



Rotary actuators for ball valves

GMA..9E

for ball valves VA..61.. / VB..61.. and VA..60.. / VB..60..

AC 24 V / DC 24...48 V / AC 230 V

- Electromotive rotary actuators with spring return for emergency position
- For 2-position, 3-position, and modulating control
- Pre-wired with 0.9 m long connection cables

Remarks

This data sheet provides a brief overview of these rotary actuators. Please refer to the Technical Basics in document Z4614en for a detailed description as well as information on safety, engineering notes, mounting and commissioning.

Use

- For 2-port and 3-port control ball valves, internally threaded connections (VAI61.. and VBI61..) or externally threaded connections (VAG61.. and VBG61..), DN15 to DN50
- For open/close ball valves 2-port and changeover ball valves 3-port, internally threaded connections (VAI60.. and VBI60..) or externally threaded connections (VAG60.. and VBG60..), DN15 to DN50
- Suitable for use with modulating controllers (DC 0...10 V), 3-position controllers or 2-position controllers
- In plants where the rotary actuator must move to the zero position (emergency position) during power failure

Type summary

| | GMA121.9E | GMA321.9E | GMA131.9E | GMA161.9E |
|---|-----------|-----------|-----------|-----------|
| Operating voltage AC 24 V / DC 24...48 V | X | | X | X |
| Operating voltage AC 230 V | | X | | |
| Control type 2-position | X | X | | |
| Control type 3-position | | | X | |
| Positioning signal Y = DC 0...10 V | | | | X |
| Position indicator U = DC 0...10 V | | | | X |

Functions

| Type ¹⁾ | GMA..21.9E | GMA131.9E | GMA161.9E |
|---|---|---|--|
| Control type | 2-position control | 3-position control | Modulating control |
| Rotary direction for mounting on ball valve (NC/NO) | NC (normally closed) ball valve | NC (normally closed) ball valve | NC (normally closed) ball valve |
| | Switch on operating voltage: Actuator opens (counter-clockwise) Switch off operating voltage: Actuator closes with spring (clockwise) | Signal on Y1 – rotation counter-clockwise – ball valve opens Signal on Y2 – rotation clockwise – ball valve closes | 0...10 V “counter-clockwise” Flow = 0% at Y = 0 V Flow = 100% at Y = 10 V |
| | See the mounting instructions M4658 for other switchings. | | |
| Emergency position (Spring return) | On power failure or when the operating voltage is switched off, the spring moves the ball valve to its mechanical zero position. | | |
| Position indication: Mechanical | Rotary angle position indication with manual lever as position indicator. | | |
| Position indication: Electrical | | | Output voltage U = DC 0...10 V is generated proportional to the rotary angle. |
| Manual adjustment | – Without voltage supplied, the rotary actuator can be rotated and fixed in any position using the supplied Allen key. – The rotary actuator returns to the zero position (actuator closed) if mechanically unlocked via Allen key or via short-term voltage supply. | | |

¹⁾ When combining GMA..1E and ASK77.2: You must consult the mounting instructions M4696 (74 319 0648 0)!

Equipment combinations

The rotary actuators are suitable for operation of the following Siemens ball valves:

VA..61.. 2-port control ball valves

| Control ball valves with: | | | | | | GMA..9E | |
|--------------------------------|--------|--------------------------------|---------|-------------------------------------|----|-------------------|-----------------|
| internal threads ¹⁾ | Rp | external threads ²⁾ | G..B | k _{vs} [m ³ /h] | DN | Δp _{max} | Δp _s |
| – | – | VAG61.15.. | G 1 B | 1...6.3 | 15 | 350 | 1400 |
| VAI61.15.. | Rp ½" | – | – | 1...10 | 15 | | |
| VAI61.20.. | Rp ¾" | VAG61.20.. | G 1 ¼ B | 4...10 | 20 | | |
| VAI61.25.. | Rp 1" | VAG61.25.. | G 1 ½ B | 6.3...16 | 25 | | |
| VAI61.32.. | Rp 1¼" | VAG61.32.. | G 2 B | 10...25 | 32 | | |
| VAI61.40.. | Rp 1½" | VAG61.40.. | G 2 ¼ B | 16...40 | 40 | | |
| VAI61.50.. | Rp 2" | VAG61.50.. | G 2 ½ B | 25...63 | 50 | | |
| | | | | | | 1000 | 800 |
| | | | | | | 600 | |

VB..61.. 3-port
control ball valves

| Control ball valves with: | | | | | | GMA..9E | |
|--------------------------------|--------|--------------------------------|---------|-------------------------------------|----|-------------------|-----------------|
| internal threads ¹⁾ | Rp | external threads ²⁾ | G..B | k _{vs} [m ³ /h] | DN | Δp _{max} | Δp _s |
| VBI61.15.. | Rp ½" | VBG61.15.. | G 1 B | 1.6...6.3 | 15 | 350 | |
| VBI61.20.. | Rp ¾" | VBG61.20.. | G 1 ¼ B | 4...6.3 | 20 | | |
| VBI61.25-10 | Rp 1" | VBG61.25-10 | G 1 ½ B | 10 | 25 | | |
| VBI61.32-16 | Rp 1¼" | VBG61.32-16 | G 2 B | 16 | 32 | | |
| VBI61.40-25 | Rp 1½" | VBG61.40-25 | G 2 ¼ B | 25 | 40 | | |
| – | – | VBG61.50-40 | G 2 ¾ B | 40 | 50 | | |
| VBI61.50.. | Rp 2" | – | – | 40...63 | 50 | | |

¹⁾ Data sheet N4211

²⁾ Data sheet N4212

VA..60.. / VB..60..
open/close 2-port
and
changeover ball valves
3-port

| Ball valves with: | | | | | | GMA..9E | |
|--------------------------------|--------|--------------------------------|---------|-------------------------------------|----|-------------------|-----------------|
| internal threads ³⁾ | Rp | external threads ⁴⁾ | G..B | k _{vs} [m ³ /h] | DN | Δp _{max} | Δp _s |
| – | – | VAG60.15-9 | G 1 B | 9 | 15 | 350 | 1400 |
| VAI60.15-15 | Rp ½" | – | – | 15 | 15 | | |
| – | – | VAG60.20-17 | G 1 ¼ B | 17 | 20 | | |
| VAI60.20-22 | Rp 1" | – | – | 22 | 20 | | |
| VAI60.25-22 | Rp 1" | VAG60.25-22 | G 1 ½ B | 22 | 25 | | |
| VAI60.32-35 | Rp 1¼" | VAG60.32-35 | G 2 B | 35 | 32 | | |
| VAI60.40-68 | Rp 1½" | VAG60.40-68 | G 2 ¼ B | 68 | 40 | | |
| VAI60.50-96 | Rp 2" | VAG60.50-96 | G 2 ¾ B | 96 | 50 | 1000 | |
| | | | | | | 800 | |
| | | | | | | 600 | |
| VBI60.15-5L | Rp ½" | – | – | 5 | 15 | 350 | |
| VBI60.20-9L | Rp 1" | – | – | 9 | 20 | | |
| VBI60.25-9L | Rp 1" | – | – | 9 | 25 | | |
| VBI60.32-13L | Rp 1¼" | – | – | 13 | 32 | | |
| VBI60.40-25L | Rp 1½" | – | – | 25 | 40 | | |
| VBI60.50-37L | Rp 2" | – | – | 37 | 50 | | |
| – | – | VBG60.15-8T | G 1 B | 8 | 15 | 350 | |
| VBI60.15-12T | Rp ½" | – | – | 12 | 15 | | |
| – | – | VBG60.20-13T | G 1 ¼ B | 13 | 20 | | |
| VBI60.20-16T | Rp 1" | – | – | 16 | 20 | | |
| – | – | VBG60.25-13T | G 1 ½ B | 13 | 25 | | |
| VBI60.25-16T | Rp 1" | – | – | 16 | 25 | | |
| VBI60.32-25T | Rp 1¼" | VBG60.32-25T | G 2 B | 25 | 32 | | |
| VBI60.40-49T | Rp 1½" | VBG60.40-49T | G 2 ¼ B | 49 | 40 | | |
| VBI60.50-73T | Rp 2" | VBG60.50-73T | G 2 ¾ B | 73 | 50 | | |

³⁾ Data sheet N4213

⁴⁾ Data sheet N4214

Notes

For more details about these rotary actuators see document Z4614.

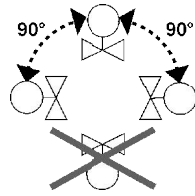
Mounting

Both ball valve and rotary actuator can easily be assembled at the mounting location. Neither special tools nor adjustments are required.

The rotary actuator is supplied with Mounting Instructions:

| Type | Document | Stock no. |
|-------------------|----------|---------------|
| GMA..9E | M4658 | 74 319 0653 0 |
| VAI61 / VBI61.. | M4211 | 74 319 0647 0 |
| VAG61 / VBG61.. | M4212 | 74 319 0922 0 |
| VAI60.. / VBI60.. | M4213 | 74 319 0883 0 |
| VAG60.. / VBG60.. | M4214 | 74 319 0923 0 |

Orientation



Commissioning

When commissioning the system, check wiring and the function of the rotary actuator.



Technical data GMA..9E

| | | | |
|---|---|---|--------|
| ! Supply voltage AC 24 V DC 24...48 V (SELV / PELV) | Operating voltage AC / Frequency | AC 24 V ± 20 % / 50/60 Hz | |
| | Operating voltage (DC) | DC 24...48 V ±20 % | |
| | Power consumption | GMA1.1.9E: Running AC: 5 VA / 3.5 W // DC: 3.5 W | |
| | | GMA121.9E/GMA131.9E: Holding AC/DC: 2 W | |
| | | GMA161.9E: Holding AC/DC: 2.5 W | |
| ! Supply voltage AC 230 V | Operating voltage AC / Frequency | AC 230 V ± 10 % / 50/60 Hz | |
| | Power consumption | GMA321.9E Running 7 VA / 4.5 W Holding 3.5 W | |
| Function data | Nominal torque | 7 Nm | |
| | Nominal rotary angle / Max. rotary angle | 90° / 95° ± 2° | |
| | Runtime for rotary angle 90° (motor operation) | 90 s | |
| | Closing time with return spring (on power failure) | 15 s | |
| Positioning signal for GMA131.9E | Switching current (at AC 24 V / DC 24...48 V) for "Open"/"Close" | > AC/DC 8 mA | |
| Positioning signal for GMA161.9E | Input voltage Y (wires 8-2) | DC 0...10 V | |
| | Max. permissible input voltage | DC 35 V | |
| Position indicator for GMA161.9E | Output voltage U (wires 9-2) | DC 0...10 V | |
| | Max. output current | DC ± 1 mA | |
| Connection cables | Cross-section of the prewired connection cables | 0.75 mm ² | |
| | Standard length | 0.9 m | |
| Degree of protection of housing | Degree of protection as per EN 60 529 (note mounting instructions) | IP54 | |
| Protection class | Insulation class | EN 60730 | |
| | AC 24 V / DC 24...48 V | III | |
| | AC 230 V | II | |
| Environmental conditions | Operation / Transport | IEC 60721-3-3 / IEC 60721-3-2 | |
| | Climatic Conditions | Class 3K5 / Class 2K3 | |
| | Temperature | -32...+55 °C / -32...+70 °C | |
| | Humidity (non-condensing) | < 95% r. h. / < 95% r. h. | |
| Standards and directives | Product standards | EN 60730-2-14 (Mode of operation, Type 1) | |
| | Automatic electrical controls for household and similar use | | |
| | Electromagnetic compatibility (Application) | For residential, commercial and industrial environments | |
| | EU Conformity (CE) | 8000081792 ¹⁾ | |
| | RCM Conformity | 8000081793 ¹⁾ | |
| | Product environmental declaration ²⁾ | CE1E4614en ¹⁾ | |
| | Weight | Without packaging: GMA1..9E | 1.2 kg |
| | | GMA3..9E | 1.3 kg |

¹⁾ The documents can be downloaded from <http://siemens.com/bt/download>

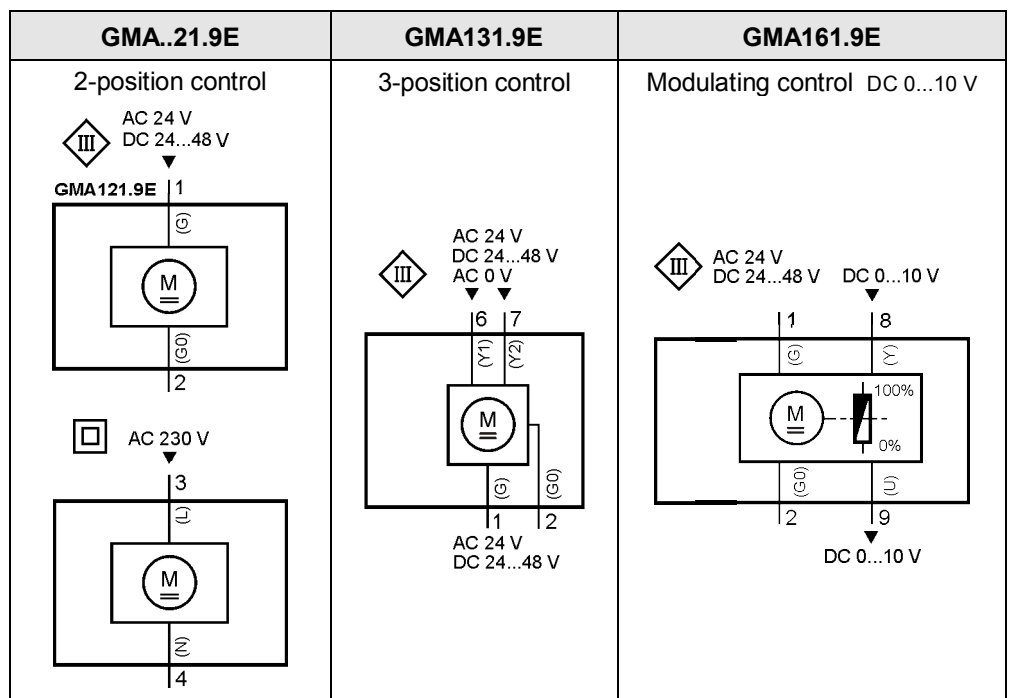
²⁾ The product environmental declaration contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

Disposal

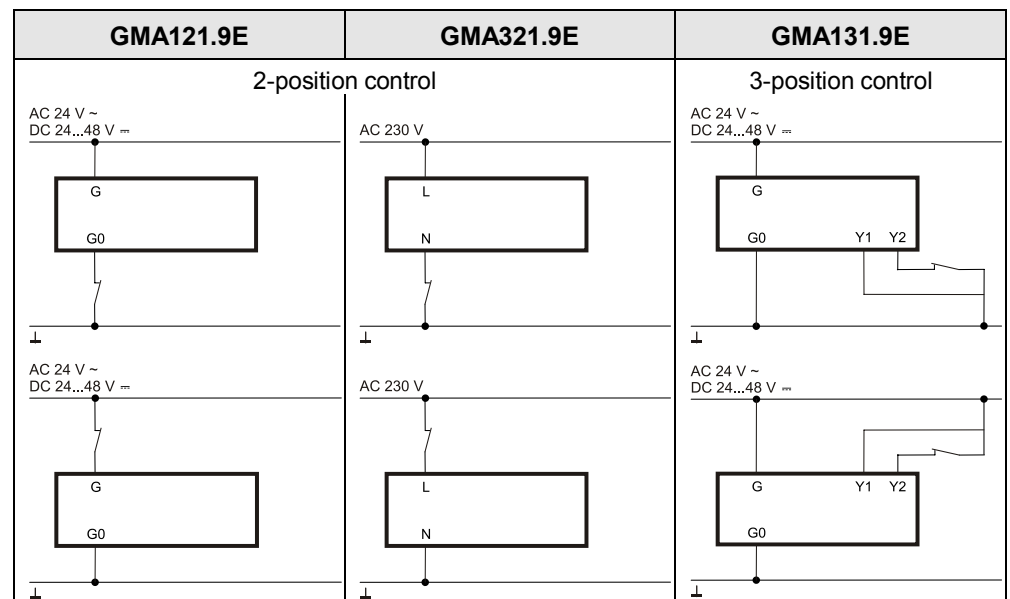
| | |
|---|--|
|  | <p>⚠ WARNING</p> <p>Tensioned return spring Opening the actuator housing can release the tensioned return spring resulting in flying parts that may cause injury.</p> <ul style="list-style-type: none"> Do not open the actuator body. |
|  | <p>The device is considered electrical and electronic equipment for disposal in terms of the applicable European Directive and may not be disposed of as domestic garbage.</p> <ul style="list-style-type: none"> Dispose of the device through channels provided for this purpose. Comply with all local and currently applicable laws and regulations. |

Connection diagrams

Internal diagrams



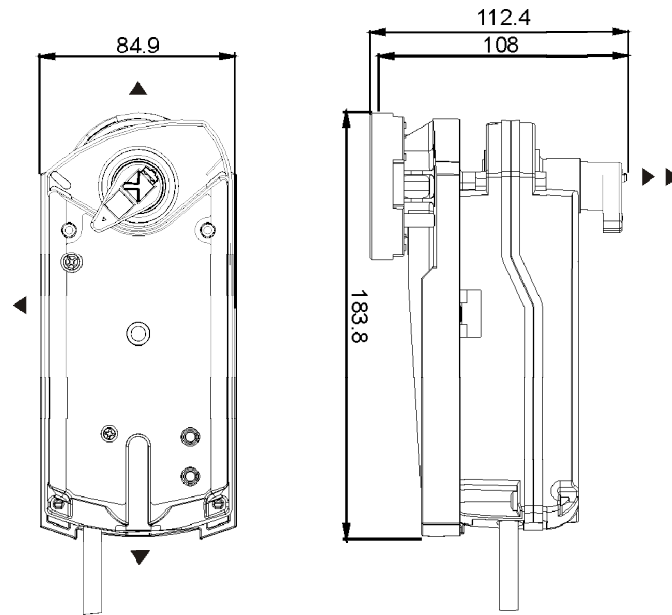
Connection diagrams Single pole single throw (SPST)



Cable labeling

| Connection | Cable | | | | Meaning |
|------------------|-------|-----|--------|--------------|--|
| | Code | No. | Color | Abbreviation | |
| Rotary actuators | G | 1 | red | RD | System potential AC 24 V / DC 24...48 V |
| AC 24 V | G0 | 2 | black | BK | System neutral |
| DC 24...48 V | Y1 | 6 | purple | VT | Positioning signal AC 0 V, AC 24 V / DC 24...48 V "counter-clockwise" N.C. |
| | Y2 | 7 | orange | OG | Positioning signal AC 0 V, AC 24 V / DC 24...48 V "clockwise" N.C. |
| | Y | 8 | grey | GY | Positioning signal DC 0...10 V |
| | U | 9 | pink | PK | Position indication DC 0...10 V |
| Rotary actuators | L | 3 | brown | BN | Line AC 230 V |
| AC 230 V | N | 4 | blue | BU | Neutral |

Dimensions



Dimensions in mm

- ▶ = > 100 mm
- ▶▶ = > 200 mm

Minimum clearance from ceiling or wall for mounting, connection, operation, maintenance etc.

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