

OpenAir™

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.

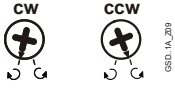
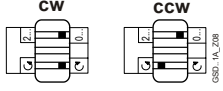
- Brushless, robust DC motors ensure reliable operation regardless of load.
- The rotary actuators do not require an end position switch, are overload proof, and remain in place upon reaching the end stop.
- The gears are maintenance free and low noise.
- Simple and reliable shaft integration.
- Mounting 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 ...		
	<p>... on the type of control. ... on the setting of the rotary direction switch.</p>  <p>With no power applied, the actuator remains in the respective position.</p>	<p>... 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>	
Position indication: Mechanical	Rotary angle position indication by a position indicator/hand lever.		
Position indication: Electrical	<ul style="list-style-type: none"> • 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 $\overline{\text{=}}$	Aux. switches	Rotary direction switch	Aux. power supply
GSD141.1A	S55499-D281	Open-close or three-position	AC 24 V ~ / DC 24...48 V $\overline{\text{=}}$	-	-	-	yes	-
GSD146.1A	S55499-D227		-					
GSD341.1A	S55499-D282		AC 100...240 V ~			-		
GSD346.1A	S55499-D230		2					
GSD161.1A	S55499-D228	Modulating	AC 24 V ~ / DC 24...48 V $\overline{\text{=}}$	DC 0/2...10 V $\overline{\text{=}}$	yes	-	yes	-
GSD166.1A	S55499-D229		yes		2			
GSD361.1A	S55499-D231		AC 100...240 V ~		yes	-		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


	<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.

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 <ul style="list-style-type: none">• 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

 	<p>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.</p> <ul style="list-style-type: none">• Dispose of the device through channels provided for this purpose.• Comply with all local and currently applicable laws and regulations..
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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 =	(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 =
Current consumption		0.1 mA
Input resistance		>100 kΩ

Outputs		
Position indicator		
Output signal (GSD16..1A)	(wires 9-2/U-G0)	DC 0...10 V = DC ±1 mA max. AC 24 V ~ / DC 24...48 V =
Output signal (GSD361.1A)	(wires 9-2/U-G-)	
Output voltage U		
Max. output current		
Protected against faulty wiring		
Aux. power supply (GSD361.1A)	(wires 1-2/G+-G-)	DC 24 V = ±20 %, max. 10 mA

Auxiliary switches		
Switching voltage		AC 24...250 V ~ / DC 12...30 V =
Contact rating		6 A resistive, 2 A inductive, min. 10 mA @ AC 4 A resistive, 2 A inductive, min. 10 mA @ DC 30 V = 0.8 A res., 0.5 A inductive, min. 10 mA @ DC 60 V =
Electric strength auxiliary switches against housing		AC 4 kV
Factory switches setting:	Switch A / Switch B	5° / 85° (fixed position)

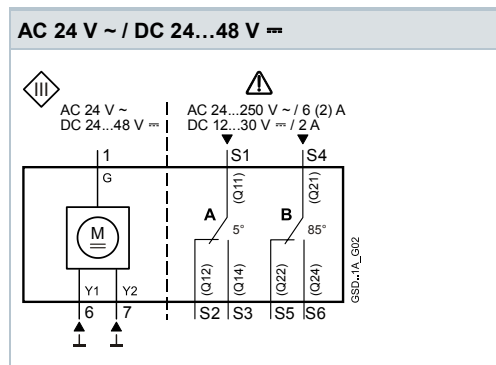
Connection cables	
Cable length	0.9 m
Cross-section	0.75 mm ²
Degree of protection	
Insulation protective class AC 24 V ~ / DC 24...48 V = AC 100...240 V ~	As per EN 60730 III II
Housing protection	IP54 as per EN 60529
Environmental conditions	
Operation – Climatic conditions – Mounting location – Temperature (extended) – Humidity, non-condensing	IEC 60721-3-3 Class 3K5 Interior, weather-protected -32...+55 °C <95 % r.F.
Transportation – 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, 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 Square Min. shaft length Shaft hardness	8...15 mm 6...11 mm 20 mm <300 HV
Weight	
Excl. packaging	Max. 0.55 kg, without switches Max. 0.7 kg, with switches

¹⁾ Permitted only to DC 30 V =

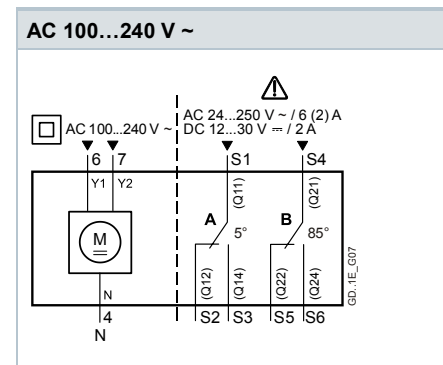
²⁾ The documents can be downloaded from <http://siemens.com/bt/download>.

Internal Diagrams

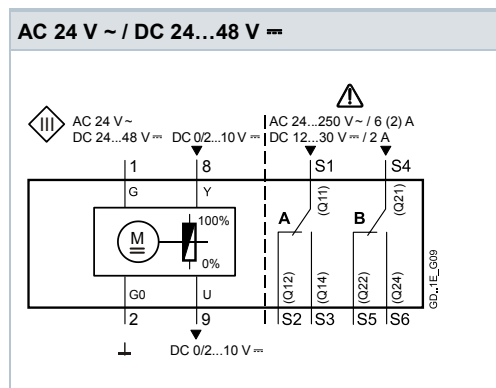
GSD14..1A (Open-close, three-p.)



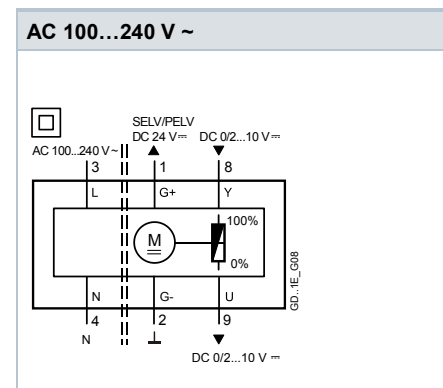
GSD34..1A (Open-close, three-p.)



GSD16..1A (Modulating control)



GSD361.1A (Modulating control)



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
	Q12	S2	grey/blue	GY BU	Switch A normally closed contact
	Q14	S3	grey/pink	GY PK	Switch A normally open contact
	Q21	S4	black/red	BK RD	Switch B input
	Q22	S5	black/blue	BK BU	Switch B normally closed contact
	Q24	S6	black/pink	BK PK	Switch B normally open contact

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