SIEMENS

OpenAir™

Air damper actuators

GDD..1E, GLD..1E

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

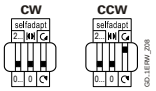
- Nominal torque 5 Nm / 8 Nm
- Operating voltage AC 24 V ~ / DC 24…48 V ⎓
- Running time for 90° rotary angle 30 s
- Mechanically adjustable span between 0...90°
- Pre-wired with 0.9 m long connection cables
- Position indication: mechanical
- Self-adaption of rotational angle range and adjustable auxiliary switches for supplementary functions

Use

The rotary actuators are used in ventilation and air conditioning plants to regulate and shut off air dampers:

- GDD..1E for damper areas up to 0.8 m^2 , GLD.1E for damper areas up to 1.2 m^2 (guide-line, always observe damper manufacturer's data).
- Suitable for use with modulating controllers (DC 0/2...10 V), open-close or three-position controllers for air dampers or air throttles.
- We recommend a minimum pulse length of 500 ms on rotary actuators operated with 3-point control to ensure continuous and accurate operation.

Functions

GDD.. GLD..	**141.1E, 146.1E**	**161.1E**
Power supply	AC 24 V ~ / DC 24…48 V ⎓	
Control type	Open-close / three-position	Modulating control (0/2…10 V)
Rotary direction	Clockwise or counter-clockwise direction depends …	
	… on the type of control … on the setting of the rotary direction switch.  With no power applied, the actuator remains in the respective position.	… 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.
Position indication: Mechanical	Rotary angle position indication by using a position indicator.	
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 switch	The switching points for auxiliary switches A and B can be set independent of each other in increments of 5° within 0° to 90°.	
Manual adjustment	The 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.	

Technical design

Housing

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

Actuator motor / Gears

- Brushless, robust DC motors ensure reliable operation regardless of load. The damper 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.

Type summary

Type	Stock no.	Nominal Torque	Control	Operating voltage	Positioning signal Y	Position indicator U = DC 0…10 V	Self-adaption of rotational angle range	Aux. switches	Rotary direction switch
GDD141.1E	S55499-D513	5 Nm	Open-close or three-position	AC 24 V ~ / DC 24…48 V ⎓	–	–	–	–	yes
GDD146.1E	S55499-D514							2	
GDD161.1E	S55499-D515		Modu-lating	AC 24 V ~ / DC 24…48 V ⎓	DC 0/2...10 V ⎓	yes	yes	–	yes

Type	Stock no.	Nominal Torque	Control	Operating voltage	Positioning signal Y	Position indicator U = DC 0…10 V	Self-adaption of rotational angle range	Aux. switches	Rotary direction switch
GLD141.1E	S55499-D516	8 Nm	Open-close or three-position	AC 24 V ~ / DC 24…48 V ⎓	–	–	–	–	yes
GLD146.1E	S55499-D517							2	
GLD161.1E	S55499-D518		Modu-lating	AC 24 V ~ / DC 24…48 V ⎓	DC 0/2...10 V ⎓	yes	yes	–	yes

Accessories

See data sheet N4698

Product documentation

Topic	Title	Document ID
Mounting instructions	Fast running air damper actuators GDx..1E, GLx..1E	A6V11684392

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

Potentiometer and auxiliary switches

Potentiometer and 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 G..D..1E 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 (G..D1…1E)		GDD1..1E	GLD1..1E
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	G..D14..1E, G..D16..1E	1.5 W/2.8VA 1.7W/3.0VA	1.9 W/3.4VA 2.1 W/3.6VA
Power consumption holding	G..D14..1E, G..D16..1E	0.5 W 0.7 W	0.5 W 0.7 W

Function data	GDD..1E	GLD..1E
Nominal torque Maximum torque (blocked) Minimum holding torque	5 Nm 10 Nm 5 Nm	8 Nm 16 Nm 8 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 for GDD14..1E Operating voltage AC 24 V ~ / DC 24…48 V ⎓	 (wires 1-6 / G-Y1) (wires 1-7 / G-Y2)	 clockwise counterclockwise
Positioning signal for GDD16..1.E Input voltage Current consumption Input resistance	 (wires 8-2 / Y-G0)	 DC 0/2…10 V ⎓ 0.1 mA >100 k
Max. Permissible input voltage Protected against faulty wiring		DC 35 V ⎓ limited to DC 10 V ⎓ max. AC 24 V ~ / DC 24…48 V ⎓
Hysteresis for non-adjustable characteristic function		60 mV

Outputs		
Position indicator Output signal (GDD16..1E) 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 ⎓

Auxiliary switches (G..D146.1E only)	
Switching voltage Contact rating	AC 24…250 V ~ / DC 12…30 V ⎓ 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 switch against housing	AC 4 kV
Switching range for auxiliary switches / setting increments	5…90° / 5°
Factory switch setting: Switch A Switch B	5° 85°

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 AC 24 V ~ / DC 24…48 V ⎓ auxiliary switches	As per EN 60730 III II
Housing protection	IP 54 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.h.
Transport Climatic conditions Temperature extended Humidity (non-condensing)	IEC 60721-3-2 Class 2K3 -32…+70 °C <95 % r.h.
Storage Climatic conditions Temperature extended Humidity (non-condensing)	IEC 60721-3-1 Class 1K3 -32…+50 °C <95 % r.h.
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) GDD141.1E, GDD146.1E, GDD161.1E GLD141.1E, GLD146.1E, GLD161.1E	 A5W00026942 A5W00026944
EAC Conformity GDD141.1E, GDD146.1E, GDD161.1E GLD141.1E, GLD146.1E, GLD161.1E	 A5W00026946 A5W00026948
RCM	Eurasian conformity

Environmental compatibility
The product environmental declaration (A5W00026066) 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” P8
Damper shaft round round Square Min. shaft length Shaft hardness	 8…16 mm 8…10 mm (with centering element) 6…12.8 mm 20 mm <300 HV

Weight	
Without packaging	Max. 0.49 kg, without switches Max. 0.63 kg, with switches

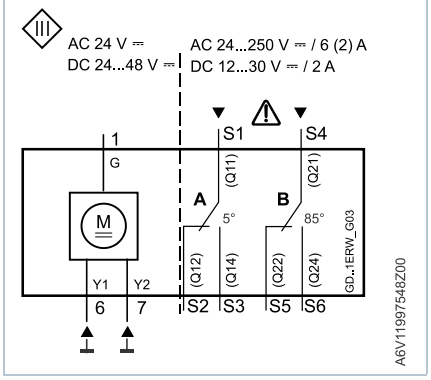
* The documents can be downloaded from http://siemens.com/bt/download.

Diagrams

Internal Diagrams

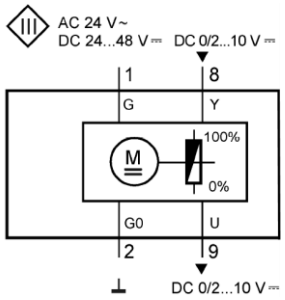
G..D14..1E (open-close, three-p.)

AC 24 V ~ / DC 24…48 V ⎓



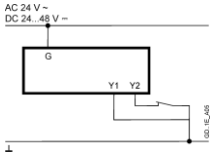
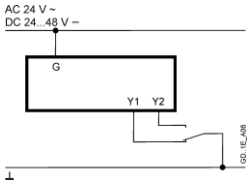
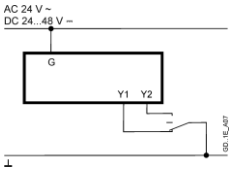
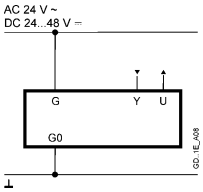
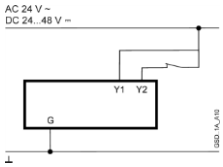
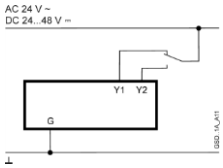
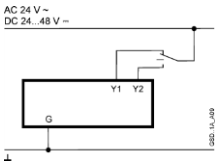
G..D16..1E (modulating, Y= DC 0/2…10 V ⎓)

AC 24 V ~ / DC 24…48 V ⎓



Connection diagrams

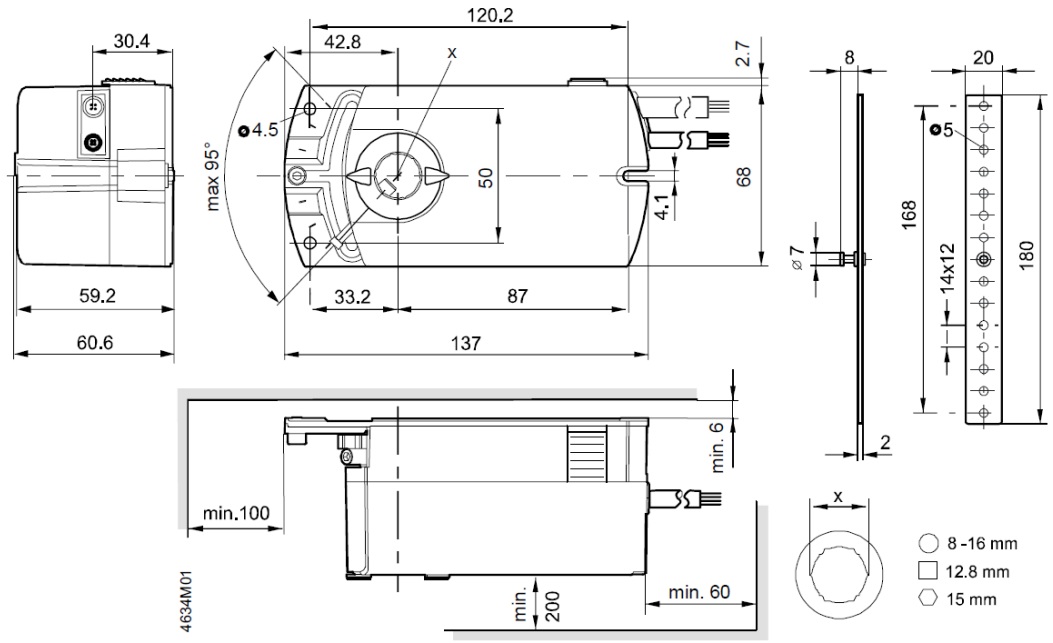
G..D1..1E (AC 24 V ~ / DC 24…48 V ⎓)

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**
			
			

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” (G..D14..1E)
	Y2	7	orange	OG	Positioning signal AC/DC 0 V, “counter-clockwise” (G..D14..1E)
	Y	8	grey	GY	Signal in (G..D16..1E)
	U	9	pink	PK	Signal out (G..D16..1E)
Auxiliary switch	Q11	S1	grey/red	GY RD	Switch A input
	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

Dimensions



Dimensions in mm

Revision numbers

Type	Valid from rev. no.	Type	Valid from rev. no.
GDD141.1E	..D	GLD141.1E	..D
GDD146.1E	..D	GLD146.1E	..D
GDD161.1E	..D	GLD161.1E	..D

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