



OpenAir™

## Air damper actuators

## GCA...1

Rotary version with spring return,  
AC 24 V / DC 24...48 V / AC 230 V

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**Electronic motor driven actuators for two-position, three-position, and modulating control, nominal torque 18 Nm, with spring return, self-centering shaft adapter, mechanically adjustable span between 0...90°, pre-wired with 0.9 m long connection cables.**

**Type-specific variations with adjustable offset and span for the positioning signal, position indicator, feedback potentiometer and adjustable auxiliary switches for supplementary functions.**

### Remarks

This data sheet provides a brief overview of these actuators. Please refer to the Technical Basics in document Z4613en for a detailed description as well as information on safety, engineering notes, mounting and commissioning.

### Use

- For damper areas up to 3 m<sup>2</sup>, friction-dependent.
- In ventilation sections where the actuator must move to the zero position (emergency position) during power failure.
- For dampers having two actuators on the same damper shaft (tandem-mounted actuators or Powerpack).

## Type summary

| GCA...  | 121.1E               | 126.1E | 321.1E | 326.1E | 131.1E                 | 135.1E | 161.1E             | 163.1E | 164.1E | 166.1E |
|---|----------------------|--------|--------|--------|------------------------|--------|--------------------|--------|--------|--------|
| Control type  | Two-position control |        |        |        | Three-position control |        | Modulating control |        |        |        |
| Operating voltage<br>AC 24 V / DC 24...48 V                 | X                    | X      |        |        | X                      | X      | X                  | X      | X      | X      |
| Operating voltage<br>AC 230 V                               |                      |        | X      | X      |                        |        |                    |        |        |        |
| Positioning signal Y<br>DC 0...10 V                         |                      |        |        |        |                        |        | X                  |        |        | X      |
| DC 0...35 V with characteristic function<br>$U_0, \Delta U$ |                      |        |        |        |                        |        |                    | X      | X      |        |
| Position indicator<br>$U = DC 0...10 V$                     |                      |        |        |        |                        |        | X                  | X      | X      | X      |
| Feedback potentiometer 1 k $\Omega$                         |                      |        |        |        |                        | X      |                    |        |        |        |
| Auxiliary switches (two)                                    |                      | X      |        | X      |                        | X      |                    |        | X      | X      |
| Powerpack (2 actuators)                                     | X                    | X      | X      | X      | X                      | X      | X                  | X      | X      | X      |






## Functions

| Type   | GCA12..1 / GCA32..1   | GCA13..1  | GCA16..1  |
|--|---|---|---|
| Control type   | Two-position control  | Three-position control  | Modulating control  |
| Positioning signal with adjustable characteristic function |   |   | DC 0...35 V at<br>Offset $U_0 = 0...5 V$<br>Span $\Delta U = 2...30 V$  |
| Rotary direction   | Clockwise or counter-clockwise movement depends on the mounting position of the damper shaft...<br>and on the type of control         |   |   |
| Spring return function                                     | On power failure or when the operating voltage is switched off, the spring return moves the actuator to its mechanical zero position. |   |   |
| Position indication:<br>Mechanical                         | Rotary angle position indication by using a position indicator.   |   |   |
| Position indication:<br>Electrical                         |   | The feedback potentiometer can be connected to external voltage to indicate the position. | Output voltage $U = DC 0...10 V$ is generated proportional to the rotary angle.   |
| Auxiliary switch   | The switching points for auxiliary switches A and B can be set independent of each other in increments of 5° within 5° to 90°.        |   |   |
| Powerpack (two actuators, tandem-mounted)                  | Mounting two of the same actuator types on the same damper shaft results in a double torque (with accessories ASK73.1).               |   | Mounting two of the same actuator types on the same damper shaft results in a double torque (with accessories ASK73.2). |
| Rotary angle limitation                                    | The rotational angle of the shaft adapter can be limited mechanically at increments of 5°.  |   |   |

## Ordering

|                          |  |
|--------------------------|--|
| Note                     | Potentiometer <b>cannot be added in the field</b> . For this reason, order the type that includes the required options.  |
| Delivery                 | Individual parts such as position indicator and other mounting materials for the actuator are <b>not mounted</b> on delivery.  |
| Accessories, spare parts | Accessories to functionally extend the actuators are available, e.g., linear/rotary sets, auxiliary switches (1 or 2 switches) and weather protection cover; see data sheet <b>N4699</b> . |

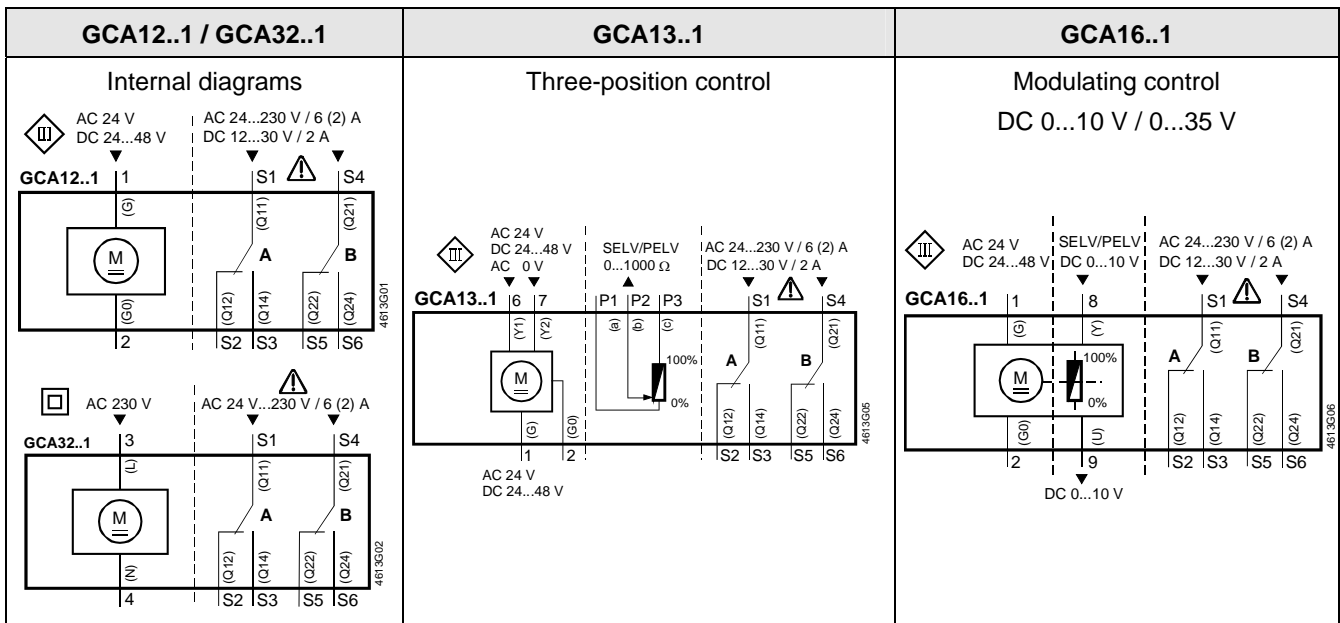
## Technical data

|   |   |  |
|---|---|--|
|  AC 24 V / DC 24...48 V supply (SELV/PELV) | Operating voltage AC / Frequency  | AC 24 V ± 20 % / 50/60 Hz                |
|   | Operating voltage DC  | DC 24...48 V ± 20 %                      |
|   | Power consumption   | Running<br>Running<br>Holding<br>Holding |
|  AC 230 V supply                           | Operating voltage / Frequency   | AC 230 V ± 10 % / 50/60 Hz               |
|   | Power consumption   | Running<br>Holding                       |
| Function data   | Nominal torque  | 18 Nm                                    |
|   | Maximum torque (blocked)  | 50 Nm                                    |
|   | Nominal rotary angle / Max. rotary angle  | 90° / 95° ± 2°                           |
|   | Runtime for rotary angle 90° (motor operation)  | 90 s                                     |
|   | Closing time with return spring (on power failure)  | 15 s                                     |
|   | Switching current (at AC 24 V) for "Open"/"Close" (wires 6, 7)  | typical 8 mA                             |
| Positioning signal for GCA13..1<br>Positioning signal for GCA16..1,   | Input voltage Y (wires 8-2)   | DC 0...10 V                              |
|   | Max. permissible input voltage  | DC 35 V                                  |
| Characteristic functions<br>for GCA161.1, 166.1<br>for GCA163.1, 164.1  | Input voltage Y (wires 8-2)   | DC 0...35 V                              |
|   | Non-adjustable characteristic function  | DC 0...10 V                              |
|   | Adjustable characteristic function  | Offset U <sub>o</sub><br>Span ΔU         |
| Position indicator<br>for GCA16..1  | Output voltage U (wires 9-2)  | DC 0...10 V                              |
|   | Max. output current   | DC ± 1 mA                                |
| Feedback potentiometer<br>for GCA132.1  | Change of resistance (wires P1-P2)  | 0...1000 Ω                               |
|   | Load  | < 1 W                                    |
|  Auxiliary switch<br>for GCA..6.1, 164.1   | AC power supply   |  |
|   | Switching voltage   | AC 24...230 V                            |
|   | Nominal current res./ind.   | AC 6 A / 2 A                             |
|   | DC power supply   |  |
| Switching voltage   | DC 12...30 V  |  |
| Nominal current   | DC 2 A  |  |
| Switching range for auxiliary switches / Setting increments   | 5°...90° / 5°   |  |
| Connection cables   | Cross-section   | 0.75 mm <sup>2</sup>                     |
|   | Standard length   | 0.9 m                                    |
| Degree of protection of housing   | Degree of protection as per EN 60 529 (note mounting instructions)  | IP 54                                    |
| Protection class  | Insulation class  | EN 60 730                                |
|   | AC 24 V, feedback potentiometer   | III                                      |
|   | AC 230 V, auxiliary switch  | II                                       |
| Environmental conditions  | Operation / Transport   | IEC 721-3-3 / IEC 721-3-2                |
|   | Temperature   | -32...+55 °C / -32...+70 °C              |
|   | Humidity (non-condensing)   | < 95% r. F. / < 95% r. F.                |
| Standards and directives  | Product safety: Automatic electrical controls for household and similar use   | EN 60 730-2-14<br>(Type 1)               |
|   | Electromagnetic compatibility (EMC):  |  |
|   | Immunity for all models, except GCA135.1x   | IEC/EN 61 000-6-2                        |
|   | Immunity for GCA135.1x  | IEC/EN 61 000-6-1                        |
|   | Emissions for all models  | IEC/EN 61 000-6-3                        |
|   |  Conformity: Electromagnetic compatibility | 89/336/ECC                               |
|   | Low voltage directive   | 73/23/ECC                                |
|   |  Conformity: Australian EMC Framework      | Radio Communication Act 1992             |
|   | Radio Interference Emission Standard  | AS/NZS 3548                              |
|   | Dimensions  | Actuator B x H x T (see "Dimensions")    |
| Weight  | Damper shaft: Round / square  | 8...25.6 / 6...18 mm                     |
|   | Min. shaft length   | 20 mm                                    |
| Without packaging: GCA1..1 / GCA32..1   |   | 2 kg / 2.1 kg                            |

## Disposal

The document on technical basics and the environmental declaration provide information on environmental compatibility and disposal of this device.

**Internal diagrams**



| Pin                                  | Cable labeling |     |            |              | Meaning  |
|--------------------------------------|----------------|-----|------------|--------------|--|
|                                      | Code           | No. | Color      | Abbreviation |  |
| Actuators<br>AC 24 V<br>DC 24...48 V | G              | 1   | red        | RD           | System potential AC 24 V / DC 24...48 V              |
|                                      | G0             | 2   | black      | BK           | System neutral                                       |
|                                      | Y1             | 6   | purple     | VT           | Pos. signal AC 0 V / AC 24 V / DC 24...48 V, "open"  |
|                                      | Y2             | 7   | orange     | OG           | Pos. signal AC 0 V / AC 24 V / DC 24...48 V, "close" |
|                                      | Y              | 8   | grey       | GY           | Pos. signal DC 0...10 V, 0...35 V                    |
|                                      | U              | 9   | pink       | PK           | Position indication DC 0...10 V                      |
| Actuators<br>AC 230 V                | L              | 3   | brown      | BN           | Phase AC 230 V                                       |
|                                      | N              | 4   | blue       | BU           | Neutral conductor                                    |
| 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                       |
| Feedback<br>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)                      |

**Dimensions**

