



OpenAir™

## Air damper actuators

GEB...1

Rotary version, AC 24 V / AC 230 V

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**Electronic motor driven actuators for three-position and modulating control, nominal torque 15 Nm, self-centering shaft adapter, mechanically adjustable span between 0...90°, prewired with 0.9 m long connection cables. Type-specific variations with adjustable offset and span for the positioning signal, position indicator, feedback potentiometer, self-adaptation of the rotary angle range, 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 Z4621en for a detailed description as well as information on safety, engineering notes, mounting and commissioning.

### Use

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- For damper areas up to 3 m<sup>2</sup>, friction-dependent.
- Suitable for modulating controllers (DC 0...10 V) or three-position controllers (e.g. for outside air dampers).
- For dampers having two actuators on the same damper shaft (tandem-mounted actuators or Powerpack).

## Type summary

| GEB....   | 131.1E                 | 132.1E | 136.1E | 331.1E | 332.1E | 336.1E | 161.1E             | 163.1E | 164.1E | 166.1E |
|---|------------------------|--------|--------|--------|--------|--------|--------------------|--------|--------|--------|
| Control type  | Three-position control |        |        |        |        |        | Modulating control |        |        |        |
| Operating voltage<br>AC 24 V                                | X                      | X      | X      |        |        |        | X                  | X      | X      | X      |
| Operating voltage<br>AC 230 V                               |                        |        |        | X      | X      | X      |                    |        |        |        |
| Positioning signal Y<br>DC 0...10 V                         |                        |        |        |        |        |        | X                  | X      | X      | X      |
| DC 2...10 V   |                        |        |        |        |        |        | X                  |        |        | X      |
| DC 0...35 V with characteristic<br>function $U_o, \Delta U$ |                        |        |        |        |        |        |                    | X      | X      |        |
| Position indicator<br>$U = DC 0...10 V$                     |                        |        |        |        |        |        | X                  | X      | X      | X      |
| Feedback potentiometer 1k $\Omega$                          |                        | X      |        |        | X      |        |                    |        |        |        |
| Self-adaptation of<br>rotary angle range                    |                        |        |        |        |        |        | X                  | X      | X      | X      |
| Auxiliary switches (two)                                    |                        |        | X      |        |        | X      |                    |        | X      | X      |
| Rotary direction switch                                     |                        |        |        |        |        |        | X                  | X      | X      | X      |
| Powerpack (two actuators,<br>tandem-mounted)                | X                      | X      | X      | X      | X      | X      |                    |        |        |        |

## Functions

| Type  | GEB13..1 / GEB33...1  | GEB16..1  |
|---|---|---|
| Control type  | Three-position control  | Modulating control  |
| Positioning signal with adjustable<br>characteristic function |   | DC 0...35 V with<br>Offset $U_o = 0...5 V$ and<br>span $\Delta U = 2...30 V$  |
| Rotary direction  | Clockwise or counter-clockwise direction depends...   |   |
|   | ...the type of control. With no power applied, the<br>actuator remains in the respective position.                                | ...the DIL switch setting clockwise / counter-<br>clockwise   |
| Position indication: Mechanical                               | Rotary angle position indication by using a position indicator.   |   |
| Position indication: Electrical                               | The feedback potentiometer can be<br>connected to external voltage to indicate<br>the position.                                   | Position indicator:<br>Output voltage $U = DC 0...10 V$ is generated<br>proportional to the rotary angle. $U$ depends on the<br>rotary direction of the DIL switch.   |
| Auxiliary switch  | The switching points for auxiliary switches A and B can be set independent of each other<br>in increments of 5° within 0° to 90°. |   |
| Self-adaptation of<br>rotary angle range                      |   | When self-adaptation is active, the actuator<br>automatically determines the mechanical end<br>positions of the rotary angle range and maps the<br>characteristic function ( $U_o, \Delta U$ ) to the calculated<br>rotary angle range. |
| Powerpack   | Mounting two of the same actuator types on the<br>same damper shaft may result in a double torque.                                | Not permitted.  |
| Rotary angle limitation                                       | The rotary angle of the shaft adapter can be limited mechanically at increments of 5°.  |   |

## Ordering

### Note

Potentiometer and **cannot be added in the field**. 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 **not mounted** on delivery.

Accessories, spare parts

Accessories to functionally extend the actuators are available, e.g., rotary/linear sets, auxiliary switches (1 or 2 switches) and weather protection cover; see data sheet **N4697**.

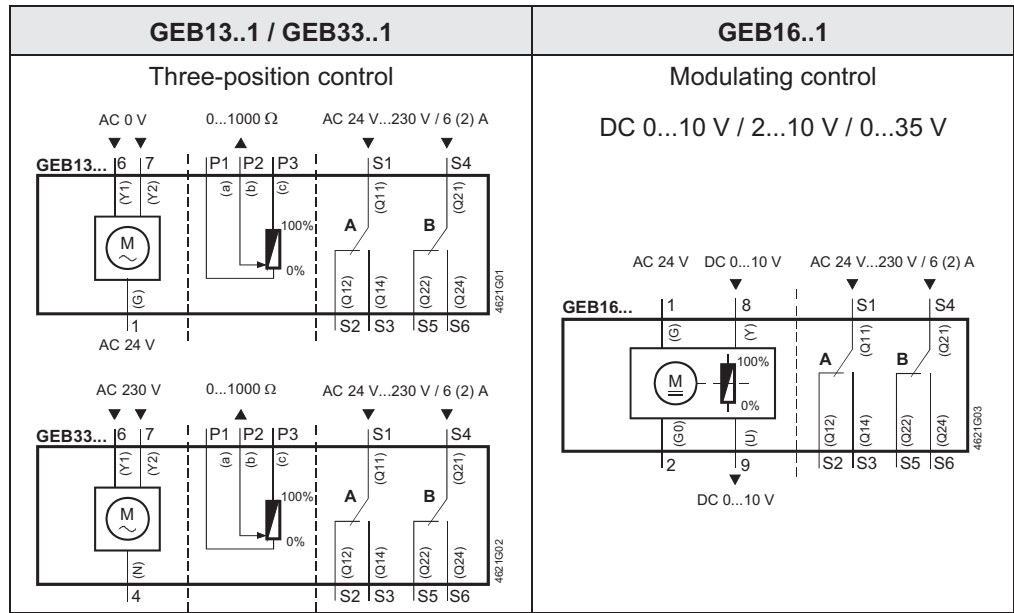
## Technical data

|  |   |                                |
|--|---|--------------------------------|
|  AC 24 V supply (SELV/PELV)                 | Operating voltage / Frequency   | AC 24 V $\pm$ 20 % / 50/60 Hz  |
|  | Power consumption GEB13..1: Running   | 4 VA / 3.5 W                   |
|  | GEB16..1: Running<br>Holding  | 6 VA / 5.5 W<br>1.5 W          |
|  AC 230 V supply                            | Operating voltage / Frequency   | AC 230 V $\pm$ 10 % / 50/60 Hz |
|  | Power consumption GEB33..1  | 3 VA / 3 W                     |
| Function data  | Nominal torque  | 15 Nm                          |
|  | Maximum torque (blocked)  | 30 Nm                          |
|  | Nominal rotary angle / Max. rotary angle  | 90° / max. 95° $\pm$ 2°        |
|  | Runtime for 90° rotary angle  | 150 s (50 Hz) / 125 s (60 Hz)  |
| Positioning signal for GEB16..1  | Input voltage Y (wires 8-2)   | DC 0...10 V / DC 2...10 V      |
|  | Max. permissible input voltage  | DC 35 V                        |
| Characteristic functions for GEB161.1, GEB166.1 for GEB163.1, GEB164.1   | Input voltage Y (wires 8-2)   | DC 0...35 V                    |
|  | Non-adjustable characteristic function  | DC 0...10 V / DC 2...10 V      |
|  | Adjustable characteristic function Offset U <sub>o</sub>  | DC 0...5 V                     |
|  | Span $\Delta$ U   | DC 2...30 V                    |
| Position indicator for GEB16...1   | Output voltage U (cores 9-2)  | DC 0...10 V                    |
|  | Max. output current   | DC $\pm$ 1 mA                  |
| Feedback potentiometer for GEB132.1 / GEB332.1   | Change of resistance (wires P1-P2)  | 0...1000 $\Omega$              |
|  | Load  | < 1 W                          |
|  | Contact rating  | 6 A resistive, 2 A inductive   |
|  Auxiliary switches for GEB..6.1 / GEB164.1 | Voltage (no mixed operation AC 24 V / AC 230 V)   | AC 24...230 V                  |
|  | Switching range for auxiliary switches  | 5°...90°                       |
|  | Setting increments  | 5°                             |
|  | Cross-section   | 0.75 mm <sup>2</sup>           |
| Connection cables  | Standard length   | 0.9 m                          |
|  | Degree of protection as per EN 60 529 (note mounting instructions)                              | IP 54                          |
| Degree of protection of housing  | Insulation class  | EN 60 730                      |
|  | AC 24 V, feedback potentiometer   | III                            |
| Protection class   | AC 230 V, auxiliary switch  | II                             |
|  | Operation / Transport   | IEC 721-3-3 / IEC 721-3-2      |
| Environmental conditions   | Temperature   | -32...+55 °C / -32...+70 °C    |
|  | Humidity (non-condensing)   | < 95% r. h. / < 95% r. h.      |
| Standards and directives   | Product safety: Automatic electrical controls for household and similar use                     | EN 60 730-2-14 (Type 1)        |
|  | Electromagnetic compatibility (EMC):  |                                |
|  | Immunity for all models, except GEB132.1x; GEB332.1x  | IEC/EN 61 000-6-2              |
|  | Immunity for GEB132.1x; GEB332.1x   | IEC/EN 61 000-6-1              |
|  | Emissions for all models  | IEC/EN 61 000-6-3              |
|  |  Conformity: |                                |
|  | Electromagnetic compatibility   | 89/336/EEC                     |
|  | Low voltage directive   | 73/23/EEC                      |
|  |  Conformity: |                                |
|  | Australian EMC Framework  | Radio Communication Act 1992   |
| Radio Interference Emission Standard   | AS/NZS 3548   |                                |
| Dimensions   | Actuator W x H x D (see "Dimensions")   | 81 x 192 x 63 mm               |
|  | Damper shaft: Round   | 6.4...20.5 mm                  |
|  | Square  | 6.4...13 mm                    |
|  | Min. shaft length   | 20 mm                          |
| Weight   | Without packaging: GEB1...1   | 1 kg                           |
|  | GEB33..1  | 1.1 kg                         |

## Disposal

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

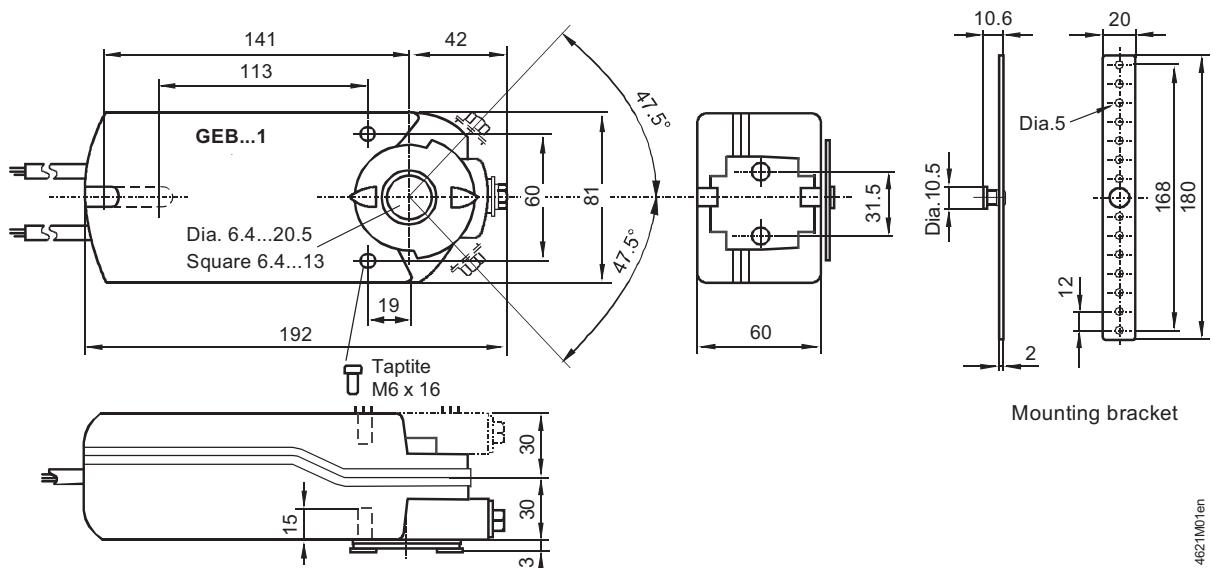
**Internal diagrams**



**Cable labeling**

| Pin               | Cable |     | Color Abbreviation | Meaning |   |
|-------------------|-------|-----|--------------------|---------|---|
|                   | Code  | No. |                    |         |   |
| Actuators AC 24V  | G     | 1   | red                | RD      | System potential AC 24 V                    |
|                   | G0    | 2   | black              | BK      | System neutral                              |
|                   | Y1    | 6   | purple             | VT      | Control signal AC 0 V, clockwise            |
|                   | Y2    | 7   | orange             | OG      | Control signal AC 0 V, counter-clockwise    |
|                   | Y     | 8   | gray               | GY      | Pos. signal DC 0...10 V, 2...10 V, 0...35 V |
|                   | U     | 9   | pink               | PK      | Position indication DC 0...10 V             |
| Actuators AC 230V | N     | 4   | blue               | BU      | Neutral conductor                           |
|                   | Y1    | 6   | black              | BK      | Control signal AC 230 V, clockwise          |
|                   | Y2    | 7   | white              | WH      | Control signal AC 230 V, counter-clockwise  |
| Auxiliary switch  | Q11   | S1  | gray/red           | GY RD   | Switch A Input                              |
|                   | Q12   | S2  | gray/blue          | GY BU   | Switch A Normally closed contact            |
|                   | Q14   | S3  | gray/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              |
| Positioner        | 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

4821M01en