



OpenAir™

## Air damper actuators

## GSD...1

Rotary version, AC/DC 24 V and AC 230 V

GSD...1

- Electric motor-driven rotary actuators for open-close control (1-wire SPST)
- 2 Nm nominal torque
- AC/DC 24 V or AC 230 V rated voltage
- Prewired with 0.9 m connecting cable
- Slider for manual adjustment
- Auxiliary switch for auxiliary functions

## Use

- For damper areas up to 0.3 m<sup>2</sup>, friction dependent.
- For directly driven zone dampers to control air flow in air ducts.

## Accessories / Spare parts

- Rotation Limiter Kit ASK74.11

## Type summary

Non-spring return rotary actuators GSD	Type	Operating voltage	Control signal	Cable length	Shaft diameter	Auxiliary switch
	GSD121.1A	AC/DC 24 V	Open-close *	0.9 m	8...15 mm	-
	GSD126.1A	AC/DC 24 V	Open-close *	0.9 m	8...15 mm	yes
	GSD321.1A	AC 230 V	Open-close *	0.9 m	8...15 mm	-
	GSD326.1A	AC 230 V	Open-close *	0.9 m	8...15 mm	yes

\* 1-wire, SPST: Single-pole, single-throw

Refer to „Internal Diagrams“, page 6.





## Functions

Type	<b>GSD121.1A</b> <b>GSD126.1A</b> <b>GSD321.1A</b> <b>GSD326.1A</b>
Control type	Open-close *
Rotary direction	Clockwise or counter-clockwise movement depends on the actuator's mounting position on the damper shaft...
Slider	Pressing the slider allows for manual actuator adjustment.
Auxiliary switch	GSD...6.1A: Set switching points at 5° or 85°.

\* 1-wire, SPST: Single-pole, single-throw

## Technical data

⚠ Power supply AC/DC 24 V	Operating voltage AC / frequency	AC 24 V ± 20% ; 50 / 60 Hz
	Operating voltage DC	DC 24 V ± 15%
	Power consumption	
	GSD121.1A / GSD126.1A: (running) (holding)	2 VA / 1.5 W 1 VA / 0.5 W
⚠ Supply voltage AC 230 V	Safety extra-low voltage (SELV) or Protective extra-low voltage (PELV) as per	HD 384
	Operating voltage / Frequency	AC 230 V ± 15%; 50/60 Hz
	Fuse for incoming supply line (fast)	2 A.
	Power consumption	
Functional data	GSD321.1A / GSD326.1A: (running) (holding)	12 VA / 2 W 12 VA / 2 W
	Nominal torque	2 Nm
	Maximum torque	6 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/counter-clockwise
Mechanical life	25 000 cycles	

Auxiliary switch	AC – Power	
	– Switching voltage	AC 24...230 V
	– Rated voltage resistive / inductive	6 A / 2 A
	No mixed operation AC 24 V / 230 V	
	DC – Power	
	– Switching voltage	DC 12...30 V
	– Rated current	DC 2 A
	– Factory switch setting:	
	– Switch A (set)	5°
	– Switch B (set)	85°
Connection cables	Cable length	0.9 m
	Cross-section	0.75 mm <sup>2</sup>
Housing type	Protection as per EN 60 529	IP40
Protection class	Insulation protective class	EN 60 730
	– AC 230 V	
	– AC/DC 24 V	
Environmental conditions	Operation	IEC 721-3-3
	– Climatic conditions	Class 3K5
	– Mounting location	Interior, weather-protected
	– Temperature (extended)	-32...+55 °C
	– Humidity, non-condensing	< 95% r.h.
	Transportation	IEC 721-3-2
	– Climatic conditions	Class 2K3
	– Temperature (extended)	-32...+70 °C
	– Humidity, non-condensing	< 95% r.h.
	Storage	IEC 721-3-1
	– Climatic conditions	Class 1K3
	– Temperature (extended)	-32...+50 °C
	– Humidity, non-condensing	< 95% r.h.
Standards	Mechanical conditions	Class 2M2
	Product safety	
	Automatic electrical controls for household and similar use (Type 1)	IEC/EN 60 730-2-14
	Electromagnetic compatibility	
	– Immunity	IEC/EN 61 000-6-2
	– Emissions	IEC/EN 61 000-6-3
	 C-tick conformity as per	
	– Australian EMC Framework	Radio communication act 1992
	– Radio Interference Emission Standard	AS/NZS 3548
	 CE conformity as per	
– EMC directive	2004/108/EEC	
– Low voltage directive	2006/95/EEC	
Dimensions	Actuator	
	W × H × D	See "Dimensions"
	Damper shaft	
	– Rectangular	6...11 mm
	Min. length	20 mm
	Max. shaft hardness	300 HV
	– Round	8...15 mm
Min. length	20 mm	
Max. shaft hardness	300 HV	
Weight	Excl. packaging	
	– GSD..21.1A	0.440 kg
	– GSD..26.1A	0.560 kg

## Mechanical design

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### Basic components

Housing	Fiberglass-reinforced plastic
Gear train	Maintenance-free, noise-free

### Engineering notes

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#### STOP

This section explains general and system-specific regulations for mains and operating voltages. It also contains important information on your own safety and that of your plant.

#### Intended use

Use these actuators as described in the basic system documentation for the applied control systems. In addition, take account of all actuator-specific features and conditions as described in the brief description on the front page of this data sheet (bold print) as well as the sections "Use", "Engineering notes", and "Technical data".



Sections flagged with the warning symbol to the left contain safety-related requirements and restrictions that must be adhered to at all times to prevent physical injury and equipment damage.

#### AC/DC 24 V supply

Operate the actuators only on safety extra-low voltage (SELV) or protective extra-low voltage (PELV) as per HD 384.

#### AC 230 V supply

The actuators are double-insulated and there is no connection for the protective ground.

#### Auxiliary switch

Apply only mains voltage or protective extra-low voltage to the switching outputs of the auxiliary switch. Mixed operation is not allowed. Operation at various phases is not allowed.

#### CAUTION

##### **Do not open the actuators!**

- The actuators are maintenance-free.
- Only the manufacturer may carry out repair work.
- Opening the actuator will void the warranty.

#### 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.

#### Required actuator type

Selection of the actuator depends on several torque factors. After obtaining the damper torque rating (Nm/m<sup>2</sup>) from the manufacturer and determining the damper area, calculate the total torque required to move the damper as follows:

Non-spring return damper actuators:

IF total torque (SF <sup>1</sup> ):	Use type:
≤ 2 Nm	GSD...1.1A / GSD...6.1A (2 Nm) GXD...1 (1,5 Nm)
≤ 5 Nm	GDB...1 (5 Nm)
≤ 10 Nm	GLB...1 (10 Nm)
≤ 15 Nm	GEB...1 (15 Nm)
≤ 25 Nm	GBB...1 (25 Nm)
≤ 35 Nm	GIB... 1 (35 Nm)

<sup>1</sup> Safety factor SF: When calculating the required torque, non-definable variables such as slight misalignment, damper age, etc. must be included as a safety factor. We recommend a safety factor of 0.8 (or 80 % of the torque characteristic).

Transformer sizing for AC 24 V	<p>Use safety insulating transformers as per EN 61 558 with double insulation designed for 100 % duty to supply SELV or PELV circuits..</p> <p>Observe all local safety rules and regulations pertaining to the sizing and protection of transformers.</p> <p>Determine the transformer power consumption by adding up the power consumption in VA for all actuators used.</p>
Wiring and commissioning	Refer to the sections "Commissioning notes" and "Wiring diagrams" in this data sheet as well as to the HVAC job drawings.

### Mounting notes

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Mounting instructions	All information and steps to properly prepare and mount the actuator are listed in the mounting instructions supplied with the actuator.
Mounting position	Mount the actuator in a position which ensures easy access to the cables and to the shaft adapter. See "Dimensions".
Damper shafts	Information on minimum length and diameter for the damper shaft is available in the "Technical data" section.
Manual adjustment	Pressing the eject button allows you to manually adjust the actuator.

### Commissioning notes

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Reference	<p>For commissioning, the following reference documentation must be available::</p> <ul style="list-style-type: none"> <li>• This data sheet.</li> <li>• HVAC job diagram.</li> </ul>
Environmental conditions	Check to ensure that all permissible values as contained in the section "Technical data" have been observed.
Mechanical check	<ul style="list-style-type: none"> <li>• Check for proper mounting and ensure that all mechanical settings correspond to the plant-specific requirements. Additionally, ensure that the dampers are tightly closed when in the closed position.</li> <li>• Check the direction of rotation.</li> <li>• Fasten the actuator securely to avoid twisting and blocking of the actuator.</li> </ul>
Electrical check	<ul style="list-style-type: none"> <li>• Check to ensure that the cables are connected in accordance with the plant wiring diagram (see "Wiring diagrams").</li> <li>• The operating voltage AC/DC 24 V (SELV/PELV) or AC 230 V must be within the tolerance values.</li> </ul>

### Functional check

GSD121.1A  
GSD126.1A

Power supply AC/DC 24 V wires red (1), black (2)  
Positioning signal AC/DC 0 V

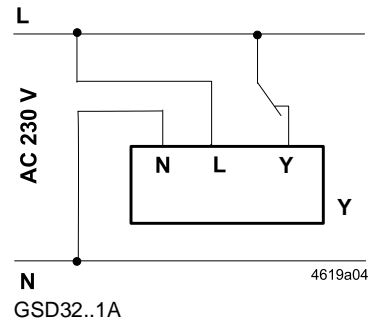
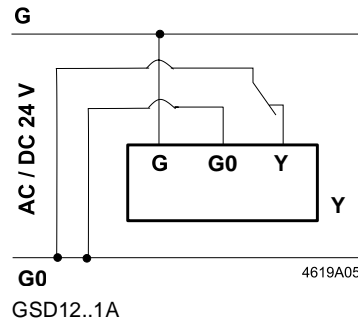
- Wire orange (7) ON: Actuator turns counter-clockwise
- Wire orange (7) OFF: Actuator turns clockwise

GSD321.1A  
GSD326.1A

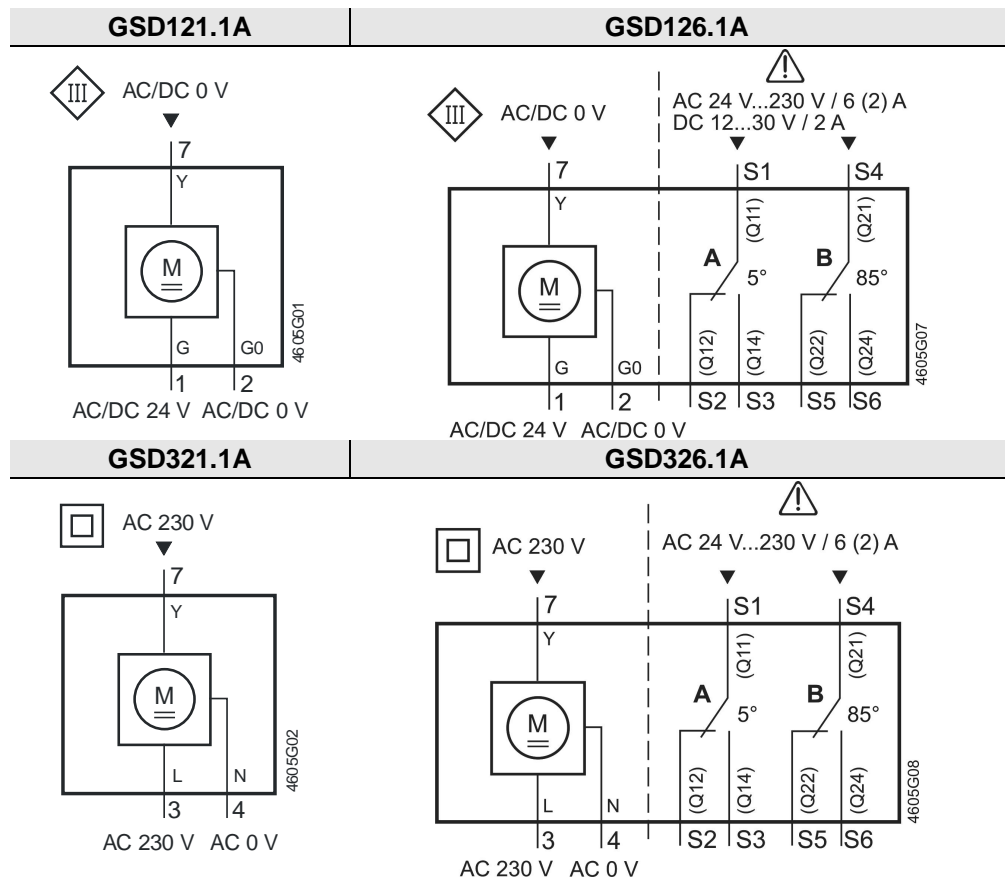
Power supply AC 230 V wires brown (3), blue (4)  
Positioning signal AC 230 V

- Wire white (7) ON: Actuator turns counter-clockwise
- Wire white (7) OFF: Actuator turns clockwise

### Internal Diagrams



### Wiring diagrams



## Cable labeling

Connection	Cable			Description	
	Code	No.	Color		
GSD121.1A GSD126.1A AC/DC 24 V	G	1	red	RD	System potential AC/DC 24 V
	G0	2	black	BK	System neutral
	Y	7	orange	OG	Positioning signal counter-clockwise AC/DC 0 V
GSD321.1A GSD326.1A AC 230 V	L	3	brown	BN	Phase AC 230 V
	N	4	blue	BU	Neutral conductor
	Y	7	white	WH	Positioning signal counter-clockwise AC 230 V
Auxiliary switch	Q11	S1	gray/red	GYRD	Switch A input
	Q12	S2	gray/blue	GYBU	Switch A NC contact
	Q14	S3	gray/pink	GYPK	Switch A NO contact
	Q21	S4	black/red	BKRD	Switch B input
	Q22	S5	black/blue	BKBU	Switch B NC contact
	Q24	S6	black/pink	BKPK	Switch B NO contact

## Dimensions

