

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

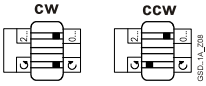
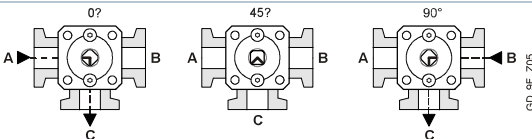
Features

- 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.

Use

Suitable for use with modulating controllers (DC 0/2...10 V).

Functions

GSD161.9A	
Control type	Modulating control (0/2...10 V)
Rotary direction	<p>Clockwise (cw) or counter-clockwise (ccw) direction depends on the setting of the rotary direction DIL switch</p>  <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	<p>NC (normally closed) ball valve</p> <p>DIL 3 set to "counterclockwise" (ccw) Flow = 0% at Y = 0 V Flow = 100% at Y = 10 V</p>
	<p>NO (normally open) ball valve</p> <p>DIL 3 set to "clockwise" (cw) Flow = 100% at Y = 0 V Flow = 0% at Y = 10 V</p>
Combination with 6-port control ball valves	<p>Rotary direction "counter-clockwise" (ccw)</p> <p>Y = 0 V Flow A – C = 100% (0°) Y = 5 V closed (45°) Y = 10 V Flow B – C = 100% (90°)</p>
	<p>Rotary direction "clockwise" (cw)</p> <p>Y = 0 V Flow B – C = 100% (0°) Y = 5 V closed (45°) Y = 10 V Flow A – C = 100% (90°)</p>
	
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.

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
GSD161.9A	S55499-D232	Modulating	AC 24 V ~ / DC 24...48 V –	DC 0/2...10 V –	yes	–	–	yes

Accessories / Spare parts

Spare parts

Individual spare parts are not available. Components of the accessory kit ASK77.5 ¹⁾, available ²⁾ 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

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

²⁾ As of August 2017.

Accessories

Type	Stock no.	Description
ALJ100	S55846-Z115	Temperature adapter for ball valves

Equipment combinations

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

Control ball valves with:						GSD161.9A	
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"	–	–	0,25...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		

¹⁾ Data sheet N4211

²⁾ Data sheet N4212

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

VWG41..	k_{vs} left [m ³ /h]	k_{vs} right [m ³ /h]	DN	GSD161.9A Δp_{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		

Product documentation


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>

Notes

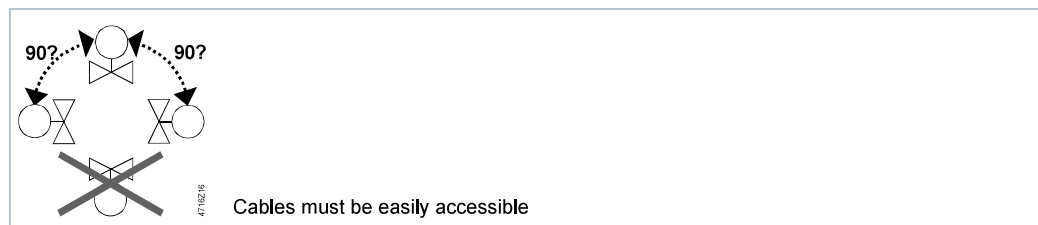
Safety

	<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.

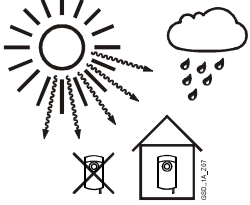
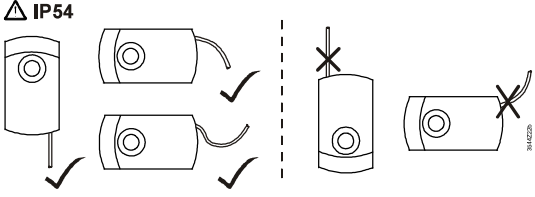

Mounting

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


Orientation



Protection against weather, humidity and dirt

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

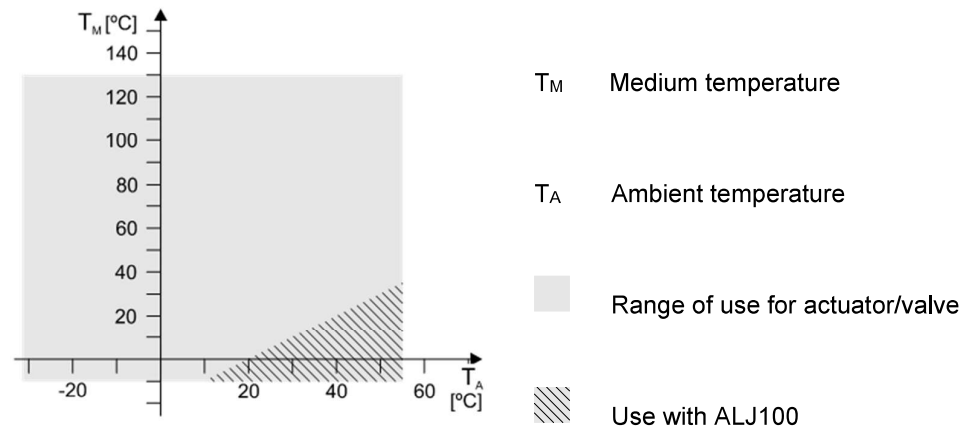
Installation

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

Engineering

GSD161.9A actuators may only be used at medium temperatures $> 0\text{ }^{\circ}\text{C}$.

If condensation occurs at the mounting site, the use of the temperature adapter ALJ100 is recommended in order to protect the actuator.



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 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

The actuators GSD161.9A are maintenance-free.

Disposal



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.

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

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	2.4 VA / 1.4 W
	holding	1.2 VA / 0.7 W
Functional data		
Nominal torque		2 Nm
Nominal rotational angle		90° / 95 ± 2°
Runtime at nominal rotational angle 90°		30 s
Duty cycle		100 %
Mechanical life		100 000 cycles
Permissible medium temperature in the valve in combination with GSD161.9A actuators		0...120 °C
Inputs		
Positioning signal		
Input voltage	(wires 8-2/Y-G0)	DC 0/2...10 V –
Current consumption		0.1 mA
Input resistance		>100 kΩ
Outputs		
Position indicator		
Output signal	(wires 9-2/U-G0)	
Output voltage U		DC 0...10 V –
Max. output current		DC ±1 mA
Protected against faulty wiring		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
Degree of protection		
Insulation class		III as per EN 60730
Housing protection		IP54 as per EN 60529
Environmental conditions		
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
Standards, directives and approvals		
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 ²⁾

Standards, directives and approvals	
RCM Conformity	A5W00004363 ²⁾
EAC Conformity	Eurasian conformity
UL	UL as per UL 60730 http://ul.com/database cUL ¹⁾ as per CSA-C22.2 No. 24-93

Environmental compatibility
The product environmental declaration A5W00030346-A ²⁾ 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. 9

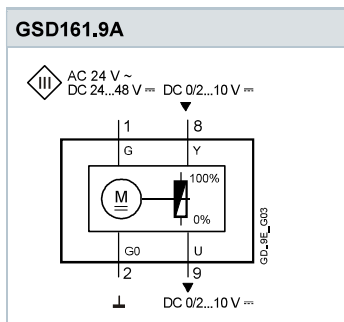
Weight	
Without packaging	0.65 kg

¹⁾ Permitted only to DC 30 V \approx

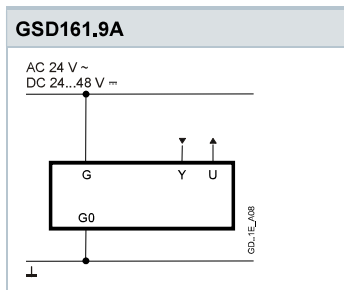
²⁾ The documents can be downloaded from <http://siemens.com/bt/download>.

Diagrams

Internal Diagram



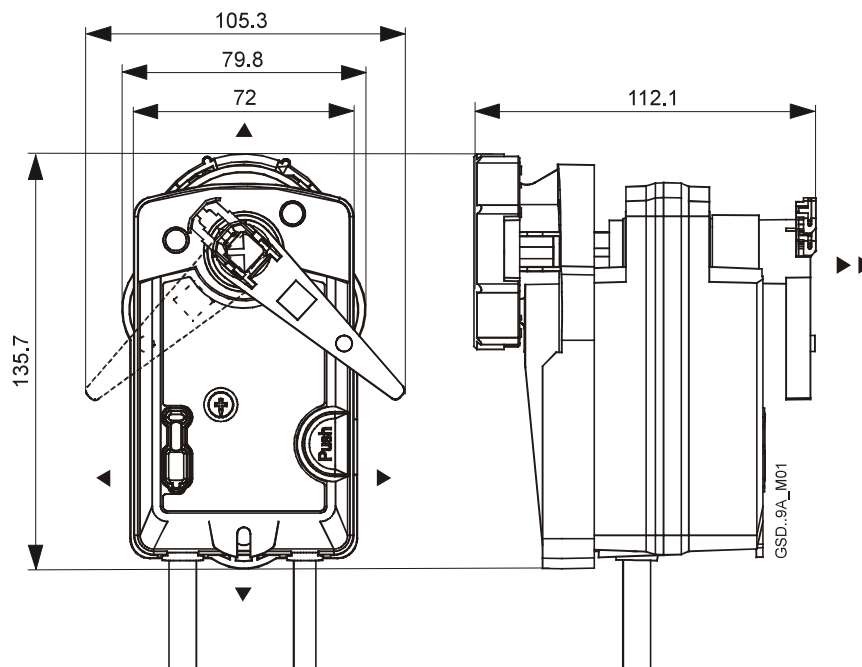
Connection diagram



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 ~ DC 24...48 V \approx	G0	2	black	BK	System neutral
	Y	8	grey	GY	Signal in
	U	9	pink	PK	Signal out

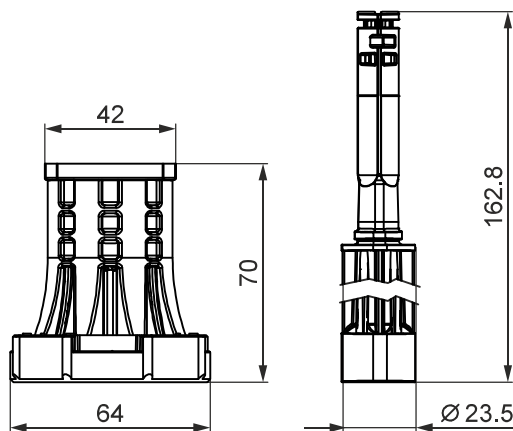
Actuator



Dimensions in mm

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

Temperature adapter (optional)



Revision numbers

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

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