

OpenAir™

Air damper actuators for railway vehicles

GDD24..1E/RW (DC 110 V)



Electromotoric rotary actuators for open-close and 3-position control

- Nominal torque 5 Nm
- Operating voltage DC 110 V =
- Runtime 30 s
- Rotary angle 0...90°
- Connection cables railway specific
- Feedback potentiometer
- Adjustable auxiliary switches
- Degree of protection IP54
- Printed circuit board with protective coating

Features

Air damper actuators in difficult operational conditions; they meet the main requirements for:

- EN 50155 (Railway applications - Electronic equipment used on rolling stock)
- EN 45545 (Railway applications - Fire protection on railway vehicles)
- EN 61373 (Railway applications - Rolling stock equipment - Shock and vibration tests)

Application

The damper actuators are expressly suitable for air conditioning units and air distribution systems for railway vehicles.

- For damper areas of ca. 0.8 m²
- Suitable for 2 and 3-position controllers.
- We recommend a minimum pulse length of 500 ms on rotary actuators operated with 3-point control to ensure continuous and accurate operation.

Functions

Function		Description
Control type		2-position- and 3-position control (SPST / SPDT / 3-position)
Rotation direction		Clockwise or counterclockwise, selectable with switch. The actuator remains in the respective position with no power applied. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> CW  </div> <div style="text-align: center;"> CCW  </div> </div>
Position indication	Mechanical	Rotation angle position indication using a position indicator
	Electrical	The feedback potentiometer can be connected to an external voltage source to indicate the position.
Auxiliary switch		The switching points for auxiliary switches A and B can be set mutually independent in 5° increments from 0...90°.
Manual adjustment		The actuator can be manually adjusted by pressing the gear train disengagement button.
Rotation angle limitation		The rotation angle can be limited between 0...90° with a set screw.

Technical design

Housing

The housing is made of fiberglass reinforced plastic:

- Flame retardant
- Non-brominated
- Non-chlorinated

Actuator / gears

- Brushless, robust DC motors ensure reliable operation regardless of load.
- The valve 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 number	Operating voltage	Runtime	Feedback potentiometer 5 k Ω	Auxiliary switch	Rotation direction switch
GDD241.1E/RW	S55499-D718	DC 110 V =	30 s	-	-	Yes
GDD242.1E/RW	S55499-D719			Yes		
GDD246.1E/RW	S55499-D720			-	2	

Accessories

Type	Designation	Application
ASK78.6	Centering insert, square profile 8 mm	To center a shaft with square profile (8 x 8 mm) in the coupling bushing of the actuator.
ASK78.7	Centering insert, square profile 10 mm	To center a shaft with square profile (10 x 10 mm) in the coupling bushing of the actuator.
ASK78.9	Centering insert, round 10 mm	To center a shaft with round diameter (\varnothing 10 mm) in the coupling bushing of the actuator.
ASK78.10	Centering insert, round 12 mm	To center a shaft with round diameter (\varnothing 12 mm) in the coupling bushing of the actuator.

Product documentation

Topic	Title	Document ID
Data sheet	Air damper actuators for railway vehicles GDD24..1E/RW	A6V12632194
Mounting instructions	Damper actuators for railway vehicles GDD..1E/RW, GLD..1E/RW	A6V12632260

Related documents such as the environmental declarations, declarations of conformity, etc., can be downloaded from the following Internet address:

www.siemens.com/bt/download

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.
- Mounting, commissioning, and service by properly trained personnel only.

Engineering

Auxiliary switch and potentiometer

Auxiliary switches and potentiometers **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 wire cross sections as per local regulations to the rated value of the installed fuse.

Maintenance

GDD24..1E/RW actuators are maintenance-free.

Disposal



The device is considered an electronic device for disposal in accordance with European guidelines and may not be disposed of as domestic waste.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Technical data

Power supply		
Operating voltage		DC 110 V = + 25 % / - 30 % (77...137,5 V =)
Power consumption	Operation	1.8 VA / 1.8 W
	Hold	0.6 VA / 0.6 W

Operating data		
Torque	Nominal torque	5 Nm
	Max. torque	10 Nm
Rotation angle	Nominal rotation angle	90°
	Max. rotation angle (mechanically limited)	95° ± 2°
Runtime at nominal rotation angle 90°		30 s
Sound power level		32 dB(A)
Feedback potentiometer		GDD242.1E/RW only
	Change in resistance	(wires P1-P2) 0...5000 Ω
	Load	<0.25 W

Mechanical life	
Full cycles	100'000
Partial cycles	5'000'000

Auxiliary switch (GDD246.1E/RW)	
Switching voltage	DC 12...110 V =
Contact loading	4 A resistive, 2 A inductive, min. 10 mA @ DC 30 V =
	0.8 A resistive, 0.5 A inductive, min. 10 mA @ DC 60 V =
	0.2 A resistive, 0.1 A inductive, min. 10 mA @ DC 110 V =
Switching range for auxiliary switches	5...90°
Setting increments	5°

Connecting cable (specifically for railway vehicles)	
Cable length	0.9 m
Cable cross-section	0.75 mm ²

Safety class and degree of protection		
Protection class	EN 60730	
	GDD242.1E/RW (feedback potentiometer)	III
	GDD246.1E/RW (auxiliary switch)	III
Degree of protection of housing	IP54 as per EN 60529	

Environmental conditions	
Temperature	-40...70 °C
Overtemperature	...85 °C (max. 10 min / 15 °C)
Humidity	<95 % r.h.
Condensation	Permissible

Directives and standards	
Product standards	EN 60730 Part 2-14: Particular requirements for electric actuators
Railway application	EN 50155 Railway applications - Electronic equipment used on rolling stock
	EN 61373 Shock and vibration Cat. 1 / class B
	EN 45545-2 Fire prevention in railway vehicles Requirement class: R22 / R23 Hazard level: HL1 / HL2 / HL3
Electromagnetic compatibility (field of use)	For railway applications Residential, commercial, and industrial environments
EU conformity (CE)	A5W00026942 ¹⁾
RCM conformity	A5W00026946 ¹⁾
EAC conformity	Eurasian conformity

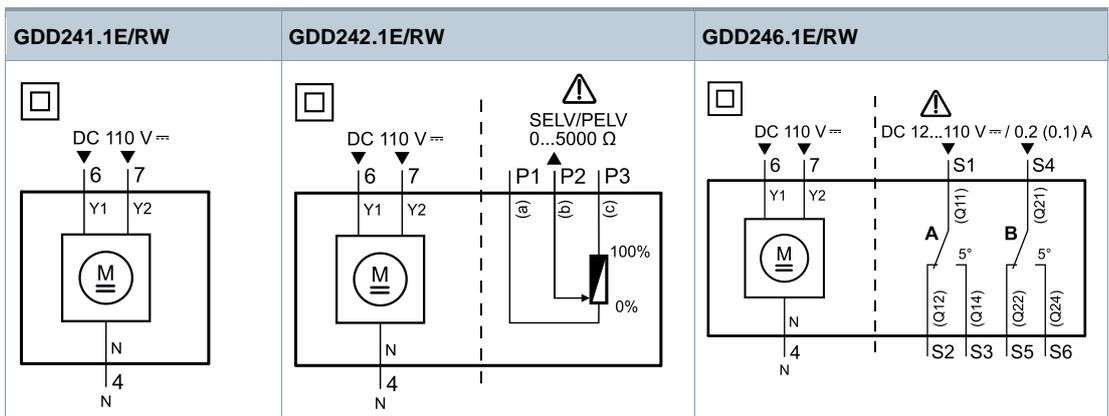
Environmental compatibility
The product environmental declaration A5W00026066 ¹⁾ contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

Dimensions and weight			
Actuator (W x H x D)		See Dimensions [▶ 8]	
Damper shaft	Square	6...12.8 mm	
		Min. length	20 mm
		Max. shaft hardness	300 HV
	Round	8...16 mm	
		Min. length	30 mm
		Max. shaft hardness	300 HV
Weight	Without packaging	GDD241.1E/RW	0.57 kg
		GDD242.1E/RW	0.64 kg
		GDD246.1E/RW	0.75 kg

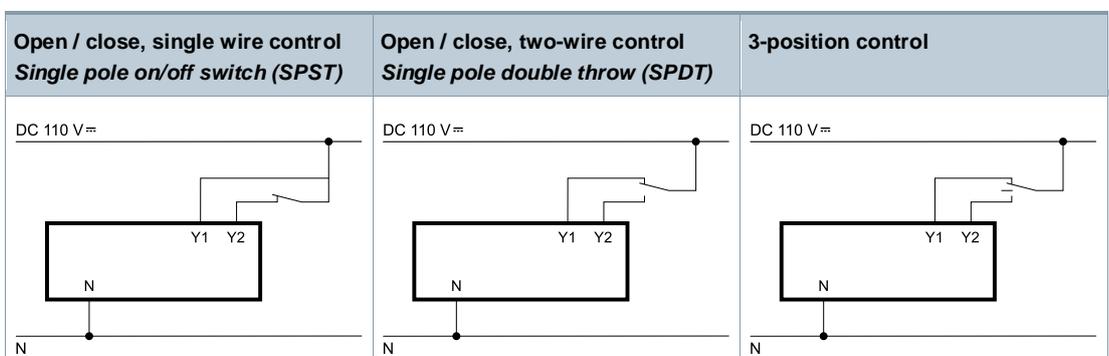
1) The documents can be downloaded at <http://siemens.com/bt/download>.

Connection diagrams

Internal diagrams



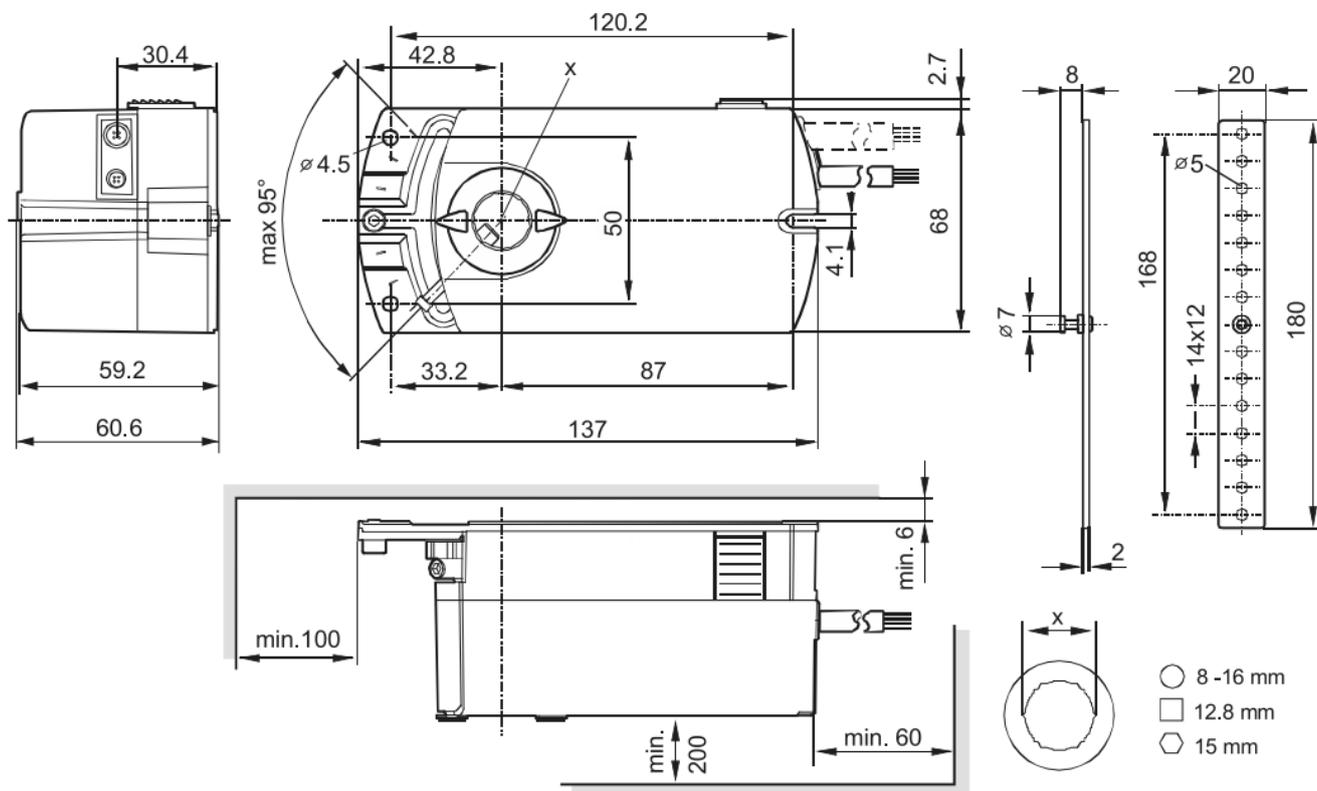
Internal diagrams



Cable designations

Connecting thread	Cable				Meaning
	Code	No.	Color	Abbreviations	
Actuators DC 110 V =	N	4	Light blue	BU	Neutral conductor
	Y1	6	Black	BK	Positioning signal DC 110 V = 'clockwise'
	Y2	7	White	WH	Positioning signal DC 110 V, 'counterclockwise'
Feedback potentiometer	a	P1	White/red	WH RD	Potentiometer 0...100 % (P1-P2)
	b	P2	White/blue	WH BU	Potentiometer pick-off
	c	P3	White/pink	WH PK	Potentiometer 100...0 % (P3-P2)
Auxiliary switch GDD246.1A/RW	Q11	S1	Gray/red	GY RD	Switch A input
	Q12	S2	Gray/blue	GY BU	Switch A Normally open contact
	Q14	S3	Gray/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

Revision numbers

Type	Valid from rev. no.
GDD241.1E/RW S55499-D718	..A
GDD242.1E/RW S55499-D719	..A
GDD246.1E/RW S55499-D720	..A

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