SIEMENS

ACVATIX™

Rotary actuators for ball valves

GLD161.9E..

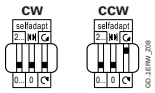
Electromotoric rotary actuators for modulating control.
Used in heating, ventilation and air conditioning plants.

- For 2-port and 3-port control ball valves, internally threaded connections (VAI61.. and VBI61..) or externally threaded connections (VAG61.. and VBG61..), DN15 to DN50
- Nominal torque 8 Nm
- Operating voltage GLD161.9E AC 24 V ~ / DC 24…48 V ⎓
- Operating voltage GLD161.9E/MO AC 24 V ~ / DC 24 V ⎓
- GLD161.9E/MO: RS-485 for Modbus RTU communication
- Pre-wired with 0.9 m long connection cables

Features

- 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

Function	161.9E	161.9E/MO
Control type	Modulating control (0/2…10 V)	Modbus RTU
Rotary direction	Clockwise or counter-clockwise direction depends … … on the setting of the rotary direction DIL switch  … 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.	- -
	NC (normally closed) ball valve	-
	DIL 3 set to “counter-clockwise” (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	-
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.	
Modbus RTU (RS-485), not galvanically isolated		Setpoint 0...100 % valve position Actual value 0...100 % for valve position Override control Open / Close / Min / Max / Stop Setpoint monitoring and backup mode

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	Position indicator U = DC 0…10 V –	Self-adaption of rotational angle range	Aux. switches	Rotary direction switch
GLD161.9E	S55499-D278	Modulating DC 0/2...10 V ⎓	AC 24 V ~ / DC 24…48 V ⎓	yes	yes	–	yes
GLD161.9E/MO	S55499-D695	Modbus RTU	AC 24 V ~ / DC 24 V ⎓				

Accessories / Spare parts

Spare parts

Individual spare parts are not available. Components of the accessory kit ASK77.3 [1)], available as an accessory, can however be used for spare parts.

Description	Components
ASK77.3 Accessory Kit BV for GxBxx1.9E	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.

Accessories

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

Equipment combinations

GLD161.9E.. and VA..61..
2-port control ball valves

Control ball valves with:				k_{vs} [m^3/h]	DN	GLD161.9E..	
internal threads [1)]	Rp	external threads [2)]	G..B			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		
VAI61.32..	Rp 1¼”	**VAG61.32..**	G 2 B	10…25	32		1000
VAI61.40..	Rp 1½”	**VAG61.40..**	G 2 ¼ B	16…40	40		800
VAI61.50..	Rp 2”	**VAG61.50..**	G 2 ¾ B	25…63	50		600

GLD161.9E.. and VB..61..
3-port control ball valves

Control ball valves with:				k_{vs} [m³/h]	DN	GLD161.9E..	
internal threads [1]	Rp	external threads [2]	G..B			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

Product documentation

Topic	Title	Document ID
Data sheet	Rotary actuators for ball valves	A6V11171770_en--
Mounting instructions	GLD..9E..	A6V11171776_----
Mounting instructions	VAI61.. / VBI61..	M4211
Mounting instructions	VAG61.. / VBG61..	M4212

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

http://siemens.com/bt/download

Notes

Safety

⚠ Caution

National safety regulations

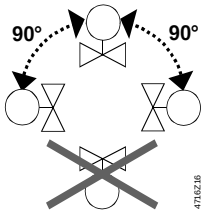
Failure to comply with national safety regulations may result in personal injury and property damage.

- Observe national provisions and comply with the appropriate safety regulations.
- Use only properly trained technicians for mounting, commissioning, and servicing.

Mounting

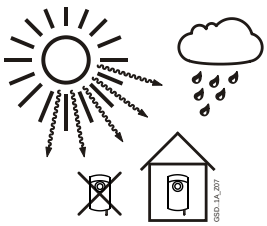
Both ball valve and rotary actuator can easily be assembled at the mounting location. Neither special tools nor adjustments are required.

Orientation

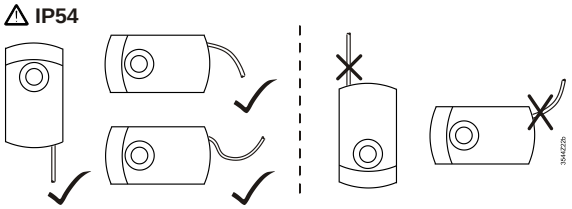


Cables must be easily accessible

Protection against weather, humidity and dirt



Protection against direct sunlight and rain



Correct mounting position and cable connection

Protection only with closed cover!

Installation

⚠ WARNING

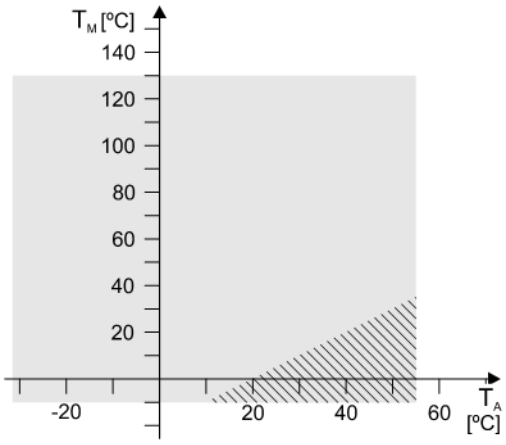
No internal line protection for supply lines to external consumers

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.

Engineering

If condensation occurs at the mounting site, the use of the temperature adapter ALJ100 is recommended in order to protect the actuator. If the medium temperature is ≤ 0 °C, the adapter shaft must be greased with silicon grease.



T_M Medium temperature

T_A Ambient temperature

Range of use for actuator/valve

Use with ALJ100

GLD161.9E/MO

The Modbus converter is designed for analog control at 0...10 V.

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 GLD161.9E.. 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.

Technical data

Power supply		
Operating voltage (SELV/PELV) / Frequency	GLD161.9E	AC 24 V ~ ±20 % (19,2…28,8 V ~) / 50/60 Hz DC 24…48 V ⎓ ±20 % (19,2…57,6 V ⎓) [1)]
	GLD161.9E/MO	AC 24 V ~ ±20 % (19,2…28,8 V ~) / 50/60 Hz DC 24 V ⎓ ±20 % (19,2…28,8 V ⎓)
Power consumption	running	4.9 VA / 1.8 W
	holding	0.5 W

Function data	
Nominal torque Maximum torque (blocked)	8 Nm 16 Nm
Nominal rotary angle (with position indication) Maximum rotary angle (mechanic limitation)	90° 95° ± 2°
Runtime for 90° rotary angle	30 s
Actuator sound power level	32 dB(A)

Inputs		
Positioning signal Input voltage Current consumption Input resistance	(wires 8-2/Y-G0)	 DC 0/2…10 V ⎓ 0.1 mA >100 kΩ
Max. permissible input voltage Protected against faulty wiring Hysteresis		DC 35 V ⎓ limited to DC 10 V ⎓ max. AC 24 V ~ 60 mV

Communication GLD161.9E/MO		
Communication protocol		
Modbus RTU		RS-485, not galvanically isolated
Number of nodes		Max. 32
Address range		1...248 / 255
	Factory setting	255
Transmission formats		1-8-E-1 / 1-8-O-1 / 1-8-N-1 / 1-8-N-2
	Factory setting	1-8-E-1
Baud rates (kbaud)		Auto / 9.6 / 19.2 / 38.4 / 57.6 / 76.8 / 115.2
	Factory setting	Auto
Bus termination		120 Ω electronically switchable
	Factory setting	Off

Outputs		
Position indicator Output signal Output voltage U Max. output current Protected against faulty wiring	(wires 9-2/U-G0)	 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	III as per EN 60730
Housing protection	IP54 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 3K5 / 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)	A5W00026944 [2)]
UK Conformity (UKCA)	A5W00219360A [2)]
RCM Conformity	A5W00026948 [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 A5W00026068 [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. 10

Weight		
Without packaging		0.69 kg
	External Modbus converter	0.15 kg

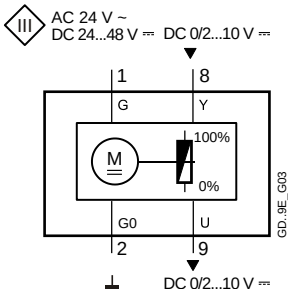
[1)] Permitted only to DC 30 V ⎓

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

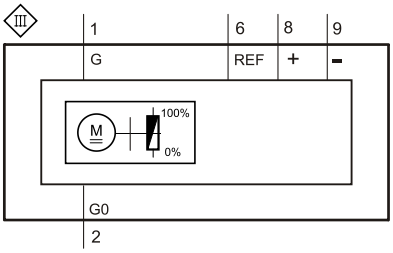
Diagrams

Internal Diagram

GLD161.9E..

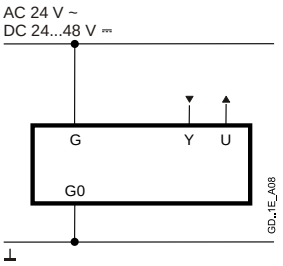


GLD161.9/MO

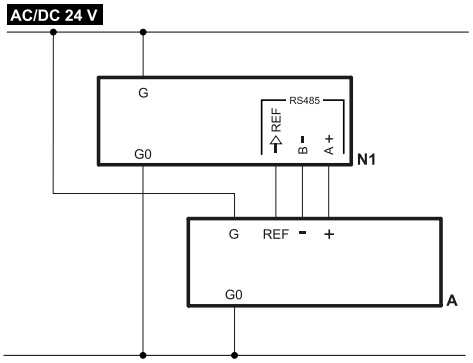


Connection diagram

GLD161.9E..



GLD161.9/MO Modbus

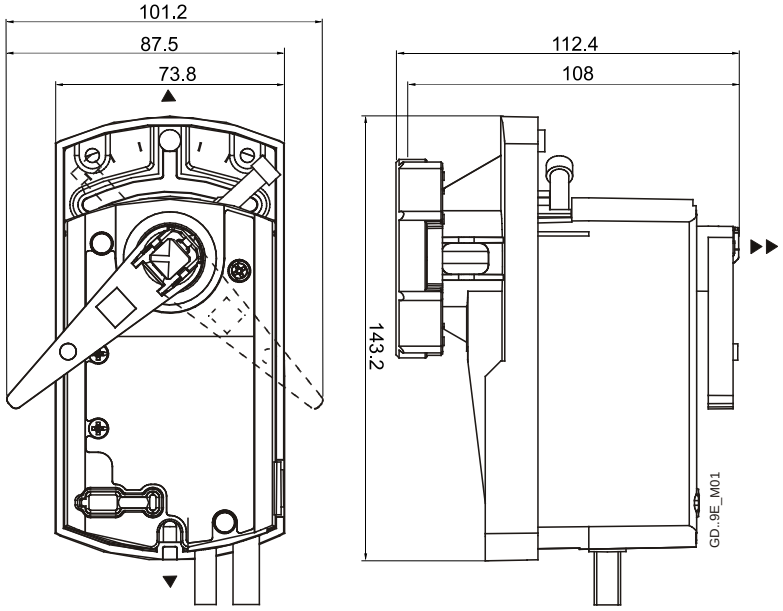


Cable labeling

Pin	Code	No	Color	Abbreviation	Meaning
Actuators AC 24 V ~ DC 24…48 V ⎓	G G0 Y U	1 2 8 9	red black grey pink	RD BK GY PK	System potential AC 24 V ~ / DC 24…48 V ⎓ System neutral Signal-in Signal-out
Modbus AC 24 V ~ DC 24 V ⎓	REF + -	6 8 9	purple gray pink	VT GY PK	Reference (Modbus RTU) Bus + (Modbus RTU) Bus – (Modbus RTU)

Dimensions

Actuator

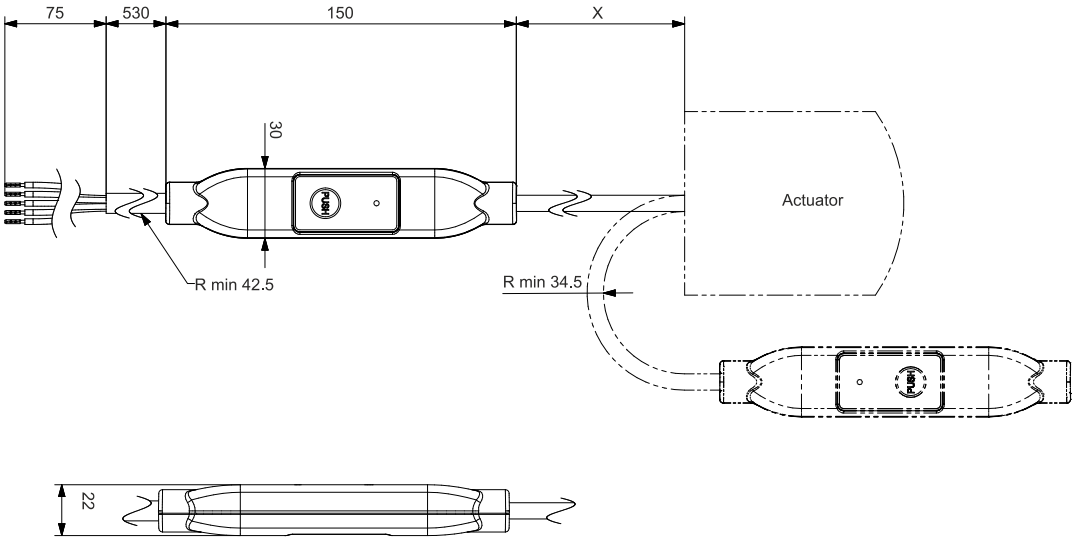


Dimensions in mm

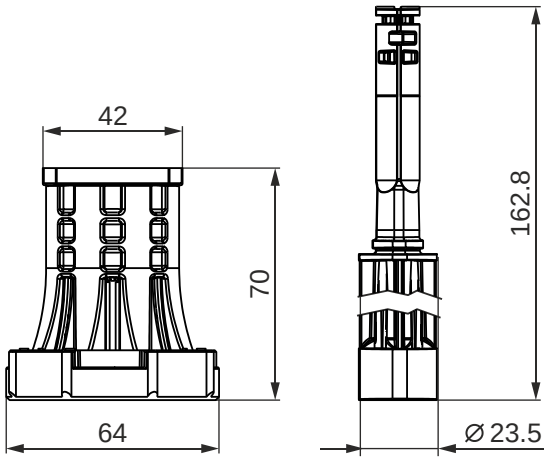
▶ = >100 mm
▶▶ = >200 mm

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

External Modbus converter



Temperature adapter (optional)



Revision numbers

Type	Valid from rev. no.
GLD161.9E	..F
GLD161.9E/MO	..F

Issued by
Siemens Switzerland Ltd
Smart Infrastructure
Global Headquarters
Theilerstrasse 1a
6300 Zug
Switzerland
Tel. +41 58-724 24 24
www.siemens.com/buildingtechnologies

Document ID A6V11171770_en--_d
Issue 2024-03-18