

ACVATIX™

Rotary actuator for ball valves

GDB161.9E



Electromotoric rotary actuators for modulating control

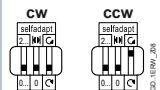
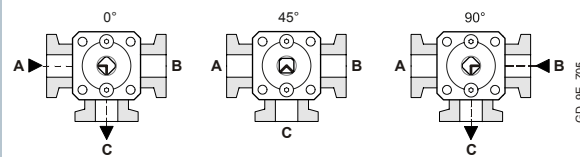
- Nominal torque 5 Nm
- Operating voltage AC 24 V ~ / DC 24...48 V
- Positioning signal DC 0/2...10 V $\overline{\text{=}}$
- Pre-wired with 0.9 m long connection cables

Features

Used in heated/chilled ceilings in combination with 6-port control ball valves VWG41.. with externally threaded connections, DN20.

- Brushless, robust DC motors ensure reliable operation regardless of load.
- The rotary actuators do not require an end position switch, are overload proof, and remain in place upon reaching the end stop.
- The gears are maintenance free and low noise.
- Suitable for use with modulating controllers (DC 0/2...10 V).

Functions

GDB..161.9E									
Control type	Modulating control (0/2...10 V)								
Rotary direction	<p>Clockwise or counter-clockwise direction depends on the setting of the rotary direction DIL switch</p>  <p>... on the positioning signal. The actuator remains in the achieved position: ... if the control signal is maintained at a constant value ... for loss of operating voltage.</p> <table border="1"> <thead> <tr> <th>Rotary direction "clockwise" (cw)</th> <th>Rotary direction "counter-clockwise" (ccw)</th> </tr> </thead> <tbody> <tr> <td>Y = 0 V Flow B – C = 100% (0°)</td> <td>Y = 0 V Flow A – C = 100% (0°)</td> </tr> <tr> <td>Y = 5 V closed (45°)</td> <td>Y = 5 V closed (45°)</td> </tr> <tr> <td>Y = 10 V Flow A – C = 100% (90°)</td> <td>Y = 10 V Flow B – C = 100% (90°)</td> </tr> </tbody> </table> 	Rotary direction "clockwise" (cw)	Rotary direction "counter-clockwise" (ccw)	Y = 0 V Flow B – C = 100% (0°)	Y = 0 V Flow A – C = 100% (0°)	Y = 5 V closed (45°)	Y = 5 V closed (45°)	Y = 10 V Flow A – C = 100% (90°)	Y = 10 V Flow B – C = 100% (90°)
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Position indication: Mechanical	Rotary angle position indication by a position indicator/hand lever.								
Position indication: Electrical	Output voltage U = DC 0/2...10 V is generated proportional to the rotary angle. U depends on the rotary direction of the DIL switch setting.								
Self-adaptation of linear span	When self-adaptation is active, the actuator automatically determines the mechanical end positions of the linear span.								
Manual adjustment	The rotary actuator can be manually adjusted by pressing the gear train disengagement button.								
Rotary angle limitation	The rotary angle of the shaft adapter can be limited mechanically with a set screw.								

Technical design/mechanical design

Housing

The housing consists essentially of flame retardant, non brominated, non chlorinated glass fibre reinforced plastic.

Type summary

Type	Stock no.	Control	Operating voltage	Positioning signal Y	Position indicator U = DC 0...10 V =	Self-adaption of rotational angle range	Aux. switches	Rotary direction switch
GDB161.9E	S55499-D275	Modulating	AC 24 V ~ / DC 24...48 V =	DC 0/2...10 V =	yes	yes	–	yes

Accessories / Spare parts

Individual spare parts are not available. Components of the accessory kit ASK77.3¹⁾, available as an accessory, can however be used for spare parts.

Description	Components
ASK77.3 Accessory Kit BV for GLBxx1.9E	Mounting bracket (base plate) Axle with sleeve and spring Manual lever with locking clip

¹⁾ Can also be used as rotary actuator for ball valves together with the actuator for air dampers G..B.1E.

Equipment combinations

Control ball valves	DN	Rotary actuators
		GDB161.9E Δp_{max}
VWG41.20-..	20	200

Δp_{max} = Maximum permissible differential pressure over the ball valve control path, valid for the entire positioning range of the ball valve rotary actuator unit.

Product documentation


Topic	Title	Document ID
Data sheet	Rotary actuator for ball valves	A6V10636150_en--_a
Technical basics	Rotary damper actuators without spring return GD..E	A6V10636139_en--_a
Mounting instructions	GDB..9E	A6V10636144_----_a
Mounting instructions	6-port control ball valve VWG41..	A6V10564501_----_a

Related documents such as environmental declarations, CE declarations, etc., can be downloaded at the following Internet address:

<http://siemens.com/bt/download>

Notes

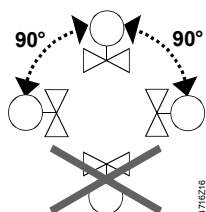
Safety

	<p>⚠ Caution</p>
	<p>National safety regulations</p> <p>Failure to comply with national safety regulations may result in personal injury and property damage.</p> <ul style="list-style-type: none"> • Observe national provisions and comply with the appropriate safety regulations. • Use only properly trained technicians for mounting, commissioning, and servicing.

Mounting

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

Orientation



Installation



⚠ WARNING

No internal line protection for supply lines to external consumers

Risk of fire and injury due to short-circuits

- Adapt the line diameters as per local regulations to the rated value of the installed fuse.

Commissioning

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

Manual adjustment

The rotary actuator can be manually adjusted into any position between 0° and 90° by pushing the gear train disengagement slider.

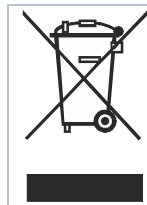
If a control signal from the controller is present, this will take priority in determining the position after the slider is released.

For manual adjustment: Power off!

Maintenance

The actuators GDB161.9E are maintenance-free.

Disposal



The device is considered an electronics device for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations..

Technical data

Power supply	
Operating voltage (SELV/PELV) / Frequency	AC 24 V ~ ±20 % (19,2...28,8 V ~) / 50/60 Hz DC 24...48 V = ±20 % (19,2...57,6 V =) ¹⁾
Power consumption running Power consumption holding	2.1 VA / 1.2 W 0.7 W
Function data	
Nominal torque Maximum torque (blocked) Minimum holding torque	5 Nm 10 Nm 5 Nm
Nominal rotary angle (with position indication) Maximum rotary angle (mechanic limitation)	90° 95° ± 2°
Runtime for 90° rotary angle	150 s
Actuator sound power level	28 dB(A)
Inputs	
Positioning signal Input voltage (wires 8-2/Y-G0) Current consumption Input resistance Max. permissible input voltage Protected against faulty wiring Hysteresis	DC 0/2...10 V = 0.1 mA >100 kΩ DC 35 V = limited to DC 10 V = max. AC 24 V ~ / DC 24...48 V = 60 mV
Outputs	
Position indicator Output signal (wires 9-2/U-G0) Output voltage U Max. output current Protected against faulty wiring	DC 0...10 V = DC ±1 mA max. AC 24 V ~ / DC 24...48 V =
Connection cables	
Cable length	0.9 m
Cross section of prewired connection cables	0.75 mm ²
Permissible length for signal lines	300 m
Degree of protection	
Insulation class AC 24 V ~ / DC 24...48 V =, feedback potentiometer AC 100...240 V ~, auxiliary switches	As per EN 60730 III II
Housing protection	IP 54 as per EN 60529
Environmental conditions	
Operation Climatic conditions Mounting location Temperature extended Humidity (non-condensing)	IEC 60721-3-3 Class 3K5 interior, weather-protected -32...+55 °C <95 % r.F.
Transport Climatic conditions Temperature extended Humidity (non-condensing)	IEC 60721-3-2 Class 2K3 -32...+70 °C <95 % r.F.
Storage Climatic conditions Temperature extended Humidity (non-condensing)	IEC 60721-3-1 Class 1K3 -32...+50 °C <95 % r.F.
Mechanical conditions	Class 2M2

Standards, directives and approvals	
Product standard	EN 60730 Part 2-14 / Particular requirements for electric actuators
Electromagnetic compatibility (Applications)	For use in residential, commercial, light-industrial and industrial environments
EU Conformity (CE)	A5W00003842 ²⁾
RCM Conformity	A5W00003843 ²⁾
EAC Conformity	Eurasian conformity
UL	UL as per UL 60730 http://ul.com/database cUL as per CSA-C22.2 No. 24-93

Environmental compatibility

The product environmental declaration A5W00026068²⁾ contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

Dimensions

Actuator W x H x D see „Dimensions“, p. 7

Weight

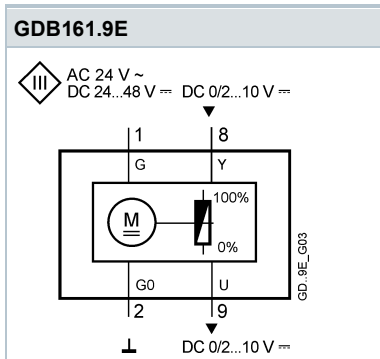
Without packaging 0.69 kg

¹⁾ C-UL: Permitted only to DC 30 V –

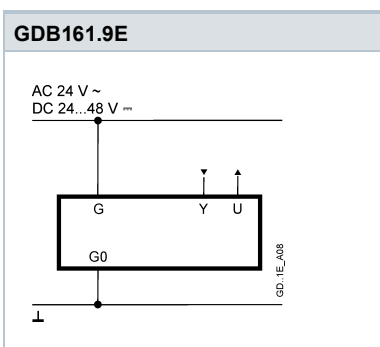
²⁾ The documents can be downloaded from <http://siemens.com/bt/download>.

Diagrams

Internal Diagrams



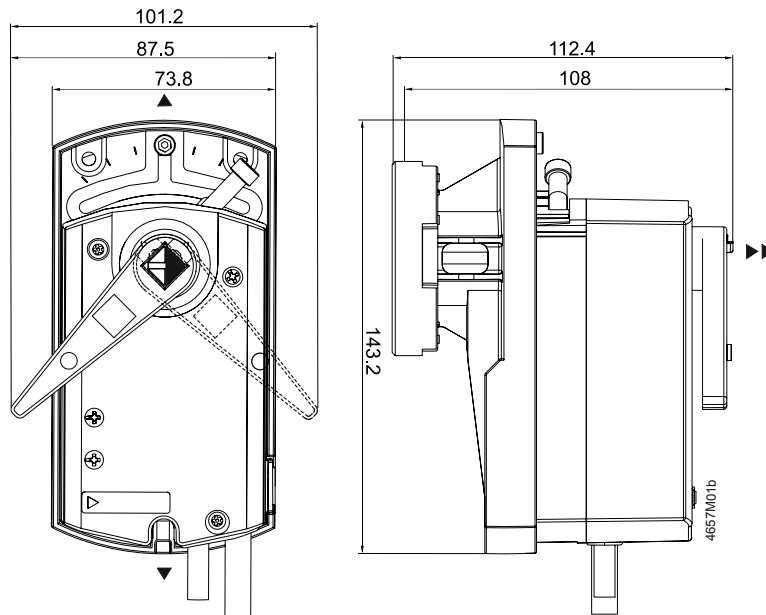
Connection diagrams



Cable labeling

Pin	Code	No	Color	Abbreviation	Meaning
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 =	Y	8	gray	GY	Signal in
	U	9	pink	PK	Signal out

Dimensions



Dimensions in mm

- ▶ = >100 mm
- ▶▶ = >200 mm

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

Revision numbers

Type	Valid from rev. no.
GDB161.9E	..B

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