

Proportional Actuators AC/DC 24 V  
2.25 N

**Application**

The **JOHNSON CONTROLS STANDARD** electric damper actuator series is designed to operate air dampers in ventilation and air conditioning systems.

The compact design and universal adapter fitted with limitation of rotation angle make this JOHNSON CONTROLS actuator highly versatile.

**Features**

- DC 0(2)...10 V or 0(4)...20 mA control signal
- Working area adjustable
- Load-independent running time
- Up to 5 actuators in parallel operation possible
- Plug-in terminal block connection
- Simple direct-mount with universal adapter on 10...20 mm Ø round-axis or 10...16 mm square shaft
- 48 mm minimum damper shaft length
- Selectable direction of rotation
- Limitation of rotation angle
- Manual release button
- 2 adjustable auxiliary switches
- Automatic shut-off at end position (overload switch)
- Actuators available with 1m cable
- Customized versions available
- Devices meet CE requirements

**Accessories**

- M9000- ZK Damper linkage selection
- M9000- ZKG Ball joints



**Ordering Codes**

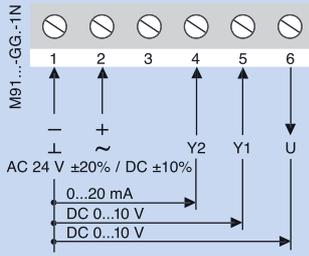
Codes	Descriptions
M91...-GGA-1N	AC/DC 24 V
M91...-GGC-1N	AC/DC 24 V, with 2 auxiliary switches
M91...-GG...-1N-K	with 1 m halogen-free cable
DH ...1.1N	AC/DC 24 V
DH...1.1SN	AC/DC 24 V, with 2 auxiliary switches
DH...N-K	with 1 m halogen-free cable

**Technical Specifications**

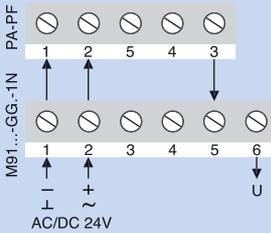
Actuator	M9108-GG...	M9116-GG...	M91246-GG...
Torque	8 Nm	16 Nm	24 Nm
Damper area*	1.5 m <sup>2</sup>	3.0 m <sup>2</sup>	4.5 m <sup>2</sup>
Running time OPEN	30 s	80 s	125 s
Running time CLOSE	30 s	80 s	125 s
Supply Voltage	AC/DC 24 V		
Frequency	50-60 Hz		
Power Consumption			
- Running	2.5 W		
- At end position	0.3 W		
Dimensioning	6.0 VA / 3.6 A @ 2 ms		
Weight	1.1 kg		
Working area Y	not adjustable		
Control signal Y1	DC 0...10 V		
Input resistance Y1	Ri 250 Ω		
Control signal Y2	0...20 mA		
Input resistance Y2	Ri 388 Ω		
Position signal U	DC 0...10 V		
Load resistance	>50 k Ω		
Angle of rotation/working range	90° (93° mech.)		
Angle of rotation/limitation	5°...85° in 5° < steps		
Auxiliary Switches	3(1.5)A, AC 230 V		
- S1 setting range	5°...85° < adjustable		
- S2 setting range	5°...85° < adjustable		
Cable	1.0 m halogen-free		
- Motor	5-Wire 1-2-4-5-6		
- Switches	5-Wire 21-22-23-24-25		
Lifetime	60'000 Rotations		
Noise level	45 dB (A)		
Protection class	II		
Degree of protection	IP 54		
Mode of action	Type1		
Ambient conditions			
- Operating temperature	-20...+50°C / IEC 721-3-3		
- Storage temperature	-30...+60°C / IEC 721-3-2		
- Humidity	5...95% r.F. no condensed		
Service	Maintenance-free		
Standards			
- Mechanics	EN 60 529 / EN 60 730-2-14		
- Electronics	EN 60 730-2-14		
- EMC Emissions	EN 50 081-1:92 / IEC 61000-6-3:96		
- EMC Immunity	EN 50 082-2:95 / IEC 61000-6-2:99		

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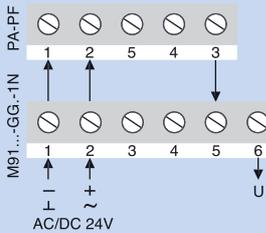
Wiring Diagram



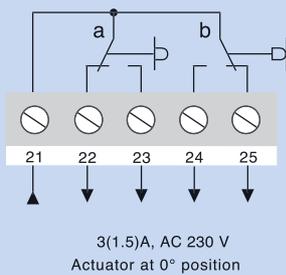
Parallel Connections



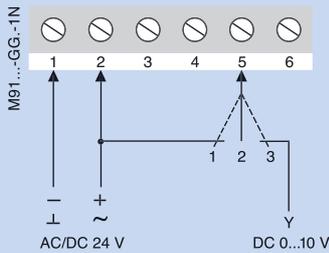
Position transmitter



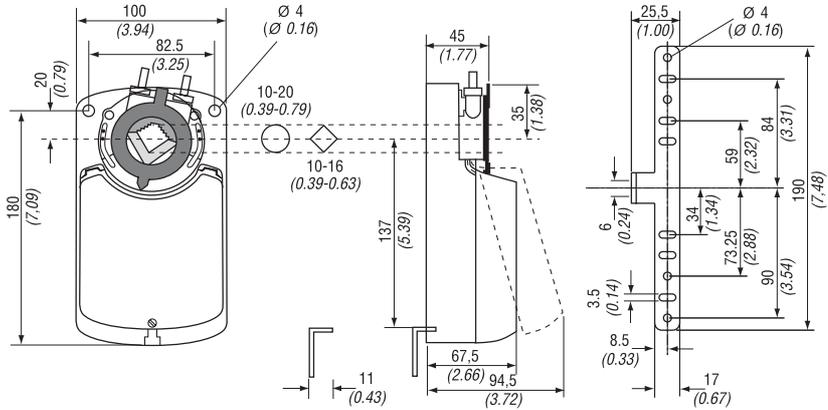
Auxiliary Switches (S)



Override Control



Dimensions in mm (inches)

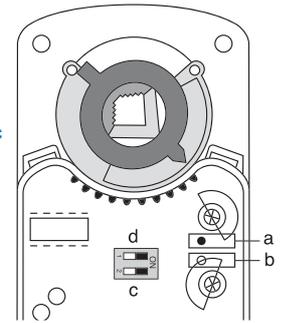
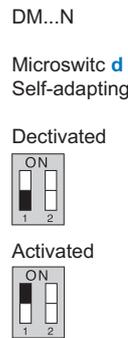


Setting the control Signal

Control signal Y1	DC 0...10 V
Input resistance	Ri 250 kΩ
Control signal Y2	0...20 mA
Input resistance	Ri 388 Ω
Position signal U	DC 0...10 V
Load resistance	> 50 kΩ

By switching microswitch **d1** to ON position, the control signal Y1 or Y2 will be adapted to the chosen angle of rotation.

Changing the direction of rotation



Position transmitter

The M91...GG.-1N can also be controlled using the JOHNSON CONTROLS Positioner (PA/PF) with control signal of DC 0...10 V. For further information concern the PA and PF positioner please refer to sheet 6.20.

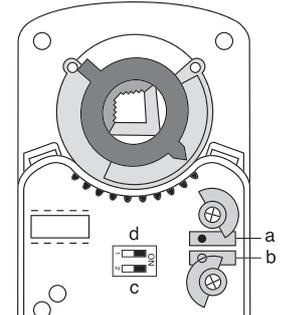
**Caution:** A maximum of 5 actuators can be controlled in parallel operation.

Setting the auxiliary switches

Factory setting:

- Switch **a** at 10°
- Switch **b** at 80°

The switching position can be manually changed to any required position by turning the ratchet.



Override control

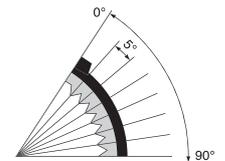
The actuator M91...GG.-1N can be forced to override control when wired in accordance with the relevant diagram on the left.

- Switch position:
- 1 = Actuator runs at 10 V
  - 2 = Actuator runs at 0(2) V
  - 3 = Automatic control

Rotation Angle

The limitation or rotation angle can be set in 5° steps by moving the adapter.

The adapter can be removed simply by pressing the adapter clip on the underside of the actuator.



Adapter release

