

# K281



Energy  
Management



Radiant  
Systems

## K281X062 proportional actuator for R206A PICVs

Datasheet  
1049EN 03/2022



Proportional actuator for R206A pressure independent control valves (PICV).

The actuator can be controlled by KLIMAbus regulation units KPM30.

### Versions and product codes

PRODUCT CODE	POWER SUPPLY	TYPE	VALVE CONNECTION	FOR USE WITH VALVE
K281X062	24 Vac/dc	Proportional 0÷10 V	M30 x 1,5 mm	R206A

## ► Technical data

- Type of actuator: proportional 0÷10 V
- Type of matching regulation: KLIMAbus (KPM30)
- Power supply: 24 Vac/dc, 50/60 Hz
- Feedback signal:  
signal: 0÷10 Vdc ±5 %  
power: max 2mA at 0÷10 Vdc
- Inlet impedance:  
voltage: > 100 kΩ  
current: 500 Ω
- Maximum stroke: 6,3 mm
- Propulsion force: 160 N
- Opening time at max speed: 8 s/mm  
(automatic reading)
- Electric absorption: 2,5 VA; 1,5 W
- Protection class: IP54
- Storage temperature range: -20÷65 °C with non-condensing R.H.
- Room temperature working range: 0÷50 °C with non-condensing R.H.
- Electric wire length: 2 m (4 x 0,35 mm<sup>2</sup>)
- Working noise level: < 30 dB(A)
- Ring nut for connection to valve's wbody: M30 x 1,5 mm, brass
- 2-color LED (green/red), status indicator
- Weight: 200 g
- Color: white

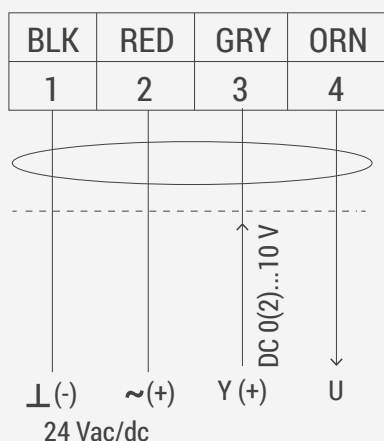
### Materials

- Lid: ABS + PC
- Stem: PA66 - GF30
- Threaded nut: CuZn40Pb2 brass

## ► Electric connections

### ▲ WARNINGS.

- Make sure to disconnect the power supply during wiring.
- Carry out and check wiring before powering the system. Short circuits or wires improperly connected may permanently damage the electrical components of the actuator.
- Do not touch, try to connect or disconnect the wires with power ON.
- Wiring must comply to the local standards and must be carried out only by qualified operators.
- Keep high and low voltage wires separated.
- Make sure the line voltage complies with the one shown on the device.
- Failure to comply with these instructions may cause injuries or damage the device.



BLACK (BLK)	Common (-)
RED (RED)	Phase (+)
GREY (GRY)	Control signal
ORANGE (ORN)	Feedback signal

## Operation

### Stroke self-calibration

The actuator calibrates itself when powered electrically by running a full cycle to read the actual stroke of the valve.

The actuator moves the stem downwards for the entire stroke till it reads a variation.

Once it reads the lower position of the valve stem, the actuator moves it upwards till it is completely open and the microprocessor memorizes the entire stroke of the actuator; then the actuator pushes the stem back down to read the upper position of the valve and establish the actual stroke.

As soon as the actuator stem touches the valve stem, the actuator completes the self-calibration procedure (flashing red light) and engages the operational mode (green led).

### Position feedback signal

INLET SIGNAL	OUTLET SIGNAL
0÷10 V	0÷10 V
2÷10 V	2÷10 V
0÷2 mA	0÷10 V
4÷20 mA	2÷10 V
Customized field	0÷10 V

The position feedback signal monitors the stroke position of the actuator.

It provides information on the actual position of the stem to an external monitoring system.

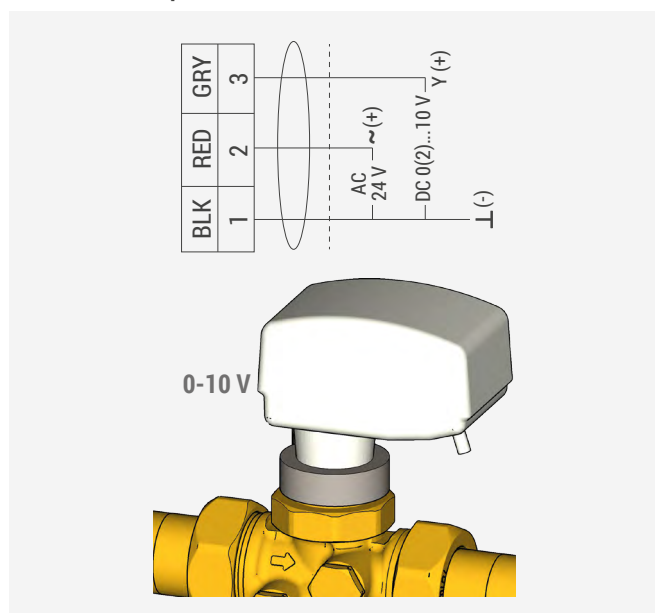
Refer to the following table for correspondence between the control signal and the feedback.

### Operational status indicators

LED		MEANING
OFF	○	No power
Flashing green	●	Moving to position
Solid green	●	Position reached
"Slow" flashing red	●	Self-calibration in progress
"Fast" flashing red	●	Error in stroke reading
Solid red	●	4/20 mA or 2/10 Vdc: signal lost

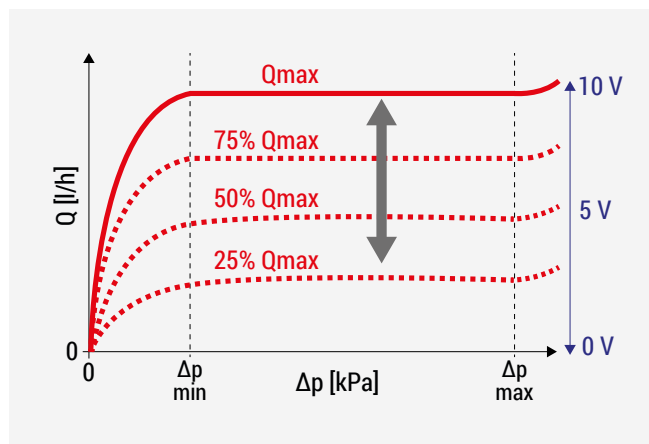
The K281X062 actuator features a 2-color LED (green-red) that provides information on the operational and diagnostic status, such as:

### Pressure-independent control with R206A valve



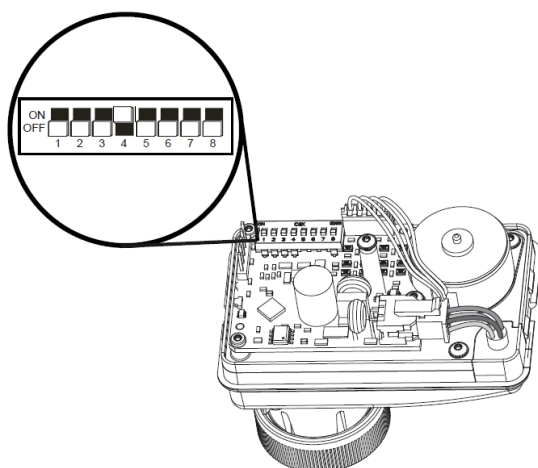
The R206A valve works at best by installing a **K281X062 proportional linear actuator**.

When combined to an electronic unit, it can control the flow automatically from the maximum value set  $Q_{max}$ , up to the minimum value, depending on the thermal requirements.



## ➤ DIP SWITCHES set-up

The actuator is provided with 8 DIP SWITCHES that enable the user to set it based on the installation requirements. The actuator is provided with DIP SWITCHES in OFF position with the exception of DIP SWITCH n°4 which is ON.



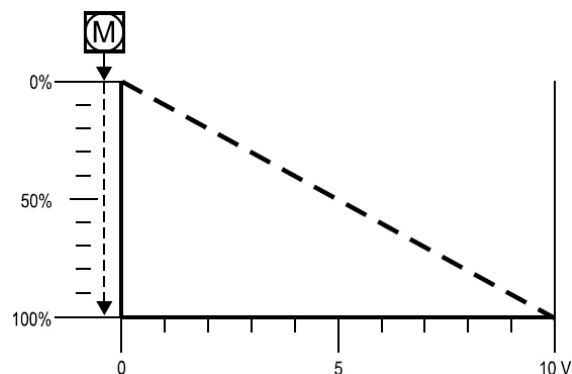
DIP SWITCH OPTIONS							
<input type="checkbox"/> 0..10VDC	<input type="checkbox"/> 0..20mA	<input type="checkbox"/> 0..5VDC	<input type="checkbox"/> 5..10VDC	<input type="checkbox"/> 2..10VDC	<input type="checkbox"/> 4..20mA	1	OFF
<input type="checkbox"/> DA	<input type="checkbox"/> RA	<input type="checkbox"/> LIN	<input type="checkbox"/> Eq%	<input type="checkbox"/> VDC	<input type="checkbox"/> mA	2	OFF
<input type="checkbox"/> NOT USED	<input type="checkbox"/> NOT USED	<input type="checkbox"/> NOT USED	<input type="checkbox"/> NOT USED	<input type="checkbox"/> NOT USED	<input type="checkbox"/> NOT USED	3	OFF
<input type="checkbox"/> NOT USED	<input type="checkbox"/> NOT USED	<input type="checkbox"/> NOT USED	<input type="checkbox"/> NOT USED	<input type="checkbox"/> NOT USED	<input type="checkbox"/> NOT USED	4	ON
1: CONTROL SIGNAL RANGE	5: CURVE	2: CONTROL SIGNAL RANGE	6: SIGNAL TYPE	3: NOT USED	7: NOT USED	5	OFF
4: ACTION	8: NOT USED					6	OFF

**DIP SWITCHES 1, 2, 3** are used to change the analogic inlet ranges. To change from a voltage analogic inlet to an analogic plug, set **DIP SWITCH 6** on the desired position.

**DIP SWITCH 4** enables to change the actuator action based on the analogic inlet:

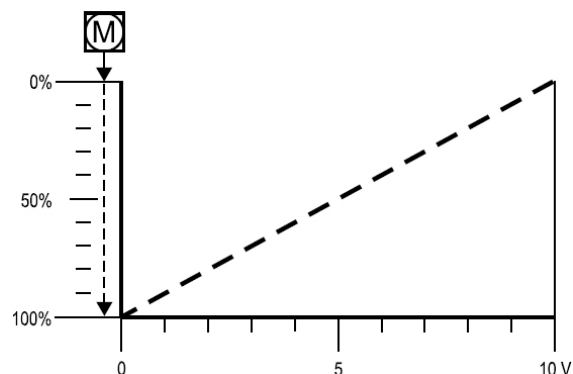
- OFF: direct action (DA)

When the signal increases, the actuator extends its stem.



- ON: reverse action (RA)

When the signal increases, the actuator retracts its stem.



**DIP SWITCH 5** enables to change the control feature of the actuator to obtain a linear combination of the valve and the actuator or an almost identical percentage.

- OFF: Linear

Use with a linear valve is recommended.

- ON: Percentage almost identical

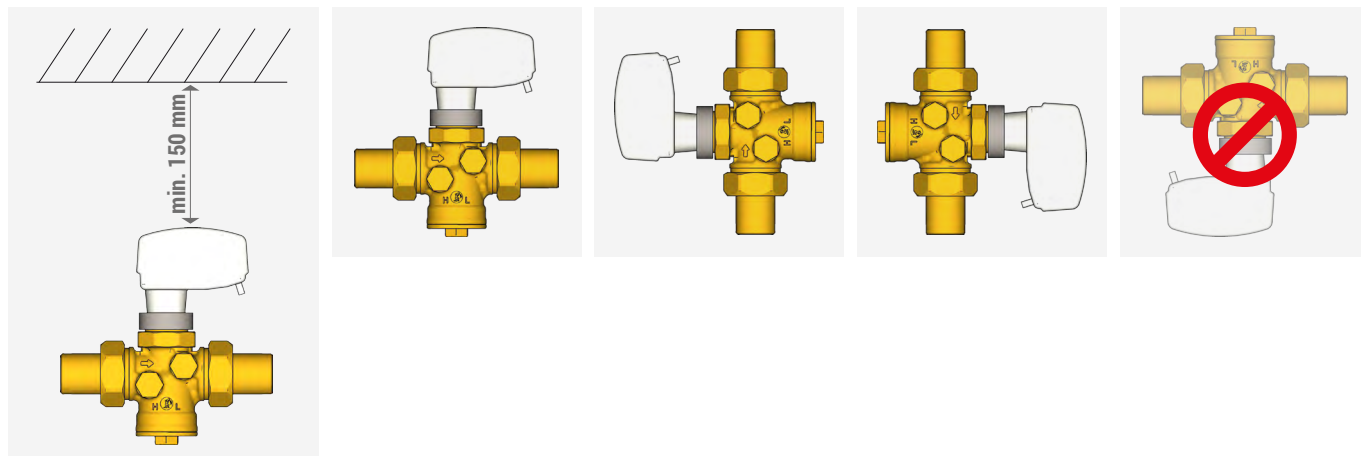
Use with an equal percentage or quick-opening valve is recommended.

**DIP SWITCHES 7, 8** are not used.

## ➤ Installation

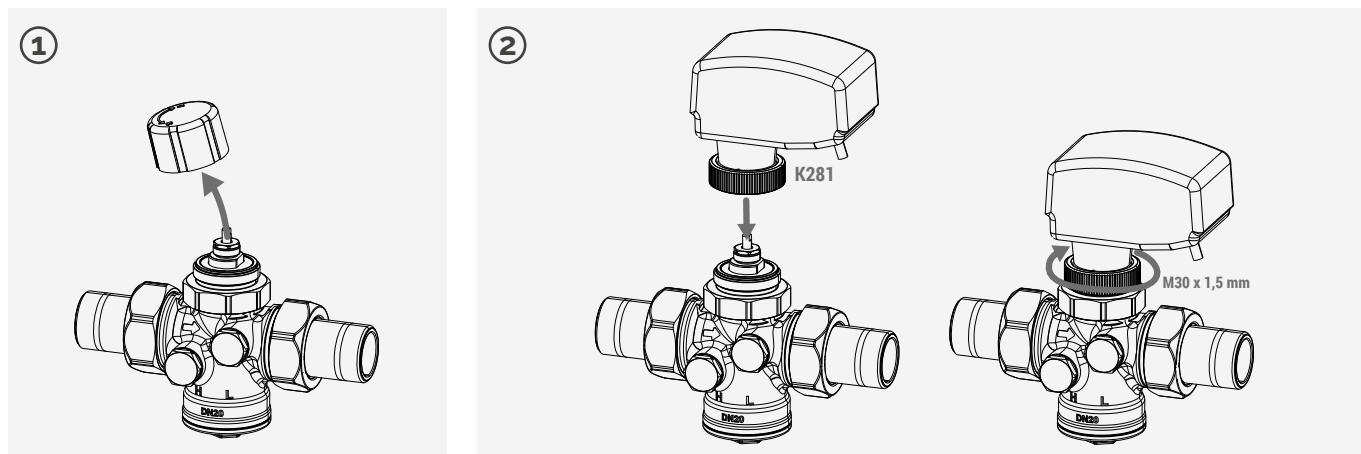
### ⚠ WARNINGS.

- The valve may be installed in any position but the actuator should not be positioned upside down or with the power cable entering from the top (to prevent problems deriving from condensation).
- Do not cover with insulating material.

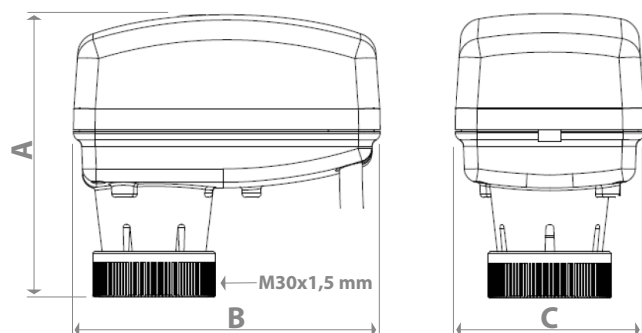


### Installation of K281X062 actuator on R206A valves

- 1) Remove the handwheel from the valve;
- 2) Screw the actuator on the valve body with the M30 x 1.5 mm threaded ring nut and wire it carefully following the diagram included with the instructions.



## ➤ Dimensions



PRODUCT CODE	A [mm]	B [mm]	C [mm]
K281X062	74	80	49

## ➤ Reference standards

- CE marking
- EMC 2014/30/EU standard
- LVD 2014/35/EU low-voltage standard
- ROHS 2011/65/EU standard

## ➤ Product specifications

### K281X062

Proportional actuator 0÷10 V for R206A pressure independent control valves (PICV). M30x1,5 brass ring nut for connection to valve body. Power 24 V; 50/60 Hz. Absorption 2,5 VA. Max stroke 6,3 mm. Opening time at 8 s/mm maximum stroke. Protection class IP54. Working room conditions 0÷50 °C with non-condensing R.H. Storage conditions -20÷65°C with non-condensing R.H. Dimensions: 74x80x49 mm. CE marking. Compliance with EMC 2014/30/EU standards, Low Voltage Directive LVD 2014/35/EU, ROHS 2011/65/EU. For use with KLIMAbus thermoregulation components.

**⚠ 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.

**ℹ Additional information.** For more information, go to [giacomini.com](http://giacomini.com) or contact our technical assistance service. This document provides only general indications. Giacomini S.p.A. may change at any time, without notice and for technical or commercial reasons, the items included herewith. The information included in this technical sheet do not exempt the user from strictly complying with the rules and good practice standards in force.

**♻ 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.