

ACVATIX™

## Rotary actuators for ball valves

GSD161.9A


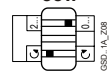
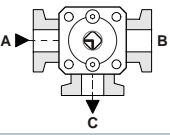
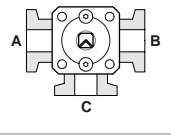
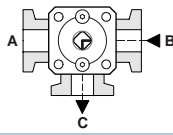


**Electromotoric rotary actuators for modulating control.  
Used in heating, ventilation and air conditioning plants.**

- For 2-port and 3-port control ball valves, internally threaded connections (VAI61.. and VBI61..) or externally threaded connections (VAG61.. and VBG61..), DN15 to DN25.
- For 6-port control ball valves VWG41.. with externally threaded connections, DN10
- Nominal torque 2 Nm
- Operating voltage AC 24 V ~ / DC 24...48 V =
- Pre-wired with 0.9 m long connection cables
- Gear train disengagement button for manual adjustment
- Position indication

- The rotary actuator drives the control ball valve to the desired operating position after connecting the operating voltage.
- 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).

<b>GSD161.9A</b>	
Control type	Modulating control (0/2...10 V)
Rotary direction	<p>Clockwise (cw) or counter-clockwise (ccw) direction depends ...</p> <p>... on the setting of the rotary direction DIL switch</p> <div style="display: flex; justify-content: center; align-items: center;"> <div style="text-align: center; margin-right: 20px;"> <b>CW</b>   </div> <div style="text-align: center;"> <b>CCW</b>   </div> </div> <p>... on the positioning signal</p> <p>The actuator remains in the achieved position:  ... if the control signal is maintained at a constant value  ... for loss of operating voltage.</p>
Combination with 2-port or 3-port control ball valves	NC (normally closed) ball valve
	DIL 3 set to "counterclockwise" (ccw) Flow = 0% at Y = 0 V Flow = 100% at Y = 10 V
	NO (normally open) ball valve
	DIL 3 set to "clockwise" (cw) Flow = 100% at Y = 0 V Flow = 0% at Y = 10 V
Combination with 6-port control ball valves	Rotary direction "counter-clockwise" (ccw)
	Y = 0 V Flow A – C = 100% (0°) Y = 5 V closed (45°) Y = 10 V Flow B – C = 100% (90°)
	Rotary direction "clockwise" (cw)
	Y = 0 V Flow B – C = 100% (0°) Y = 5 V closed (45°) Y = 10 V Flow A – C = 100% (90°)
	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> 0°   </div> <div style="text-align: center;"> 45°   </div> <div style="text-align: center;"> 90°   </div> </div>
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.
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.

## Housing

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

Type	Stock no.	Control	Operating voltage	Positioning signal Y	Position indicator U = DC 0...10 V $\Rightarrow$	Self-adaption of rotational angle range	Aux. switches	Rotary direction switch
GSD161.9A	S55499-D232	Modulating	AC 24 V ~ / DC 24...48 V $\Rightarrow$	DC 0/2...10 V $\Rightarrow$	yes	–	–	yes

## Accessories / Spare parts

Individual spare parts are not available. Components of the accessory kit ASK77.5 <sup>1)</sup>, available <sup>2)</sup> as an accessory, can however be used for spare parts.

Description	Components
ASK77.5 Accessory Kit for BV GSD-GQD	Mounting bracket (base plate) Axle with sleeve and spring Manual lever with locking clip

<sup>1)</sup> Can also be used as rotary actuator for ball valves together with the actuator for air dampers GSD.1A.

<sup>2)</sup> As of August 2017.

## Equipment combinations

### GSD161.9A and VA..61.. (2-port) / VB..61.. (3-port) control ball valves

Control ball valves with:			G..B	k <sub>vs</sub> [m <sup>3</sup> /h]	DN	GSD161.9A	
internal threads <sup>1)</sup>	Rp	external threads <sup>2)</sup>				$\Delta p_{\max}$	$\Delta p_s$
–	–	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		
VBI61.15..	Rp ½"	VBG61.15..	G 1 B	1.6...6.3	15		–
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		

<sup>1)</sup> Data sheet N4211

<sup>2)</sup> Data sheet N4212

### GSD161.9A and 6-port control ball valves VWG41..

VWG41..	k <sub>vs</sub> left [m <sup>3</sup> /h]	k <sub>vs</sub> right [m <sup>3</sup> /h]	DN	GSD161.9A $\Delta p_{\max}$
VWG41.10-0.25..	0.25	0.4...1	10	200
VWG41.10-0.4..	0.4	0.65...1.6		
VWG41.10-0.65..	0.65	1...1.6		
VWG41.10-1.0..	1	1.3...1.9		
VWG41.10-1.3..	1.3	1.6...1.9		
VWG41.10-1.6-1.9	1.6	1.9		
VWG41.10-1.9-1.9	1.9	1.9		

Topic	Title	Document ID
Data sheet	Rotary actuators for ball valves GSD161.9A	A6V10636056_en--
Mounting instructions	Rotary-type actuator GSD161.9A	A6V10636061_----
Mounting instructions	Ball valve VAI61.. / VBI61..	M4211
Mounting instructions	Ball valve VAG61.. / VBG61..	M4212
Mounting instructions	6-port control ball valve VWG41..	A6V10564501

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

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

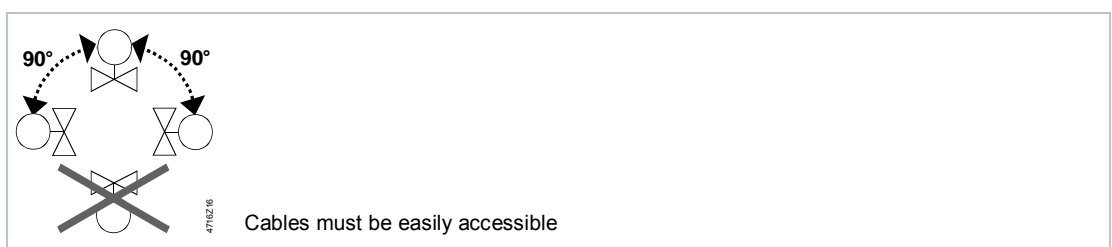
## Safety

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

## Mounting

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

### Orientation




### Protection against weather, humidity and dirt

Protection against direct sunlight and rain	Correct mounting position and cable connection	Protection only with closed cover!

## Installation

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	<p><b>⚠ WARNING</b></p> <p><b>No internal line protection for supply lines to external consumers</b></p> <p>Risk of fire and injury due to short-circuits</p> <ul style="list-style-type: none"><li>• Adapt the line diameters as per local regulations to the rated value of the installed fuse.</li></ul>
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## Commissioning

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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 button.

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!

### Electric, parallel connection of actuators

Up to 10 actuators of the same type can be electrically wired in parallel; cable length and cable cross-sections must be observed.



## Maintenance

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The actuators GSD161.9A are maintenance-free.

## Disposal

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 	<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"><li>• Dispose of the device through channels provided for this purpose.</li><li>• Comply with all local and currently applicable laws and regulations.</li></ul>
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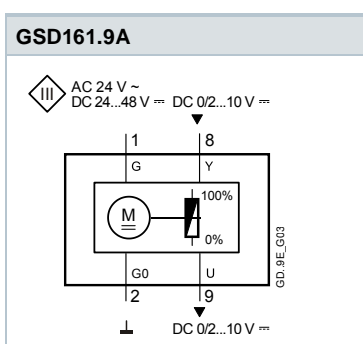
<b>Power supply</b>		
Operating voltage (SELV/PELV) / Frequency		AC 24 V ~ $\pm 20\%$ (19.2...28.8 V ~) / 50/60 Hz DC 24...48 V $\pm 20\%$ (19.2...57.6 V $\pm$ ) <sup>1)</sup>
Power consumption	running	2.4 VA / 1.4 W
	holding	1.2 VA / 0.7 W
<b>Functional data</b>		
Nominal torque		2 Nm
Nominal rotational angle		90° / $95 \pm 2^\circ$
Runtime at nominal rotational angle 90°		30 s
Duty cycle		100 %
Mechanical life		100 000 cycles
Actuator sound power level		30 dB(A)
<b>Inputs</b>		
Positioning signal		
Input voltage	(wires 8-2/Y-G0)	DC 0/2...10 V $\pm$
Current consumption		0.1 mA
Input resistance		>100 k $\Omega$
<b>Outputs</b>		
Position indicator		
Output signal	(wires 9-2/U-G0)	
Output voltage U		DC 0...10 V $\pm$
Max. output current		DC $\pm 1$ mA
Protected against faulty wiring		max. AC 24 V ~ / DC 24...48 V $\pm$
<b>Connection cables</b>		
Cable length		0.9 m
Cross section of prewired connection cables		0.75 mm <sup>2</sup>
<b>Degree of protection</b>		
Insulation class		III as per EN 60730
Housing protection		IP54 as per EN 60529
<b>Environmental conditions</b>		
Operation		IEC 60721-3-3
– Climatic conditions		Class 3K5
– Mounting location		Interior, weather-protected
– Temperature (extended)		-32...+55 °C
– Humidity, non-condensing		<95 % r.F.
Transportation		IEC 60721-3-2
– Climatic conditions		Class 3K5 / 2K3
– Temperature (extended)		-32...+70 °C
– Humidity, non-condensing		<95 % r.F.
Storage		IEC 60721-3-1
– Climatic conditions		Class 1K3
– Temperature (extended)		-32...+50 °C
– Humidity, non-condensing		<95 % r.F.
Mechanical conditions		Class 2M2
<b>Standards, directives and approvals</b>		
Product standard		EN60730 Part 2-14 / Particular requirements for electric actuators
Electromagnetic compatibility (Applications)		For use in residential, commerce, light-industrial and industrial environments
EU Conformity (CE)		A5W00004362 <sup>2)</sup>

Standards, directives and approvals	
RCM Conformity	A5W00004363 <sup>2)</sup>
EAC Conformity	Eurasian conformity
UL	UL as per UL 60730 <a href="http://ul.com/database">http://ul.com/database</a> cUL <sup>1)</sup> as per CSA-C22.2 No. 24-93
Environmental compatibility	
The product environmental declaration A5W00030346-A <sup>2)</sup> 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. 8
Weight	
Without packaging	0.65 kg

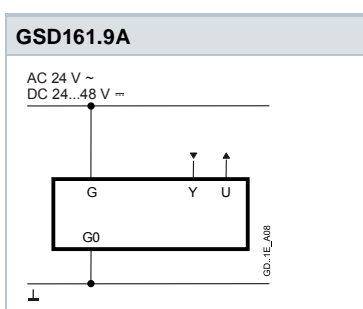
<sup>1)</sup> Permitted only to DC 30 V  $\approx$

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

## Internal Diagram

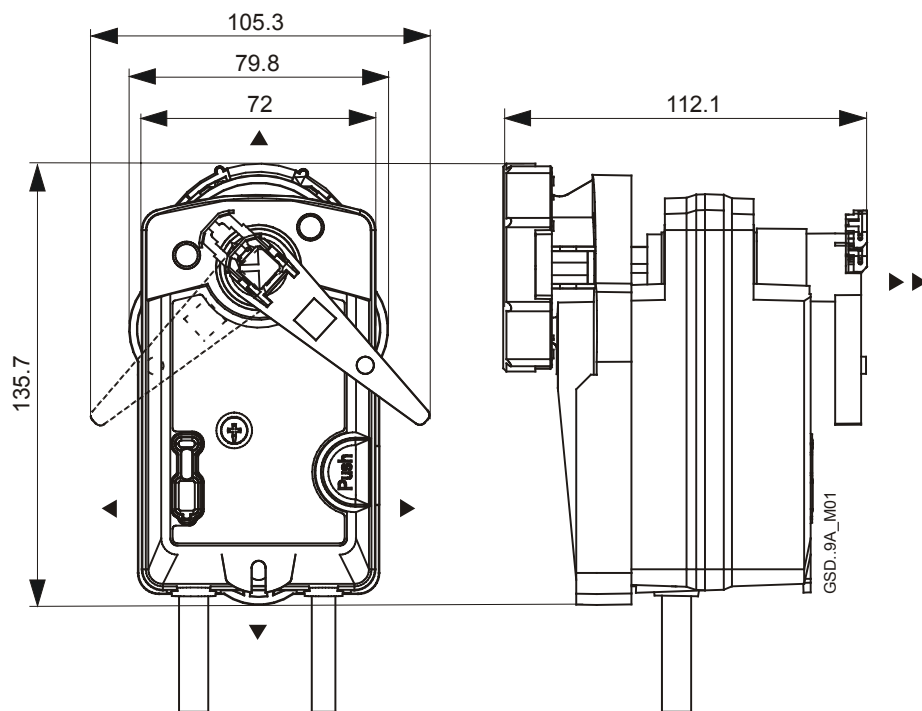


## Connection diagram



## Cable labeling

Connection	Code	No	Color	Abbreviation	Meaning
Actuators	G	1	red	RD	System potential AC 24 V ~ / DC 24...48 V $\approx$
AC 24 V ~	G0	2	black	BK	System neutral
DC 24...48 V $\approx$	Y	8	grey	GY	Signal in
	U	9	pink	PK	Signal out



Dimensions in mm

- = >100 mm Minimum clearance from ceiling or wall for mounting,  
 ►► = >200 mm connection, operation, maintenance etc.

Type	Valid from rev. no.
GSD161.9A	..A