

Air damper actuators

GSD...1A



Electric motor-driven rotary actuators for open-close, three-position and modulating control

- 2 Nm nominal torque
- Operating voltage AC 24 V ~ / DC 24...48 V = or AC 100...240 V ~
- Prewired with 0.9 m connecting cable
- Gear train disengagement button for manual adjustment
- Position indication
- Auxiliary switches for auxiliary functions

Features

The rotary actuator drives the damper 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.
- Simple and reliable shaft integration.
- Mounting bracket included.

Use

Non-spring return rotary actuators. Application in ventilation and air conditioning plants to operate air dampers and air throttles.

- For damper areas up to 0.3 m², friction dependent.
- Suitable for use with modulating controllers (DC 0/2...10 V), open-close or three-position controllers.
- For directly driven zone dampers to control air flow in air ducts.
- We recommend a minimum pulse length of 500 ms on rotary actuators operated with 3-point control to ensure continuous and accurate operation.

Functions

Type	AC 24 V ~ / DC 24...48 V =	GSD14..1A	GSD16..1A
	AC 100...240 V ~	GSD34..1A	GSD361.1A
Control type	Open-close / three-position		Modulating control
Rotary direction	Clockwise (cw) or counter-clockwise (ccw) direction depends on the type of control. ... on the setting of the rotary direction switch. CW  CCW  GSD 14..218 With no power applied, the actuator remains in the respective position.		
	... on the setting of the rotary direction DIL switch CW  CCW  GSD 14..218 ... 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		
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.		
Auxiliary switches	Fixed position 5° / 85°		
Manual adjustment	The actuator can be manually adjusted by pressing the gear train disengagement button.		

Technical design/mechanical design

Housing

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

Type summary

Type	Stock number	Control	Operating voltage	Positioning signal Y	Position indicator U = DC 0/2...10 V $\overline{\text{m}}$	Aux. switches	Rotary direction switch	Aux. power supply
GSD141.1A	S55499-D281	Open-close or three-position	AC 24 V ~ / DC 24...48 V $\overline{\text{m}}$	—	—	—	yes	—
GSD146.1A	S55499-D227		AC 100...240 V ~			2		
GSD341.1A	S55499-D282					—		
GSD346.1A	S55499-D230					2		
GSD161.1A	S55499-D228	Modulating	AC 24 V ~ / DC 24...48 V $\overline{\text{m}}$	DC 0/2...10 V $\overline{\text{m}}$	yes	—	yes	—
GSD166.1A	S55499-D229		AC 100...240 V ~		yes	2		yes
GSD361.1A	S55499-D231				yes	—		

Product documentation

Topic	Title	Document ID
Data sheet	Air damper actuators GSD..1A	A6V10636055_en--
Mounting instructions	Rotary-type actuator GSD..1A	A6V10636060_----

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.

Engineering

Auxiliary switches

Auxiliary switches cannot be added in the field.

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.

Maintenance

The actuators GSD..1A 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 GSD14..1A / GSD16..1A		
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	GSD14..1A	2.2 VA / 1.2 W
	GSD16..1A	2.4 VA / 1.4 W
Power consumption holding	GSD14..1A	1 VA / 0.5 W
	GSD16..1A	1.2 VA / 0.7 W

Power supply GSD34..1A / GSD361.1A		
Operating voltage / Frequency		AC 100...240 V ~ ±10 % (90...264 V ~) / 50/60 Hz
Power consumption running	GSD34..1A	4.5 VA / 1.8 W
	GSD361.1A	3.7 VA / 1.4 W
Power consumption holding	GSD34..1A	2.4 VA / 0.9 W
	GSD361.1A	1.6 VA / 0.5 W

Functional data	
Nominal torque	2 Nm
Maximum torque	5 Nm
Nominal rotational angle	90°
Maximum rotational angle (mechanically limited)	95° ± 2°
Runtime at nominal rotational angle 90°	30 s
Duty cycle	100 %
Direction of rotation	Clockwise / counterclockwise
Mechanical life	100 000 cycles
Actuator sound power level	35 dB(A)

Inputs		
Positioning signal for GSD14..1A		
Operating voltage	(wires 1-6/G-Y1)	clockwise
AC 24 V ~ / DC 24...48 V $\overline{\text{---}}$	(wires 1-7/G-Y2)	counterclockwise
Positioning signal for GSD34..1A		
Operating voltage	(wires 4-6/N-Y1)	clockwise
AC 100...240 V ~	(wires 4-7/N-Y2)	counterclockwise
Positioning signal for GSD16..1A		
Input voltage	(wires 8-2/Y-G0)	DC 0/2...10 V $\overline{\text{---}}$
Current consumption		0.1 mA
Input resistance		>100 k Ω
Outputs		
Position indicator		
Output signal (GSD16..1A)	(wires 9-2/U-G0)	DC 0...10 V $\overline{\text{---}}$ DC ± 1 mA max. AC 24 V ~ / DC 24...48 V $\overline{\text{---}}$
Output signal (GSD361.1A)	(wires 9-2/U-G-)	
Output voltage U		
Max. output current		
Protected against faulty wiring		max. AC 24 V ~ / DC 24...48 V $\overline{\text{---}}$
Aux. power supply (GSD361.1A)	(wires 1-2/G+-G-)	DC 24 V $\overline{\text{---}}$ ± 20 %, max. 10 mA
Mechanical life		
Full cycles		100'000
Partial cycles		5'000'000
Auxiliary switches		
Switching voltage		AC 24...250 V ~ / DC 12...30 V $\overline{\text{---}}$
Contact rating		6 A resistive, 2 A inductive, min. 10 mA @ AC 4 A resistive, 2 A inductive, min. 10 mA @ DC 30 V $\overline{\text{---}}$ 0.8 A res., 0.5 A inductive, min. 10 mA @ DC 60 V $\overline{\text{---}}$
Electric strength auxiliary switches against housing		AC 4 kV
Factory switches setting:	Switch A / Switch B	5° / 85° (fixed position)
Connection cables		
Cable length		0.9 m
Cross-section		0.75 mm ²
Degree of protection		
Insulation protective class		As per EN 60730
AC 24 V ~ / DC 24...48 V $\overline{\text{---}}$		III
AC 100...240 V ~		II
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 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	EN 60730 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⁾
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
Damper shaft	
round	8...15 mm
Square	6...11 mm
Min. shaft length	20 mm
Shaft hardness	<300 HV

Weight

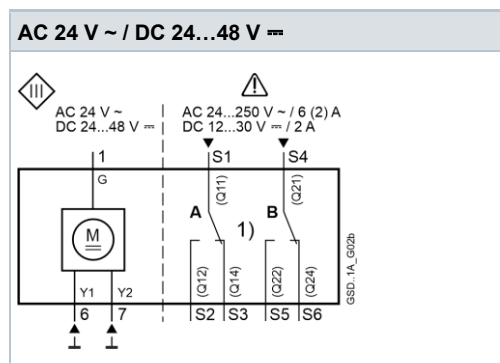
Excl. packaging	Max. 0.55 kg, without switches Max. 0.7 kg, with switches
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¹⁾ Permitted only to DC 30 V $\overline{\text{---}}$

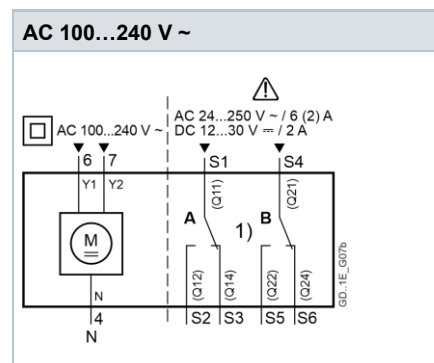
²⁾ The documents can be downloaded from <http://siemens.com/bt/download>.

Internal Diagrams

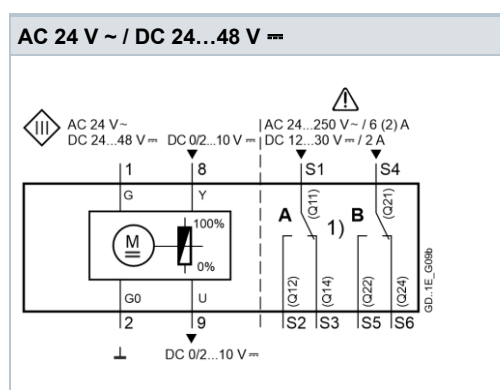
GSD14..1A (Open-close, three-p.)



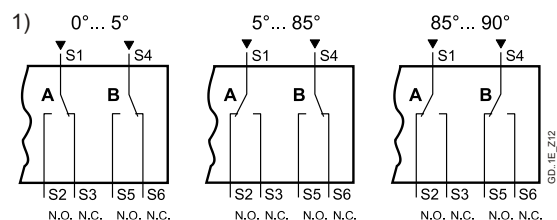
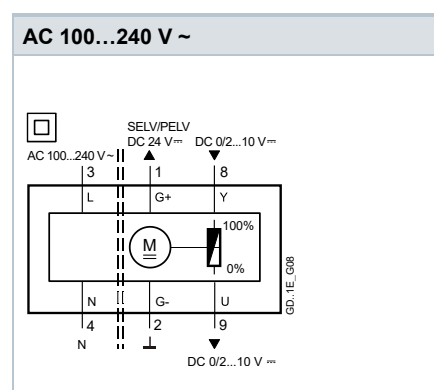
GSD34..1A (Open-close, three-p.)



GSD16..1A (Modulating control)



GSD361.1A (Modulating control)



Actuator Position	Switch A Common S1 connected to	Switch B Common S4 connected to
0°...5°	S3	S6
5°...85°	S2	S6
85°...90°	S2	S5

Connection diagrams

GSD1..1A (AC 24 V ~ / DC 24...48 V =)

Open-close, single wire control Single Pole Single Throw (SPST)	Open-close, two wire control Single Pole Double Throw (SPDT)	Three-position control	Modulating control

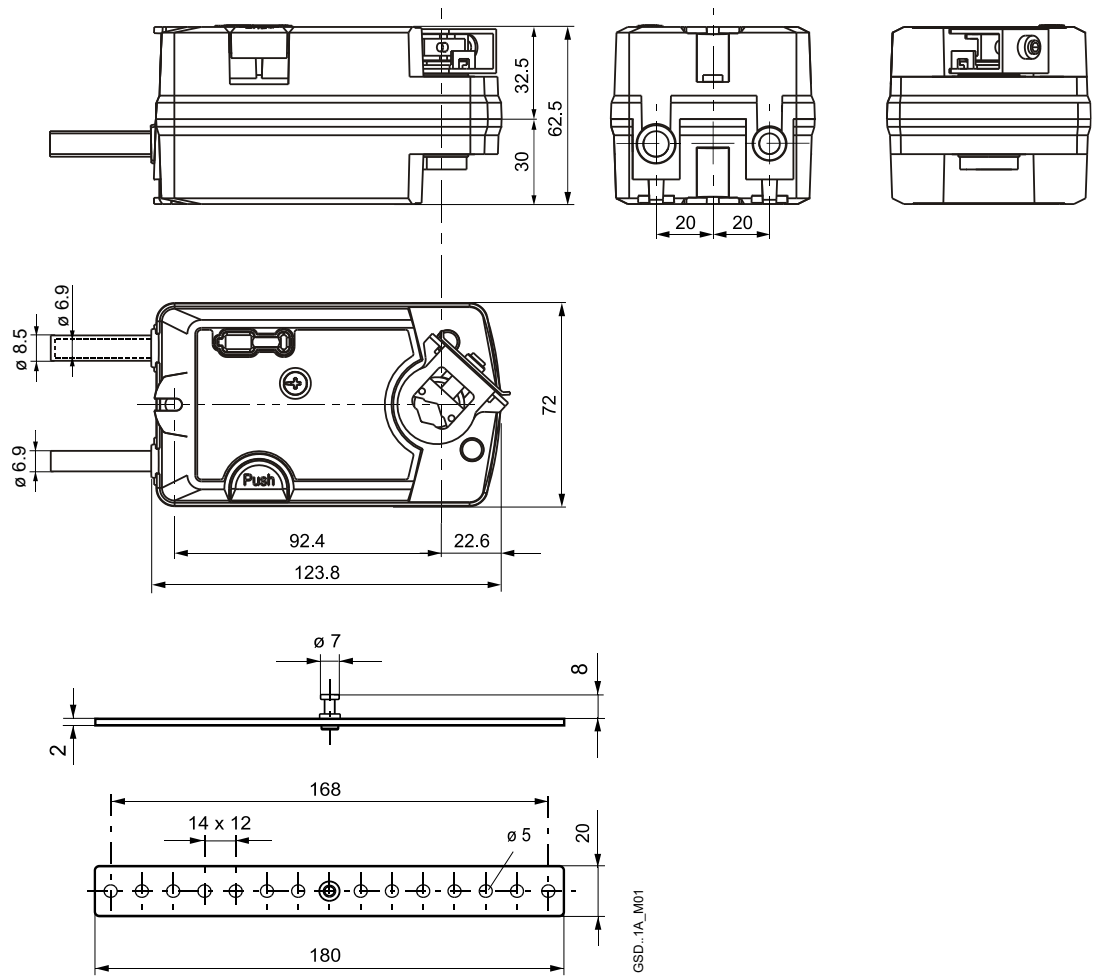
GSD3..1A (AC 100...240 V ~)

Open-close, single wire control Single Pole Single Throw (SPST)	Open-close, two wire control Single Pole Double Throw (SPDT)	Three-position control	Modulating control

Cable labeling

Connection	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 =	Y1	6	purple	VT	Positioning signal AC/DC 0 V, "clockwise" (GSD14..1A)
	Y2	7	orange	OG	Positioning signal AC/DC 0 V, "counterclockwise" (GSD14..1A)
	Y	8	grey	GY	Signal in (GSD16..1A)
	U	9	pink	PK	Signal out (GSD16..1A)
Actuators	L	3	brown	BR	Line AC 100...240 V ~
AC 100...240 V ~	N	4	light blue	BU	Neutral conductor
	Y1	6	black	BK	Positioning signal AC 100...240 V ~, "clockwise" (GSD34..1A)
	Y2	7	white	WH	Positioning signal AC 100...240 V ~, "counterclockwise" (GSD34..1A)
	G+	1	red	RD	System potential DC 24 V = (GSD361.1A)
	G-	2	black	BK	System neutral (GSD361.1A)
	Y	8	grey	GY	Signal in (GSD361.1A)
	U	9	pink	PK	Signal out (GSD361.1A)
Auxiliary switch	Q11	S1	grey/red	GY RD	Switch A input
	Q12	S2	grey/blue	GY BU	Switch A normally open contact
	Q14	S3	grey/pink	GY PK	Switch A normally closed contact
	Q21	S4	black/red	BK RD	Switch B input
	Q22	S5	black/blue	BK BU	Switch B normally open contact
	Q24	S6	black/pink	BK PK	Switch B normally closed contact

Dimensions



Dimensions in mm

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