# Types 227V + GUAC

**Actuators with rotation drive**

**without spring return**
5 Nm
8 Nm
15 Nm
20 Nm
30 Nm

**with spring return**
5 Nm
15 Nm

**for OEM (angle of rotation ∞°)**
10 Nm

**For the application with**

Air volume control
Channel pressure regulation


| Page: | | | Content: |
|---|---|---|---|
| 2 | | | Overview volume flow control and actuators with rotation drive |
| 3 | | | Summary 227V and GUAC |
| 4 | - | 9 | Compact VAV control 227V |
| 10 | - | 11 | GUAC-D3 |
| 12 | - | 13 | GUAC-S1 / -S3 / -S6 |
| 14 | - | 15 | GUAC-P1 / -P3 / -P6 |
| 16 | - | 17 | GUIV-A / -O / -S |
| 18 | | | Actuators for the control by GUAC |
| 19 | | | Notes |
| 20 | | | Your way to Gruner |

GRUNER – the friendly alternative

**GRUNER AG**
PF 1149, D-78560 Wehingen
Tel. (++49) 74 26 / 948 - 0
Fax (++49) 74 26 / 948 - 200
http://www.gruner.de
E-Mail: info@gruner.de



GRUNER
Schalten und Bewegen

# OVERVIEW VOLUME FLOW CONTROL AND ACTUATORS WITH ROTATION DRIVE

| | VAV | Volume control unit | | | Pressure control unit | |
|---|---|---|---|---|---|---|
| ● = Standard<br>❍ = Optional |  | |  |  | |  |
| **Type** | **227V** | | **GUAC-D** | **GUAC-S** | | **GUAC-P** |
| **Sensor** | dynamic | | dynamic | static | | static |
| 0...100 Pa | | | | ● | | ● |
| 0...300 Pa | ● | | ● | ● | | ● |
| 0...600 Pa | | | | ● | | ● |
| **Control** | | | | | | |
| Override control | ● | | ● | ● | | ● |
| Control signal<br>(0) 2...10 VDC or<br>(0) 4...20 mA with 500Ω | ● | | ● | ● | | ● |
| **Power supply** | | | | | | |
| 24 VAC/DC | ● | | ● | ● | | ● |
| **Options** | | | | | | |
| Switching output | ❍ | | ❍ | ❍ | | ❍ |
| Corrosive medium | | | | ● | | ● |
| min. pressure 0.3 Pa | ● | | ● | | | |

| | without spring return | | | with spring return | | OEM |
|---|---|---|---|---|---|---|
| ● = Standard<br>❍ = Optional |  |  |  |  |  |  |
| **Type** | **227** | **232** | **231** | **228** | **238** | **235** |
| **Torque** | 5 Nm (appr.1 m²)<br>8 Nm (appr.1.6 m²) | 15 Nm (appr.3 m²) | 20 Nm (appr.4 m²)<br>30 Nm (appr.6 m²) | 5 Nm (appr.1 m²) | 15 Nm (appr.3 m²) | 10 Nm (appr.2 m²) |
| **Control** | | | | | | |
| by GUAC | ● | ● | ● | ● | ● | ● |
| **Power supply** | | | | | | |
| 24 VAC/DC | ● | ● | ● | ● | ● | ● |
| by control unit GUAC | | | | | | |
| **Options** | | | | | | |
| End shaft | | | | | | ● |
| Universal locking clamp | ● | ● | ● | ● | ● | |
| Form locking | ❍ | | | ❍ | ❍ | |

# SUMMARY TYPES 227V AND GUAC

● = Standard
❍ = Optional

| Type | 227V-024-05 | 227V-024-08 | 227V-024-15 | GUAC-D3 | GUAC-S1 | GUAC-S3 | GUAC-S6 | GUAC-P1 | GUAC-P3 | GUAC-P6 | GUIV-A / -O / -S |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sensor** | | | | | | | | | | | |
| 0...100 Pa | | | | | ● | | | ● | | | | |
| 0...300 Pa | ● | ● | ● | ● | | ● | | | ● | | | |
| 0...600 Pa | | | | | | | ● | | | ● | | |
| **Control** | | | | | | | | | | | |
| Override control | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Control signal (0) 2...10 VDC or (0) 4...20 mA with 500Ω | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| **Setting** | | | | | | | | | | | |
| GUIV-A | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| GUIV-O | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| GUIV-S | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| **Power supply** | | | | | | | | | | | |
| 24 VAC/DC | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| **Options** | | | | | | | | | | | |
| Switching output | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | | |
| Corrosive medium | | | | | ● | ● | ● | ● | ● | ● | | |
| min. pressure 0.3 Pa | ● | ● | ● | ● | | | | | | | | |
| **for Actuator** | | | | | | | | | | | |
| 227-024-05-V | | | | ● | ● | ● | ● | ● | ● | ● | | |
| 227-024-08-V | | | | ● | ● | ● | ● | ● | ● | ● | | |
| 232-024-15-V | | | | ● | ● | ● | ● | ● | ● | ● | | |
| 231-024-20-V | | | | ● | ● | ● | ● | ● | ● | ● | | |
| 231-024-30-V | | | | ● | ● | ● | ● | ● | ● | ● | | |
| 228-024-05-V | | | | ● | ● | ● | ● | ● | ● | ● | | |
| 238-024-15-V | | | | ● | ● | ● | ● | ● | ● | ● | | |
| 235-024-10-V | | | | ● | ● | ● | ● | ● | ● | ● | | |
| **Page** | 4 | 6 | 8 | 10 | 12 | 12 | 12 | 14 | 14 | 14 | 16 | |

Standard version with universal locking clamp and anti-torsion bow. Also available with form locking for shaft (❑ 8 mm) and flange fixing. All actuators dispose of manual override button, a mechanical limitation of the angle of rotation and setting button for the rotation direction (cw/ccw).

Actuators according to US-standards available upon demand.

**GRUNER AG**
PF 1149, D-78560 Wehingen
Tel. (++49) 74 26 / 948 - 0
Fax (++49) 74 26 / 948 - 200
http://www.gruner.de
E-Mail: info@gruner.de



GRUNER
Schalten und Bewegen


## Applications

The damper actuator type 227V contains a dynamic differential pressure sensor. The volume flow is measured according to the defined flow direction. An integrated microprocessor controls measurement and control of the actuator and communication.

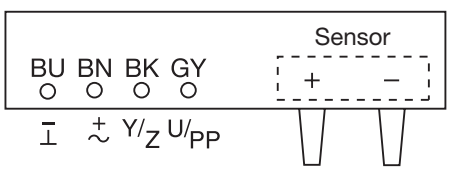
For pressure independent control of VAV boxes. The actuator is controlled by proportional controllers, positioners or DDC systems. Simple realisation of different operating modes can be utilised by using override control signals.

## Technical characteristics

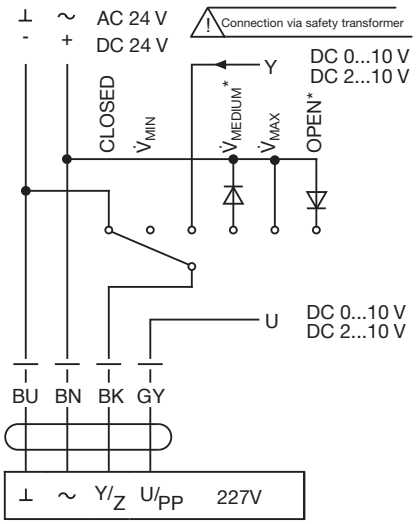
| | |
|---|---|
| **Power supply** | |
| **Nominal voltage** | 24 VDC / 24 VAC |
| **Operating range** | 19.2...30.0 VDC / 19.2...28.8 VAC |
| **Power consumption** | motion: 2.5 W / power safe mode: 1.0 W |
| **Transformer size** | 4.5 VA |
| **Differential pressure sensor** | |
| **Operating pressure** | 0...300 Pa (depends on OEM) |
| **Bursting pressure** | 1 bar |
| **Medium** | 0...70°C / 5...95% rel. humidity, non condensing |
| **Characteristic** | OEM specific, matching the baffle device |
| **Mounting position** | any position, no calibration necessary |
| **Material** | Ultem 2200 |
| **Pressurized connection** | Stubs for tubes with inner-Ø 4...6 mm |
| **Working volume flow** | |
| $\dot{V}_{NOM}$ | OEM-specific value, depending on used VAV box type |
| $\dot{V}_{MAX}$ | 30...100% of $\dot{V}_{NOM}$ |
| $\dot{V}_{MIN}$ | 0...80% of $\dot{V}_{MAX}$ |
| $\dot{V}_{MEDIUM}$ | 50 % of [$\dot{V}_{MIN}$ ... $\dot{V}_{MAX}$] |
| $\dot{V}_{CONST}$ | 0...100% of $\dot{V}_{NOM}$ |
| **Control** | see figure 1 and 2 |
| **Ri** | > 50 kΩ |
| **Control signal Y** | 0...10 VDC / 0...20 mA with 500 Ω / (I)<br>2...10 VDC / 4...20 mA with 500 Ω / (II) |
| **Override control Z** | $\dot{V}_{MIN}$ / $\dot{V}_{MEDIUM}$ / $\dot{V}_{MAX}$ / OPEN / (I)<br>CLOSED / $\dot{V}_{MIN}$ / $\dot{V}_{MEDIUM}$ / $\dot{V}_{MAX}$ / OPEN / (II) |
| **Feedback signal U** | 0...10 VDC / (I)<br>2...10 VDC / (II) |
| **Operation** | |
| **Connection PP** | external via feedback signal U, Serv. Plug |
| **Communication** | PP-Bus, 1200 Baud, max. 15 VDC |

## Connection scheme

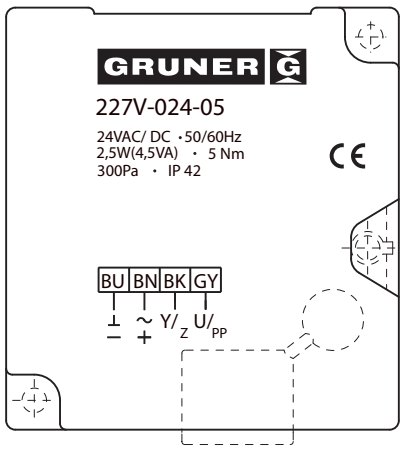
**227V-024-05**



## 1




## 2

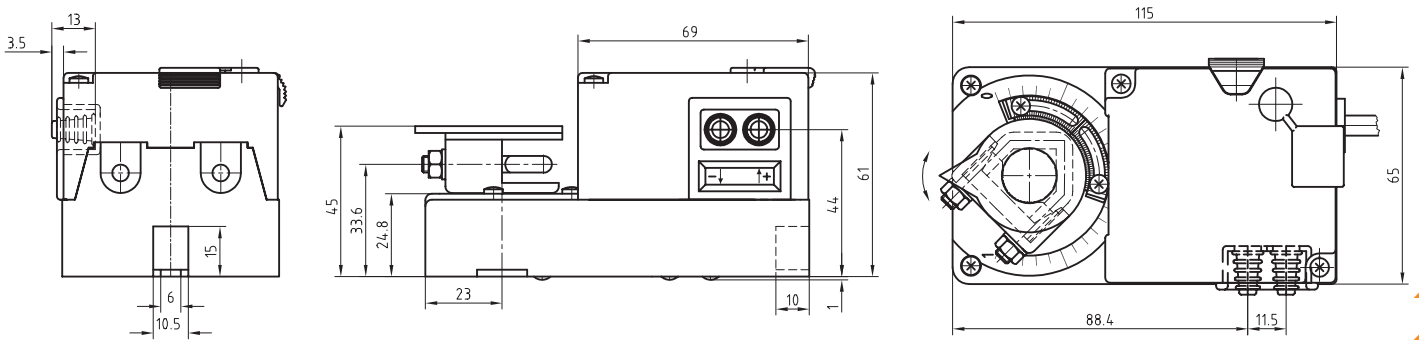



## Technical characteristics (continued)

| | |
|---|---|
| **Actuator** | |
| **Description** | non-interlock brushed DC motor with power safe mode |
| **Torque** | 5 Nm |
| **Direction of rotation** | reversible |
| **Angle of rotation** | 95° with mechanical end stops |
| **Running time 90°** | 60...120 s |
| **Manual override** | disengange button, self restoring |
| **Position indicator** | visual indicator |
| **Damper shaft** | universal clamp connection for shaft Ø = 8...16 mm / ❒ = 8...12 mm |
| **Connection** | |
| **Electric Connection** | Cable 900 mm / 4 x 0.75 mm² |
| **Ambient conditions** | |
| **Operating / storage** | 0...50°C / -20...80°C |
| **Safety class** | III (safety low voltage) |
| **Protection** | IP 42 |
| **Approvals** | 73/23/EWG, 89/336/EWG |
| **Others** | |
| **Sound power level** | < 35 dB(A) |
| **Maintenance** | maintenance-free |
| **Weight** | 570 g |

## Technical drawing

**227V-024-05**




## Applications

The damper actuator type 227V contains a dynamic differential pressure sensor. The volume flow is measured according to the defined flow direction. An integrated microprocessor controls measurement and control of the actuator and communication.

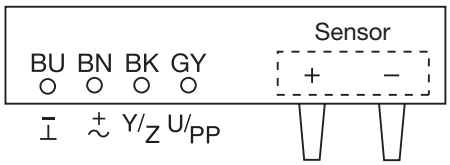
For pressure independent control of VAV boxes. The actuator is controlled by proportional controllers, positioners or DDC systems. Simple realisation of different operating modes can be utilised by using override control signals.

## Technical characteristics

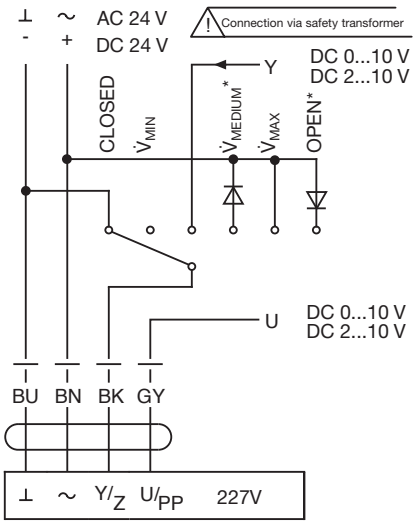
| | |
|---|---|
| **Power supply** | |
| **Nominal voltage** | 24 VDC / 24 VAC |
| **Operating range** | 19.2...30.0 VDC / 19.2...28.8 VAC |
| **Power consumption** | motion: 2.5 W / power safe mode: 1.0 W |
| **Transformer size** | 4.5 VA |
| **Differential pressure sensor** | |
| **Operating pressure** | 0...300 Pa (depends on OEM) |
| **Bursting pressure** | 1 bar |
| **Medium** | 0...70°C / 5...95% rel. humidity, non condensing |
| **Characteristic** | OEM specific, matching the baffle device |
| **Mounting position** | any position, no calibration necessary |
| **Material** | Ultem 2200 |
| **Pressurized connection** | Stubs for tubes with inner-Ø 4...6 mm |
| **Working volume flow** | |
| $\dot{V}_{NOM}$ | OEM-specific value, depending on used VAV box type |
| $\dot{V}_{MAX}$ | 30...100% of $\dot{V}_{NOM}$ |
| $\dot{V}_{MIN}$ | 0...80% of $\dot{V}_{MAX}$ |
| $\dot{V}_{MEDIUM}$ | 50 % of [$\dot{V}_{MIN}$ ... $\dot{V}_{MAX}$] |
| $\dot{V}_{CONST}$ | 0...100% of $\dot{V}_{NOM}$ |
| **Control** | see figure 1 and 2 |
| **Ri** | > 50 kΩ |
| **Control signal Y** | 0...10 VDC / 0...20 mA with 500 Ω / (I)<br>2...10 VDC / 4...20 mA with 500 Ω / (II) |
| **Override control Z** | $\dot{V}_{MIN}$ / $\dot{V}_{MEDIUM}$ / $\dot{V}_{MAX}$ / OPEN / (I)<br>CLOSED / $\dot{V}_{MIN}$ / $\dot{V}_{MEDIUM}$ / $\dot{V}_{MAX}$ / OPEN / (II) |
| **Feedback signal U** | 0...10 VDC / (I)<br>2...10 VDC / (II) |
| **Operation** | |
| **Connection PP** | external via feedback signal U, Serv. Plug |
| **Communication** | PP-Bus, 1200 Baud, max. 15 VDC |

## Connection scheme

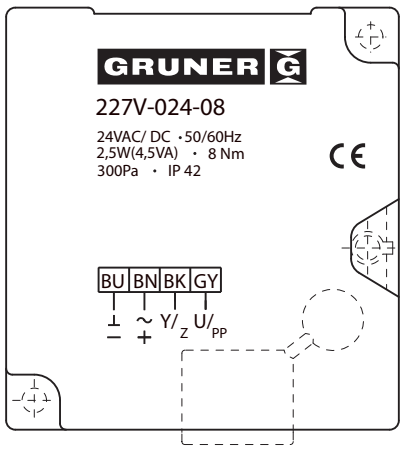
**227V-024-08**



## 1




## 2

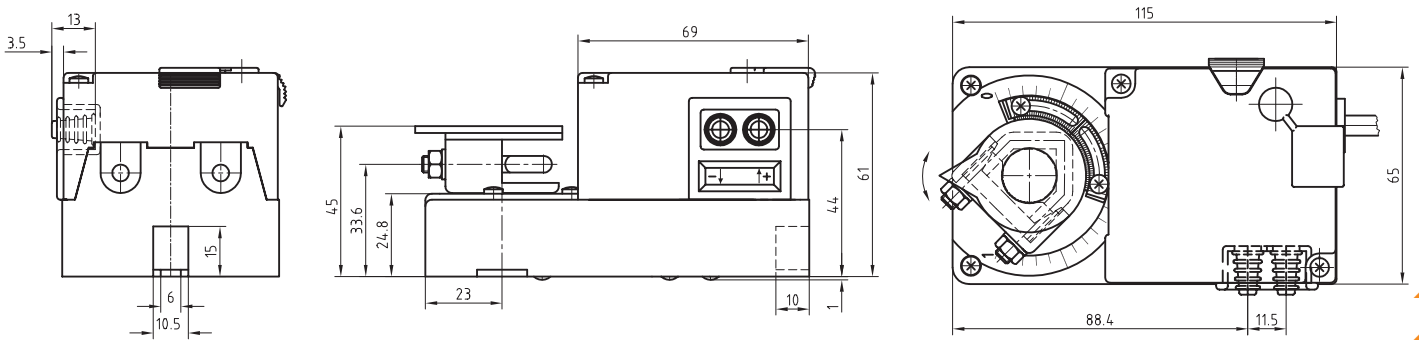



## Technical characteristics (continued)

| | |
|---|---|
| **Actuator** | |
| **Description** | non-interlock brushed DC motor with power safe mode |
| **Torque** | 8 Nm |
| **Direction of rotation** | reversible |
| **Angle of rotation** | 95° with mechanical end stops |
| **Running time 90°** | 60...120 s |
| **Manual override** | disengange button, self restoring |
| **Position indicator** | visual indicator |
| **Damper shaft** | universal clamp connection for shaft Ø = 8...16 mm / ❒ = 8...12 mm |
| **Connection** | |
| **Electric Connection** | Cable 900 mm / 4 x 0.75 mm² |
| **Ambient conditions** | |
| **Operating / storage** | 0...50°C / -20...80°C |
| **Safety class** | III (safety low voltage) |
| **Protection** | IP 42 |
| **Approvals** | 73/23/EWG, 89/336/EWG |
| **Others** | |
| **Sound power level** | < 35 dB(A) |
| **Maintenance** | maintenance-free |
| **Weight** | 570 g |

## Technical drawing

**227V-024-08**




## Applications

The damper actuator type 227V contains a dynamic differential pressure sensor. The volume flow is measured according to the defined flow direction. An integrated microprocessor controls measurement and control of the actuator and communication. For pressure independent control of VAV boxes. The actuator is controlled by proportional controllers, positioners or DDC systems. Simple realisation of different operating modes can be utilised by using override control signals.

Lifetime under full load

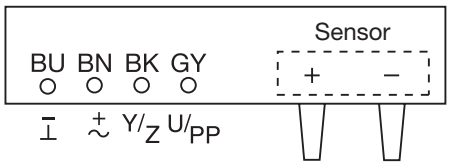
- 8 Nm more than 60,000 cycles
- 15 Nm at least 20,000 cycles

## Technical characteristics

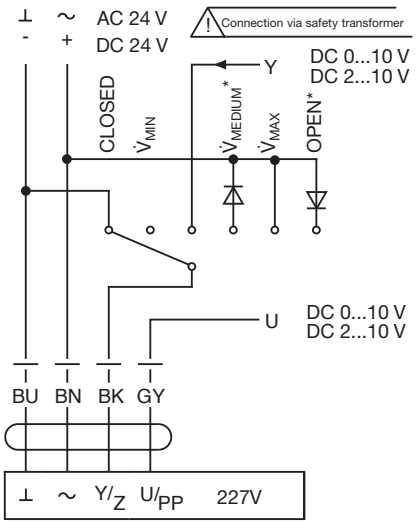
| | |
|---|---|
| **Power supply** | |
| **Nominal voltage** | 24 VDC / 24 VAC |
| **Operating range** | 19.2...30.0 VDC / 19.2...28.8 VAC |
| **Power consumption** | motion: 2.5 W / power safe mode: 1.0 W |
| **Transformer size** | 4.5 VA |
| **Differential pressure sensor** | |
| **Operating pressure** | 0...300 Pa (depends on OEM) |
| **Bursting pressure** | 1 bar |
| **Medium** | 0...70°C / 5...95% rel. humidity, non condensing |
| **Characteristic** | OEM specific, matching the baffle device |
| **Mounting position** | any position, no calibration necessary |
| **Material** | Ultem 2200 |
| **Pressurized connection** | Stubs for tubes with inner-Ø 4...6 mm |
| **Working volume flow** | |
| $\dot{V}_{NOM}$ | OEM-specific value, depending on used VAV box type |
| $\dot{V}_{MAX}$ | 30...100% of $\dot{V}_{NOM}$ |
| $\dot{V}_{MIN}$ | 0...80% of $\dot{V}_{MAX}$ |
| $\dot{V}_{MEDIUM}$ | 50 % of [$\dot{V}_{MIN}$ ... $\dot{V}_{MAX}$] |
| $\dot{V}_{CONST}$ | 0...100% of $\dot{V}_{NOM}$ |
| **Control** | see figure 1 and 2 |
| **Ri** | > 50 kΩ |
| **Control signal Y** | 0...10 VDC / 0...20 mA with 500 Ω / (I)<br>2...10 VDC / 4...20 mA with 500 Ω / (II) |
| **Override control Z** | $\dot{V}_{MIN}$ / $\dot{V}_{MEDIUM}$ / $\dot{V}_{MAX}$ / OPEN / (I)<br>CLOSED / $\dot{V}_{MIN}$ / $\dot{V}_{MEDIUM}$ / $\dot{V}_{MAX}$ / OPEN / (II) |
| **Feedback signal U** | 0...10 VDC / (I)<br>2...10 VDC / (II) |
| **Operation** | |
| **Connection PP** | external via feedback signal U, Serv. Plug |
| **Communication** | PP-Bus, 1200 Baud, max. 15 VDC |

## Connection scheme

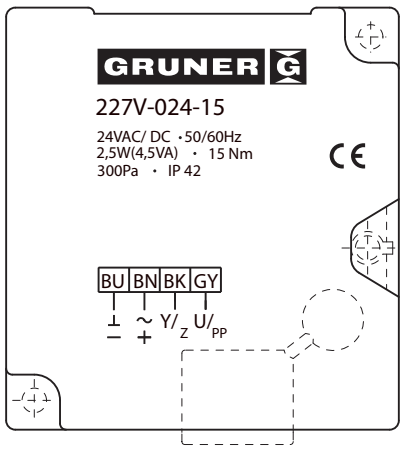
**227V-024-15**



## 1




## 2

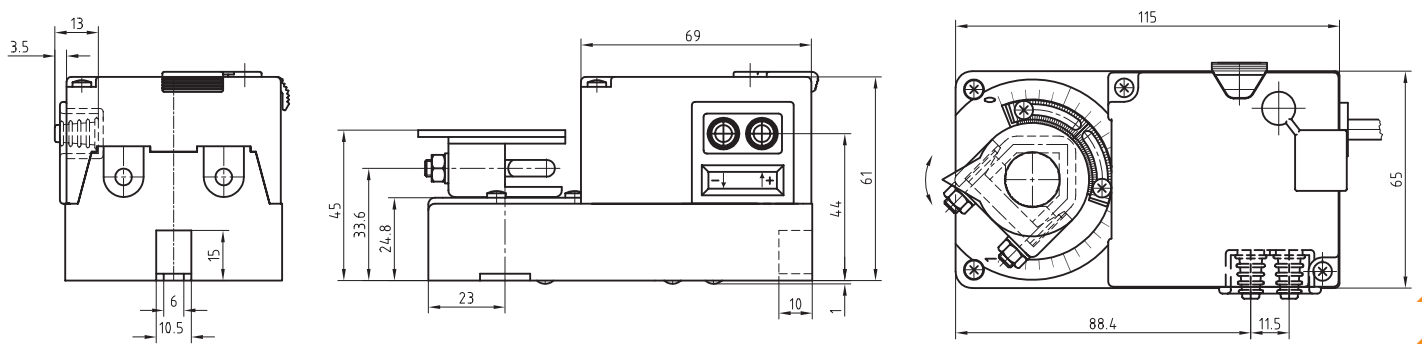



## Technical characteristics (continued)

| | |
|---|---|
| **Actuator** | |
| **Description** | non-interlock brushed DC motor with power safe mode |
| **Torque** | 15 Nm |
| **Direction of rotation** | reversible |
| **Angle of rotation** | 95° with mechanical end stops |
| **Running time 90°** | 60...120 s |
| **Manual override** | disengange button, self restoring |
| **Position indicator** | visual indicator |
| **Damper shaft** | universal clamp connection for shaft Ø = 8...16 mm / ❒ = 8...12 mm |
| **Connection** | |
| **Electric Connection** | Cable 900 mm / 4 x 0.75 mm² |
| **Ambient conditions** | |
| **Operating / storage** | 0...50°C / -20...80°C |
| **Safety class** | III (safety low voltage) |
| **Protection** | IP 42 |
| **Approvals** | 73/23/EWG, 89/336/EWG |
| **Others** | |
| **Sound power level** | < 35 dB(A) |
| **Maintenance** | maintenance-free |
| **Weight** | 570 g |

## Technical drawing

**227V-024-15**



## Applications

The VAV controller type GUAC-D3 contains a dynamic differential pressure sensor. The volume flow is measured according to the defined flow direction. An integrated microprocessor controls measurement and control of the actuator and communication.

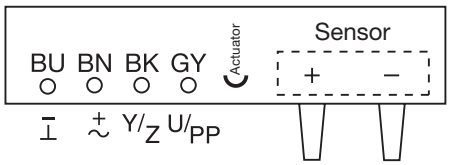
For pressure independent control of VAV boxes. The actuator is controlled by proportional controllers, positioners or DDC systems. Simple realisation of different operating modes can be utilised by using override control signals.

## Technical characteristics

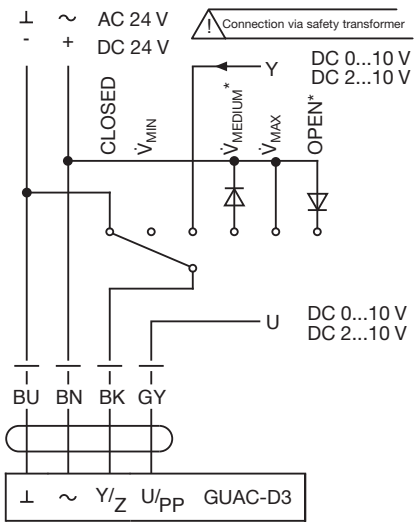
| | |
|---|---|
| **Power supply** | |
| **Nominal voltage** | 24 VDC / 24 VAC |
| **Operating range** | 19.2...30.0 VDC / 19.2...28.8 VAC |
| **Power consumption** | 0.6 W (without actuator) |
| **Transformer size** | 1.2 VA (without actuator) |
| **Differential pressure sensor** | |
| **Operating pressure** | 0...300 Pa (depends on OEM) |
| **Bursting pressure** | 1 bar |
| **Medium** | 0...70°C / 5...95% rel. humidity, non condensing |
| **Characteristic** | OEM specific, matching the flow meter |
| **Mounting position** | any position, no calibration necessary |
| **Material** | Ultem 2200 |
| **Pressurized connection** | Stubs for tubes with inner-Ø 4...6 mm |
| **Working volume flow** | |
| $\dot{V}_{NOM}$ | OEM-specific value, depending on used VAV box type |
| $\dot{V}_{MAX}$ | 30...100% of $\dot{V}_{NOM}$ |
| $\dot{V}_{MIN}$ | 0...80% of $\dot{V}_{MAX}$ |
| $\dot{V}_{MEDIUM}$ | 50 % of [$\dot{V}_{MIN}$ ... $\dot{V}_{MAX}$] |
| $\dot{V}_{CONST}$ | 0...100% of $\dot{V}_{NOM}$ |
| **Control** | see figure 1 |
| **Ri** | > 50 kΩ |
| **Control signal Y** | 0...10 VDC / 0...20 mA with 500 Ω / (I)<br>2...10 VDC / 4...20 mA with 500 Ω / (II) |
| **Override control Z** | $\dot{V}_{MIN}$ / $\dot{V}_{MEDIUM}$ / $\dot{V}_{MAX}$ / OPEN / (I)<br>CLOSED / $\dot{V}_{MIN}$ / $\dot{V}_{MEDIUM}$ / $\dot{V}_{MAX}$ / OPEN / (II) |
| **Feedback signal U** | 0...10 VDC / (I)<br>2...10 VDC / (II) |
| **Operation** | |
| **Connection PP** | external via feedback signal U, Serv. Plug |
| **Communication** | PP-Bus, 1200 Baud, max. 15 VDC |

## Connection scheme

**GUAC-D3**



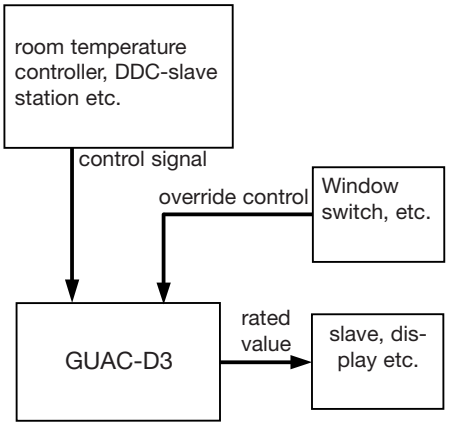
## 1




## Technical characteristics (continued)

| | |
|---|---|
| **Connection** | |
| **Connection of GUAC** | clamp connection for 3(4) x 0.75 mm² |
| **Connection of Actuator** | Phoenix connector with 900 mm cable |
| **Ambient conditions** | |
| **Operating / storage** | 0...50°C / -20...80°C |
| **Safety class** | III (safety low voltage) |
| **Protection** | IP 42 |
| **Approvals** | 73/23 EWG, 89/336 EWG |
| **Others** | |
| **Maintenance** | maintenance-free |
| **Weight** | 375 g |

## 2

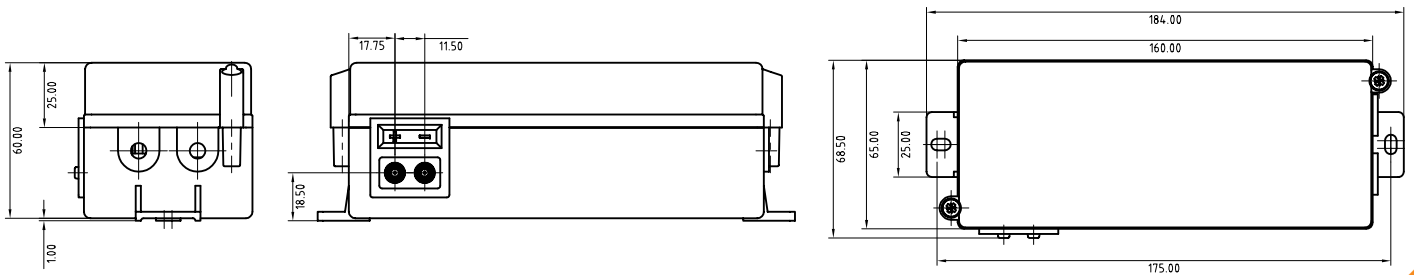



## VAV control (fig. 2)

Override controls are realised by using switches or relays. The actual value of the volume flow is available as linear, electrical standard signal, which can be used for the control of a sequel control unit (slave), i.e. for waste air and/or display. The voltage range for actual value and rated value is 2 to 10 VDC. The customer can switch over to 0 to 10 VDC by the control unit GUIV. The volume flow control unit is ready for use after connection to the operating voltage and the room temperature controller. Eventually necessary modifications of the volume flow can be effected by the customer at the GUAC-D3. Several control units can be connected to a room temperature controller for parallel operation. Sequel fresh air/waste air-operations can be realised. The GUAC-D3 can communicate by the PP-connection. The set parameters can be read and the voltage range can be modified by means of the GRUNER control unit GUIV.

## Technical drawing

**GUAC-D3**



## Applications

The VAV controller type GUAC-S contains a static differential pressure sensor. The volume flow is measured according to the defined flow direction. An integrated microprocessor controls measurement and control of the actuator and communication.

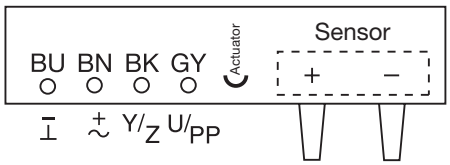
For pressure independent control of VAV boxes. The actuator is controlled by proportional controllers, positioners or DDC systems. Simple realisation of different operating modes can be utilised by using override control signals.

## Technical characteristics

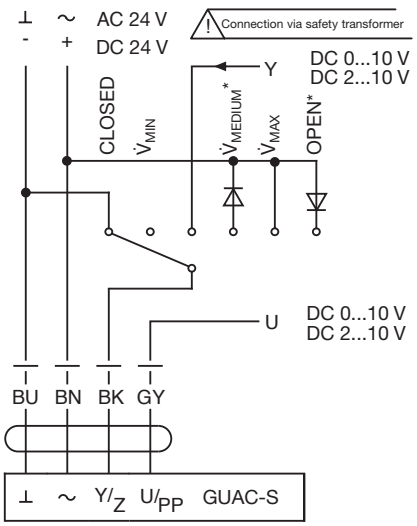
| | |
|---|---|
| **Power supply** | |
| **Nominal voltage** | 24 VDC / 24 VAC |
| **Operating range** | 19.2...30.0 VDC / 19.2...28.8 VAC |
| **Power consumption** | 0.6 W (without actuator) |
| **Transformer size** | 1.2 VA (without actuator) |
| **Differential pressure sensor** | |
| **Operating pressure** | 100 Pa / 300 Pa / 600 Pa (depends on OEM) |
| **Bursting pressure** | 0.2 bar |
| **Medium** | 0...70°C / 5...95% rel. humidity, non condensing |
| **Characteristic** | OEM specific, matching the flow meter |
| **Mounting position** | depends on the position, therefore calibration necessary by GUIV |
| **Material** | silicone-rubber |
| **Pressurized connection** | Stubs for tubes with inner-Ø 4...6 mm |
| **Working volume flow** | |
| $\dot{V}_{NOM}$ | OEM-specific value, depending on used VAV box type |
| $\dot{V}_{MAX}$ | 30...100% of $\dot{V}_{NOM}$ |
| $\dot{V}_{MIN}$ | 0...80% of $\dot{V}_{MAX}$ |
| $\dot{V}_{MEDIUM}$ | 50 % of [$\dot{V}_{MIN}$ ... $\dot{V}_{MAX}$] |
| $\dot{V}_{CONST}$ | 0...100% of $\dot{V}_{NOM}$ |
| **Control** | see figure 1 |
| **Ri** | > 50 kΩ |
| **Control signal Y** | 0...10 VDC / 0...20 mA with 500 Ω / (I)<br>2...10 VDC / 4...20 mA with 500 Ω / (II) |
| **Override control Z** | $\dot{V}_{MIN}$ / $\dot{V}_{MEDIUM}$ / $\dot{V}_{MAX}$ / OPEN / (I)<br>CLOSED / $\dot{V}_{MIN}$ / $\dot{V}_{MEDIUM}$ / $\dot{V}_{MAX}$ / OPEN / (II) |
| **Feedback signal U** | 0...10 VDC / (I)<br>2...10 VDC / (II) |
| **Operation** | |
| **Connection PP** | external via feedback signal U, Serv. Plug |
| **Communication** | PP-Bus, 1200 Baud, max. 15 VDC |

## Connection scheme

**GUAC-S**



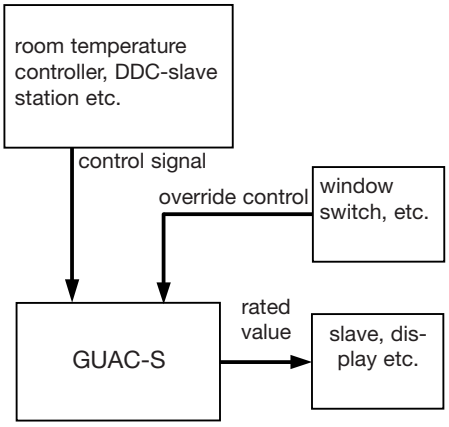
**1**




## Technical characteristics (continued)

| | |
|---|---|
| **Connection** | |
| **Connection of GUAC** | clamp connection for 3(4) x 0.75 mm² |
| **Connection of Actuator** | Phoenix connector with 900 mm cable |
| **Ambient conditions** | |
| **Operating / storage** | 0...50°C / -20...80°C |
| **Safety class** | III (safety low voltage) |
| **Protection** | IP 42 |
| **Approvals** | 73/23 EWG, 89/336 EWG |
| **Others** | |
| **Maintenance** | maintenance-free |
| **Weight** | 375 g |

**2**

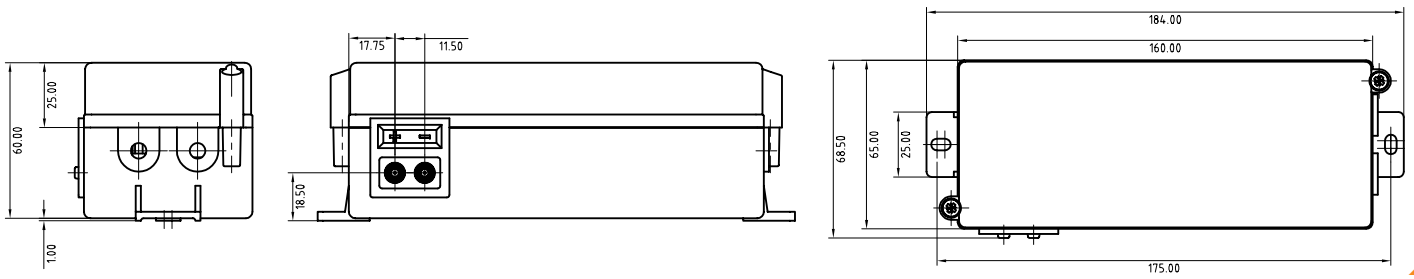



## VAV control (fig. 2)

If the air is polluted with particles or sticky components or charged with aggressive medium the GUAC-S will be used, as no partial volume flow is passed through the transmitter for measuring the volume flow.

## Technical drawing

**GUAC-S**



## Applications

The VAV controller type GUAC-P contains a static differential pressure sensor. The pressure is measured according to the statical principle. An integrated microprocessor controls measurement and control of the actuator and communication.

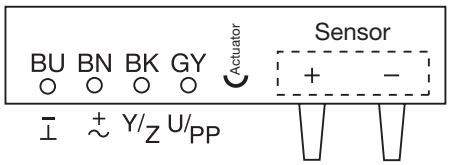
For pressure dependent control of VAV boxes. The actuator is controlled by proportional controllers, positioners or DDC systems. Simple realisation of different operating modes can be utilised by using override control signals.

## Technical characteristics

| | |
|---|---|
| **Power supply** | |
| **Nominal voltage** | 24 VDC / 24 VAC |
| **Operating range** | 19.2...30.0 VDC / 19.2...28.8 VAC |
| **Power consumption** | 0.6 W (without actuator) |
| **Transformer size** | 1.2 VA (without actuator) |
| **Differential pressure sensor** | |
| **Operating pressure** | 100 Pa / 300 Pa / 600 Pa (depends on OEM) |
| **Bursting pressure** | 0.2 bar |
| **Medium** | 0...70°C / 5...95% rel. humidity, non condensing |
| **Characteristic** | OEM specific, matching the flow meter |
| **Mounting position** | depends on the position, therefore calibration necessary by GUIV |
| **Material** | silicone-rubber |
| **Pressurized connection** | Stubs for tubes with inner-Ø 4...6 mm |
| **Working volume flow** | |
| $\Delta p_{NOM}$ | OEM-specific value |
| $\Delta p_{MAX}$ | 30...100% of $\Delta p_{NOM}$ |
| $\Delta p_{MIN}$ | 0...80% of $\Delta p_{MAX}$ |
| $\Delta p_{MEDIUM}$ | 50% of [$\Delta p_{MIN}$ ... $\Delta p_{MAX}$] |
| $\Delta p_{CONST}$ | 0...100% of $\Delta p_{NOM}$ |
| **Control** | see figure 1 |
| **Ri** | > 50 kΩ |
| **Control signal Y** | 0...10 VDC / 0...20 mA with 500 Ω / (I)<br>2...10 VDC / 4...20 mA with 500 Ω / (II) |
| **Override control Z** | $\Delta p_{MIN}$ / $\Delta p_{MEDIUM}$ / $\Delta p_{MAX}$ / OPEN / (I)<br>CLOSED / $\Delta p_{MIN}$ / $\Delta p_{MEDIUM}$ / $\Delta p_{MAX}$ / OPEN / (II) |
| **Feedback signal U** | 0...10 VDC / (I)<br>2...10 VDC / (II) |
| **Operation** | |
| **Connection PP** | external via feedback signal U, Serv. Plug |
| **Communication** | PP-Bus, 1200 Baud, max. 15 VDC |

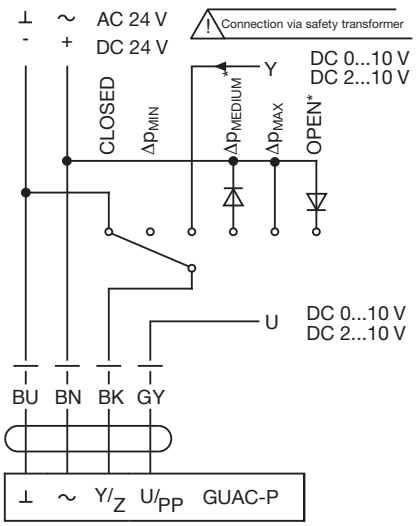
## Connection scheme

**GUAC-P**




GRUNER AG
PF 1149, D-78560 Wehingen
Tel. (++49) 74 26 / 948 - 0
Fax (++49) 74 26 / 948 - 200
http://www.gruner.de
E-Mail: info@gruner.de

**1**

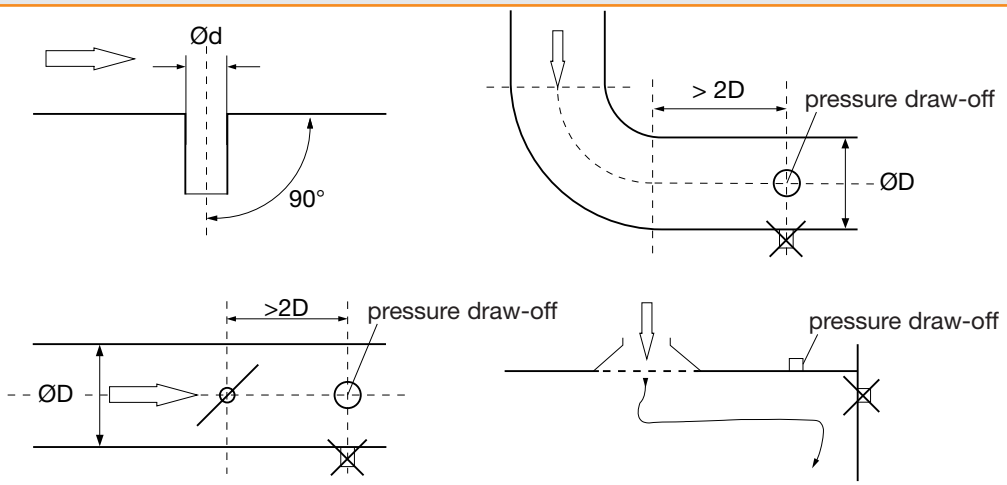



## Technical characteristics (continued)

| | |
|---|---|
| **Connection** | |
| **Connection of GUAC** | clamp connection for 3(4) x 0.75 mm² |
| **Connection of Actuator** | Phoenix connector with 900 mm cable |
| **Ambient conditions** | |
| **Operating / storage** | 0...50°C / -20...80°C |
| **Safety class** | III (safety low voltage) |
| **Protection** | IP 42 |
| **Approvals** | 73/23 EWG, 89/336 EWG |
| **Others** | |
| **Maintenance** | maintenance-free |
| **Weight** | 375 g |

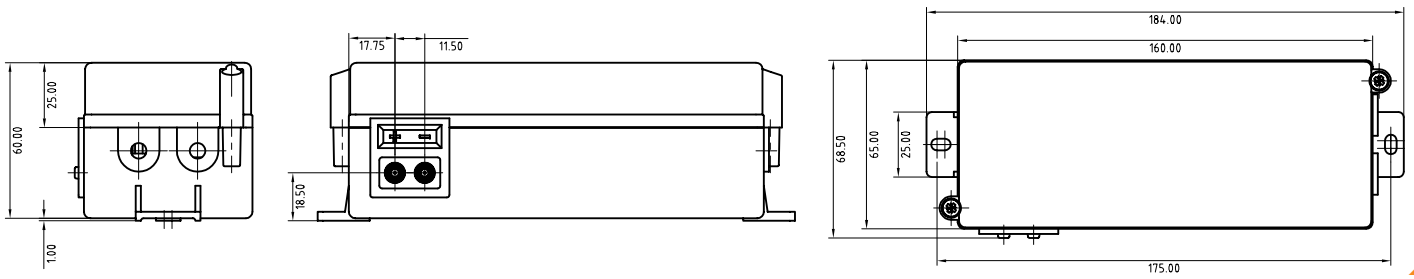
## Measuring points for static pressure (fig. 2)

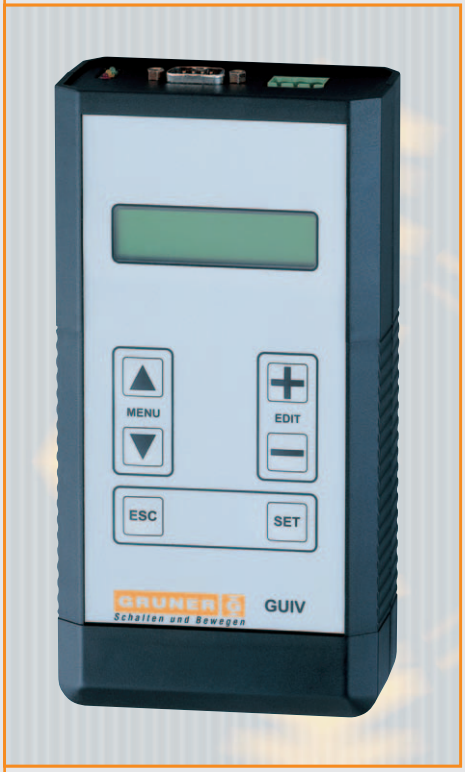
**2**




## Technical drawing

**GUAC-P**






## Applications

Setting device for VAV-Compact (227V-024-08) and VAV-Universal (GUAC-D, GUAC-S, GUAC-P):

- GUIV-A: Monitoring and setting by service technician
- GUIV-O: Monitoring and setting by OEM
- GUIV-S: PP-Bus/RS232-Interface only

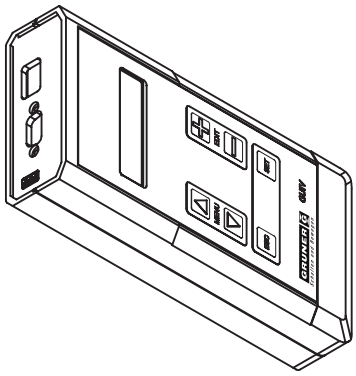
All devices have a serial interface that can be connected to a PC. All setting can be done by software.

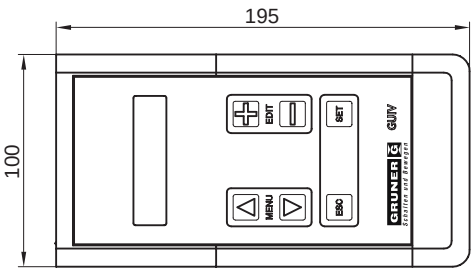
## Technical characteristics

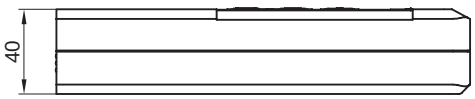
| | |
|---|---|
| **Power supply** | |
| **Nominal voltage** | 24 VDC |
| **Operating range** | 19.2...30.0 VDC / 19.2...28.8 VAC |
| **Power consumption** | 2.0 W (GUIV-A / GUIV-O)<br>1.0 W (GUIV-S) |
| **Connection** | |
| **Communication** | PP-Bus, 1200 Baud, max. 18 VDC |
| **Transfer cable** | max. 70 m |
| **Ambient conditions** | |
| **Operating / storage** | 0...+50°C / -10...+60°C |
| **Safety class** | III (safety low voltage) |
| **Protection** | IP 42 |
| **Approvals** | 89/336 EWG, 73/23 EWG |
| **Others** | |
| **Dimensions** | 195 x 100 x 40 mm (GUIV-A / GUIV-O)<br>71 x 43 x 23 mm (GUIV-S) |
| **Maintenance** | maintenance-free |

## Technical drawing

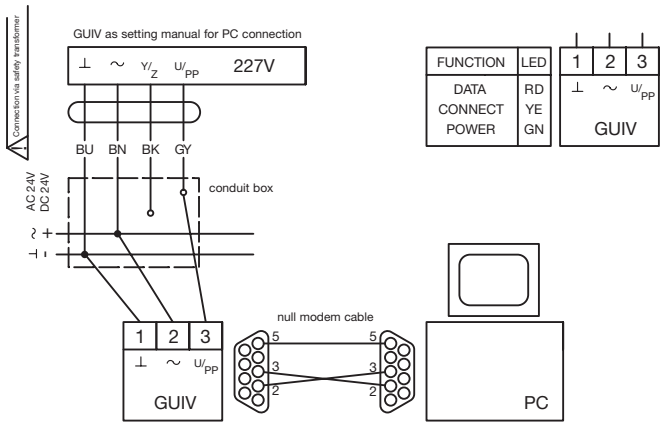
**GUIV-A / GUIV-O**





## 1




## Connection scheme (fig. 1)

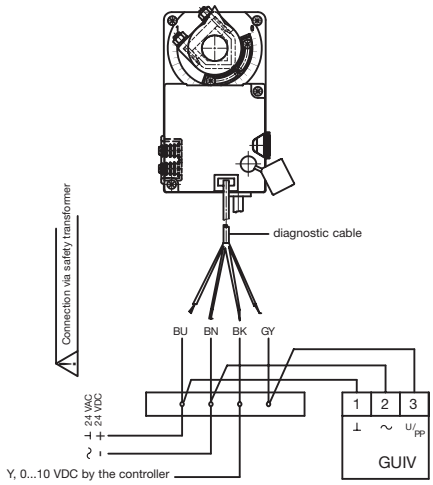
**Connection PP-bus**
(1) Ground
(2) Supply voltage
(3) Data line PP-Bus

**LED´s PP-Bus**

RED: DATA - flashes in case of a data transfer
YELLOW: CONNECT - RS232 interface active (PC <-> connected and PC-software loaded
GREEN: POWER - voltage is available

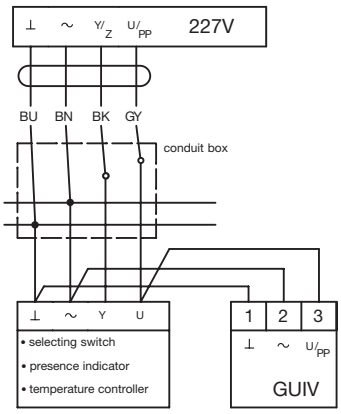
## GUIV-connection with diagnostic cable

## 2



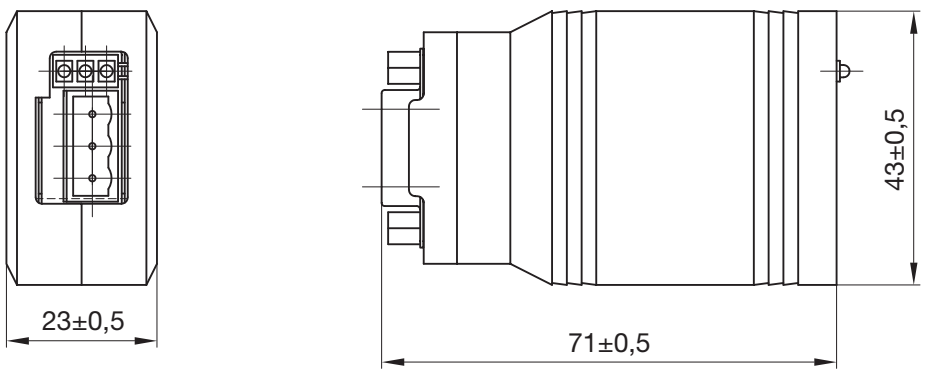

## GUIV connection on leading controller

## 3




## Technical drawing

**GUIV-S**



| 227-024-05-V | | | |
|---|---|---|---|
| Connecting voltage | 24 VAC (50/60 Hz) / DC ±20% | Running time (90°) | 60...120 s |
| Power consumption | 2.0 W / 3.5 VA | Safety class | IP 54 (cable downwards) |
| Control signal Y | 6.0 VDC ± 4 VDC (from GUAC) | Protection | III (safety low voltage) |
| Torque | 5 Nm | Approvals | 73/23 EWG, 89/336 EWG |
| | | Sound power level | < 35 dB (A) |

| 227-024-08-V | | | |
|---|---|---|---|
| Connecting voltage | 24 VAC (50/60 Hz) / DC ±20% | Running time (90°) | 60...120 s |
| Power consumption | 2.5 W / 4.5 VA | Safety class | IP 54 (cable downwards) |
| Control signal Y | 6.0 VDC ± 4 VDC (from GUAC) | Protection | III (safety low voltage) |
| Torque | 8 Nm | Approvals | 73/23 EWG, 89/336 EWG |
| | | Sound power level | < 35 dB (A) |

| 232-024-15-V | | | |
|---|---|---|---|
| Connecting voltage | 24 VAC (50/60 Hz) / DC ±20% | Running time (90°) | 40...80 s |
| Power consumption | 4.5 W / 7.5 VA | Safety class | IP 54 (cable downwards) |
| Control signal Y | 6.0 VDC ± 4 VDC (from GUAC) | Protection | III (safety low voltage) |
| Torque | 15 Nm | Approvals | 73/23 EWG, 89/336 EWG |
| | | Sound power level | < 40 dB (A) |

| 231-024-20-V | | | |
|---|---|---|---|
| Connecting voltage | 24 VAC (50/60 Hz) / DC ±20% | Running time (90°) | 60...80 s |
| Power consumption | 3.5 W / 6.0 VA | Safety class | IP 54 (cable downwards) |
| Control signal Y | 6.0 VDC ± 4 VDC (from GUAC) | Protection | III (safety low voltage) |
| Torque | 20 Nm | Approvals | 73/23 EWG, 89/336 EWG |
| | | Sound power level | < 40 dB (A) |

| 231-024-30-V | | | |
|---|---|---|---|
| Connecting voltage | 24 VAC (50/60 Hz) / DC ±20% | Running time (90°) | 60...100 s |
| Power consumption | 5.0 W / 8.0 VA | Safety class | IP 54 (cable downwards) |
| Control signal Y | 6.0 VDC ± 4 VDC (from GUAC) | Protection | III (safety low voltage) |
| Torque | 30 Nm | Approvals | 73/23 EWG, 89/336 EWG |
| | | Sound power level | < 40 dB (A) |

| 228-024-05-V | | | |
|---|---|---|---|
| Connecting voltage | 24 VAC (50/60 Hz) / DC ±20% | Running time (90°) | Actuator: 150 s / Spring: < 20 s |
| Power consumption | 2.5 W / 5.0 VA | Safety class | IP 54 (cable downwards) |
| Control signal Y | 6.0 VDC ± 4 VDC (from GUAC) | Protection | III (safety low voltage) |
| Torque | 5 Nm | Approvals | 73/23 EWG, 89/336 EWG |
| | | Sound power level | < 30 dB (A) |

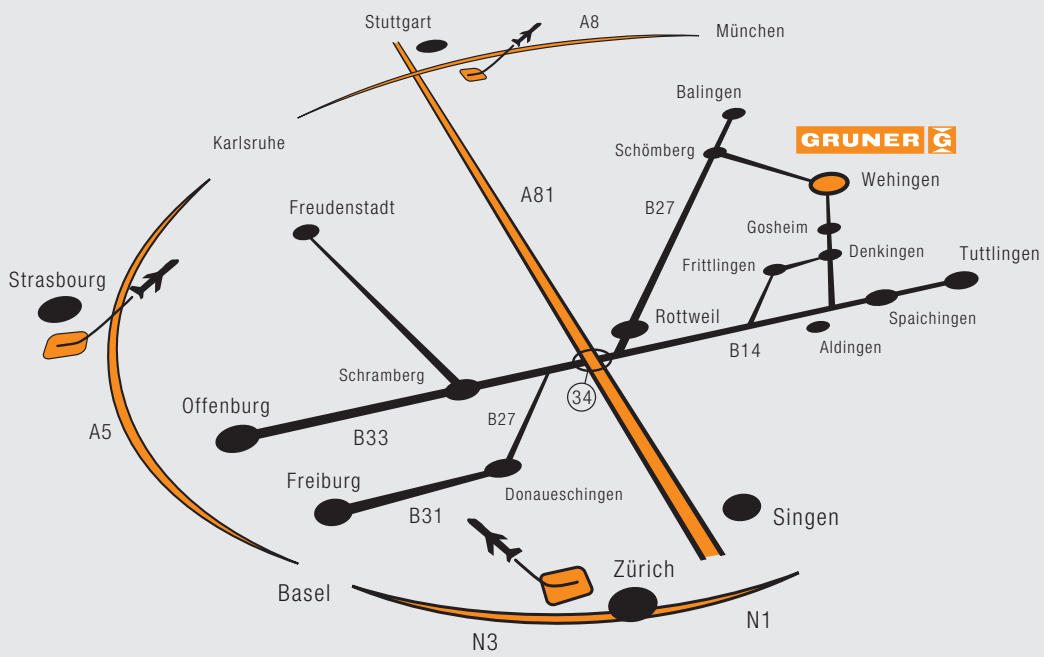
| 238-024-15-V | | | |
|---|---|---|---|
| Connecting voltage | 24 VAC (50/60 Hz) / DC ±20% | Running time (90°) | Actuator: 150 s / Spring: < 15 s |
| Power consumption | 7.0 W / 9.0 VA | Safety class | IP 54 (cable downwards) |
| Control signal Y | 6.0 VDC ± 4 VDC (from GUAC) | Protection | III (safety low voltage) |
| Torque | 15 Nm | Approvals | 73/23 EWG, 89/336 EWG |
| | | Sound power level | < 50 dB (A) |

| 235-024-10-V | | | |
|---|---|---|---|
| Connecting voltage | 24 VAC (50/60 Hz) / DC ±20% | Running time (90°) | 20...40 s |
| Power consumption | 4.5 W / 7.5 VA | Safety class | IP 54 (cable downwards) |
| Control signal Y | 6.0 VDC ± 4 VDC (from GUAC) | Protection | III (safety low voltage) |
| Torque | 10 Nm | Approvals | 73/23 EWG, 89/336 EWG |
| | | Sound power level | < 35 dB (A) |

GRUNER AG
PF 1149, D-78560 Wehingen
Tel. (++49) 74 26 / 948 - 0
Fax (++49) 74 26 / 948 - 200
http://www.gruner.de
E-Mail: info@gruner.de

GRUNER AG
PF 1149, D-78560 Wehingen
Tel. (++49) 74 26 / 948 - 0
Fax (++49) 74 26 / 948 - 200
http://www.gruner.de
E-Mail: info@gruner.de

# YOUR WAY TO GRUNER




**GRUNER AG**
PF 1149, D-78560 Wehingen
Tel. (++49) 74 26 / 948 - 0
Fax (++49) 74 26 / 948 - 200
http://www.gruner.de
E-Mail: info@gruner.de



GRUNER
*Schalten und Bewegen*