K275Y002 (K275)

Energy Management

Datasheet
0786EN 04/2024

Actuator with integrated temperature regulator for R296, R297 mixing valves and R586R distribution units

Actuator with integrated constant temperature regulator for the control of R296, R297 mixing valves and R586R distribution units.
It controls fixed supply temperature in HVAC systems (without umidity control), in stand-alone operation.
The actuator has a fixed angle rotation of 90° and possibility of manual control.
With DIP switches inside actuator is possible to set the following parameters:
- Direction of rotation (counterclockwise CCW / clockwise CW)
- Different temperature ranges depending on the application
- Reaction factor x1/x10

Typical applications:
- Maintaining a constant temperature in boiler heating circuit
- Underfloor heating applications, industrial processes, heat accumulators
- Hot domestic water systems or swimming pools.

Versions and product codes

PRODUCT CODE	POWER SUPPLY	USE
K275Y002	24 V - 50 Hz	R296, R297 mixing valves R586R distribution units

NOTE. The following kits are also supplied with the actuator:
- P275Y003: kit for actuator installation on R296 mixing valves
- P275Y004: kit for actuator installation on R297 3/4", 1", 1-1/4" mixing valves

Accesories
- **P275Y001**: kit for actuator installation on R297 1-1/2" and 2" mixing valves and R297 flanged
- **P275Y005**: kit for actuator installation on R586R DN32 distribution units

Spare parts
- **P275Y003**: kit for actuator installation on R296 mixing valves
- **P275Y004**: kit for actuator installation on R297 3/4", 1", 1-1/4" mixing valves
- **P275Y010**: power supply 230 V / 24 V

GIACOMINI WATER E-MOTION

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Technical data

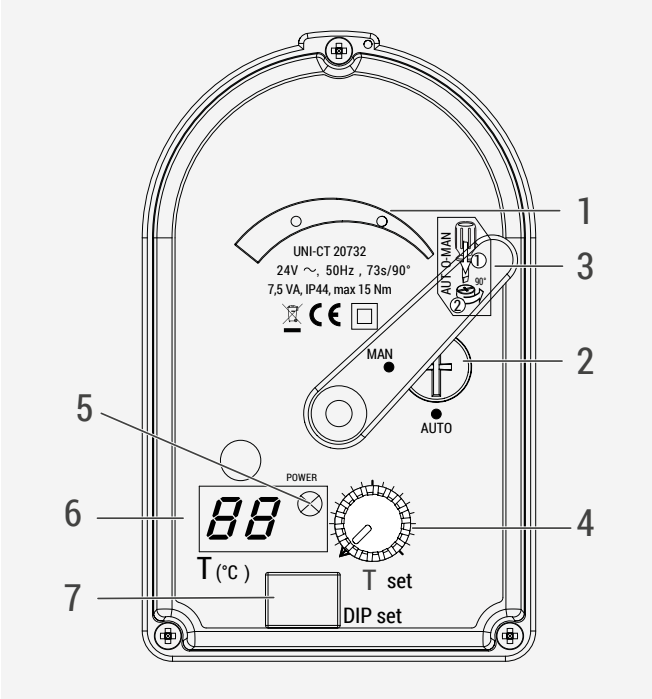
Electrical data
- Supply voltage: 24 Vac, 50 Hz, ± 10 % (230 Vac, 50 Hz with adapter included)
- Power: 5 VA
- Connection cable: 2 x 0,5 mm²; length 2 m
- Sensor type: Pt1000 (cable length 1,1 m) insulation: -30 °C to 105 °C (adapter set enclosed)

Functional data
- Torque: max 15 Nm
- Rotation time: 73 s
- Rotation angle: 90°
- Manual override: manual or permanent with pushbutton (for maintenance purposes)
- DIP switches settings: direction of rotation (counterclockwise CCW / clockwise CW); different temperature ranges depending on the application (0÷100 °C, 60÷85 °C, 20÷70 °C, 25÷45 °C); reaction factor x1/x10

Safety
- Protection class. II
- Degree of protection: IP44
- Ambient temperature: 0÷55 °C
- Fluid temperature: according to valve's specifications
- Storage temperature: -20÷80 °C
- Maintenance: maintenance free

Operation

Front pannel description



1	Reversible mechanical indication
2	Button for manual/auto control
3	Lever for manual control, also serves for the indication of the valve position
4	Button for adjusting the required temperature When adjusting the temperature, the set value flashes on LCD screen
5	Led indication of operation
6	LCD screen for displaying temperature
7	DIP switches cover

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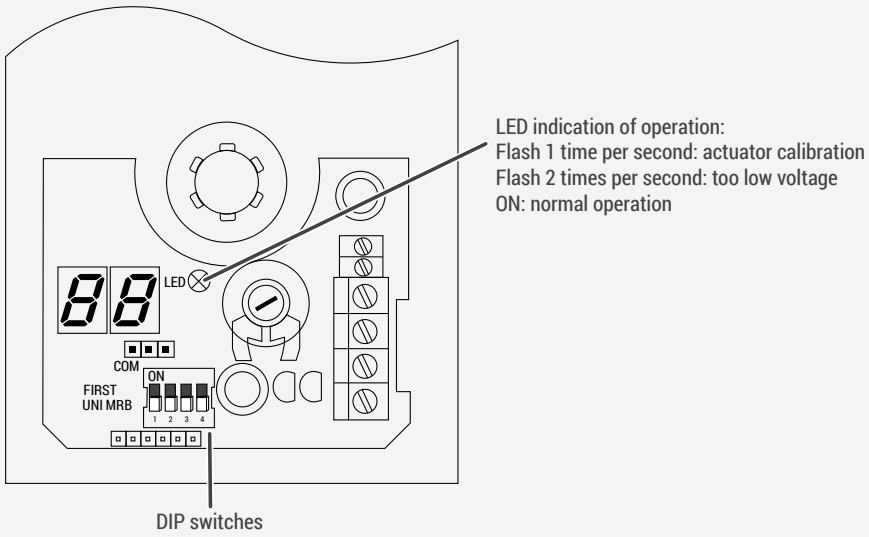
DIP switches

DIP switches and are located inside the actuator.
They can be set by removing the plastic protection caps on top of the actuator (without removing the red cover).



Factory settings

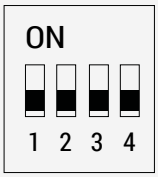
- DIP1: OFF - counterclockwise opening direction (CCW)
- DIP2, DIP3: OFF - temperature range 0÷100 °C
- DIP4: OFF - reaction factor x1

Parameter settings

With DIP switches inside the actuator is possible to set the following parameters:

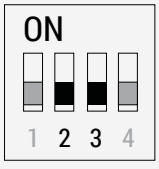
- DIP1 - Setting direction of valve opening:
  ON: clockwise opening direction (CW)
  OFF: counterclockwise opening direction (CCW)
- DIP2, DIP3 - Different temperature ranges depending on the application
  0÷100 °C, 60÷85 °C, 20÷70 °C, 25÷45 °C
- DIP4 - Reaction factor x1/x10

DIP switches settings



CW	Temperature range setting		x10
CCW			x1
1	2	3	4

Temperature range setting



DIP	0 °C.. 100 °C	60 °C..85 °C	20 °C..70 °C	25 °C..45 °C
2	OFF	OFF	ON	ON
3	OFF	ON	OFF	ON

✎ **NOTE.** Every time the position of DIP1 is changed, actuator calibration is made. The Led blinks (1x/sec) and actuator is rotated to the left and right side. In this case leave the actuator in position AUTO, do not change settings and do not disconnect the power supply. During calibration of actuator system, because of system protection, is necessary to turn off the circulator to prevent oscillation of temperature in the system (underfloor heating, hot water....)

✎ **NOTE.** Reaction factor x1/x10 - response speed of the actuator. In most cases, the factor x1 is used. x10 factor is recommended in case of installation with a low thermal inertia (PVC pipe, plastic pipes for drinking water).

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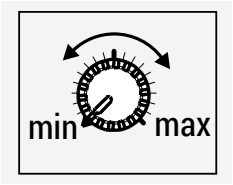
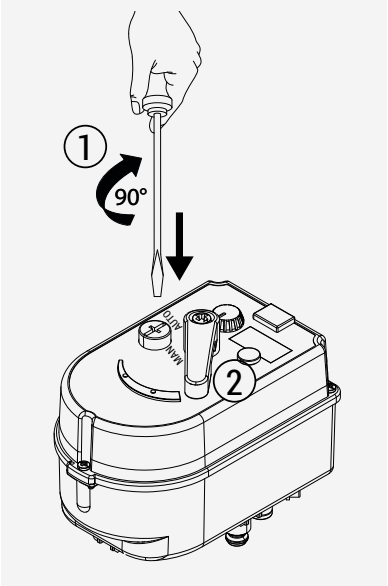
Setting desired temperature



With this knob you can set the desired temperature.
Temperature setting range depends on the setting of DIP switches (factory setting is 0÷100 °C).
When the knob is turned, the Led screen displays the set temperature and this value will blink for about 3 seconds.
After that time, the Led screen shows the current sensor temperature.

Manual control



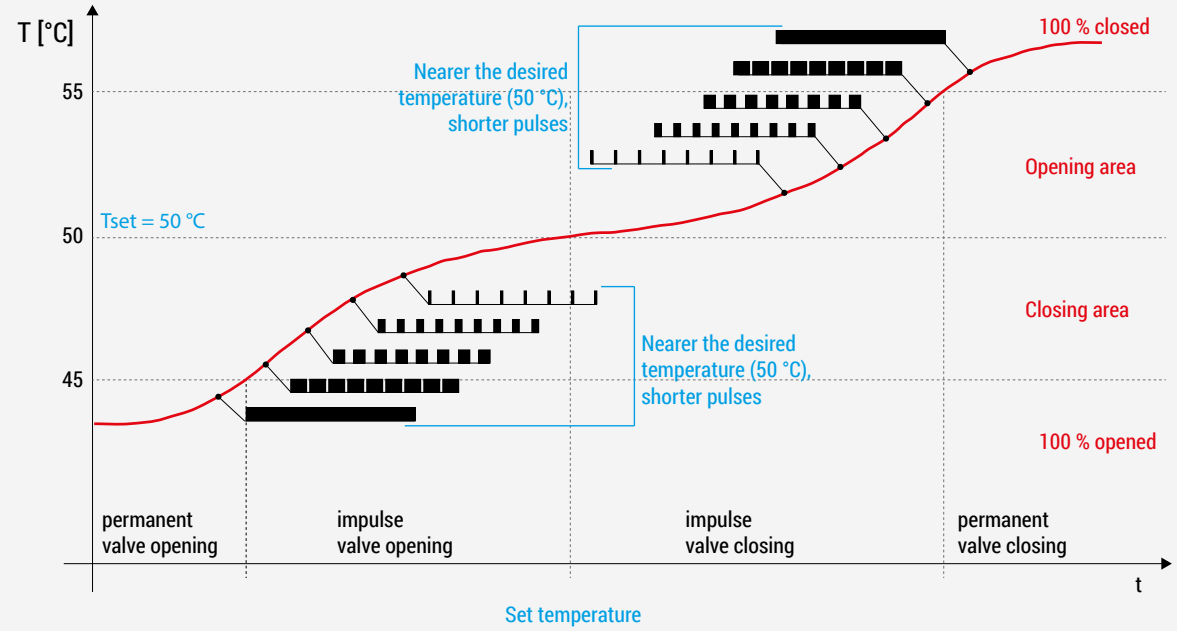
In the case of power failure or for service purposes, user can manually operate with the actuator:

- with a screwdriver push and turn off the button to the MAN position.
- manually move the lever to desired position.

NOTE. When the button for manual operation is in MAN position, the actuator stays in temporary position regardless of control signal.

Example of actuator behavior diagram as a function of temperature

Desired temperature: 50 °C



When the temperature is below 45 °C, the actuator gives a continuous signal to keep the mixing valve open.

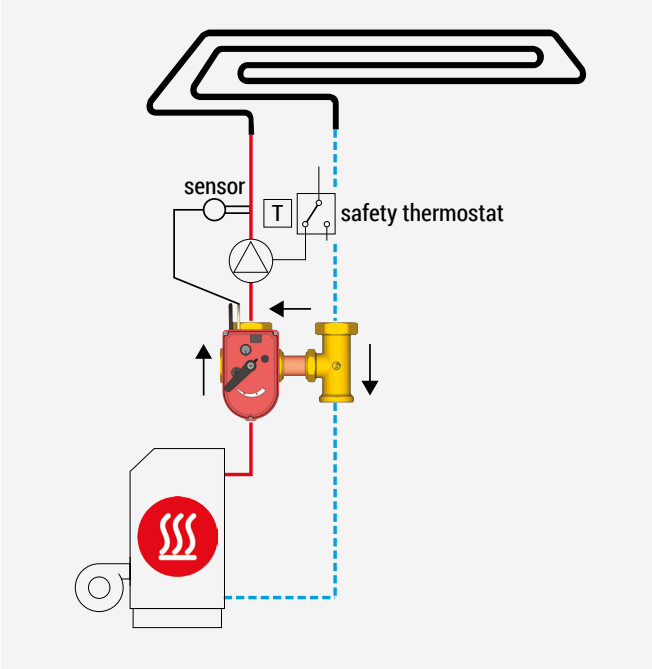
When the temperature is between 45 and 50 °C, the actuator sends pulses to open the mixing valve. Getting nearer the desired temperature (50 °C), pulses became shorter.

When the temperature is between 50 and 55 °C, the actuator sends pulses to close the mixing valve. Getting nearer the desired temperature (50 °C), pulses became shorter.

When the temperature is above 55 °C, the actuator gives a continuous signal to keep the mixing valve closed.

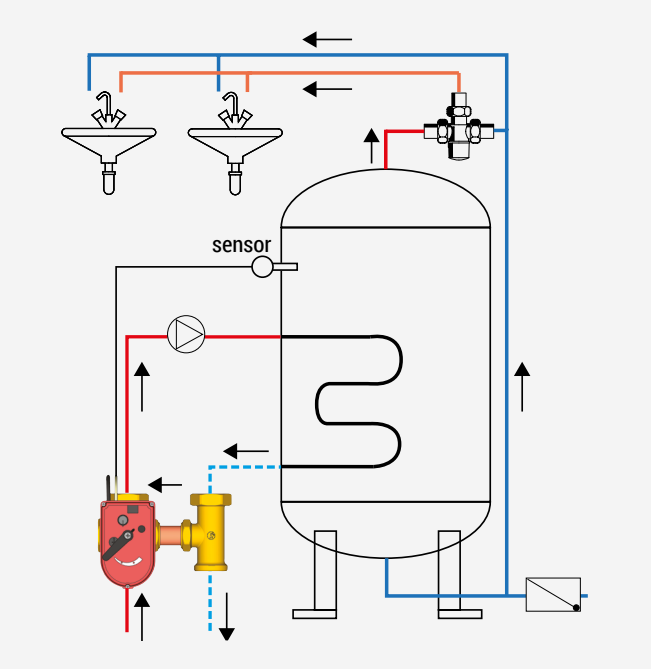
Radiant floor heating

Maintain a constant temperature of heating water.
The installation of a safety thermostat is recommended.



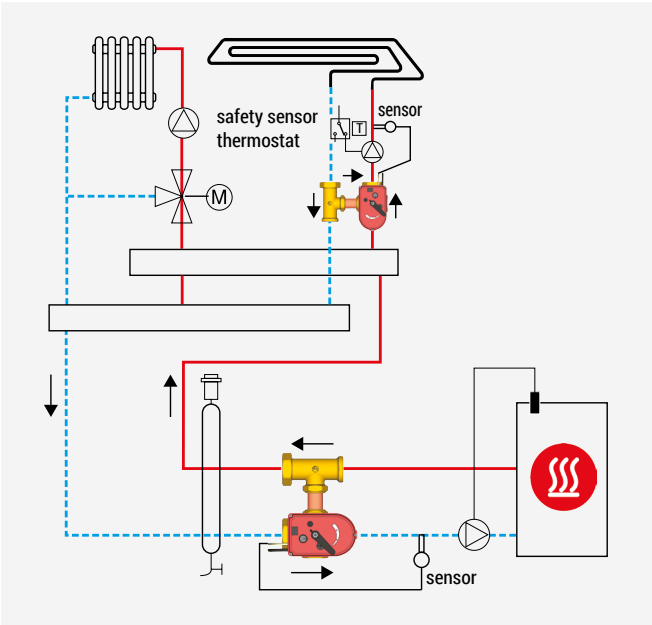
Tank to heat the domestic water

Maintain a constant water temperature inside the hot water tank.



Radiator and radiant floor systems

Maintain a constant return flow water temperature (protection against condesation in solid fuel boiler) and constant temperature in the heating system.



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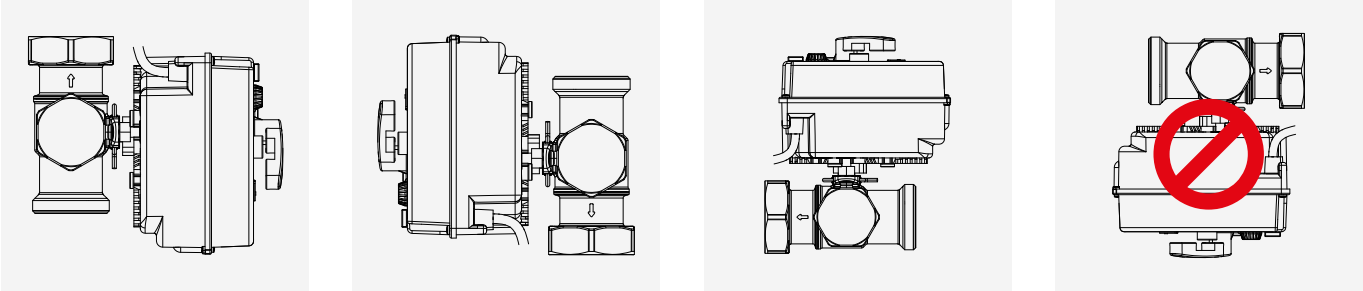
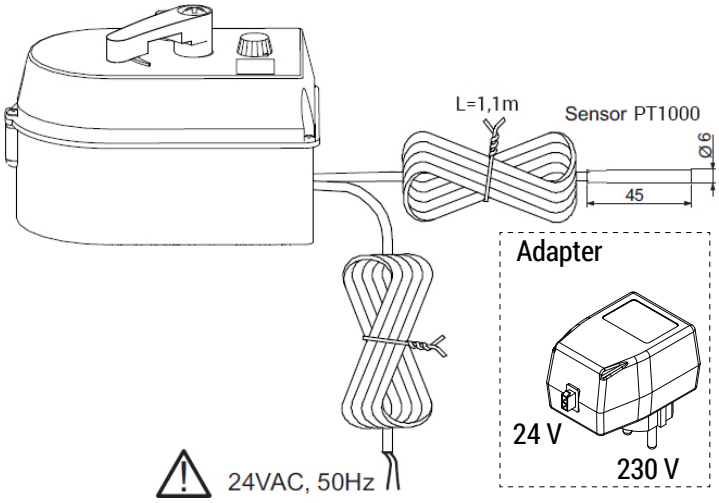
Installation

NOTE. To correctly install the K275Y002 actuator on Giacomini valves, refer to the instructions of the valves.

Allowed positions



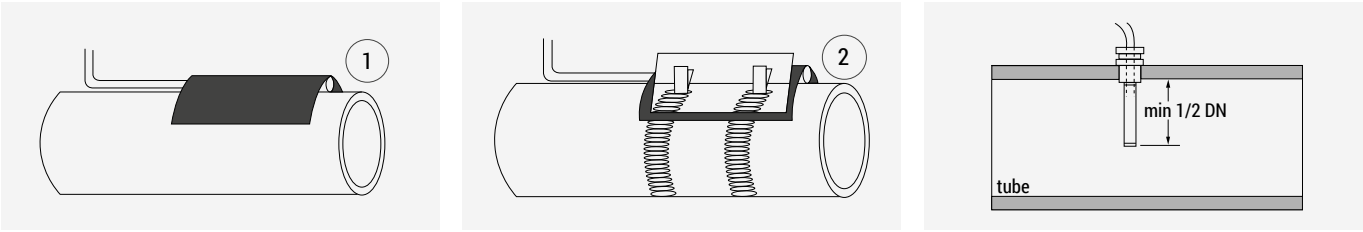
Electrical installation



Installation of temperature sensor

The temperature sensor has to be installed after the circulator of the system, at a max.distance of 1,1 m from the actuator. It can be installed in contact with pipe or as immersion sensor. For contact installation use the kit included. It is necessary to provide a flat smooth surface in contact lenght min. 40 mm for the placing of the sensor. This guarantees max thermal sensor connection and the optimal reaction time of the actuator.

Protect the sensor with self adhesive insulation (1) and then attach the bracket (2) as shown



For immersion installation the sensor must be mounted in sleeve till mid-pipe.

When installing, it is necessary to provide adequate mechanical protection of sensor and sensor's cable. It is necessary to isolate the sensor cable from heat in case of very hot parts. By optimizing the thermal insulation of the measuring point can eliminate the influence of ambient temperature on the actuator operation.

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Most common errors

DESCRIPTION OF ERRORS	CAUSE	REPAIR
On Led screen is displayed: Er1 / Er2	Sensor is disconnected (Er1) Sensor is in short cut (Er2)	Check the sensor, replace if necessary
LFast blinking of Led diode (2/sec) and on Led display: 888	Low voltage supply	Check the voltage supply
Blinking of Led (1/sec) and rotating of actuator in extreme left and right side	Actuator is calibrating	Leave the actuator calibrating till the end and then will actuator pass in normal operation
Continuous operation of the actuator opening/ closing	DIP4 (reaction factor) is in position x10 (too fast response to changes)	DIP4 switch move to the position x1 (slower response)
The actuator does not reach its set value	Sensor is not properly installed (bad contact)	Check the sensor mounting, check if the sensor is thermally insulated
	AUTO/MAN button of actuator is in a position MAN	Set the button to position AUTO
	Actuator is not properly installed on the mixing valve	Check the actuator mounting on the mixing valve or mechanical installation
If it is necessary to set the temperature to 60 °C, but actuator only allows you to set 45° C	Inappropriate temperature range settings on the DIP switches 2 and 3	DIP switches 2 and 3 put into right position
The actuator closes the mixing valve but in the system is too cold	Inappropriate set of DIP switch 1	Check the appropriate position of DIP switch 1
The actuator is too slowly responding to the changes, does not reach the desired temperature	Inappropriate set of DIP switch 4 - in the position x1	For a faster response is necessary to put DIP switch 4 on position x10
Led indicator is not ON, Led display is not illuminated, the actuator stand still	There is no power	Check power supply
Manual button is in the MAN position, you can not move lever with your hand	Mixing valve is blocked	Remove the actuator from the mixing valve, move the valve axes with tool
The temperature of the system is too low according to the desired temperature or oscillates	inappropriate sensor insulation from its environment (wind exposure)	Install thermal insulation on the sensor

SAFETY NOTE

- The actuator has been designed for use in heating, ventilation and cooling systems (NB: without umidity control) and cannot to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Caution: power supply voltage - 24 VAC.
- It may only be installed by suitably trained personnel. All applicable legal or institutional installation regulations must be complied with.
- The device must be protected from moisture and is not recommended for use in external applications.
- The device may only be opened at the manufacturer's site. It does not contain any part that can be replaced or repaired by the user.
- The cable must not be removed from the device.
- The device contains electrical and electronic components and cannot be disposed as a household refuse. All locally valid regulations and requirements must be observed.

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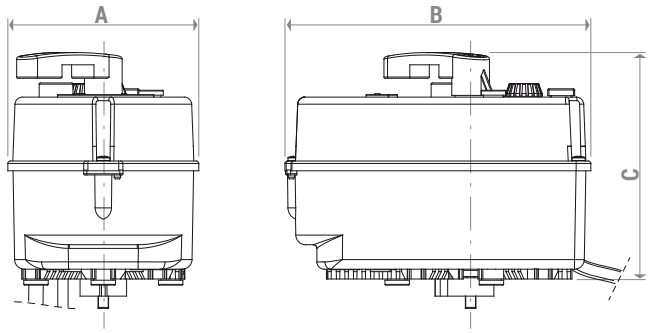
Dimensions



PRODUCT CODE	A [mm]	B [mm]	C [mm]
K275Y002	78	125	93

Reference standards

- EMC 2004/108/CE
- LV 2006/95/CE
- PAH 2005/69/CE

Product specifications

K275Y002

Actuator with integrated constant temperature regulator for the control of R296, R297 mixing valves and R586R distribution and control units. It controls fixed supply temperature in HVAC systems (without umidity control), in stand-alone operation. Rotation angle: 90°. Possibility of manual operation with lever. Possibility to set the following parameters: direction of rotation (counterclockwise CCW / clockwise CW); different temperature ranges depending on the application; reaction factor x1/x10. Power supply: 24 Vac, 50 Hz, ± 10 % (230 Vac, 50 Hz with adaptor, included). Power: 5 VA. Connection cable: 2 x 0,5 mm²; length 2 m. Sensor type: Pt1000 (cable length 1,1 m) insulation: -30 °C to 105 °C (adapter set enclosed). Torque: max 15 Nm. Rotation time: 73 s. Protection class. II. Degree of protection: IP44. Ambient temperature: 0÷55 °C. Storage temperature: -20÷80 °C. Maintenance free. Complies with the Directive EMC 2004/108/EC and Low Voltage Directive 2006/95/EC.

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.

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