



OpenAir™

## Air damper actuators

## GCA..1

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

**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> . |

**⚠ 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.

**Technical data**

|   |   |  |                     |
|---|---|--|---------------------|
| <p><b>⚠</b> AC 24 V / DC 24...48 V supply (SELV/PELV)</p> | Operating voltage AC / Frequency  | AC 24 V ± 20 % / 50/60 Hz                                      |                     |
|   | Operating voltage DC  | DC 24...48 V ± 20 %  |                     |
|   | Power consumption Running   | AC: 7 VA / 5 W   |                     |
|   | Running   | DC: 4 W  |                     |
| <p><b>⚠</b> AC 230 V supply</p>                           | Power consumption Holding   | AC: 5 VA / 3 W   |                     |
|   | Holding   | DC: 3 W  |                     |
|   | Operating voltage / Frequency   | AC 230 V ± 10 % / 50/60 Hz                                     |                     |
|   | Power consumption Running   | 8 VA / 6 W   |                     |
| Function data   | Holding   | 6 VA / 4 W   |                     |
|   | Nominal torque  | 18 Nm  |                     |
|   | Maximum torque (blocked)  | 50 Nm  |                     |
|   | Nominal rotary angle / Max. rotary angle                                    | 90° / 95° ± 2°   |                     |
| Positioning signal for GCA13..1                           | Runtime for rotary angle 90° (motor operation)                              | 90 s   |                     |
|   | Closing time with return spring (on power failure)                          | 15 s   |                     |
|   | Positioning signal for GCA16..1,  | Switching current (at AC 24 V) for "Open"/"Close" (wires 6, 7) | typical 8 mA        |
|   | Characteristic functions for GCA161.1, 166.1 for GCA163.1, 164.1            | Input voltage Y (wires 8-2)                                    | DC 0...10 V         |
| Max. permissible input voltage                            |   | DC 35 V  |                     |
| Input voltage Y (wires 8-2)                               |   | DC 0...35 V  |                     |
| Non-adjustable characteristic function                    |   | DC 0...10 V  |                     |
| Position indicator for GCA16..1                           | Adjustable characteristic function  | DC 0...5 V   |                     |
|   | Offset U <sub>o</sub>   | DC 2...30 V  |                     |
|   | Span ΔU   |  |                     |
|   | Output voltage U (wires 9-2)  | DC 0...10 V  |                     |
| Feedback potentiometer for GCA132.1                       | Max. output current   | DC ± 1 mA  |                     |
|   | Change of resistance (wires P1-P2)  | 0...1000 Ω   |                     |
| <p><b>⚠</b> Auxiliary switch for GCA..6.1, 164.1</p>      | Load  | < 1 W  |                     |
|   | 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   |                     |
| Connection cables   | Nominal current   | DC 2 A   |                     |
|   | Switching range for auxiliary switches / Setting increments                 | 5°...90° / 5°  |                     |
|   | 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. h. / < 95% r. h.                                      |                     |
| Norms and directives                                      | Product safety: Automatic electrical controls for household and similar use | EN 60 730-2-14 (Type 1)  |                     |
|   | Electromagnetic compatibility (Application)                                 | For residential, commercial and industrial environments        |                     |
|   | EU Conformity (CE)  | A5W00004370 <sup>1)</sup>                                      |                     |
|   | UKCA Conformity   | A5W00198156A <sup>1)</sup>                                     |                     |
|   | RCM Conformity  | A5W00004371 <sup>1)</sup>                                      |                     |
|   | Product environmental declaration <sup>2)</sup>                             | CE1E4613en <sup>1)</sup>                                       |                     |
|   | Dimensions  | Actuator B x H x T (see "Dimensions")                          | 100 x 300 x 67.5 mm |

|        |                    |                    |                      |
|--------|--------------------|--------------------|----------------------|
| 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        |

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

<sup>2)</sup> The product environmental declaration contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

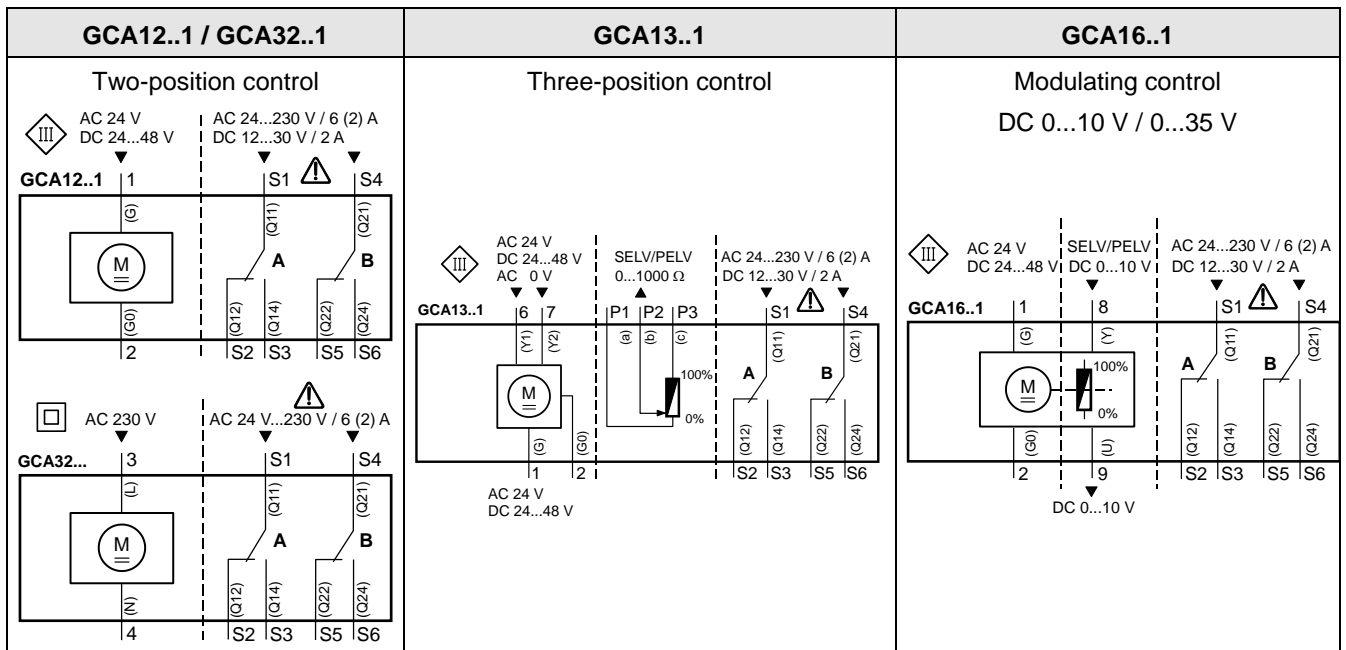
## Disposal



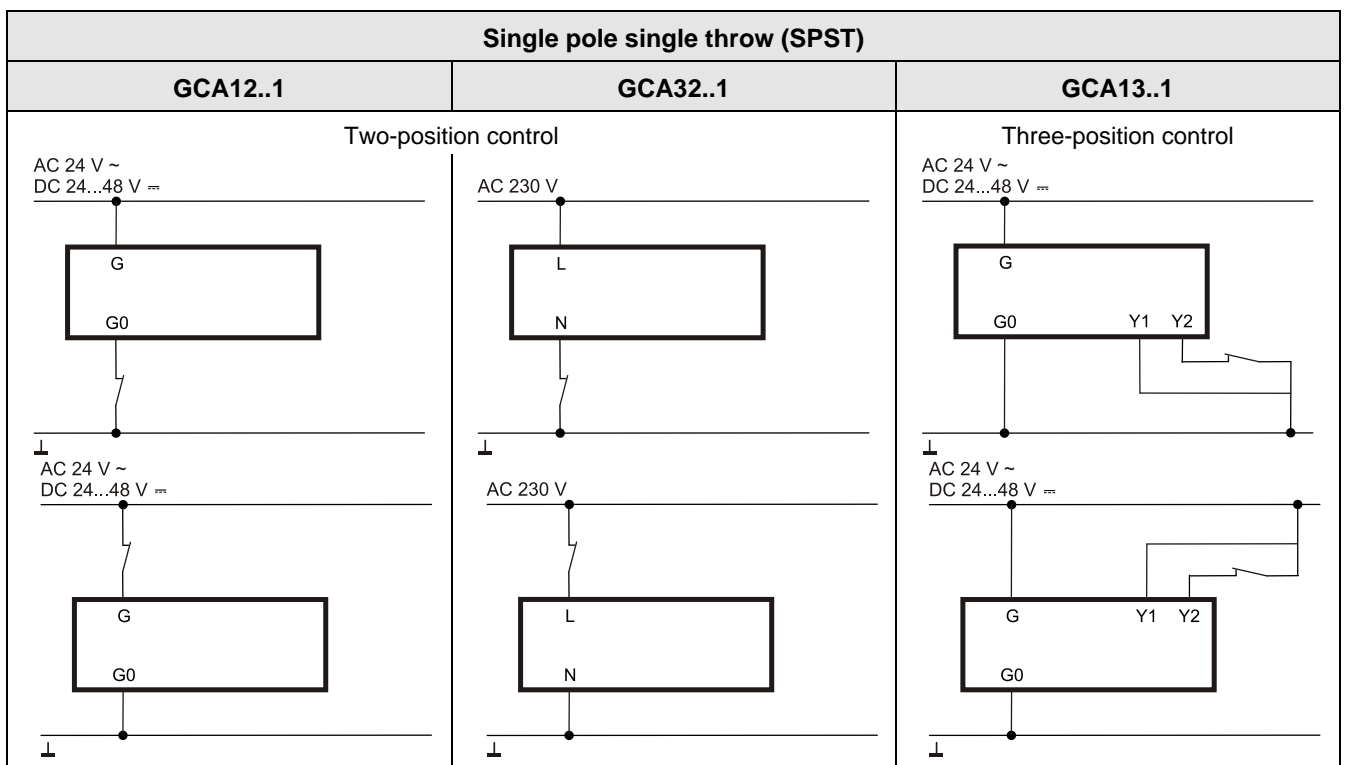
The device is considered an electronics device for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic garbage.

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

## Internal diagrams

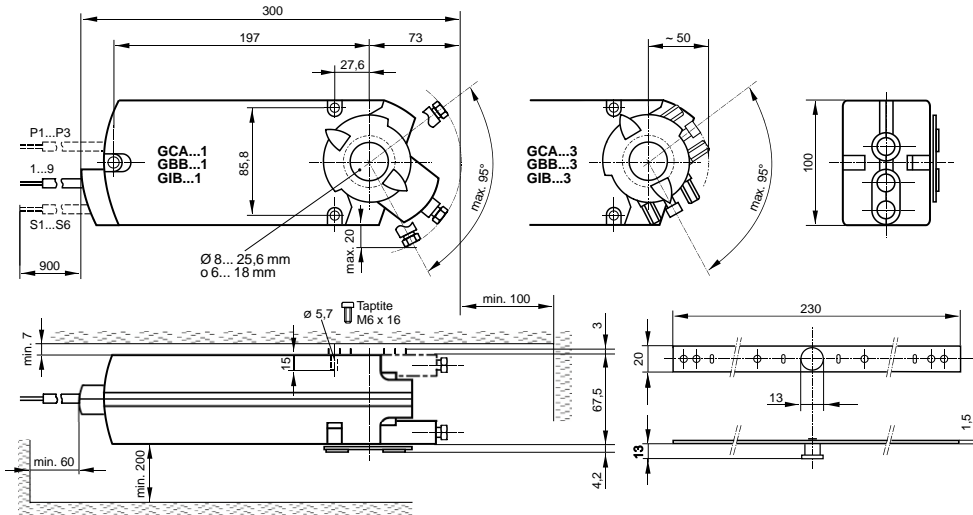


## Connection diagrams



| 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                    |
| 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



Dimensions in mm

Issued by  
Siemens Switzerland Ltd  
Smart Infrastructure  
Global Headquarters  
Theilerstrasse 1a  
6300 Zug  
Switzerland  
Tel. +41 58-724 24 24

[www.siemens.com/buildingtechnologies](http://www.siemens.com/buildingtechnologies)

© Siemens Switzerland Ltd, 2006

Technical specifications and availability subject to change without notice.