ACTUATOR WITH INTEGRATED REGULATOR, K282 FOR R298 AND R298N MIXING VALVE

Description

K282 actuator is an actuator that works both as motor and regulator, to control the delivery temperature with three way mixing valve.
Thus, K282 actuator can be used on three way valves:
• it controls fixed delivery temperature both heating and cooling, in "stand-alone" functioning;
• it can carry out the regulation with climatic compensation when heating and the fixed regulation with calibration on internal thermohygrometric conditions when cooling, in combination with KM203 network controller, K365P external sensor, K481 or K483 thermostats and K485 ambient sensor.

Versions and product codes

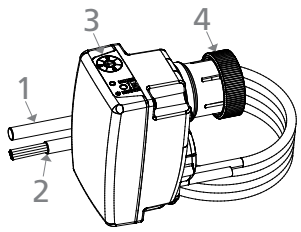
Product code	Supply	Type
K282X002	24 Vac	With integrated regulator

Technical data

Product code	K282X002
Type of actuator	Three point floating
Type of regulation	Giacoklima series (KPM20)
Supply tension	24 V; 50/60 Hz
Nominal thrust	120 N ±20 %
Max. stroke	6,5 mm
Opening time to max. stroke	85 sec.
Absorbed power	5 VA
Protection level	IP40
Storage temperature range	-34÷55 °C with U.R. non-condensing
Operating temperature range	0÷55 °C with U.R. non-condensing
Electrical connections	cable lenght 1,5 m (7x 0,14 mm²)
Delivery temperature probe	NTC sensor 30 kΩ at 25 °C, sensor bulb 47 mm long, external Ø 6 mm, 2x0,22 mm² cable, 1,5 m long, external Ø = 3 mm, black external sheath, self-extinguishing
Rotating potentiometer	WINTER range: 20÷60 °C SUMMER range: 15÷25 °C

Main features

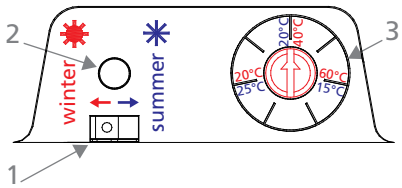
• M28x1,5 brass ring fixing to valve body.
• Immersion probe for delivery water temperature with bulb, length 47 mm and diameter 6 mm, connected to the actuator body.
• Proportional-integral (PI) digital electronic regulator inserted in the actuator body.
• Motorized manual control (open ring) of the valve by selecting the opening position (from 0% to 100%).
• Stand-alone functioning: manual selection by summer/winter mode selector.
• Stand-alone functioning: manual selection of the working set by rotating potentiometer with double adjustment scale. Winter mode from 20 °C to 60 °C; summer mode from 15 °C to 25 °C.
• Bus signal network functioning with KM203 network controller: climatic compensation regulation during winter and calibration on internal thermohygrometric conditions during summer.



1 Delivery temperature probe
2 Multipole cable for electric connections
3 Frontal side and frontal panel of the actuator
4 Ring fixing to valve body

Control elements

The summer/winter mode selector and the rotating potentiometer with double adjustment scale to select the fixed set for the delivery temperature control are on the frontal side of K282 actuator.
Once summer/winter switching has been made through selector, position the rotating potentiometer at the desired set according to the appropriate graduated scale: the scale working during the winter is indicated with red numbers (range from 20 °C to 60 °C ascending clockwise); the scale working during the summer is indicated with blue numbers (range from 15 °C to 25 °C ascending anticlockwise).
Both controls are used in stand-alone functioning of the actuator.
When K282 is used in combination with KM203 network controller, both manual mode selector and rotating potentiometer are deactivated and their use has no effect. In this application, the modification of delivery temperature set or summer/winter switching is made by KD300 display.



1 SUMMER/WINTER mode selector
2 RED/GREEN signalling led
3 Rotating potentiometer with double adjustment scale

Caution!
In stand-alone functioning of K282 actuator, after summer/winter switching through selector, position the rotating potentiometer at the desired set according to the appropriate graduated scale.

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Signalling elements

The led on the frontal side of K282 actuator provides two kinds of information: the application type, stand-alone or with bus signal network connection to KM203 network controller and summer/winter mode set to regulate the delivery temperature.

Fixed red: indicates stand-alone functioning in WINTER mode.

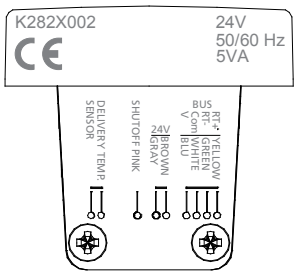
Fixed green: indicates stand-alone functioning in SUMMER mode.

Flashing red: indicates the functioning in combination with KM203 network controller in WINTER mode.

Flashing green: indicates the functioning in combination with KM203 network controller in SUMMER mode.

Flashing alternate red/green: indicates that K282 actuator, used in combination with KM203 network controller, is no more supervised by KM203 because of an anomaly (deactivation of supply to network controller or communication problems on bus network).

The operating set has become the one set on the rotating potentiometer and the real mode, that is the one imposed by the supervisor, is not coherent with the operating mode imposed by the manual selector on the frontal side. With this signal, it is recommended to check the correct supply to the network controller and the correct functionality of bus network.



Conductor color	Function
BROW	24 V~ supply connection
GRAY	24 V~ supply connection

When 24 V~ supply is activated to K282 actuator, the integrated electronic regulator starts a cycle of adjustment in which the stem of the actuator is led to complete by-pass position (the whole stem has gone back in the actuator body).

Connection to bus

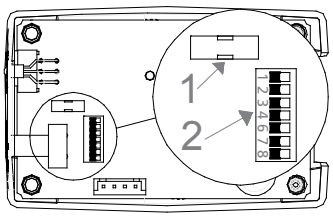
Data between K282 actuator and KM203 network controller are transfered through the system bus (connection to primary bus) by using RT+, RT- and Com terminals. In addition, the supply for the communication function is carried through the system bus by using V and Com terminals. Max. 3 K282 actuators can be connected to KM203 network controller.

Caution!
Before connecting K282 actuator, make sure that network tension IS NOT CONNECTED and that it corresponds to the one written on the back of the device (24 V~). The device must be installed by qualified staff only.

Conductor color	Function
YELLOW	RT+ Signal (RS485 standard)
GREEN	RT- Signal (RS485 standard)
WHITE	Com Common (signal + supply)
BLUE	V SELV supply

Caution!
Before the connection to the system bus, make sure that KM203 network controller is not supplied, not to damage the communication module of K282 actuator. In case more than 3 actuators are connected to KM20x controller (through primary bus), it is necessary to provide a separated supply of the devices. The bus cable of K282 actuator must be placed in a canalization with an electrical protective covering independent from canalizations that carry network tension or that control actuators.

Addressing



1 Jumper for manual control (open ring) of the actuator
2 8 way microswitch for actuator addressing

The addressing through microswitch with several ways is not relevant when K282 actuator is used as single device (stand-alone configuration): it is not necessary to make any configuration in this application.

The addressing through microswitch with several ways is vital for the correct configuration of the device in those applications in which the actuator is used in combination with KM20x network controller.

All microswitch sliders are positioned on "OFF" (side with 1-8 numbers) on delivery. K282 actuator uses selectors from 1 to 6 to assign an address between 0 and 31: check the address to assign on the design documentation of the system.

	Position of microswitch ways					
Ind.	1	2	3	4	5	6
0	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF
11	ON	ON	OFF	ON	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF
13	ON	OFF	ON	ON	OFF	OFF
14	OFF	ON	ON	ON	OFF	OFF
15	ON	ON	ON	ON	OFF	OFF
16	OFF	OFF	OFF	OFF	ON	OFF
17	ON	OFF	OFF	OFF	ON	OFF
18	OFF	ON	OFF	OFF	ON	OFF
19	ON	ON	OFF	OFF	ON	OFF
20	OFF	OFF	ON	OFF	ON	OFF
21	ON	OFF	ON	OFF	ON	OFF
22	OFF	ON	ON	OFF	ON	OFF
23	ON	ON	ON	OFF	ON	OFF
24	OFF	OFF	OFF	ON	ON	OFF
25	ON	OFF	OFF	ON	ON	OFF
26	OFF	ON	OFF	ON	ON	OFF
27	ON	ON	OFF	ON	ON	OFF
28	OFF	OFF	ON	ON	ON	OFF
29	ON	OFF	ON	ON	ON	OFF
30	OFF	ON	ON	ON	ON	OFF
31	ON	ON	ON	ON	ON	OFF

Caution!
Make sure that the assigned address is correct: it is not possible to have two devices with the same address in the same system.

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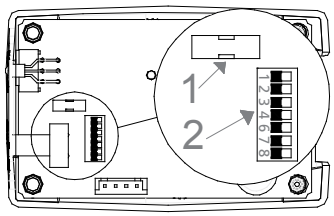
Motorized manual control of the valve



1 Jumper for manual control (open ring) of the actuator
2 8 way microswitch for actuator addressing

The manual positioning (open ring) of the mixing valve is useful when starting a system or in order to check the functioning. This operation can be made with K282 actuator by extracting the apposite jumper on the board, after removing the upper shell: the rotating potentiometer position represents the required opening for the mixing valve in this manual state of functioning. The opening of the direct way from the boiler of the valve increases by rotating the potentiometer clockwise when Giacomini mixing valves are used. The stem of the actuator is completely retracted (0%) and the mixing valve closes the direct way completely (by-pass position), when the rotating potentiometer is completely rotated anticlockwise; the stem of the actuator is protruding (100%) and the mixing valve opens the direct way completely, when potentiometer is completely rotated clockwise.

For the manual positioning:
• Remove 24 V~ supply to K282 actuator
• Loosen the actuator ring fixing to valve body and unscrew the actuator completely
• Remove the upper shell of the actuator by removing the 4 fixing screws
• Extract the jumper placed on the electronic board as shown in the picture
• Position the upper shell of the actuator again through the 4 fixing screws
• Assemble K282 actuator on the valve body again
• Activate 24 V~ supply
• The actuator resets completely until it closes the direct way completely (0%)
• The actuator positions at the indicated opening through the rotating potentiometer.
When the functioning test is finished, follow the instructions and insert the jumper placed on the electronic board.

Caution!
Manual positioning tests of the valve must be carried out once the jumper on the electronic board has been extracted and after assembling again and fixing with the 4 apposite screws the upper shell of the actuator. Do not activate 24 V~ supply before assembling the upper shell again. The manual positioning of the valve must be carried out by qualified staff only.

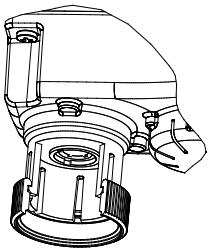
Caution!
The reading of immersion delivery temperature probe is not taken into account during the manual positioning test of the valve. Make sure that the delivery temperature is not over or under the safety limits according to the kind of system. The manual positioning of the valve must be carried out by qualified staff only.

Installation

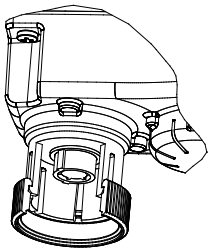
• Unscrew the hand-wheel protecting body before assembling and adjust the shutter manually on R298 or R298N valve.
• Fix K282 actuator through its apposite brass fixing ring: the ring must be screwed to the valve body up to end stroke in order to ensure max. stroke to the shutter.
• Insert the immersion probe in a R227 pit, downstream of the secondary circulator, and block by means of the fixing screw.

Positions of the linear stem of the actuator

The action of the digital regulator integrated in K282 actuator associates the stem completely retracted to the position of complete closure (0%) as shown in the picture; the stem completely protruding from the actuator body is associated to the position of complete opening (100%).

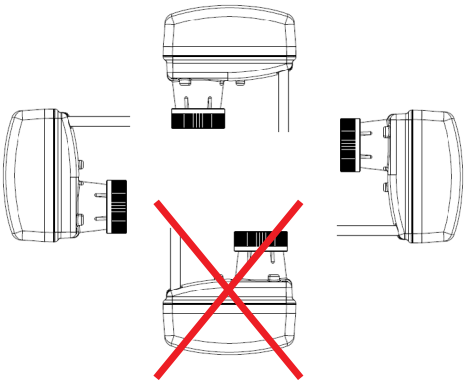


Retracted stem, by-pass position of R298 valve

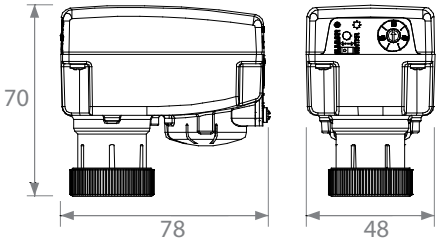


Protruding stem, opening position of the direct way of R298 valve

Correct installation positions of K282 actuator



Dimensions



Dimensions in mm

Compliance

- CE
- EMC 2004/108/CE
- Low voltage directive 2006/95/CE

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Additional information

For additional information please check the Giacomini website at the following address: www.giacomini.com

☎ +39 0322 923 372
🖷 +39 0322 923 255
✉ consulenza.prodotti@giacomini.com

Giacomini S.p.A. Via per Alzo 39, I-28017 San Maurizio d'Opaglio (NO) Italy