

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.

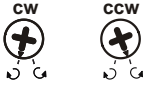
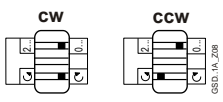
- Brushless, robust DC motors ensure reliable operation regardless of load.
- The rotary actuators do not require an end position switch, are overload proof, and remain in place upon reaching the end stop.
- The gears are maintenance free and low noise.
- Simple and reliable shaft integration.
- Mounting 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 m<sup>2</sup>, 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><small>GSD14..1A, 2018</small></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><small>GSD14..1A, 2018</small></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"> <li>• Output voltage U = DC 0/2...10 V is generated proportional to the rotary angle.</li> <li>• U depends on the rotary direction of the DIL switch setting.</li> </ul>		
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 =	Aux. switches	Rotary direction switch	Aux. power supply
GSD141.1A	S55499-D281	Open-close or three-position	AC 24 V ~ / DC 24...48 V =	-	-	-	yes	-
GSD146.1A	S55499-D227		2					
GSD341.1A	S55499-D282		-					
GSD346.1A	S55499-D230		2					
GSD161.1A	S55499-D228	Modulating	AC 24 V ~ / DC 24...48 V =	DC 0/2...10 V =	yes	-	-	
GSD166.1A	S55499-D229		yes		2			
GSD361.1A	S55499-D231		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


	<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>

## Engineering

### Auxiliary switches

Auxiliary switches cannot be added in the field.


## Installation

	<b>⚠ WARNING</b>
	<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>

## Maintenance

The actuators GSD..1A are maintenance-free.

## Disposal

	<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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## 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 =) <sup>1)</sup>
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..1.A		
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..1.A)	(wires 9-2/U-G0)	
Output signal (GSD361.1.A)	(wires 9-2/U-G-)	
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 =
Aux. power supply (GSD361.1A)	(wires 1-2/G+-G-)	DC 24 V = ±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 =
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 <sup>2</sup>
Degree of protection		
Insulation protective class		As per EN 60730
AC 24 V ~ / DC 24...48 V =		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

<b>Standards, directives and approvals</b>	
Electromagnetic compatibility (Applications)	For use in residential, commerce, light-industrial and industrial environments
EU Conformity (CE)	A5W00004362 <sup>2)</sup>
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

<b>Environmental compatibility</b>
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).

<b>Dimensions</b>	
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

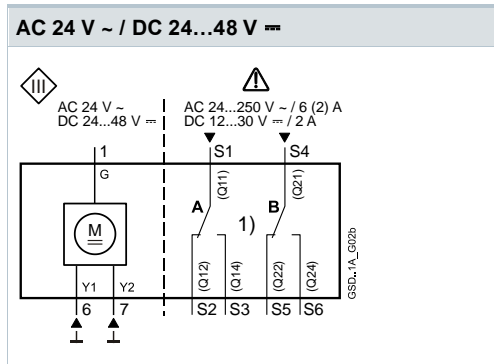
<b>Weight</b>	
Excl. packaging	Max. 0.55 kg, without switches Max. 0.7 kg, with switches

<sup>1)</sup> Permitted only to DC 30 V =

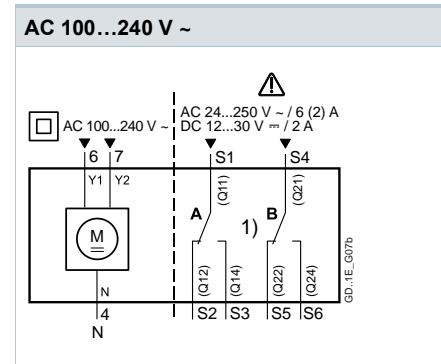
<sup>2)</sup> The documents can be downloaded from <http://siemens.com/bt/download>.

Internal Diagrams

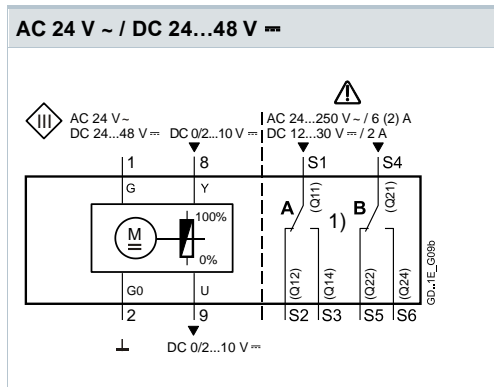
GSD14..1A (Open-close, three-p.)



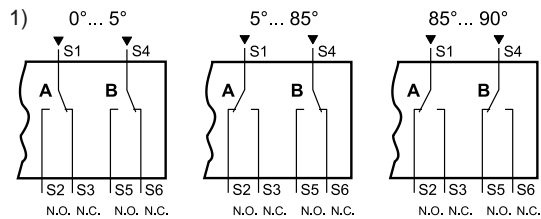
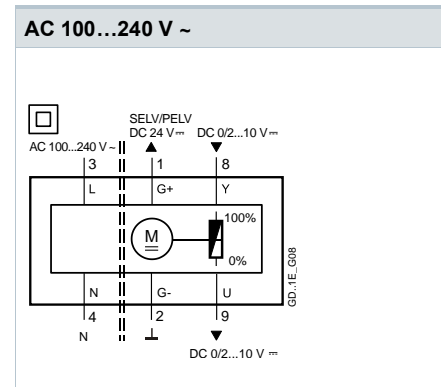
GSD34..1A (Open-close, three-p.)



GSD16..1A (Modulating control)



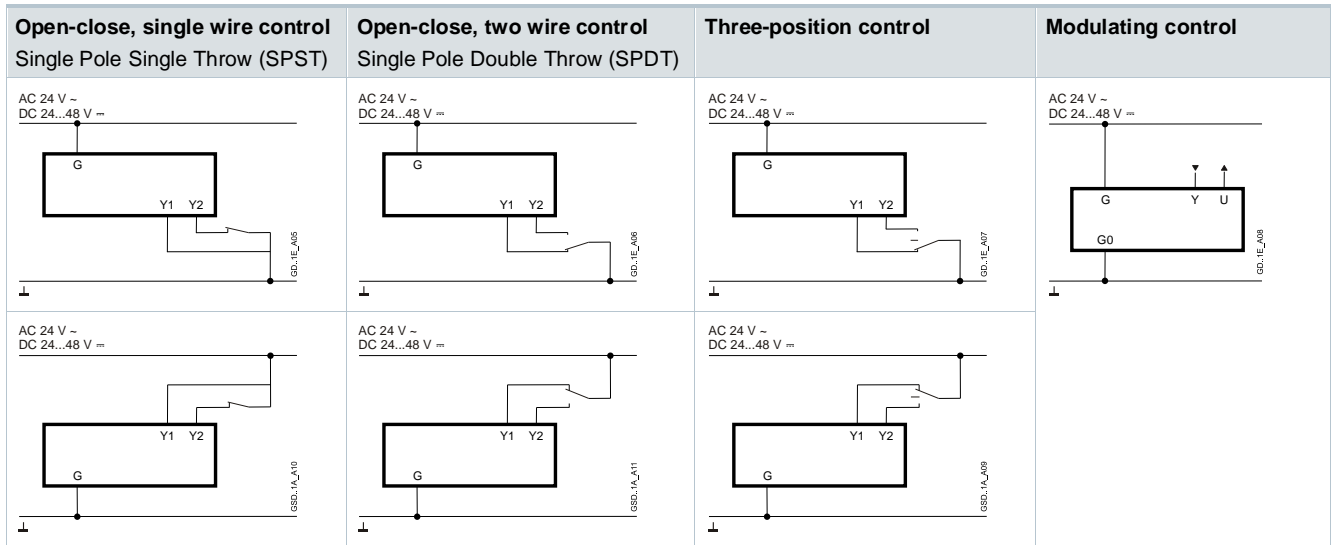
GSD361.1A (Modulating control)



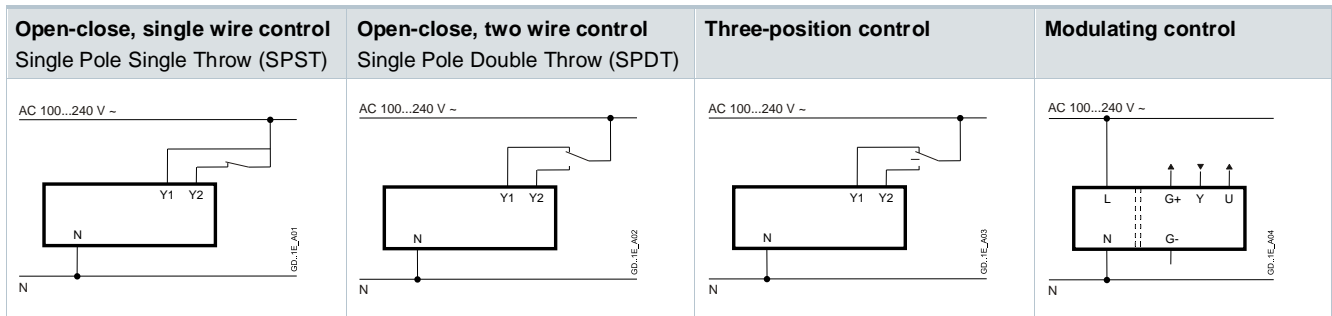
Actuator Position	Switch A Common S1 connected to	Switch B Common S4 connected to
0°...5°	S3	S6
5°...85°	S2	S6
85°...90°	S2	S5

## Connection diagrams

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



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

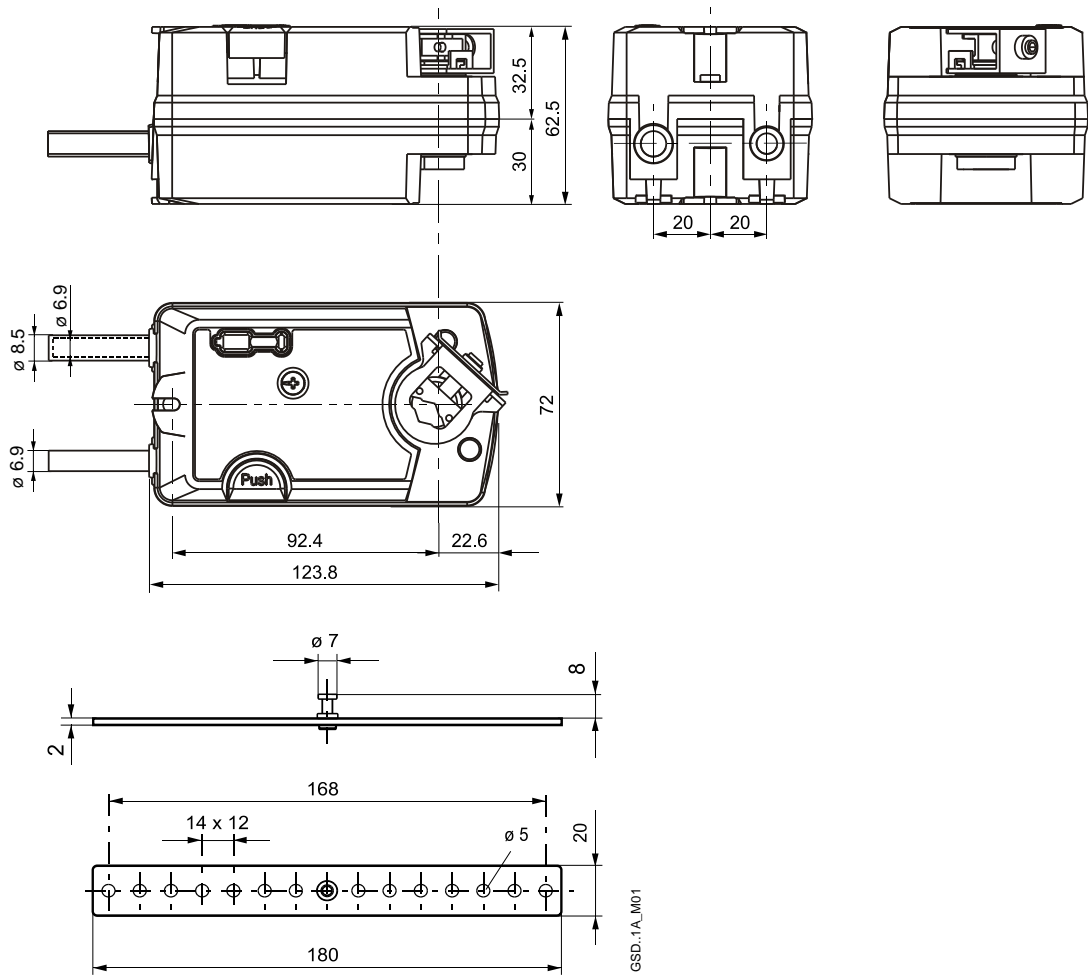


## Cable labeling

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 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

Issued by  
Siemens Switzerland Ltd  
Building Technologies Division  
International Headquarters  
Gubelstrasse 22  
6301 Zug  
Switzerland  
Tel. +41 41-724 24 24  
[www.siemens.com/buildingtechnologies](http://www.siemens.com/buildingtechnologies)

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Document ID    A6V10636055\_en--\_f  
Issue            2024-06-27