SIEMENS

4619

OpenAir™

Residential
Air damper actuators GSD...1.6

Rotary version, two-position control

Electric motor-driven actuators for two-position control
2 Nm nominal torque
AC 24 V or AC 220/230 V rated voltage

Use

In ventilating and air conditioning plants to actuate air dampers

- with nominal torque of 2 Nm for damper areas of approx. up to 0.3 m² or barrel dampers up to 12”
- operate direct driven zone dampers used to control air flow in ducts
- specifically to address two position domestic and light commercial barrel damper applications
- Allow parallel operation
- Provide cable version and modular jack version

Type summary

Non-spring return - rotary air damper actuators

Type	Operating voltage Frequency	Control signal	Cable length	Coupling
GSD141.6A	AC 24 V / 50 Hz	SPDT	0.9 m	Φ8 Round
GSD141.6K	AC 24 V / 50 Hz	SPDT	Modular Jack	Φ8 Round
GSD341.6A	AC 230 V / 50 Hz	SPDT	0.9 m	Φ8 Round
GSD341.6A/KO	AC 220 V / 60 Hz	SPDT	0.9 m	Φ8 Round

Equipment combinations

These actuators can be connected to all control devices with a two-position control supplying a switching voltage of AC 24 V or AC 220/230 V.

Functions

Basic functions

Rotational movement

The actuators rotational movement (clockwise or counter-clockwise) depends on the electrical control.

As soon as the operating voltage AC 24 V or AC 220/230 V is applied, the actuator starts to turn.

Mechanical design

Basic components

Housing

Robust, light-weight plastic housing

Gear train

Maintenance-free and low noise gear train with metal gear train plate to extend actuator life.

Engineering notes

STOP

The basic system data for the control systems in use contain all engineering information; refer to this data prior to mounting, wiring and commissioning the actuator and carefully read all safety information.

Intended use

Use these actuators in a system only for applications as described in the basic system documentation of the applied control systems. Additionally, include all actuator-specific features and conditions as described in the brief description on the title page of this data sheet (bold print) and in the chapters “Use”, “Engineering Notes” and “Technical Data”

⚠

The sections flagged with a warning symbol as illustrated in the left margin contain safety-related requirements and restrictions. It is important that these are adhered in order to prevent physical injury and equipment damage.

AC 24 V supply

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

⚠ AC 220/230 V supply

The actuators are double-insulated and do not provide a connection for the protective ground.

CAUTION

Do not open the actuator!

- The units are maintenance-free
- Any repair work must be conducted by the manufacturer only
- Opening of the actuator will void warranty

Parallel connection

Parallel connection of GSD actuators is allowed.

Required actuator type

Selection of the actuator depends on several torque factors. After obtaining the damper torque rating (Nm/m²) from the manufacturer and determining the damper area, calculate the torque total required to move the damper as follows:

IF total torque (SF[1])	**Use type**
≤ 2 Nm	GSD…1 (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)

[1] Safety factor SF: When calculating the number of actuators, non-definable variables such as slight misalignment, damper age, etc. must be included as a safety factor. We recommend a safety factor of 0.80 (or 80% of the torque characteristic)

Sizing transformers for AC 24 V (SELV)

Use safety insulating transformers with double insulation as per EN 60742; the transformers must be made for 100% runtime.

Observe all local safety rules and regulations pertaining to sizing and protection of transformers.

Determine the transformer's power consumption by adding up the power consumption in VA for all actuators used.

Wiring and commissioning

Refer to "Commissioning notes" and "Diagrams" in this data sheet as well as to the HVAC job drawings.

Mounting notes

Mounting instructions

All information and steps to properly prepare and mount the actuator are listed in the Mounting instruction guide supplied with the actuator.

Mounting position

Choose the actuators mounting position so that it is easy to access the cables as well as the setting shaft on the actuator front. Refer to "Dimensions".

Damper shafts

Information on minimum length and diameter for the damper shaft is available in "Technical data".

Commissioning notes

References

For commissioning, the following reference documentation must exist:

- This data sheet
- Mounting instructions
- Job diagram

Ambient conditions

Check to ensure that all permissible values as contained in the “Technical data” have been observed

Mechanical check:
Check for proper mounting and ensure that all mechanical settings correspond to the plant-specific requirements. Additionally, ensure that the dampers are shut tight when in the closed position.

Check the direction of rotation.

Fasten the actuator securely to avoid twisting and blocking of the actuator.

Electrical check

Check to ensure that the cables are connected in accordance with the plant wiring diagram (see “Diagrams”).

The operating voltage AC 24 V (SELV/PELV) or AC 220/230 V must be within the tolerance values.

Functional check:

SPDT

Control signal AC 24 V

- Connection between wires red-violet: actuator turns clockwise.
- Connection between wires red-orange: actuator turns counter-clockwise.

Control signal AC 24 V (RJ11 type)

- Connection between Pin 3 / 4 - Pin 1 / 2: actuator turns clockwise.
- Connection between Pin 3 / 4 - Pin 5 / 6: actuator turns counter-clockwise

Control signal AC 220/230 V

- Between wires light blue-black: actuator turns clockwise.
- Between wires light blue-white: actuator turns counter-clockwise

Technical data

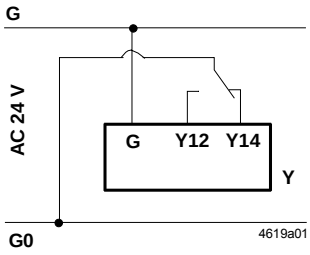
Power supply AC 24 V for GSD1…/..	Operating voltage	AC 24 V ± 15 %
	Safety extra-low (SELV) or Protection by extra-low voltage (PELV) as per	HD 384
	Requirements of external safety insulating transformer (100% ED)	EN 60730-1
	Supply line fuse	Max. 10 A
	Frequency	50 Hz + 2%
	Power supply (with control signal)	110 mA
	Power supply (with control signal)	2.4 VA / 2 W
⚠ Power supply AC 230 V for GSD3../..	Operating voltage	AC 230 V ±15 %
	Supply line fuse	Max. 10 A
	Frequency	50 Hz + 2%
	Power supply (with control signal)	40 mA
	Power supply (with control signal)	10 VA / 4 W
⚠ Power supply AC 220 V / 60Hz for GSD341.6A/KO.	Operating voltage	AC 220 V ± 15 %
	Supply line fuse	Max. 10 A
	Frequency	60 Hz + 2%
	Power supply (with control signal)	45 mA
	Power supply (with control signal)	10 VA / 4 W

Mechanical data	Nominal torque	2 Nm
	Maximum torque	< 2.2 Nm
	Nominal rotational angle	90 °
	Maximum rotational angle (mechanic limitation)	< 98 °
	Run time for nominal rotational angle 90 º	< 19 s
	Duty cycle	One cycle per 2 minute
	Rotational movement direction	Clockwise / Counter-clockwise
	Mechanical life	On / Off 25,000 cycles
Wire connections for SPDT	Control signals AC 220/230 V	
	Wires light blue – black	Clockwise
	Wires light blue – white	Counter-clockwise
	Control signals AC 24 V	
	Wires red-violet	Clockwise
	Wires red-orange	Counter-clockwise
	Control signals AC 24 V (RJ11 type)	
	Wires green/red-black/white	Clockwise
	Wires green/red-blue/yellow	Counter-clockwise
Connection cables	Cable Lengths	0.9 m
	Cross-section	
	Supply voltage AC 24 V	3 x 0.75 mm^2
	Supply voltage AC 220/230 V	3 x 0.75 mm^2
Housing protection	Degree of protection as per EN 60 529	IP 40
Insulation class	AC 220/230 V	II
	AC 24 V	III

Environmental conditions	Operation	IEC 721-3-3
	Climatic conditions	Class 3K5
	Mounting location	interior, weather-protected
	Temperature	0...+50 °C
	Humidity (non-condensing)	< RH 95 %
	Transport	IEC 721-3-2
	Climatic conditions	Class 2K2
	Temperature	-32…+70 °C
	Humidity (non-condensing)	< 95% R.H.
	Mechanical conditions	Class 2M3
Standards	Product safety	
	Automatic electrical controls for household and similar use (type 1)	IEC/EN 60 730 1-14
	Electromagnetic compatibility	
	Immunity	IEC/EN 61000-6-2
	Emissions	IEC/EN 61000-6-3
	N474 C-Tick conformity to	
	Australian EMC Framework	Radio Communication Act 1992
	Radio Interference Emission Standard	AS / NZS 3548
	CE conformity to	
	EMC directive	89/336/EEC
	Low voltage directive	73/23/EEC
Dimensions	Actuator	
	W × H × D : Round shaft	70 X 75 X 100
	Damper shaft	
	Rectangular	6 mm
	Min length	18 mm
	Max shaft hardness	260 HB
	Round	Φ8
	Min length	30 mm
	Max shaft hardness	260 HB
Weight	Without packaging	
	GSD…1.6A	0.61 Kg
	GSD141.6K	0.52 Kg

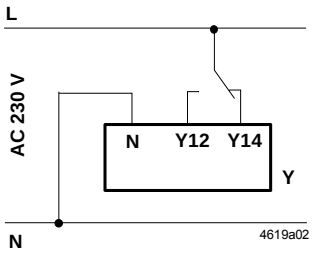
Wiring diagrams (Example: Control signals for drive direction counter-clockwise)

SPDT



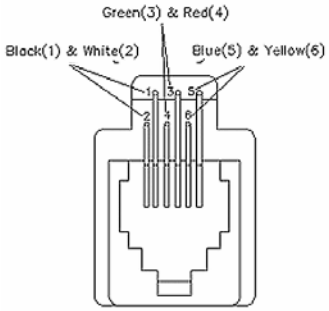
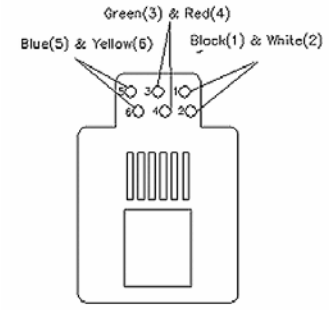
Y Actuator GSD141.6

G System Potential
AC 24 V
G0 System neutral



Y Actuator GSD341.6

L System Potential
AC 230 V
N System neutral

ASN	Voltage	Control mode	Wire designation, colour & function					Configuration of RJ11 Modular Jack of GSD141.6K	Legend	
			AC 24 V						RD	red
			G	G0		Y12	Y14		BK	black
			1	2		6	7		OG	orange
GSD141.6A	AC 24 V / 50 Hz	SPDT	RD			VT	OG		VT	violet
GSD141.6K	AC 24 V / 50 Hz	SPDT	Refer to configuration of RJ11 Modular Jack of GSD141.6K						BU	blue
			AC 220/230 V						WH	white
			N	L		Y12	Y14			
			4	3		6	7			
GSD341.6A	AC 230 V / 50 Hz	SPDT	BU			BK	WH			
GSD341.6A/KO	AC 220 V / 60 Hz	SPDT	BU			BK	WH			

Dimensions