



OpenAir™

## Residential Air damper actuators

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

**GSD...6**  
**GQD...6**

GSD...6

- Electric motor driven actuators for open-close control (2-wire, SPDT)
- 2 Nm nominal torque
- AC/DC 24 V or AC 230 V rated voltage
- Pre-wired with 0.9 m cable
- Version with RJ12 jack

GQD...6

- Electric motor driven actuators for 2-position control
- 2 Nm nominal torque
- Spring return
- AC/DC 24 V or AC 230 V rated voltage
- Pre-wired with 0.9 m cable

### Use

- For damper areas up to 0.3 m<sup>2</sup> or barrel dampers up to 12", friction dependent.
- For directly driven zone dampers used to control air flow in ducts.

## Type Summary

### Non-spring return - rotary air damper actuators

| Type      | Operating voltage | Control signal | Cable length | Coupling |
|-----------|-------------------|----------------|--------------|----------|
| GSD141.6A | AC/DC 24 V        | Open-close *   | 0.9 m        | Ø 8 mm   |
| GSD141.6K | AC/DC 24 V        | Open-close *   | RJ12 jack    | Ø 8 mm   |
| GSD341.6A | AC 230 V          | Open-close *   | 0.9 m        | Ø 8 mm   |

\* 2-wire, SPDT: single pole - double-throw

### Spring return - rotary air damper actuators

| Type      | Operating voltage | Control signal | Cable length | Coupling |
|-----------|-------------------|----------------|--------------|----------|
| GQD121.6A | AC/DC 24 V        | 2-position     | 0.9 m        | Ø 8 mm   |
| GQD321.6A | AC 230 V          | 2-position     | 0.9 m        | Ø 8 mm   |

## Functions

| Type             | GSD141.6..<br>GSD341.6A                                                        | GQD121.6A<br>GQD321.6A                                                                                                  |
|------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Control type     | Open-close *                                                                   | 2-position                                                                                                              |
| Rotary direction | Clockwise or counter-clockwise movement depends on the wiring of the actuator. |                                                                                                                         |
| Spring return    |                                                                                | On power failure or when the operating voltage is switched off, the spring returns the actuator to its mechanical zero. |

## Technical Data

|                              |                                                                             |                             |
|------------------------------|-----------------------------------------------------------------------------|-----------------------------|
| ⚠ Power supply<br>AC/DC 24 V | Operating voltage AC / Frequency                                            | AC 24 V ± 20 % ; 50 / 60 Hz |
|                              | Operating voltage DC                                                        | DC 24 V ± 15 %              |
|                              | Safety extra-low (SELV) or<br>Protection by extra-low voltage (PELV) as per | HD 384                      |
|                              | Requirements of external safety isolating<br>transformer (100 % duty cycle) | EN 61 558                   |
|                              | Fuse for incoming supply line (fast)                                        | 2 A                         |
|                              | Power consumption                                                           |                             |
|                              | – GSD141.6...: (running)                                                    | 2 VA / 1.5 W                |
| ⚠ Power supply<br>AC 230 V   | (holding)                                                                   | 1 VA / 0.5 W                |
|                              | – GQD121.6A: (running)                                                      | 6.5 VA / 4.5 W              |
|                              | (holding)                                                                   | 4 VA / 2.5 W                |
|                              | Operating voltage / Frequency                                               | AC 230 V ± 15 %; 50 / 60 Hz |
|                              | Fuse for incoming supply line (fast)                                        | 2 A                         |
|                              | Power consumption                                                           |                             |
|                              | – GSD341.6A: (running)                                                      | 12 VA / 2 W                 |
| Function data                | (holding)                                                                   | 12 VA / 2 W                 |
|                              | – GQD321.6A: (running)                                                      | 10 VA / 4.5 W               |
|                              | (holding)                                                                   | 7 VA / 3 W                  |
|                              | Nominal torque                                                              | 2 Nm                        |
|                              | Maximum torque                                                              | 6 Nm                        |
|                              | Nominal rotational angle                                                    | 90°                         |
|                              | Maximum rotational angle<br>(mechanically limited)                          | 95° ± 2°                    |

|                          |                                                                                                          |                                                                                     |
|--------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                          | Runtime for nominal rotational angle 90 °                                                                | 30 s                                                                                |
|                          | Closing time with spring return<br>(on power failure)                                                    | 15 s                                                                                |
|                          | Duty cycle                                                                                               | 100 %                                                                               |
|                          | Direction of rotation                                                                                    | Clockwise / Counter-clockwise                                                       |
|                          | Mechanical life                                                                                          | 25 000 cycles                                                                       |
|                          |                                                                                                          |                                                                                     |
| Connection cables        | Cable length                                                                                             | 0.9 m                                                                               |
|                          | Cross-section                                                                                            | 0.75 mm <sup>2</sup>                                                                |
| Housing protection       | Degree of protection as per EN 60 529                                                                    | IP40                                                                                |
| Protection class         | Insulation 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)                                                                              | < r.H. 95 %                                                                         |
|                          | Transport                                                                                                | 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.                                                                         |
|                          | Mechanical conditions                                                                                    | Class 2M2                                                                           |
| Standards                | Product Safety                                                                                           |                                                                                     |
|                          | Automatic electrical controls for household<br>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 to |                                                                                     |
|                          | – Australian EMC Framework                                                                               | Radio Communication Act 1992                                                        |
|                          | – Radio Interference Emission Standard                                                                   | AS / NZS 3548                                                                       |
|                          |  CE conformity to     |                                                                                     |
|                          | – EMC directive                                                                                          | 2004/108/EEC                                                                        |
|                          | – Low voltage directive                                                                                  | 2006/95/EEC                                                                         |
| Dimensions               | Actuator                                                                                                 |                                                                                     |
|                          | W × H × D (see section “Dimension”)                                                                      | 70 X 121.4 X 62.5                                                                   |
|                          | Damper shaft                                                                                             |                                                                                     |
|                          | – Round                                                                                                  | 8 mm                                                                                |
|                          | Min. length                                                                                              | 15 mm                                                                               |
| Weight                   | Max. shaft hardness                                                                                      | 300 HV                                                                              |
|                          | Without packaging                                                                                        |                                                                                     |
|                          | – GSD141.6A                                                                                              | 0.43 kg                                                                             |
|                          | – GSD141.6K                                                                                              | 0.36 kg                                                                             |
|                          | – GSD341.6A                                                                                              | 0.44 kg                                                                             |
|                          | – GQD121.6A                                                                                              | 0.47 kg                                                                             |
|                          | – GQD321.6A                                                                                              | 0.48 kg                                                                             |

## Mechanical design

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### Basic components

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

### 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 regarding your own safety and that for your plant.

#### Intended use

Use these actuators as described in the basic system documentation for the applied control systems. Additionally, 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) and in the sections "Use", "Engineering Notes" and "Technical Data".



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

#### CAUTION

##### **Do not open the actuator!**

- The actuators are maintenance-free.
- Any repair work must be conducted by the manufacturer only.
- Opening the actuator will void the warranty.
- Spring return actuators contain pre-tensioned springs. Only trained personnel may open such actuators (by means of special tools).

#### Parallel connection

Up to 10 actuators of the same type can be electrically wired in parallel. The admissible cable length and cable cross-section must be observed.

#### Sizing transformers for AC 24 V

Use safety insulating transformers as per EN 61 558 with double insulation, designed for 100 % duty to supply SELV or PELV circuits.

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

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

#### 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. Refer to the "Dimensions" section.

#### Damper shafts

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

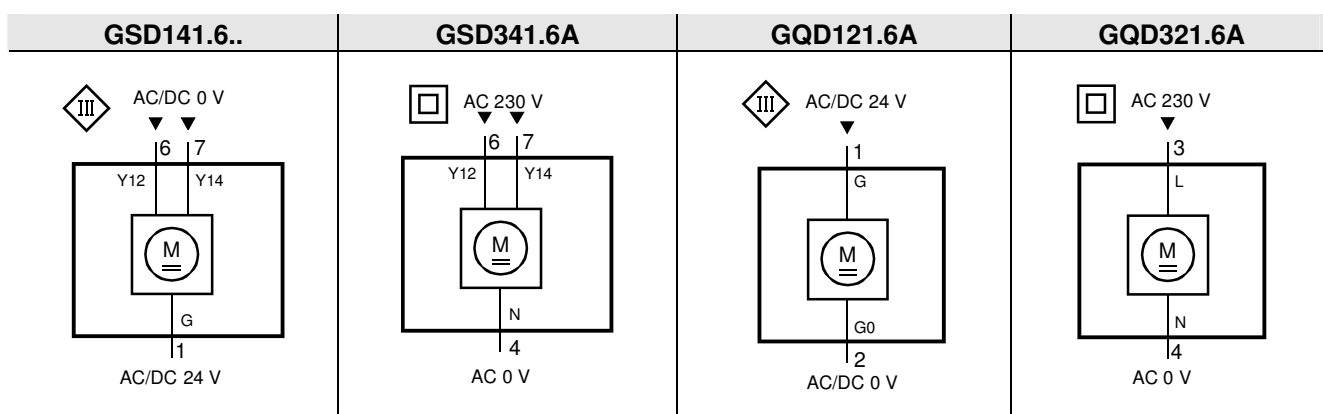
## Commissioning notes

|                    |                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| References         | <p>For commissioning, the following reference documentation must be available:</p> <ul style="list-style-type: none"> <li>• This data sheet</li> <li>• Job diagram</li> </ul>                                                                                                                                                                                                                  |
| Ambient 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

|           |                                                                                                                                                                                                                                                                    |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GSD141.6A | <p>Power supply AC/DC 24 V wire red (1)<br/>Control signal AC/DC 0 V</p> <ul style="list-style-type: none"> <li>• Wire violet (6) ON: actuator turns clockwise</li> <li>• Wire orange (7) ON: actuator turns counter-clockwise</li> </ul>                          |
| GSD141.6K | <p>Power supply AC/DC 24 V wires green/red (3/4)<br/>Control signal AC/DC 0 V</p> <ul style="list-style-type: none"> <li>• Wires black/white (1/2) ON: actuator turns clockwise</li> <li>• Wires blue/yellow (5/6) ON: actuator turns counter-clockwise</li> </ul> |
| GSD341.6A | <p>Power supply AC 0 V wire blue (4)<br/>Control signal AC 230 V</p> <ul style="list-style-type: none"> <li>• Wire black (6) ON: actuator turns clockwise</li> <li>• Wire white (7) ON: actuator turns counter-clockwise</li> </ul>                                |
| GQD121.6A | <p>Power supply AC/DC 24 V wires red (1) and black (2)</p> <ul style="list-style-type: none"> <li>• Power ON: actuator turns clockwise</li> <li>• Power OFF: actuator turns mechanically counter-clockwise (by spring)</li> </ul>                                  |
| GQD321.6A | <p>Power supply AC 230 V wires brown (3) and blue (4)</p> <ul style="list-style-type: none"> <li>• Power ON: actuator turns clockwise</li> <li>• Power OFF: actuator turns mechanically counter-clockwise (by spring)</li> </ul>                                   |

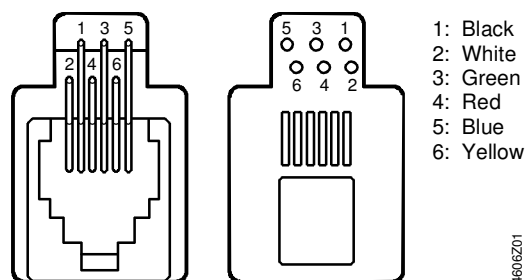
### Wiring diagrams



## Cable labeling

| Pin                             | Code | No. | Cable Color | Abbreviation | Meaning                                       |
|---------------------------------|------|-----|-------------|--------------|-----------------------------------------------|
| <b>GSD141.6..</b><br>AC/DC 24 V | G    | 1   | red         | RD           | System potential AC/DC 24 V                   |
|                                 | Y12  | 6   | violet      | VT           | Pos. signal clockwise AC/DC 0 V               |
|                                 | Y14  | 7   | orange      | OG           | Pos. signal counter-clockwise AC/DC 0 V       |
| <b>GSD341.6A</b><br>AC 230 V    | N    | 4   | blue        | BU           | Neutral                                       |
|                                 | Y12  | 6   | black       | BK           | Positioning signal clockwise AC 230 V         |
|                                 | Y14  | 7   | white       | WH           | Positioning signal counter-clockwise AC 230 V |
| <b>GQD121.6A</b><br>AC/DC 24 V  | G    | 1   | red         | RD           | System potential AC/DC 24 V                   |
|                                 | G0   | 2   | black       | BK           | System neutral                                |
| <b>GQD321.6A</b><br>AC 230 V    | L    | 3   | brown       | BN           | Line AC 230 V                                 |
|                                 | N    | 4   | blue        | BU           | Neutral                                       |

RJ12 jack GSD141.6K



## Dimensions

