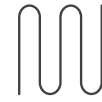


R478, R478M



Radiant
Systems



Energy
Management

Normally open thermo-electric actuators

Datasheet
0814EN  01/2024



Thermo-electric actuators installed on distribution manifolds, radiator valves or fan coil units enable to adequately control the ambient temperature by combining energy saving to high levels of comfort.

The R473 and R473M normally open thermo-electric actuators feature absolute operational quietness, a long life as they have no mechanical parts subject to wear and tear and a proper slowed-down closing system to prevent water hammer effects. The activation mechanism includes wax bulbs controlled by low-consumption electrical PTCs.

▲ WARNING. This device should not be operated by children younger than 8 years, people with reduced physical, sensory or mental capacities, or inexperienced people who are not familiar with the product, unless they are given close supervision or instructions on how to use it safely and are made aware by a responsible person of the dangers its use might entail. Children must not play with the device.

It is the user's responsibility to clean and maintain the appliance. Children should never clean or maintain it unless they are given supervision.

Versions and product codes

SERIES	PRODUCT CODE	POWER SUPPLY	FEATURES
R478	R478X221	230 Vac	2-conductors wire
	R478X222	24 Vac/dc	
	R478VX221	230 Vac	2-conductors wire with varistor
R478M	R478MX221	230 Vac	4-conductors wire, with stroke-end micro switch
	R478MX222	24 Vac/dc	
	R478VX231	230 Vac	4-conductors wire, with stroke-end micro switch and varistor

Optional

- R453FY002: plastic ring nut adaptor for R473, R473M, R478, R478M thermo-electric actuators; from connection M30 x 1,5 mm to connection for thermo-electric actuators

Spare part

- R453Y002: spare part plastic ring nut for R473, R473M, R478, R478M thermo-electric actuators

Technical data

- Complies with L.V. directive provision
- Status without voltage: normally open (N.O.)
- Quick connection for Giacomini standard valves and/or manifolds
- Mechanical position indicator
- Linear movement
- Actuator useful stroke: 2,4 mm
- Pollution class: II
- Nominal pulse voltage: 4 kV
- Protection degree: IP40
- Protection against direct contacts through double insulation (Class II)
- Power supply wire: H03 VV-F; useful length 1,5 m
- Time for fully opening/closing at 25 °C ambient temperature: ~3 min
- Room temperature of use: -5+50 °C
- Storage room temperature: -20+65 °C
- PBT self-extinguishing case material V0-UL94
- Normally closed micro switch with open valve (only for versions with stroke-end micro switch R478M)

Electrical data

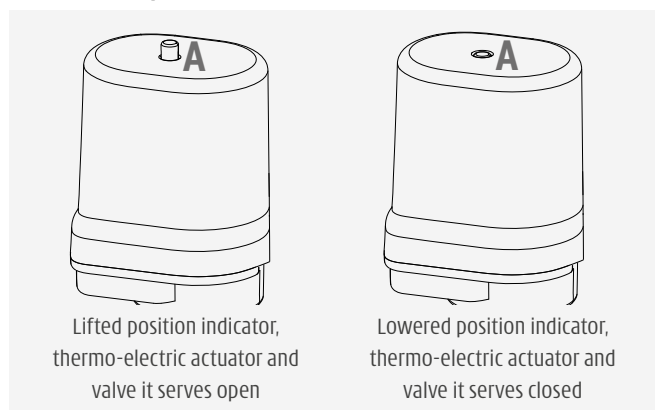
PRODUCT CODE	ABSORBED POWER	VOLTAGE	MAX PEAK CURRENT *	CURRENT ABSORBED AFTER 12 MIN *	RESISTANCE *	POWER SUPPLY WIRE SECTION	MICROSWITCH	VARISTOR
R478X221	3,5 W	230 V 50 Hz	≤ 1,0 A	≤ 0,015 A	1200 Ω +46 % -35 %	2 x 0,75 mm ²	-	-
R478X222	3 W	24 V 50 Hz	≤ 0,22 A	≤ 0,125 A	147 Ω ± 25 %	2 x 0,75 mm ²	-	-
R478VX221	3,5 W	230 V 50 Hz	≤ 1,0 A	≤ 0,015 A	1200 Ω +46 % -35 %	2 x 0,75mm ²	-	S10K250
R478MX221	3,5 W	230 V 50 Hz	≤ 1,0 A	≤ 0,015 A	1200 Ω +46 % -35 %	4 x 0,75 mm ²	5 A 125 Vac 3 A 250 Vac	
R478MX222	3 W	24 V 50 Hz	≤ 0,22 A	≤ 0,125 A	147 Ω ± 25 %	4 x 0,75 mm ²	5 A 125 Vac 3 A 250 Vac	
R478VX231	3,5 W	230 V 50 Hz	≤ 1,0 A	≤ 0,015 A	1200 Ω +46 % -35 %	4 x 0,75mm ²	5 A 125 Vac 3 A 250 Vac	S10K250

* Values read at room temperature

Main features

R478 thermo-electric actuators are equipped with a 2-conductors wire to connect them to room thermostats or control units. R478M thermo-electric actuators are equipped with a 4-conductors wire with stroke-end micro switch to control circulators or zone valves (brown: phase; blue: neutra; black and grey: micro switch). The R478VX221 and R478VX231 versions include a varistor for installation in areas where the network voltage is subject to sudden changes that may damage the electronic components.

Mechanical position indicator



R478 and R478M thermo-electric actuators are equipped with a mechanical position indicator (A) on the top which enables to visually identify the current position of the actuator and the valve it serves.

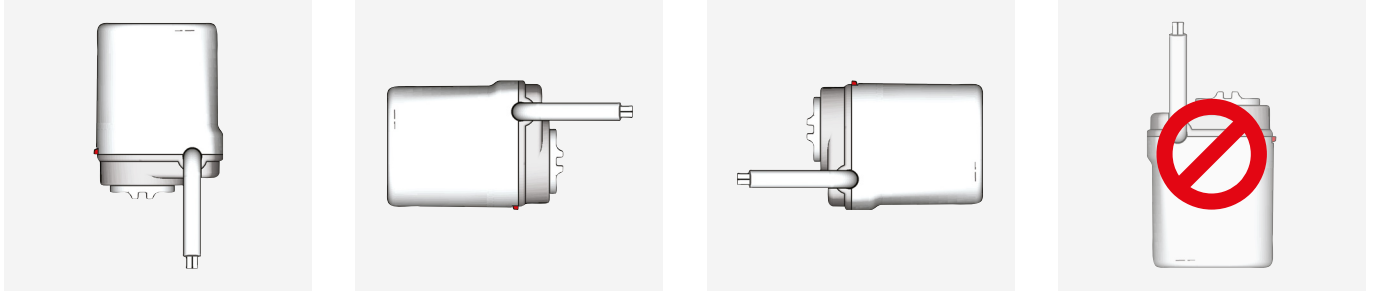
The actuator closes the valve when electrically powered. The indicator (A) is lowered down when the valve is closed. The indicator is particularly useful during testing to perform operation verifications without starting the system or disassembling the actuator.

Installation

Allowed installation positions

R478 and R478M thermo-electric actuators may be installed on valves and/or manifolds with Giacomini standard connections, using the special R453Y002 ring nut provided with the actuators.

They can be installed horizontally or vertically, but not upside down with the indicator pointing downwards.



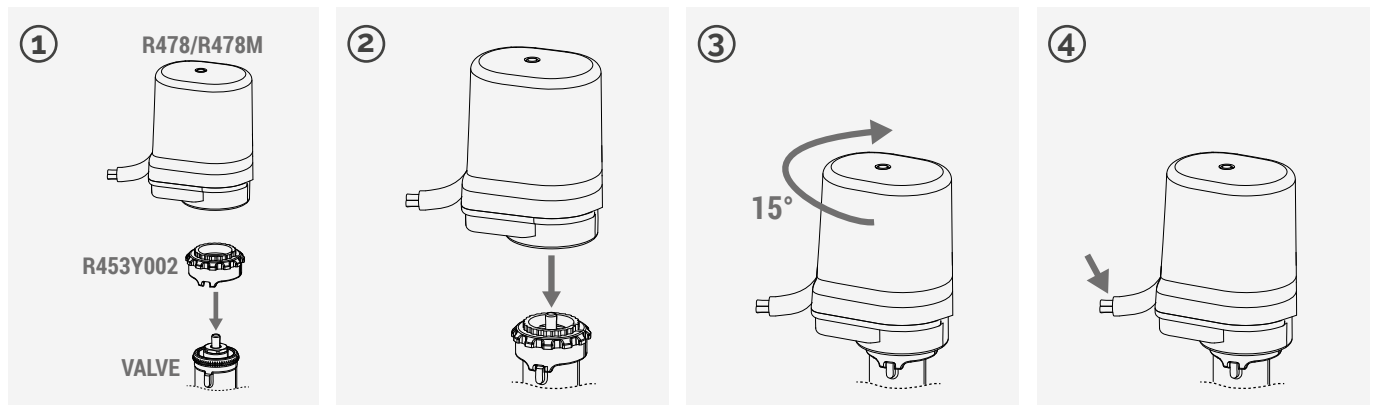
Installation on valve's body

To install the actuators on valves and/or manifolds, proceed as follows:

- 1) install the R453Y002 ring nut, included in the package of the actuator, on the valve's body;
- 2) assemble the thermo-electric actuator on the ring nut, pressing just enough to lock them together;
- 3) turn the actuator about 15° clockwise until a click is heard (max. torque 5 Nm).

To release the actuator, turn it 15° counterclockwise;

- 4) make the electrical connection of the actuator, following the wired diagram supplied with the actuator instructions.



▲ WARNING.

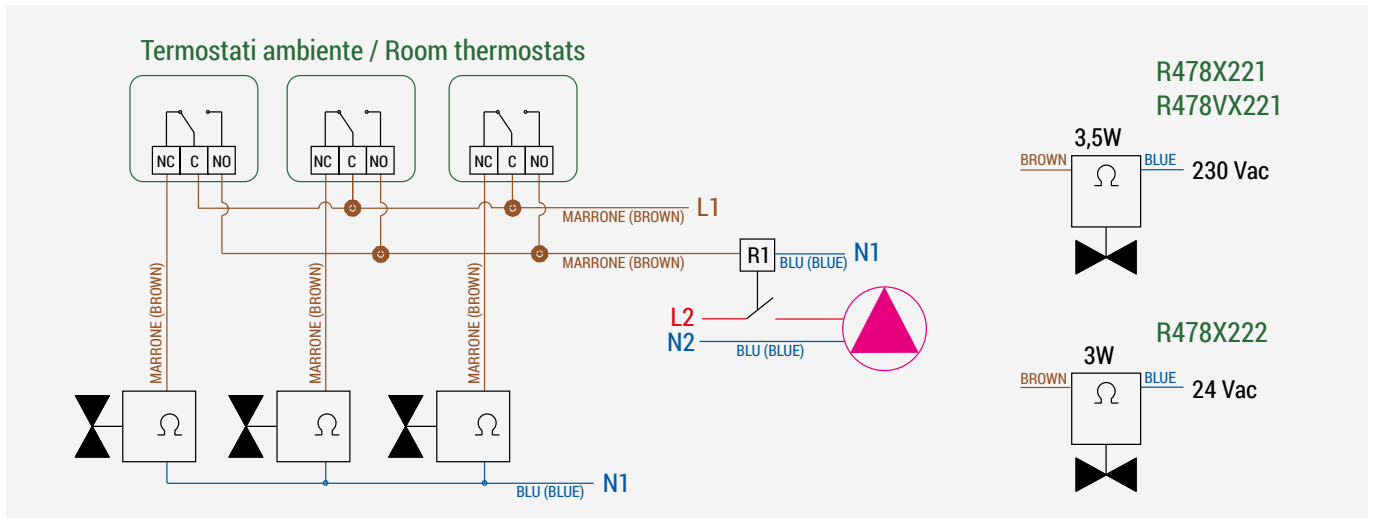
- The actuator case cannot be disassembled and should never be opened.
- Tampering immediately voids the warranty.
- The power supply wire is not replaceable; if the cable is damaged, replace the actuator.
- Electrical connections must be carried out by qualified personnel and voltage-free after carefully verifying the voltage which must comply with the one specified.
- Connection of power wires to the fix distribution network must be performed in a safe manner as provided for by the Technical Rules in force in the Country of use.
- Giacomini S.p.A. will not be held responsible for damages suffered by individuals or objects for misuse of the product.

Electrical connections

WARNING. On the electric supply circuit, a fuse or a protection device external to the device, has to be installed to intervene in case of fault/short circuit conditions.

R478 connections

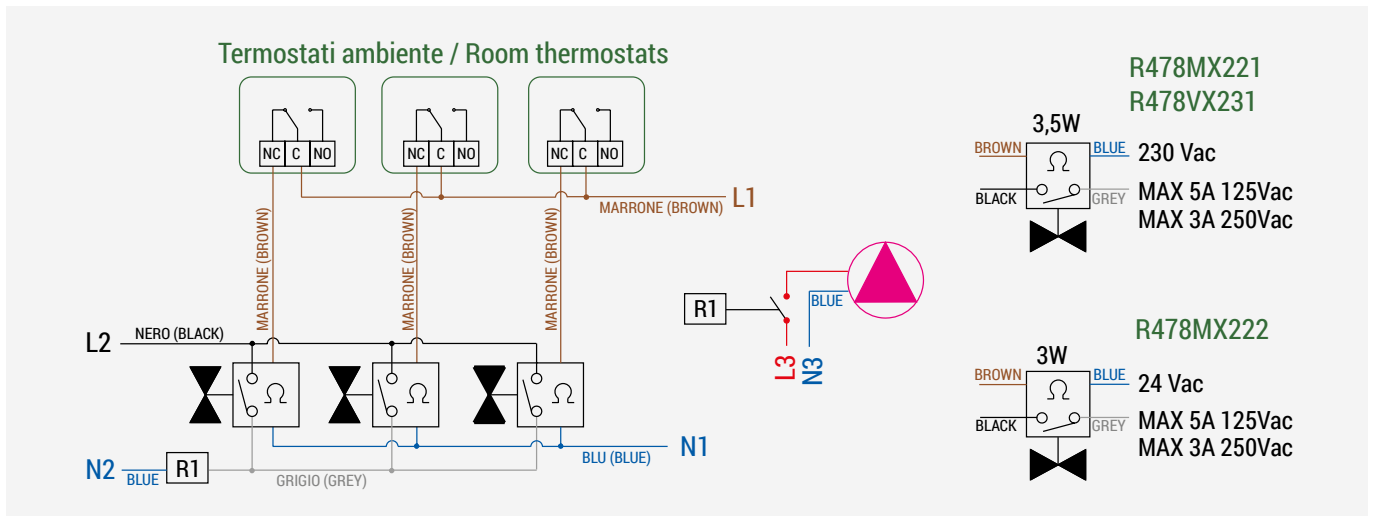
R478 thermo-electric actuators provide for various connection options able to satisfy a wide range of installation needs. The most frequent cases require simple direct connections to room thermostats or interposition of relays to control the circulators or zone valves.



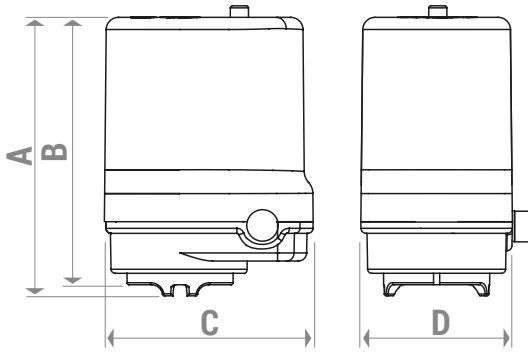
R478M connections

R478M thermo-electric actuators equipped with a stroke-end micro switch enable to easily activate circulators or zone valves. They are generally connected to room thermostats taking into consideration that the R478M is open when there is no voltage (while the micro switch is electrically closed in such status).

To control significant power loads, we recommend installing a relay to prevent overloading of the actuator micro switches.



➤ Dimensions



A [mm]	B [mm]	C [mm]	D [mm]
68	65	51	37

➤ Product specifications

R478

Normally open thermo-electric actuator for valves and/or manifolds. 2-conductors wire, length 1,5 m. Protection degree: IP40. Quick connection. Mechanical position indicator. Room temperature range $-5\div 50$ °C. Available with 230 V or 24 V power. Complies with Directive L.V.

R478M

Normally open thermo-electric actuator for valves and/or manifolds. 4-conductors wire with stroke-end micro switch, length 1,5 m. Protection degree IP40. Rapid connection. Position mechanic indicator. Room temperature range $-5\div 50$ °C. Available with 230 V or 24 V power. Complies with Directive L.V.

⚠ Safety Warning. Installation, commissioning and periodical maintenance of the product must be carried out by qualified operators in compliance with national regulations and/or local standards. A qualified installer must take all required measures, including use of Individual Protection Devices, for his and others' safety. An improper installation may damage people, animals or objects towards which Giacomini S.p.A. may not be held liable.

♻ Package Disposal. Carton boxes: paper recycling. Plastic bags and bubble wrap: plastic recycling.

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♻ Product Disposal. Do not dispose of product as municipal waste at the end of its life cycle. Dispose of product at a special recycling platform managed by local authorities or at retailers providing this type of service.