

Quick running actuator

Actuator with rotation drive

2.5 Nm
4 Nm
5 Nm
8 Nm
15 Nm

For the application with

Laboratory ventilation techniques
Room ventilation techniques
VAV
Valves



Page: Content:

2	General overview quick running actuator, 2.5 Nm, 5 Nm, 8 Nm + 15 Nm
3	Actuator with digital drive
4 - 5	Technical Data, quick running actuator, 2.5 Nm
6 - 7	Technical Data, quick running actuator, 8 Nm
8 - 9	Technical Data, quick running actuator, 15 Nm
10 - 17	Technical Data, quick running actuator, 5 Nm
18 - 19	Technical Data, quick running actuator, 4 Nm
20	Specific characteristics of continuous control
21	Notes
22	Your way to Gruner



GRUNER - the friendly alternative

Type	227CS-024-02			227CS-024-08			227CS-024-15		
	2.5 Nm	8 Nm	15 Nm						
Torque	2.5 Nm	8 Nm	15 Nm						
Running time (90°)	1 s	4 s	5 s						
Control	Tri-state								
	On/Off								
	●	●	●						
Continuous control									
(0) 2...10 VDC or	●	●	●						
(0) 4...20 mA									
Power supply									
24 VAC/DC	●	●	●						
230 VAC									
Options									
Digital Drive	○	○	○						
Feedback signal	●	●	●						
GUAC Connection	○	○	○						
Page	4	6	8						

Type	227S-024-05		227S-024-05-S1		227S-024-05-P5		227S-230-05		227S-230-05-S1		227S-230-05-P5		227S-3-230-05		227S-3-230-05-S1		227S-3-230-05-P5		227CS-024-05		227CS-024-04		
	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	4 Nm			
Torque	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	4 Nm			
Running time (90°)	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	20...35s	5 s			
Control	Tri-state																						
	On/Off																						
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Continuous control																							
(0) 2...10 VDC or																				●	●		
(0) 4...20 mA w/ 500Ω																							
Power supply																							
24 VAC/DC	●	●	●																	●	●		
230 VAC				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
Options																							
Digital Drive																							
Potentiometer			●				●									●							
Feedback signal																				●	●		
Auxiliary switch		●				●						●											
GUAC Connection	○																						
Page	10	10	10	12	12	12	14	14	14	14	14	16	18										

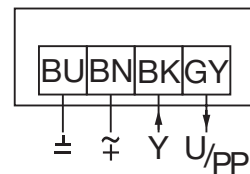
Standard version with universal locking clamp and anti torsion bow. Also available with concentric form locking for shaft (□ 8 mm) and flange fixing. All actuators dispose of manual override button, a mechanical limitation of the angle of rotation and setting button for the rotation direction (cw/ccw).

Actuators according to US-standards available upon demand.

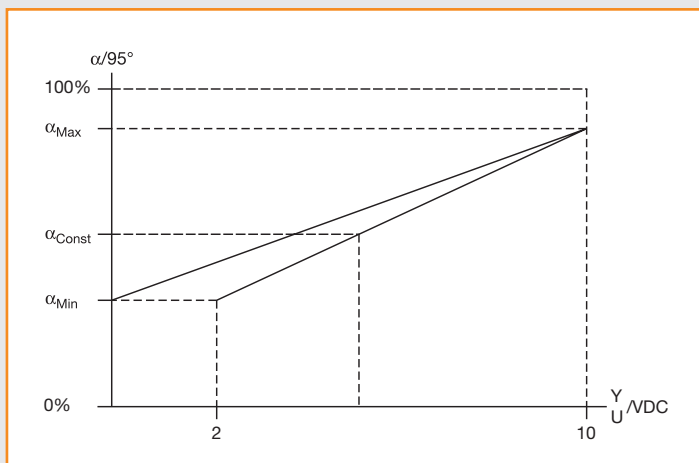
The actuators with digital drive have no dip switches for setting the functions. All settings are done by the GUIV (Windows PC or Handheld device) via PP-Bus:

- Available options:
- direction of rotation
 - increasing of running time up to 20 s
 - control signal Y = (0) 2...10 VDC
 - control signal Y = (0) 4...20 mA @ 500Ω
 - feedback signal U = (0) 2...10 VDC
 - limitation of angle of rotation 0...100% of 95°
 - α_{Min} correspond (0) 2 VDC
 - α_{Max} correspond 10 VDC
 - digital control via α_{Const} as variable for angular control

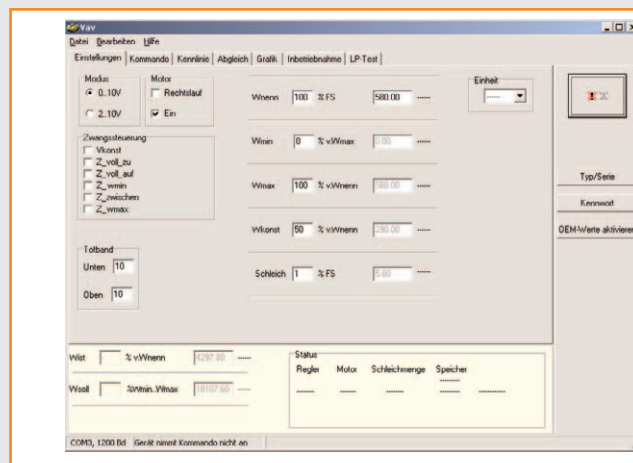
Connection scheme



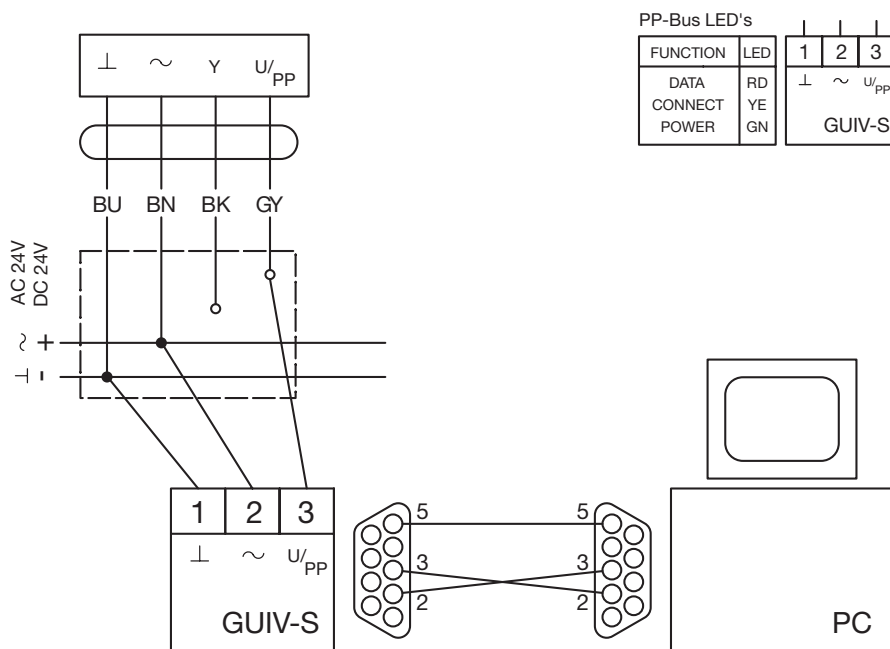
Angular control



Windows software



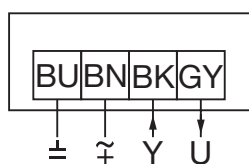
GUIV Connection





227CS-024-02

Connection scheme (continuous control)



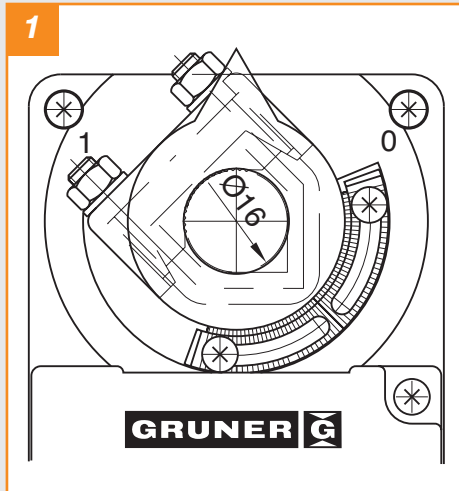
Applications

To regulate dampers, valves or other regulatory functions:

- sturdy drive
- torque 2.5 Nm
- running time 1 s
- position indication
- angle of rotation changeable from outside
- load independent
- speed regulated
- direction of rotation changeable from inside
- electromagnetic compatibility controlled
- maintenance-free

Technical data

Control	Continuous control / On/Off
Control signal Y (Continuous control)	0...10 VDC or 2...10 VDC (Standard) or 0...20 mA or 4...20 mA
Control signal Y (On/Off)	0 VDC (Off) 24 VAC / DC (On)
Feedback signal U	0...10 VDC or 2...10 VDC (Standard)
Connecting voltage	24 VAC (50/60 Hz) / DC±20%
Power consumption	18.0 W
Transformer sizing	22.0 VA
Angle of rotation	max. 95° (adjustable from outside)
Direction of rotation	changeable from inside
Running time (90°)	1 s
Torque	2.5 Nm
Connection	cable 900 mm / 0.75 mm ²
Safety class	III
Protection	IP 54 (cable downwards)
Dimensions	115 x 65 x 89 mm
Ambient temperature	-20...+50°C
Maintenance	maintenance-free
CE	73/23/EWG, 89/336/EWG
Weight	750 g

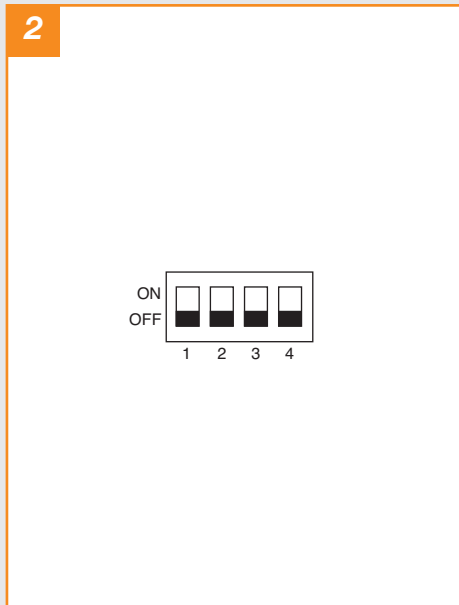


Adjustment of the angle of rotation (fig. 1)

Both end stops are adjusted to 0° and 90°. For smaller rotation angles, loosen the screws at the metal end stop, adjust the end stops as requested, and fasten the screws again.

Fixing of the shaft (fig. 1)

by the locking clamp to the damper shaft: □ 8...12 mm
 ∅ 8...16 mm

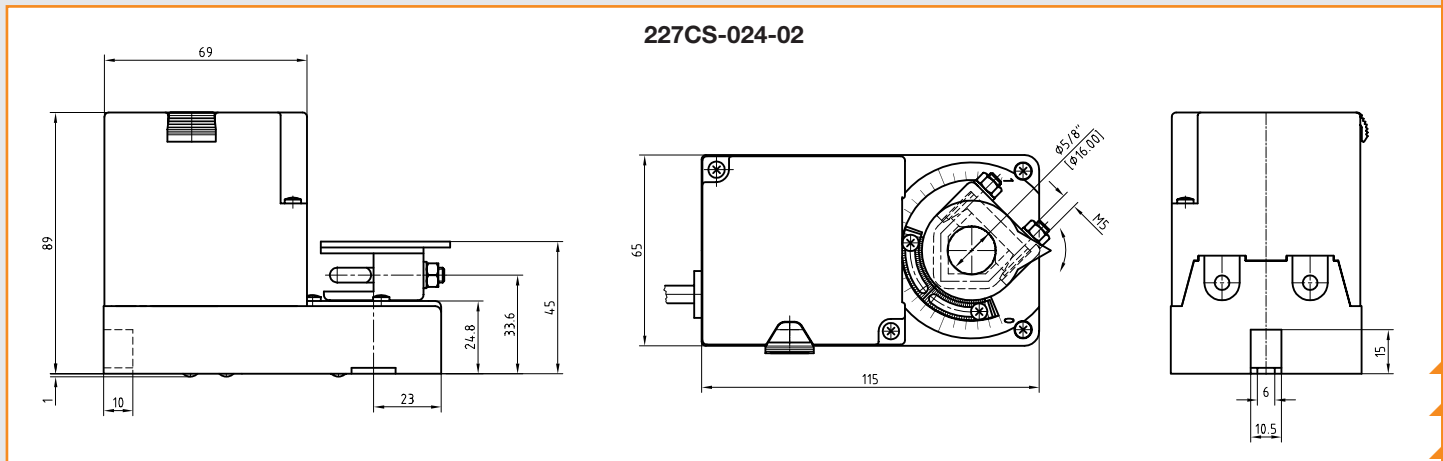


Adjustment of the functional switches (fig. 2)

	OFF	ON
Direction of rotation		
clockwise (0...90°)	3	-
counter clockwise (90...0°)	-	3
Control signal Y		
2...10 VDC (Standard)	1, 2	-
0...10 VDC	2	1
4...20 mA	1	2
0...20 mA	-	1, 2

Switches actually unused must be at position OFF. All switches are set to OFF by factory default.

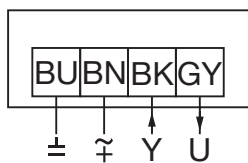
Technical drawing





227CS-024-08

Connection scheme (continuous control)



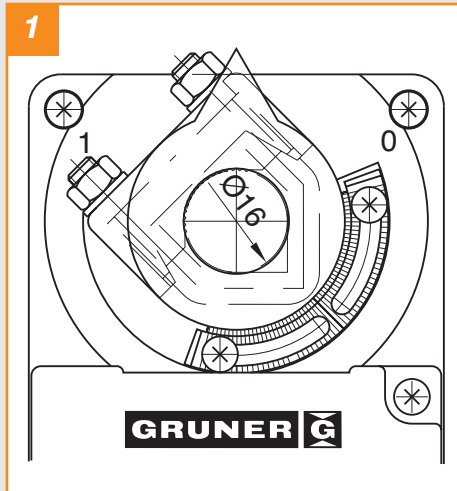
Application

To regulate dampers, valves or other regulatory functions:

- sturdy drive
- torque 8 Nm
- running time 4 s
- position indication
- angle of rotation changeable from outside
- load independent
- speed regulated
- direction of rotation changeable from inside
- electromagnetic compatibility controlled
- maintenance-free

Technical data

Control	Continuous control / On/Off
Control signal Y (Continuous control)	0...10 VDC or 2...10 VDC (Standard) or 0...20 mA or 4...20 mA
Control signal Y (On/Off)	0 VDC (Off) 24 VAC / DC (On)
Feedback signal U	0...10 VDC or 2...10 VDC (Standard)
Connecting voltage	24 VAC (50/60 Hz) / DC±20%
Power consumption	12.0 W
Transformer sizing	15.0 VA
Angle of rotation	max. 95° (adjustable from outside)
Direction of rotation	changeable from inside
Running time (90°)	4 s
Torque	8 Nm
Connection	cable 900 mm / 0.75 mm ²
Safety class	III
Protection	IP 54 (cable downwards)
Dimensions	115 x 65 x 89 mm
Ambient temperature	-20...+50°C
Maintenance	maintenance-free
CE	73/23/EWG, 89/336/EWG
Weight	750 g

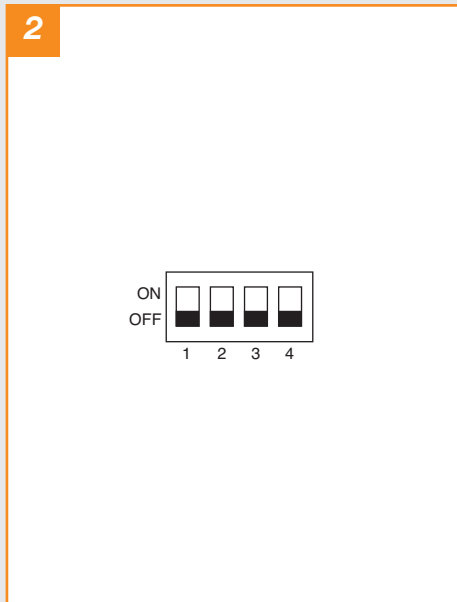


Adjustment of the angle of rotation (fig. 1)

Both end stops are adjusted to 0° and 90°. For smaller rotation angles, loosen the screws at the metal end stop, adjust the end stops as requested, and fasten the screws again.

Fixing of the shaft (fig. 1)

by the locking clamp to the damper shaft: □ 8...12 mm
 ∅ 8...16 mm

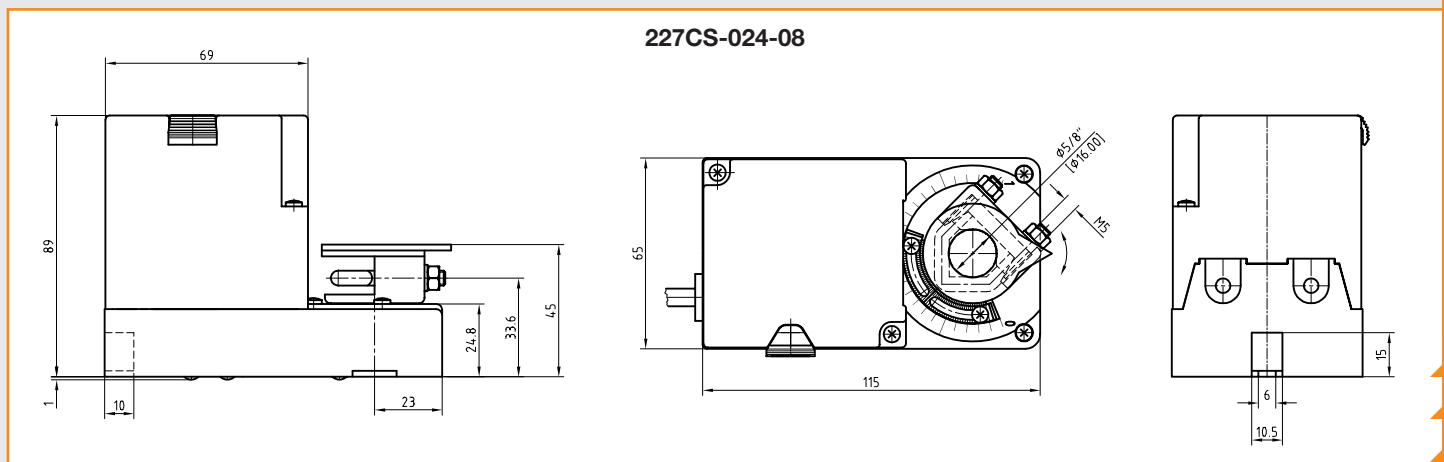


Adjustment of the functional switches (fig. 2)

	OFF	ON
Direction of rotation		
clockwise (0...90°)	3	-
counter clockwise (90...0°)	-	3
Control signal Y		
2...10 VDC (Standard)	1, 2	-
0...10 VDC	2	1
4...20 mA	1	2
0...20 mA	-	1, 2

Switches actually unused must be at position OFF. All switches are set to OFF by factory default.

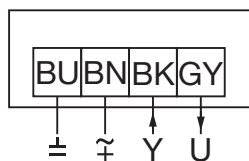
Technical drawing





227CS-024-15

Connection scheme (continuous control)



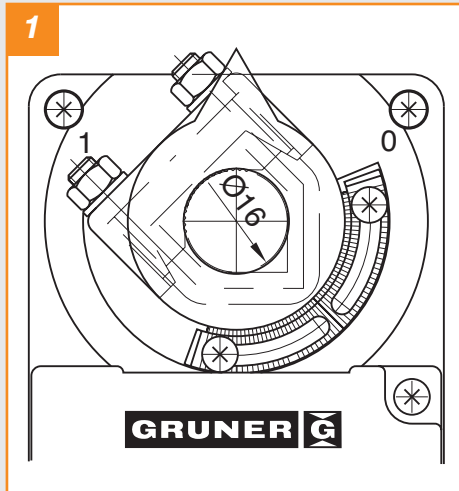
Application

To regulate dampers, valves or other regulatory functions:

- Lifetime under full load
 - 8 Nm more than 60,000 cycles
 - 15 Nm at least 20,000 cycles
- running time 5 s
- angle of rotation changeable from outside
- load independent
- speed regulated
- direction of rotation changeable from inside
- electromagnetic compatibility controlled
- maintenance-free

Technical data

Control	Continuous control / On/Off
Control signal Y (Continuous control)	0...10 VDC or 2...10 VDC (Standard) or 0...20 mA or 4...20 mA
Control signal Y (On/Off)	0 VDC (Off) 24 VAC / DC (On)
Feedback signal U	0...10 VDC or 2...10 VDC (Standard)
Connecting voltage	24 VAC (50/60 Hz) / DC±20%
Power consumption	20.0 W
Transformer sizing	26.0 VA
Max. allowable running time per 100 s	50% ED
Angle of rotation	max. 95° (adjustable from outside)
Direction of rotation	changeable from inside
Running time (90°)	5 s
Torque	15 Nm
Connection	cable 900 mm / 0.75 mm ²
Safety class	III
Protection	IP 54 (cable downwards)
Dimensions	115 x 65 x 89 mm
Ambient temperature	-20...+50°C
Maintenance	maintenance-free
CE	73/23/EWG, 89/336/EWG
Weight	750 g

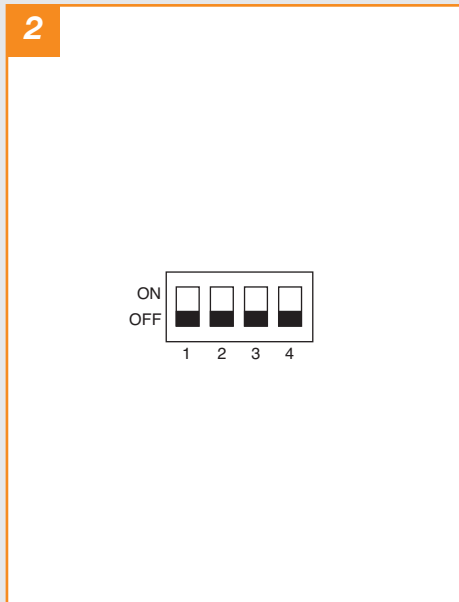


Adjustment of the angle of rotation (fig. 1)

Both end stops are adjusted to 0° and 90°. For smaller rotation angles, loosen the screws at the metal end stop, adjust the end stops as requested, and fasten the screws again.

Fixing of the shaft (fig. 1)

by the locking clamp to the damper shaft: □ 8...12 mm
 ∅ 8...16 mm

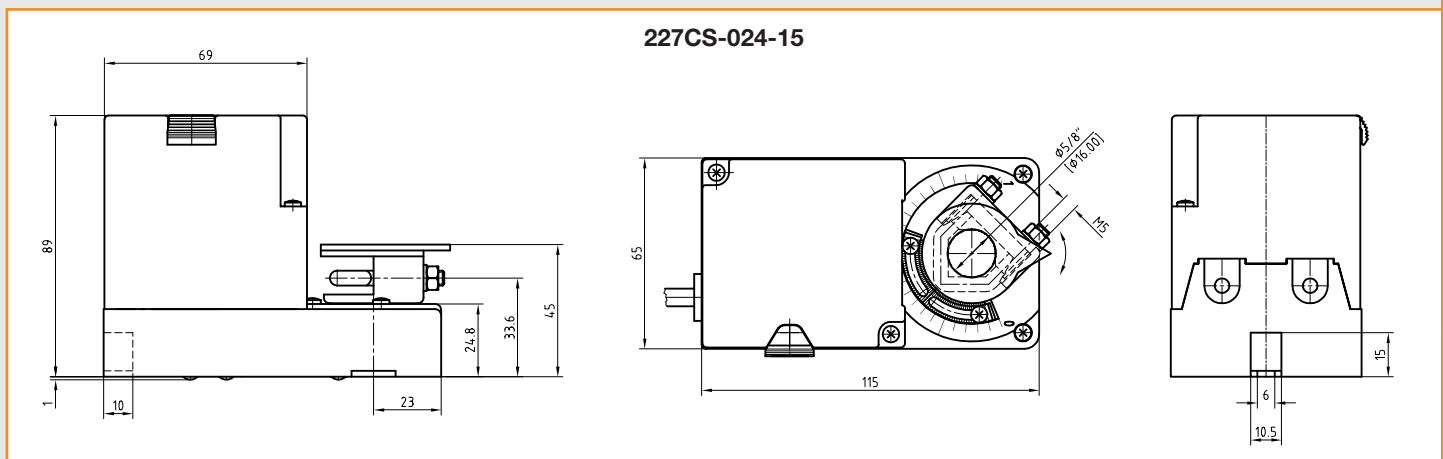


Adjustment of the functional switches (fig. 2)

	OFF	ON
Direction of rotation		
clockwise (0...90°)	3	-
counter clockwise (90...0°)	-	3
Control signal Y		
2...10 VDC (Standard)	1, 2	-
0...10 VDC	2	1
4...20 mA	1	2
0...20 mA	-	1, 2

Switches actually unused must be at position OFF. All switches are set to OFF by factory default.

Technical drawing





Application

To regulate dampers, valves or other regulatory functions:

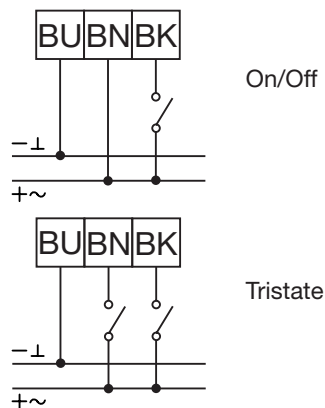
- sturdy drive
- torque 5 Nm
- load dependent running time
- position indication
- angle of rotation changeable from outside
- direction of rotation changeable from outside
- Auxiliary switch adjustable from outside
- electromagnetic compatibility controlled
- maintenance-free

Technical data

Control	On/Off + Tristate
Connecting voltage	24 VAC (50/60 HZ) / DC $\pm 20\%$
Power consumption	3.5 W
Transformer sizing	6.5 VA
Angle of rotation	max. 95° (adjustable from outside)
Direction of rotation	changeable from outside
Running time (90°)	20...35 s
Torque	5 Nm
max. 1 auxiliary switch	changeable from outside
Schaltleistung Zusatzschalter	250 VAC / 5 A, change-over switch
Rückführpoti	4.7 k Ω
Connection	cable 900 mm / 0.75 mm ²
Safety class	III
Protection	IP 54 (cable downwards)
Dimensions	115 x 65 x 61 mm
Ambient temperature	-20...+50°C
Maintenance	maintenance-free
CE	73/23/EWG, 89/336/EWG
Weight	530 g

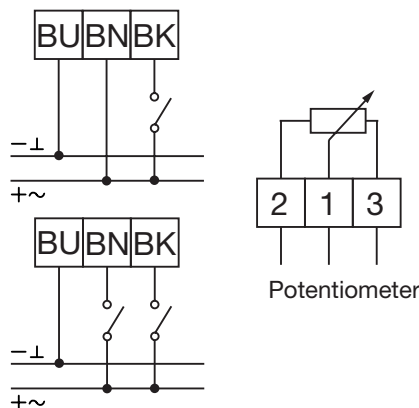
227S-024-05

Connection scheme



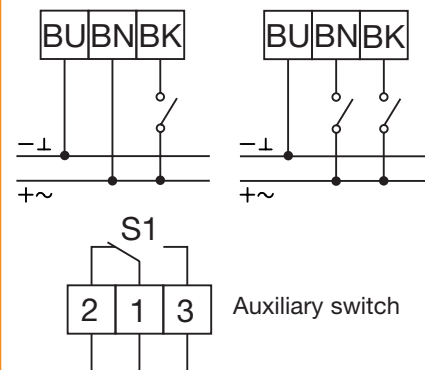
227S-024-05-S1

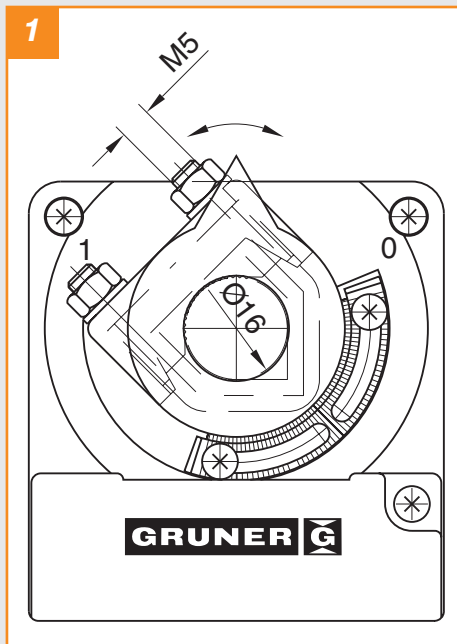
Connection scheme



227S-024-05-P5

Connection scheme



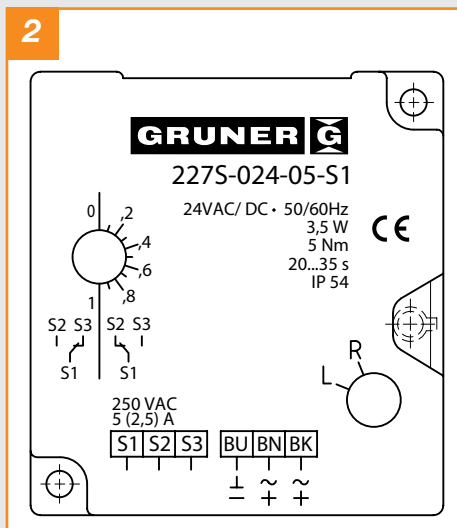


Adjustment of the angle of rotation (fig. 1)

Both end stops are adjusted to 0° and 90°. For smaller rotation angles, loosen the screws at the metal end stop, adjust the end stops as requested, and fasten the screws again.

Fixing of the shaft (fig. 1)

by the locking clamp to the damper shaft: □ 8...12 mm
 ∅ 8...16 mm



Adjustment of the direction of rotation (fig. 2)

The actuator is adjusted to clockwise direction by the factory => "R". For changing the direction of rotation, turn the adjusting knob to "L".

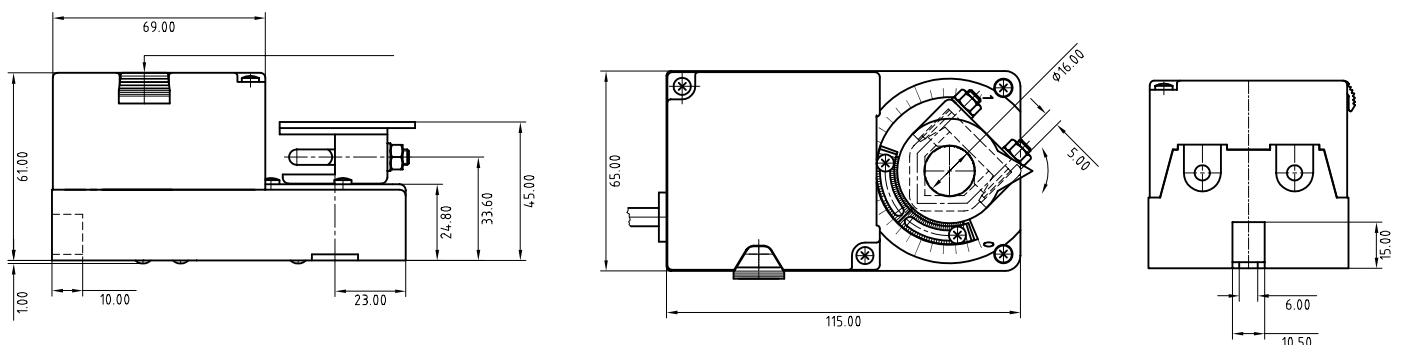
Adjustment of the auxiliary switch (fig. 2)

The scale at the adjusting knob corresponds to a percentage graduation, related to 0° - 90°.

- 1) End stop is set to "0": Switch off the motor and choose the requested switching position by turning the knob to the right, i.e. ".2" = 20%.
- 2) End stop is set to "1": Switch off the motor and choose the requested switching position by turning the knob to the left, i.e. ".8" = 20%.

Technical drawing

227S-024-05





Application

To regulate dampers, valves or other regulatory functions:

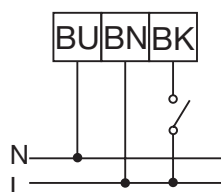
- sturdy drive
- torque 5 Nm
- load dependent running time
- position indication
- angle of rotation changeable from outside
- direction of rotation changeable from outside
- Auxiliary switch adjustable from outside
- electromagnetic compatibility controlled
- maintenance-free

Technical data

Control	On/Off
Connecting voltage	230 VAC (50/60 Hz) ±15%
Power consumption	2.2 W
Transformer sizing	28.0 VA
Angle of rotation	max. 95° (adjustable from outside)
Direction of rotation	changeable from outside
Running time (90°)	20...35 s
Torque	5 Nm
max. 1 auxiliary switch	changeable from outside
Schaltleistung Zusatzschalter	250 VAC / 5 A, change-over switch
Rückführpoti	4.7 kΩ
Connection	cable 900 mm / 0.75 mm ²
Safety class	II
Protection	IP 54 (cable downwards)
Dimensions	115 x 65 x 61 mm
Ambient temperature	-20...+50°C
Maintenance	maintenance-free
CE	73/23/EWG, 89/336/EWG
Weight	530 g

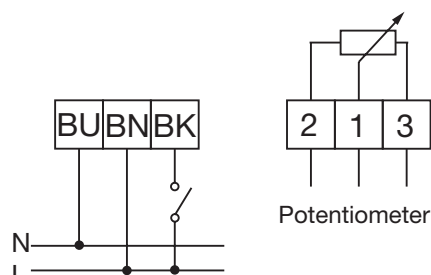
227S-230-05

Connection scheme
(On/Off)



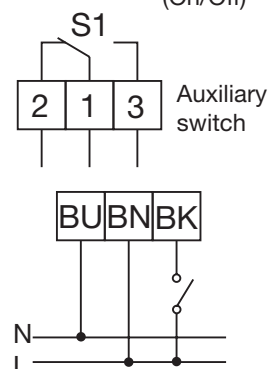
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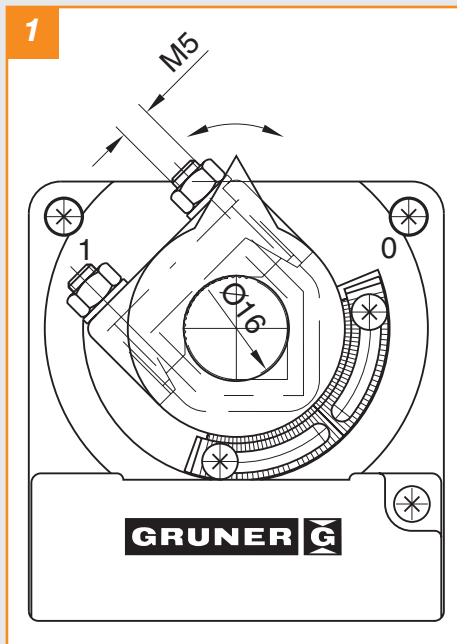
Connection scheme
(On/Off)



227S-230-05-P5

Connection scheme
(On/Off)



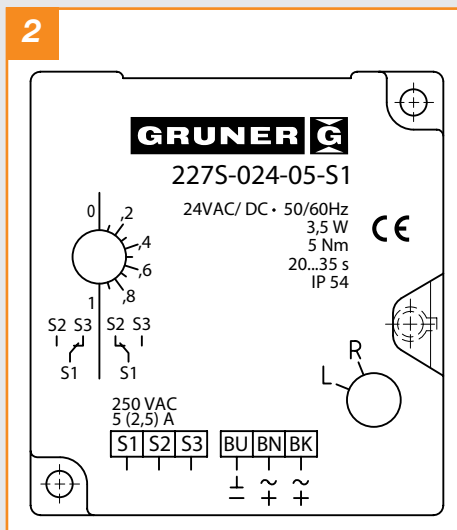


Adjustment of the angle of rotation (fig. 1)

Both end stops are adjusted to 0° and 90°. For smaller rotation angles, loosen the screws at the metal end stop, adjust the end stops as requested, and fasten the screws again.

Fixing of the shaft (fig. 1)

by the locking clamp to the damper shaft: □ 8...12 mm
 ∅ 8...16 mm



Adjustment of the direction of rotation (fig. 2)

The actuator is adjusted to clockwise direction by the factory => "R". For changing the direction of rotation, turn the adjusting knob to "L".

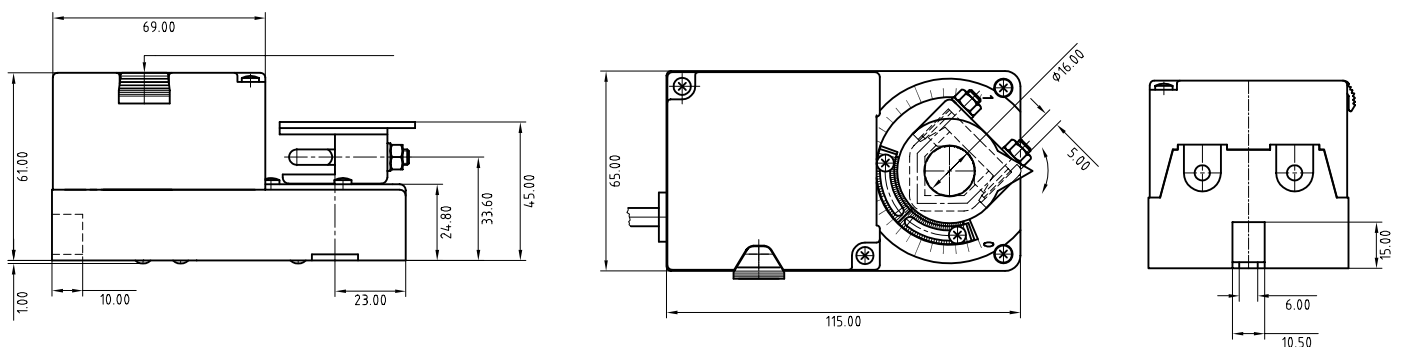
Adjustment of the auxiliary switch (fig. 2)

The scale at the adjusting knob corresponds to a percentage graduation, related to 0° - 90°.

- 1) End stop is set to "0": Switch off the motor and choose the requested switching position by turning the knob to the right, i.e. ".2" = 20%.
- 2) End stop is set to "1": Switch off the motor and choose the requested switching position by turning the knob to the left, i.e. ".8" = 20%.

Technical drawing

227S-230-05





Application

To regulate dampers, valves or other regulatory functions:

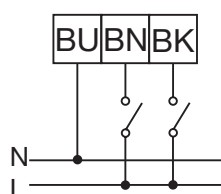
- sturdy drive
- torque 5 Nm
- load dependent running time
- position indication
- angle of rotation changeable from outside
- direction of rotation changeable from outside
- Auxiliary switch adjustable from outside
- electromagnetic compatibility controlled
- maintenance-free

Technische Daten

Control	Tristate
Connecting voltage	230 VAC (50/60 Hz) ±15%
Power consumption	2.2 W
Transformer sizing	28.0 VA
Angle of rotation	max. 95° (adjustable from outside)
Direction of rotation	changeable from outside
Running time (90°)	20...35 s
Torque	5 Nm
max. 1 auxiliary switch	changeable from outside
Schaltleistung Zusatzschalter	250 VAC / 5 A, change-over switch
Rückführpoti	4.7 kΩ
Connection	cabl 900 mm / 0.75 mm ²
Safety class	II
Protection	IP 54 (cabl downwards)
Dimensions	115 x 65 x 61 mm
Ambient temperature	-20...+50°C
Maintenance	wartungsfrei
CE	73/23/EWG, 89/336/EWG
Weight	530 g

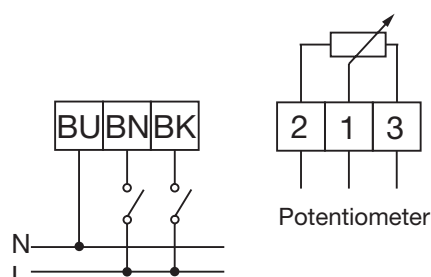
227S-3-230-05

Connection scheme
(Tri-state)



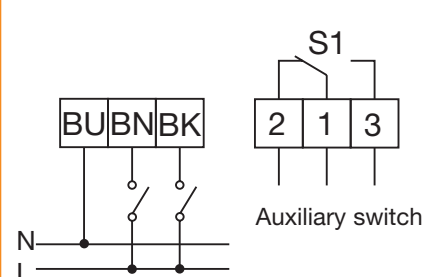
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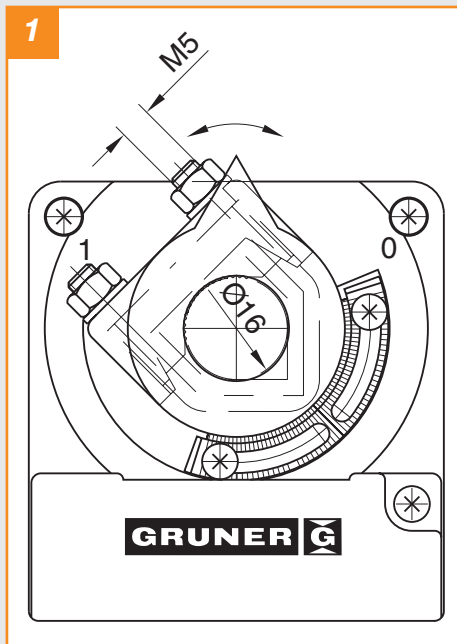
Connection scheme
(Tri-state)



227S-3-230-05-P5

Connection scheme
(Tri-state)



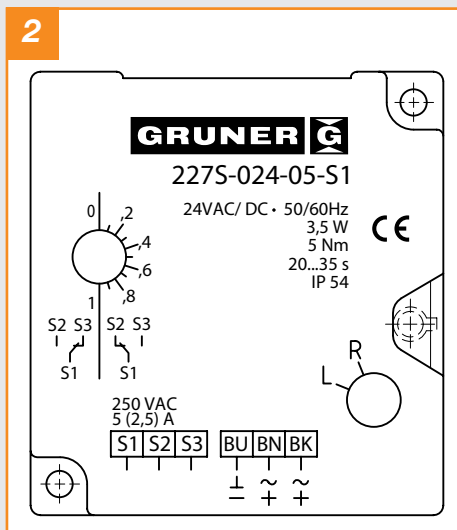


Adjustment of the angle of rotation (fig. 1)

Both end stops are adjusted to 0° and 90°. For smaller rotation angles, loosen the screws at the metal end stop, adjust the end stops as requested, and fasten the screws again.

Fixing of the shaft (fig. 1)

by the locking clamp to the damper shaft: □ 8...12 mm
 ∅ 8...16 mm



Adjustment of the direction of rotation (fig. 2)

The actuator is adjusted to clockwise direction by the factory => "R". For changing the direction of rotation, turn the adjusting knob to "L".

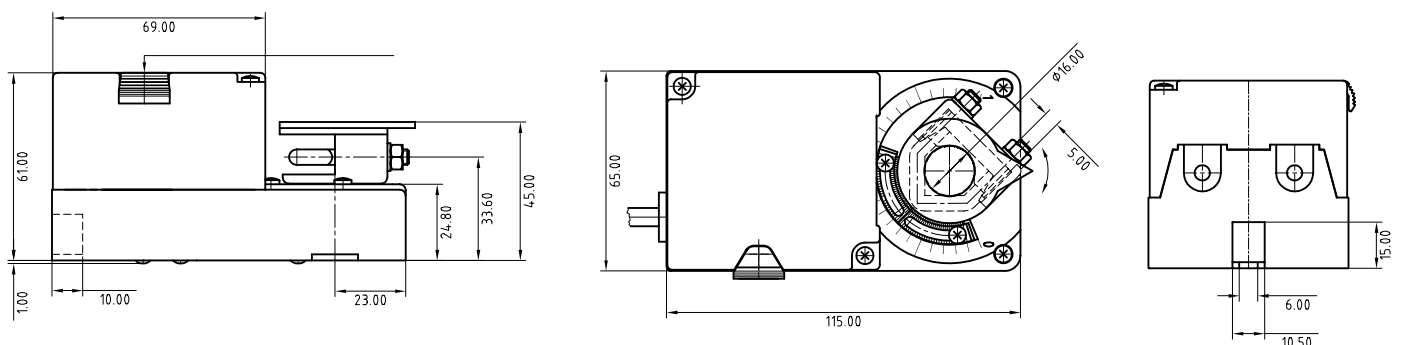
Adjustment of the auxiliary switch (fig. 2)

The scale at the adjusting knob corresponds to a percentage graduation, related to 0° - 90°.

- 1) End stop is set to "0": Switch off the motor and choose the requested switching position by turning the knob to the right, i.e. ".2" = 20%.
- 2) End stop is set to "1": Switch off the motor and choose the requested switching position by turning the knob to the left, i.e. ".8" = 20%.

Technical drawing

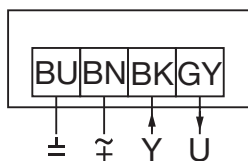
227S-3-230-05





227CS-024-05

Connection scheme (Continuous control)



Application

To regulate dampers, valves or other regulatory functions:

- sturdy drive
- torque 5 Nm
- load dependent running time
- position indication
- angle of rotation changeable from outside
- direction of rotation changeable from outside
- electromagnetic compatibility controlled
- maintenance-free

Technical data

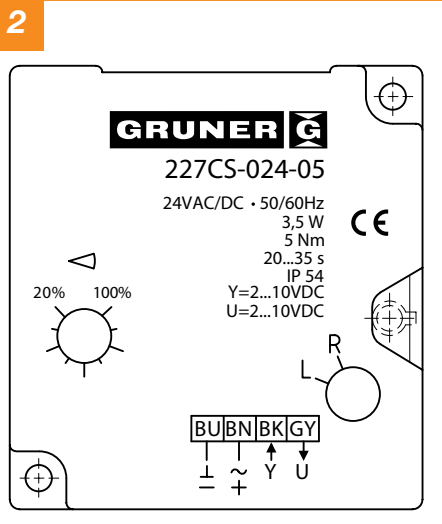
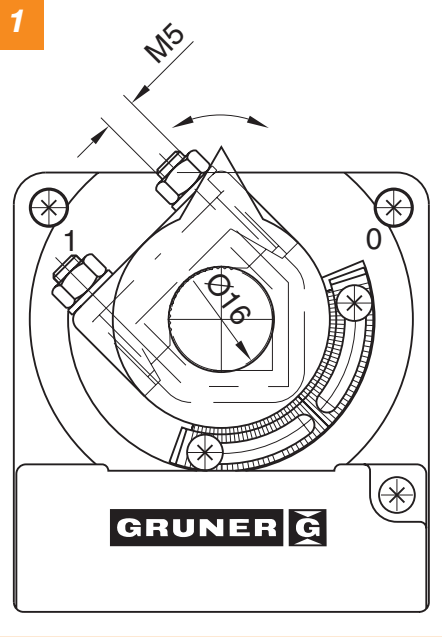
Control	Continuous control
Control signal Y	0...10 VDC or 2...10 VDC (Standard) or 0...20 mA or 4...20 mA
Feedback signal U	0...10 VDC or 2...10 VDC (Standard)
Connecting voltage	24 VAC (50/60 Hz) / DC ±20%
Power consumption	3.5 W
Transformer sizing	5.5 VA
Angle of rotation	max. 95° (adjustable from outside)
Direction of rotation	changeable from outside
Running time (90°)	20...35 s
Torque	5 Nm
Connection	cable 900 mm / 0.75 mm ²
Safety class	III
Protection	IP 54 (cable downwards)
Dimensions	115 x 65 x 61 mm
Ambient temperature	-20...+50°C
Maintenance	maintenance-free
CE	73/23/EWG, 89/336/EWG
Weight	530 g

Adjustment of the angle of rotation (fig. 1)

Both end stops are adjusted to 0° and 90°. For smaller rotation angles, loosen the screws at the metal end stop, adjust the end stops as requested, and fasten the screws again.

Fixing of the shaft (fig. 1)

by the locking clamp to the damper shaft: □ 8...12 mm
 ∅ 8...16 mm



Adjustments (fig. 2)

Angle of rotation:

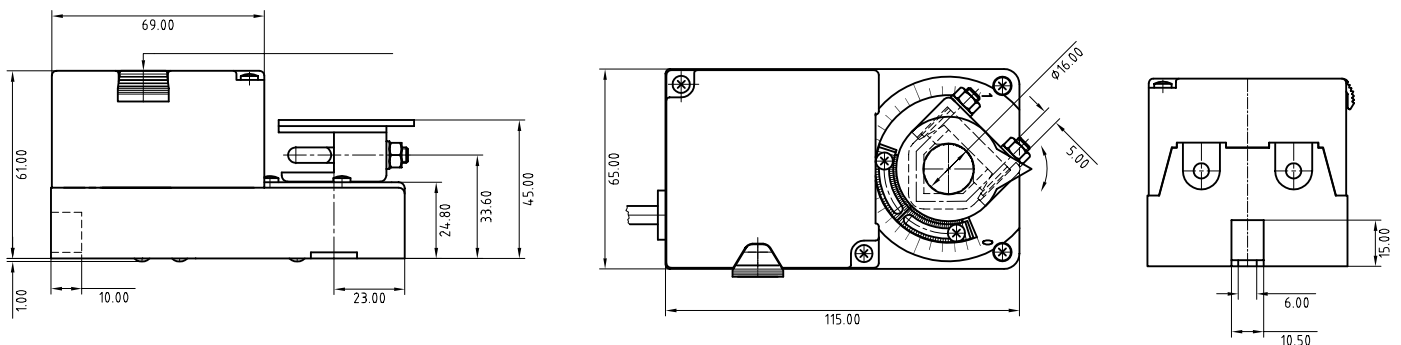
The actuator is adjusted to clockwise direction by the factory => "R". For changing the direction of rotation, turn the adjusting knob to "L".

Regulation range:

The actuators are supplied with the (0) 2...10 VDC for the regulation range 0° to 90°. A smaller angle (proportional) can be chosen, where the regulation range (0) 2...10 VDC goes for. The actuator must be switched off for doing so.

Technical drawing

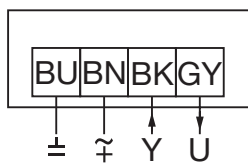
227CS-024-05





227CS-024-04

Connection scheme (Continuous control)



Application

To regulate dampers, valves or other regulatory functions:

- sturdy drive
- torque 4 Nm
- load dependent running time
- position indication
- angle of rotation changeable from outside
- direction of rotation changeable from outside
- electromagnetic compatibility controlled
- maintenance-free

Technical data

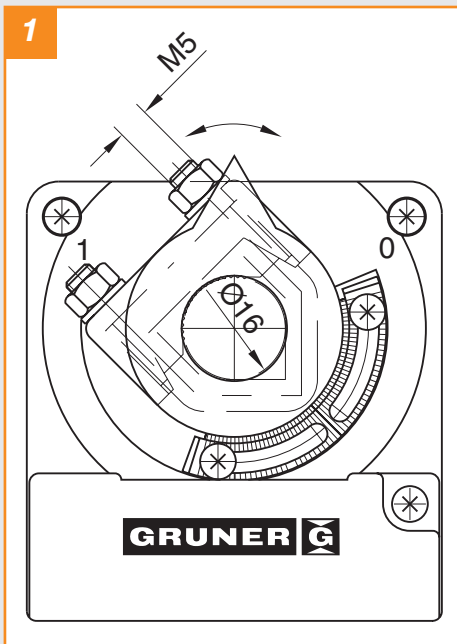
Control	Continuous control
Control signal Y	0...10 VDC or 2...10 VDC (Standard) or 0...20 mA or 4...20 mA
Feedback signal U	0...10 VDC or 2...10 VDC (Standard)
Connecting voltage	24 VAC (50/60 Hz) / DC ±20%
Power consumption	12.0 W
Transformer sizing	15.0 VA
Angle of rotation	max. 95° (adjustable from outside)
Direction of rotation	changeable from outside
Running time (90°)	5 s
Torque	4 Nm
Connection	cable 900 mm / 0.75 mm ²
Safety class	III
Protection	IP 54 (cable downwards)
Dimensions	115 x 65 x 61 mm
Ambient temperature	-20...+50°C
Maintenance	maintenance-free
CE	73/23/EWG, 89/336/EWG
Weight	530 g

Adjustment of the angle of rotation (fig. 1)

Both end stops are adjusted to 0° and 90°. For smaller rotation angles, loosen the screws at the metal end stop, adjust the end stops as requested, and fasten the screws again.

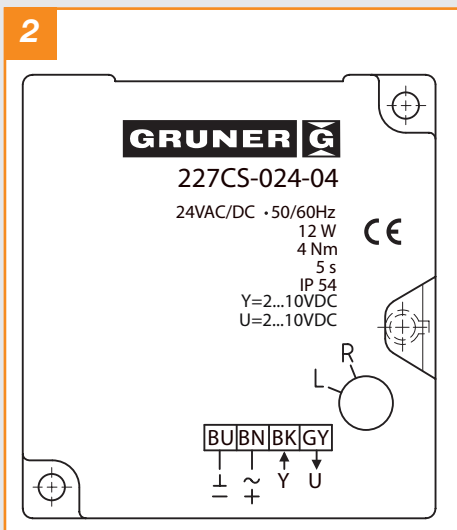
Fixing of the shaft (fig. 1)

by the locking clamp to the damper shaft: □ 8...12 mm
 ∅ 8...16 mm



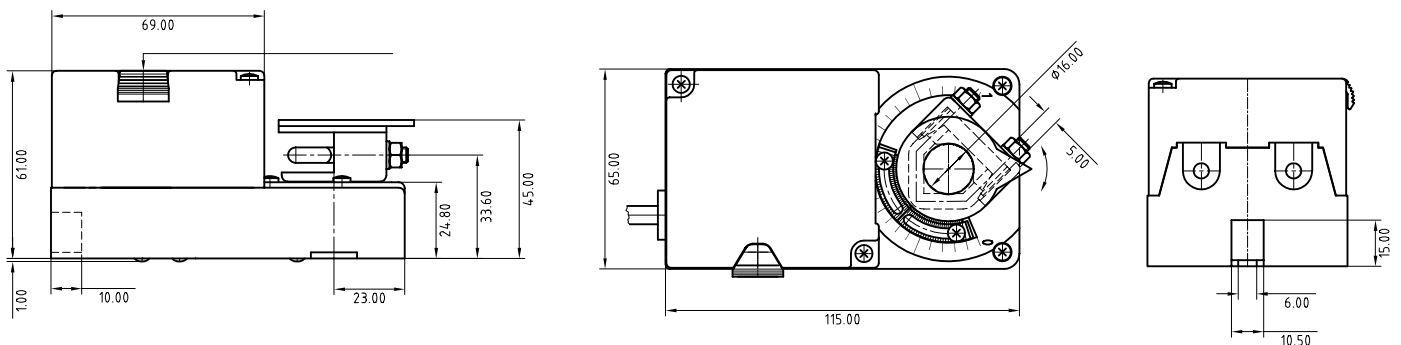
Adjustment of the direction of rotation (fig. 2)

The actuator is adjusted to clockwise direction by the factory => "R". For changing the direction of rotation, turn the adjusting knob to "L".

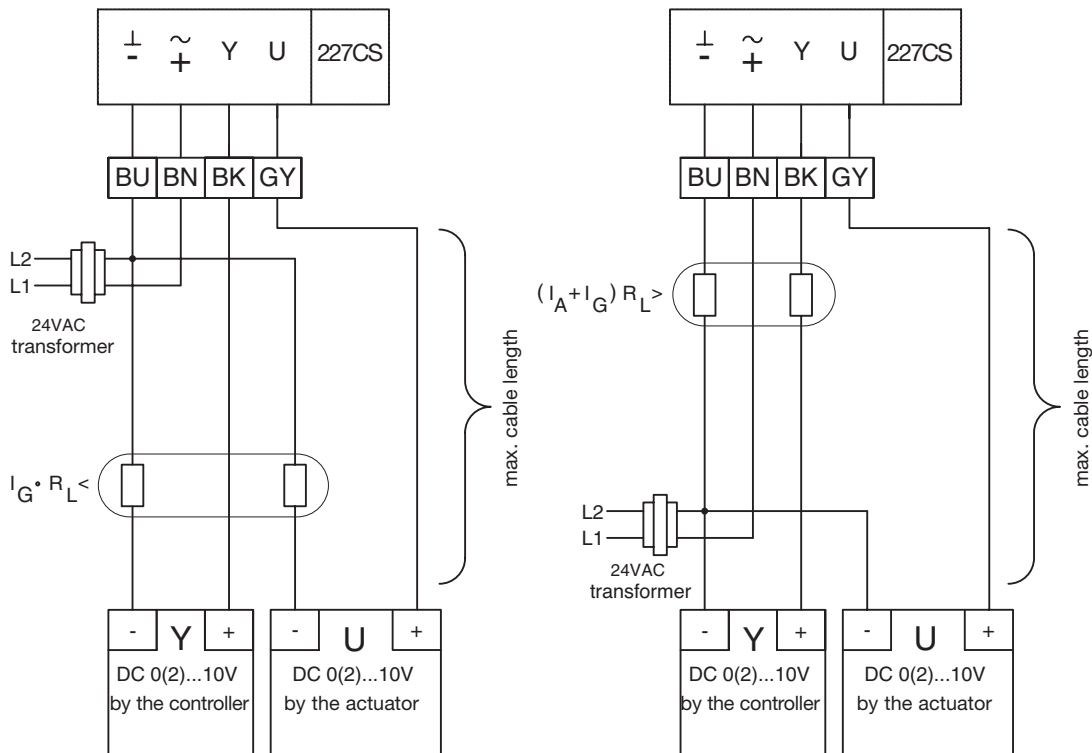


Technical drawing

227CS-024-04



Wiring configuration and recommended cable length



I_G ... current of set valve selector

I_A ... actuator current

$I_G \ll I_A$

R_L ... cable resistance

$$R_L = \frac{1}{\sigma} \times \frac{L}{A}$$

L ... cable length

A ... cable cross section

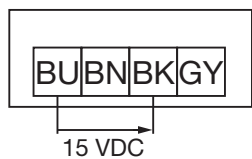
σ ... $56,2 \times 10^6 \text{ S/m}$

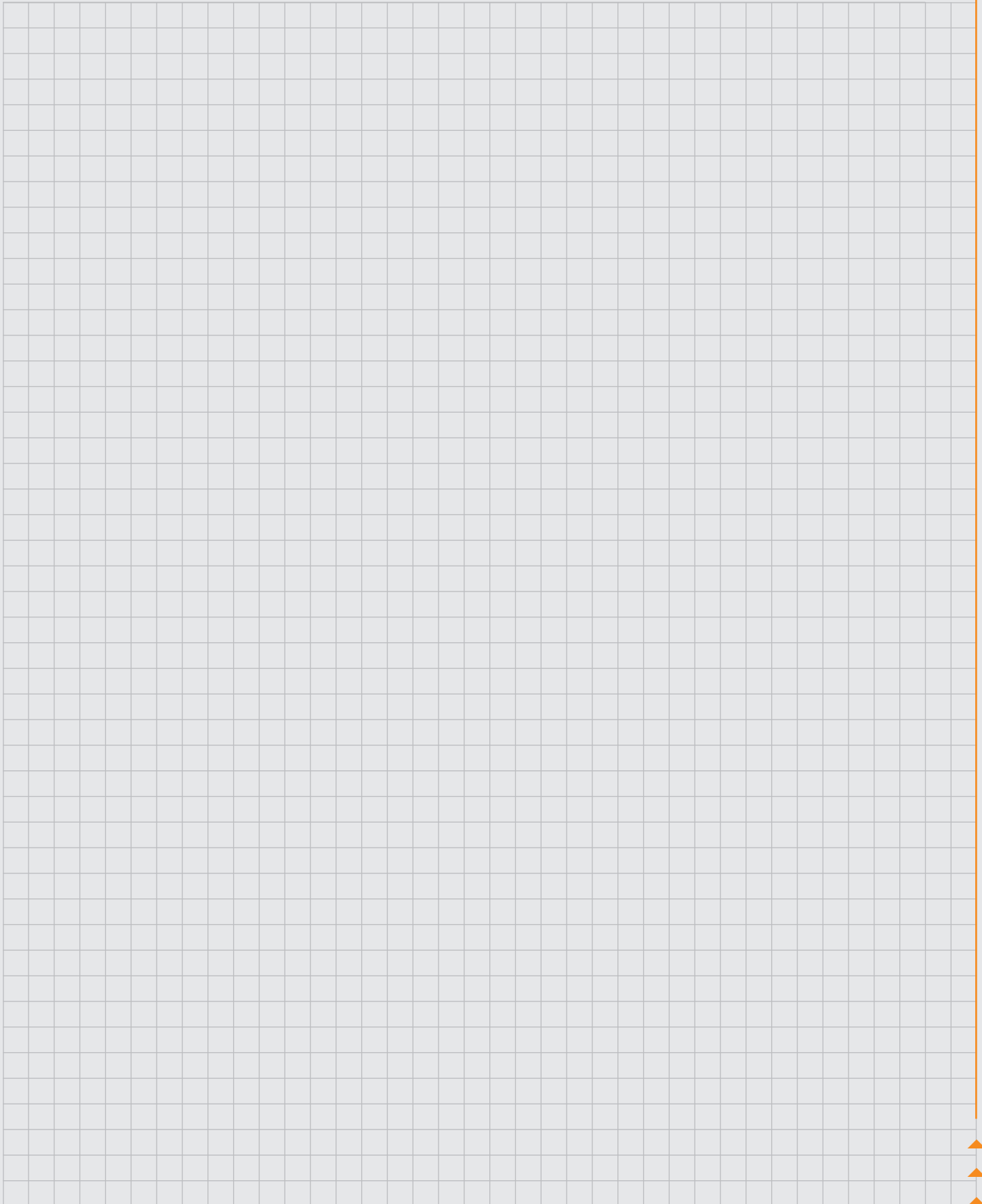
cable cross section	max. cable length
0,75 mm ²	23 m
1 mm ²	31 m
1,5 mm ²	46 m
2,5 mm ²	76 m

For several actuators switched in parallel the max. cable length must be divided by the number of actuators.

Teach-in of range of angle > 30°

1. Actuator stand by
2. Adjusting mechanical endstops
3. 15 VDC at Y
4. Power on actuator
5. Actuator starts teach-in process of range of angle (10...30 s)
6. Remove 15 VDC at Y





▶ ▶ ▶ YOUR WAY TO GRUNER

