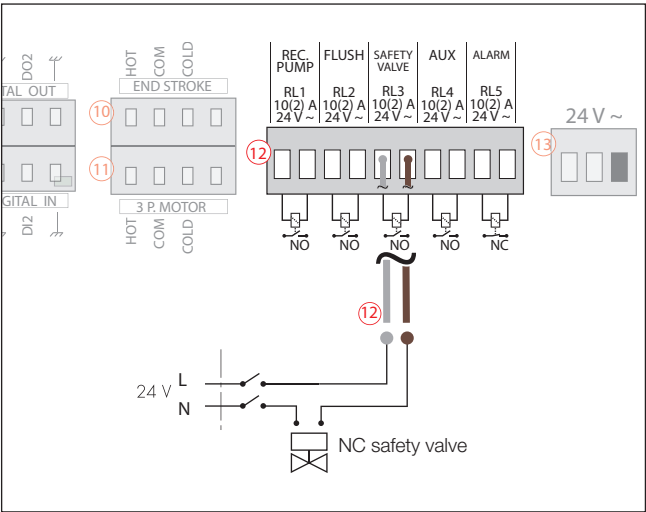
Contact for disinfection flushing valve (RL2)

The contact closes to open the flushing valve at the end of the disinfection phase, allowing the circuit temperature to return to its operating value more quickly.



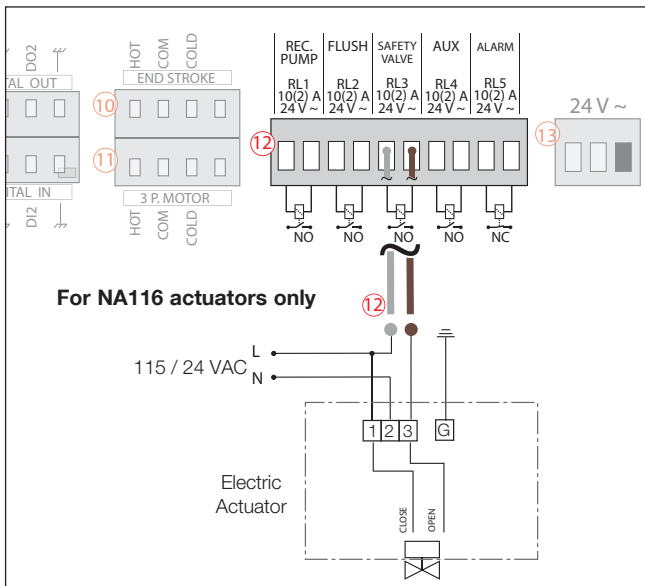
Contact for emergency shutoff valve (RL3) Solenoid valve

The controller keeps this relay contact closed during normal operation. If the system temperature rises to a dangerous temperature level the contact will open to operate the emergency shut off valve. If the valve is of the normally open type, an SPDT relay must be inserted.



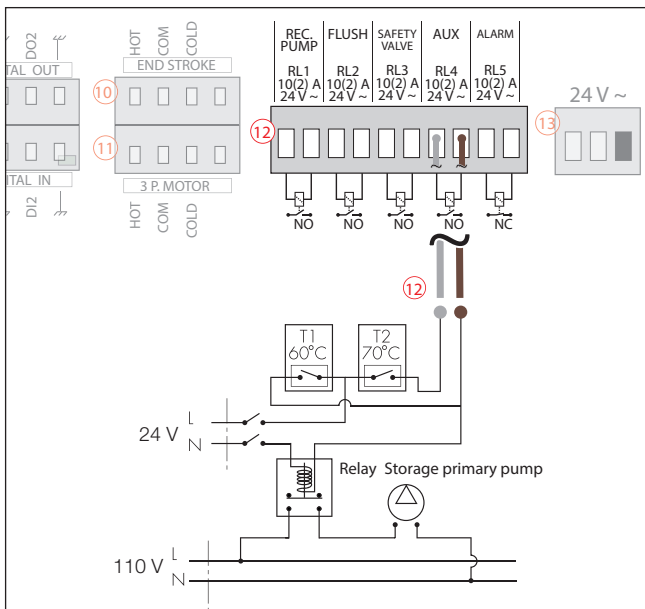
**Contact for temperature limitation safety valve (RL3)
3-contact motorized valve**

The controller keeps the contact closed during normal operation. If the temperature rises above the danger level, the contact opens to activate the temperature restriction valve.



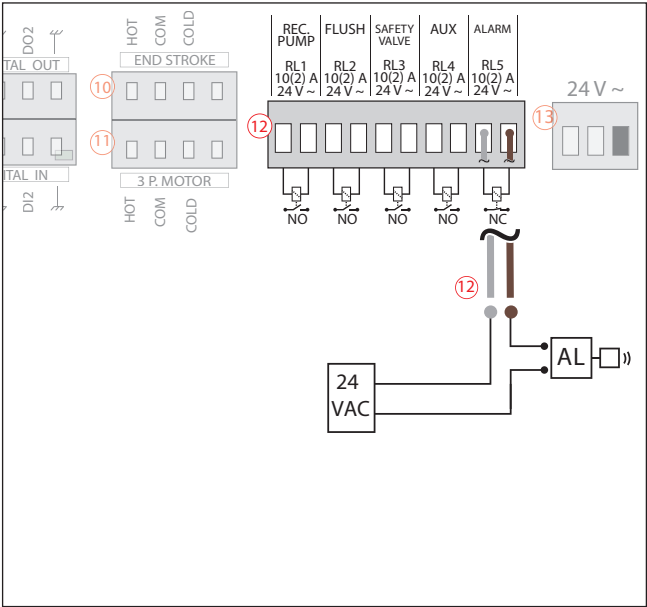
Auxiliary contact for water storage thermostat (RL4)

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



Contact for alarm management (RL5)

This contact remains open during normal system operation. In the event of an alarm or electrical supply failure this contact closes. Activating an alarm or light, needing to be sourced separately.



Hydraulic installation

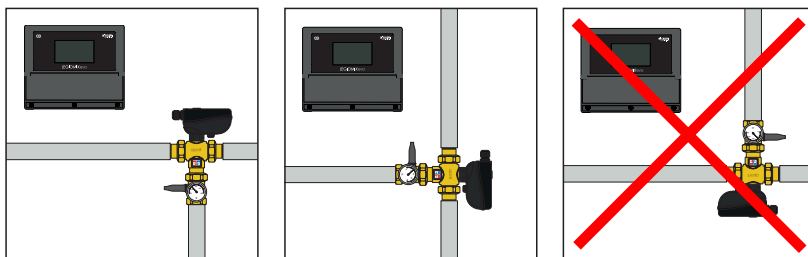
Before installing the LEGIOMIXevo mixing valve, the pipes must be flushed to prevent impurities in the water from affecting performance.

We recommend always installing strainers of sufficient capacity at the inlet from the water mains.

If the system is washed with chemicals, leave the mixed temperature sensor housing end plug on. For subsequent washing procedures, disconnect the temperature sensor and fit the relevant plug. Only connect the sensor after washing has been completed.

The LEGIOMIXevo must be installed as shown on the installation diagrams in this manual in an appropriate technical room, and taking account of applicable plumbing codes and regulations.

The LEGIOMIXevo may be installed either vertically or horizontally, but the actuator must not be upside down.



The body of the mixing valve indicates the following:

- Hot water inlet with a red arrow
- Cold water inlet with a blue arrow.



Check valves

In systems with mixing valves, check valves should be installed to prevent undesired backflows, as indicated in the section "Application diagrams". Always installing strainers of sufficient capacity is recommended at the inlet of the water mains to aid in preventing check valves from being fouled by debris.

Commissioning

Due to the special purposes for which the digital mixing valve will be used, it must be commissioned in accordance with current regulations and by qualified personnel using suitable measuring instruments. Check that the hot and cold water supply pressures are within the operating limits of the mixing valve. Check the temperature of the hot water from the storage, $T \geq 140\text{ }^{\circ}\text{F}$ ($60\text{ }^{\circ}\text{C}$).

Refer to User's Manual NA11371 for startup and commissioning steps including time and date. Record all parameter settings and measurements in the commissioning documentation.

Maintenance

During operation, perform regular tests to monitor the mixing valve's performance. Any significant changes in the mixed water temperature during these tests may indicate the need for maintenance of the valve or system. If such changes occur, refer to the **Hydraulic installation** and **commissioning** sections for guidance on maintenance procedures. It is recommended to conduct the following checks periodically, ensuring the valve maintains optimal performance, at least every 12 months or more frequently if necessary:

1. Inspect and clean the system strainers and filters.
2. Verify the correct operation of any check valves installed at the LEGIOMIXevo inlets and ensure no leaks caused by debris.
3. Periodically descale the internal components of the valve using a suitable descaling solution, especially in systems used seasonally, such as in hotels.
4. After inspecting and maintaining any components, repeat the mixing valve commissioning procedure.

Functional faults

The controller has special alarms related to functional faults.
Refer to the dedicated section of the "User's Manual" (code NA11371).

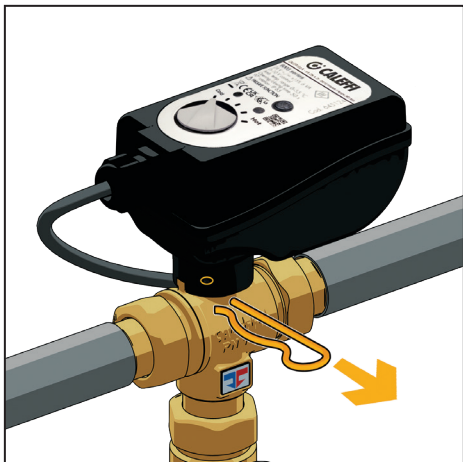
Troubleshooting

In normal operating conditions, the LEGIOMIXevo provides outstanding performance. However, in special circumstances when a maintenance schedule is not observed, the following problems may arise:

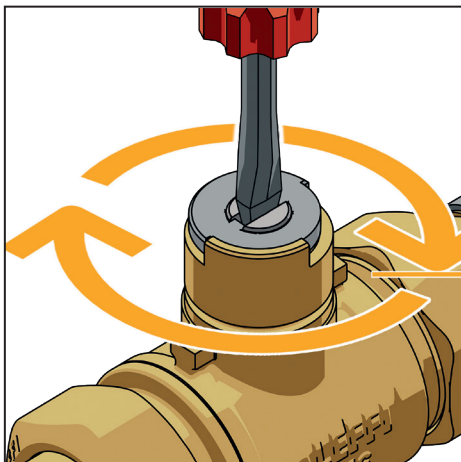
Problem	Cause	Solution
Hot water supplied to cold water taps.	a. Inlet check valves not operating correctly or seals worn/damaged; b. Check valves not used.	- Replace damaged check valves; - Install check valves.
Mixed water temperature fluctuations.	a. Insufficient recirculation flow rate; b. Variations in network pressure; c. Incorrect recirculation circuit connection; d. Incorrect installation.	- Ensure the minimum flow rate; - Stabilise the water pressure; - Make sure the application diagrams have been observed
Insufficient or incorrect valve outlet flow rate.	a. Clogged strainers; b. Jammed check valves; c. No water supply at the cold and/or hot inlet.	- Check strainers and check valves in the system.

Manual opening procedure

To perform manual opening, in the case of a fault or power failure, proceed as follows:



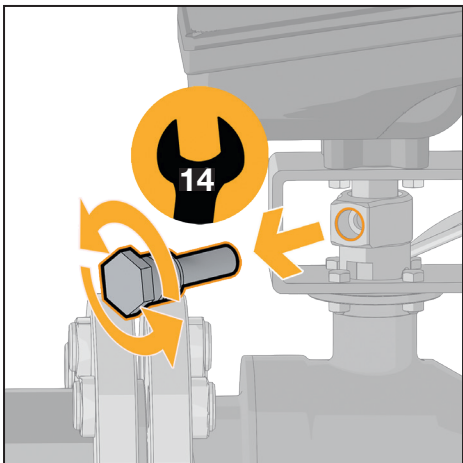
1. Remove the actuator from the valve body.



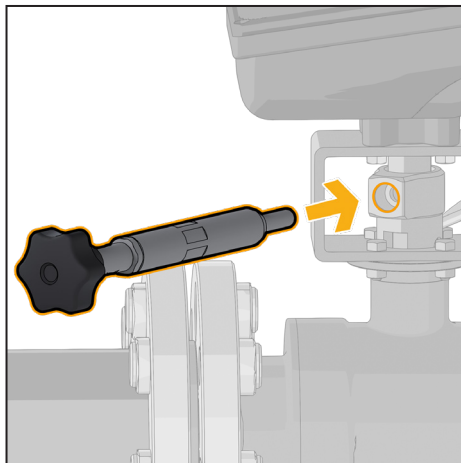
2. Turn the valve to the desired position by using a screwdriver.

Flanged versions

To perform manual opening, in the case of a fault or power failure, proceed as follows:



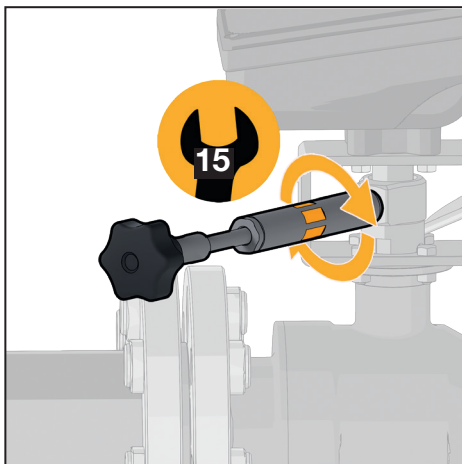
1. Unscrew the threaded locking pin using a 14 mm wrench.



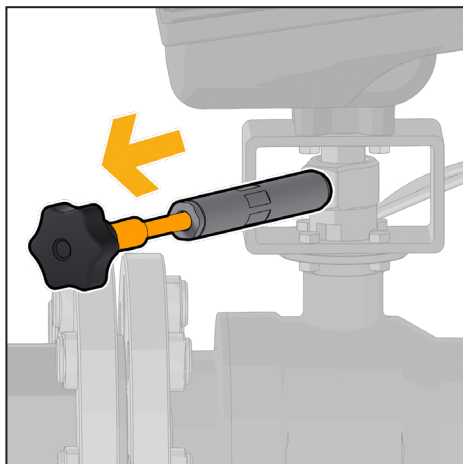
2. Screw the specific lever (supplied) into the locking pin hole.

Flanged versions

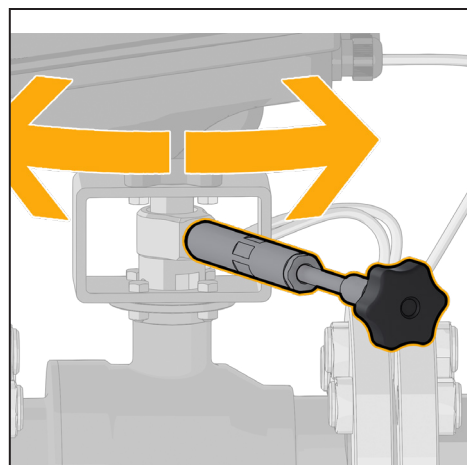
(continued)



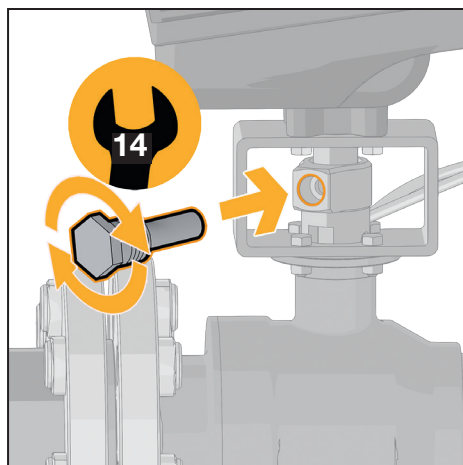
3. Lock the lever in position using the specific locknut with a 15 mm fixed wrench.



4. Pull the knob outwards.



5. Turn the valve to the desired position. During these operations take precautions to avoid the danger of scalding to users.



6. When the procedure is complete, realign so that the knob engages and screw the locking pin back into its threaded hole.

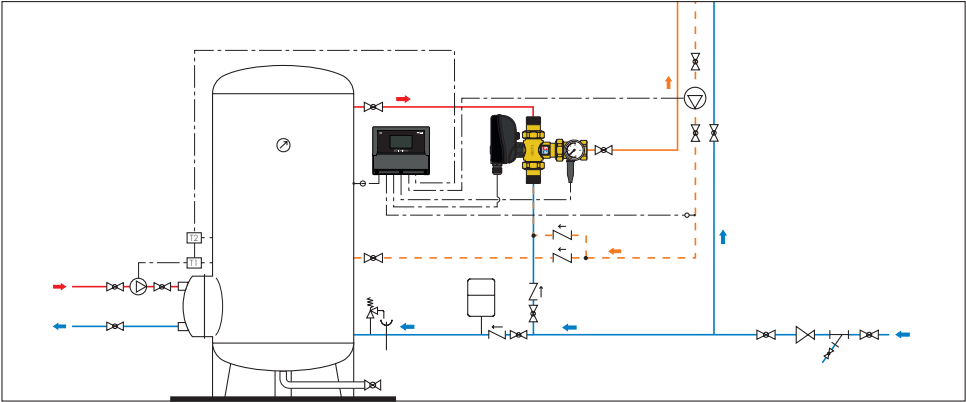
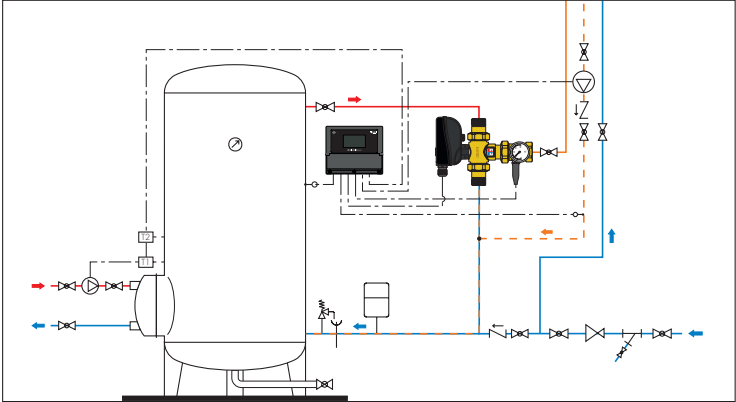
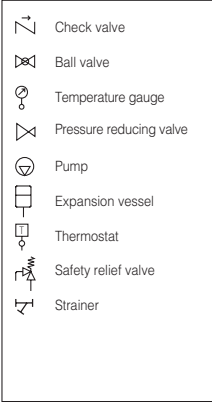


CAUTION: IMPORTANT: Risk of electric shock. The back panel and mixing valve contain live circuits. Cut off the electric supply before performing work. Failure to follow these instructions may result in injury of persons or damage to property.



In actuators equipped with a fail-safe function, it is necessary to wait for the end of the actuator's movement before manually acting on the valve, even after removing the power supply. Wait for the signal LEDs to completely switch off at the end of the fail-safe function. For detailed information about the status of the LEDs, refer to the user's manual.

Application diagrams





This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: no changes or modifications allowed on the equipment not expressly approved by the party responsible for compliance. It could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that of the receiver.
- Consult the dealer or an experienced radio/TV technician for help.



This Class B digital apparatus complies with CAN ICES-003(B) / NMB-003(B).
Cet appareil numérique de classe B est conforme à la norme
CAN ICES-003(B) / NMB-003(B).

THE LEGIOMIXevo 6003 SERIES POINT-OF-DISTRIBUTION (ASSE 1017) DIGITAL MIXING VALVE IS INTENDED TO BE BUT ONE COMPONENT IN AN OVERALL RISK MANAGEMENT PLAN AS DESCRIBED IN ANSI/ASHRAE STANDARD 188 "LEGIONELLOSIS: RISK MANAGEMENT FOR BUILDING WATER SYSTEMS". WHEN INSTALLED AND USED AS DESIGNED AND INTENDED, THE LEGIOMIXevo CAN HELP REDUCE BACTERIA IN DOMESTIC HOT WATER RECIRCULATION SYSTEMS, HOWEVER DUE TO SYSTEM-DEPENDENT VARIABLES, 100% ERADICATION CAN NOT BE GUARANTEED. CALEFFI IS NOT RESPONSIBLE FOR ANY DAMAGES, CONSEQUENTIAL OR OTHER, THAT MAY ARISE FROM LEGIONELLA ILLNESS WHEN USING THE LEGIOMIXevo DIGITAL MIXING VALVE.

LEAVE THIS MANUAL WITH THE USER
Laisser de manual avec l'utilisateur



01-2025

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