M91xx-GGx-1N4
Modulating Actuators AC/DC 24 V - Speed Version

Application
The **JOHNSON CONTROLS SPECIAL** 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 lenght
- 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 1 m cable
- Customized versions available
- Devices meet CE requirements

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

Technical Specifications

Actuator	M9108-GGx-1N4	M9116-GGx-1N4
Torque	8 Nm	16 Nm
Damper area*	1.5 m^2	3.0 m^2
Running Time OPEN	8 s	16 s
Running Time CLOSE	8 s	16 s
Supply Voltage	AC/DC 24 V	
Frequency	50-60 Hz	
Power Consumption		
- Running	6.0 W	
- At end position	0.6 W	
Dimensioning	15.0 VA / 3.6 A @ 2 ms	
Working area Y	not adjustable	
Control Signal Y1	DC 0(2)... 10 V	
Imput resistance Y1	Ri 250 Ω	
Control Signal Y2	0(4)...20 mA	
Imput resistance Y2	Ri 388 Ω	
Position signal U	DC 0...10 V	
Load resistance	> 50 kΩ	
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		
Cable	1 m halogen-free	
- Motor	5-Wire 1-2-4-5-6	
- Switches	5-Wire 21-22-23-24-25	
Life time	60.000 rotations	
Noise level	45 dB (A)	
Protection Class	II	
Degree of Protection	IP 54	
Mode of Action	Type 1	
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	
Weight	1.1 Kg	
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	

***Caution:** Please note damper manufacturer's information concerning the open/close torque.

Ordering Codes

Codes	Descriptions
M9108-GGA-1N4	AC/DC 24 V
M9108-GGC-1N4	AC/DC 24 V, with 2 auxiliary switches
M9116-GGA-1N4	AC/DC 24 V
M9116-GGC-1N4	AC/DC 24 V, with 2 auxiliary switches

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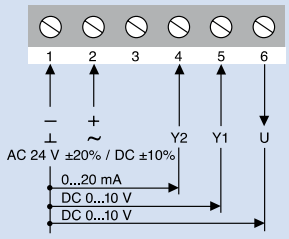
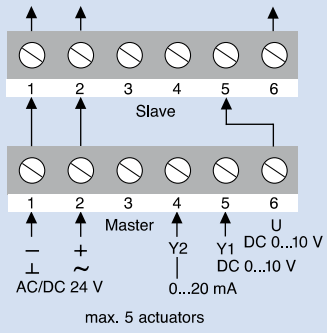
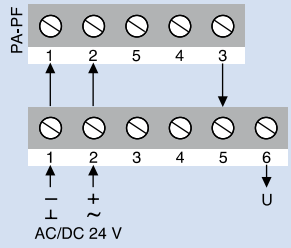
Wiring Diagram



Parallel Connections



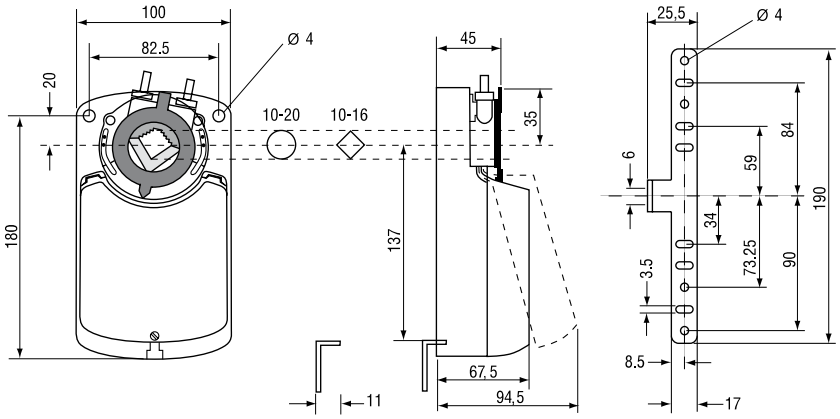
Position transmitter



The M91xx-GG...-1N4 can also be controlled using the JOHNSON CONTROLS Positioner (PA/PF) with control signal of DC 0...10 V. For further information concerning the PA and PF positioner please refer to sheet 6.20.

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

Dimensions in mm



Setting the control Signal

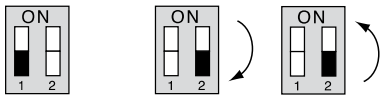
Control signal Y1 Input resistance	DC 0...10 V Ri 250 kΩ
Control signal Y2 Input resistance	0...20 mA Ri 388 Ω
Position signal U Load resistance	DC 0...10 V > 50 kΩ

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

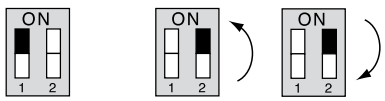
By switching microswitch **c** the direction of rotation can be changed.

Microswitch **d** Microswitch **c**
Self-adapting

Dectivated



Activated



M9116
M9124

M9108

Setting Span and OFFSET

The potentiometers **O** and **S** help to match control signals Y1 and Y2 to any make of controller.

Example 1

Control signal Y1 working between DC 2...10 V

Setting: Starting point **O** = 2
working range **S** = 8

Example 2

Control signal Y2 working between 6...18 mA

Setting: Starting point **O** = 3
Working range **S** = 6

Start point **O**

Scale O	0	1	2	3	4	5	6	7	8
for Y1 (VDC)	0	1	2	3	4	5	6	7	8
for Y2 (mA)	0	2	4	6	8	10	12	14	16

Working range **S**

Scale S	2	3	4	5	6	7	8	9	10
for Y1 (VDC)	2	3	4	5	6	7	8	9	10
for Y2 (mA)	4	6	8	10	12	14	16	18	20

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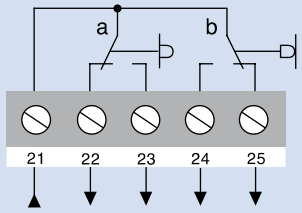
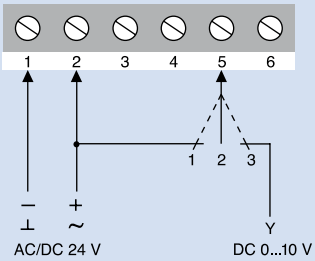
Auxiliary Switches (S)



3(1.5)A, AC 230 V
Actuator at 0° position

Override Control



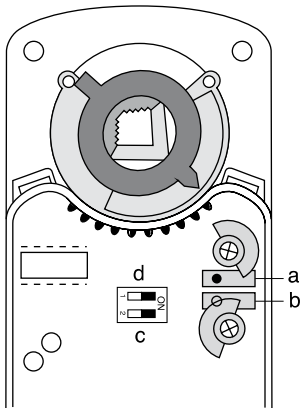
The actuator M91..-GG..-1N4 can be forced to override control when wired in accordance with the diagram.

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

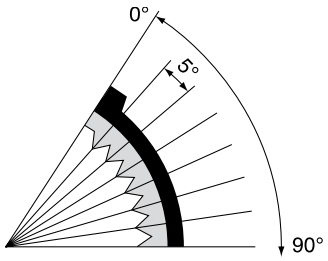
Settings the auxiliary switches

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

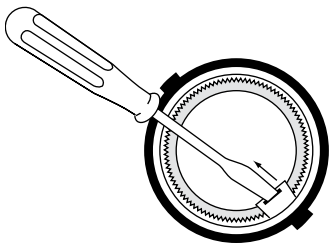


Limitation of Rotation Angle



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

Adapter release



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