

Proportional Actuators

P/N 14-88360-1904 Rev. D



JOVENTA®

Building Efficiency

Headquarters: Milwaukee, Wisconsin, USA

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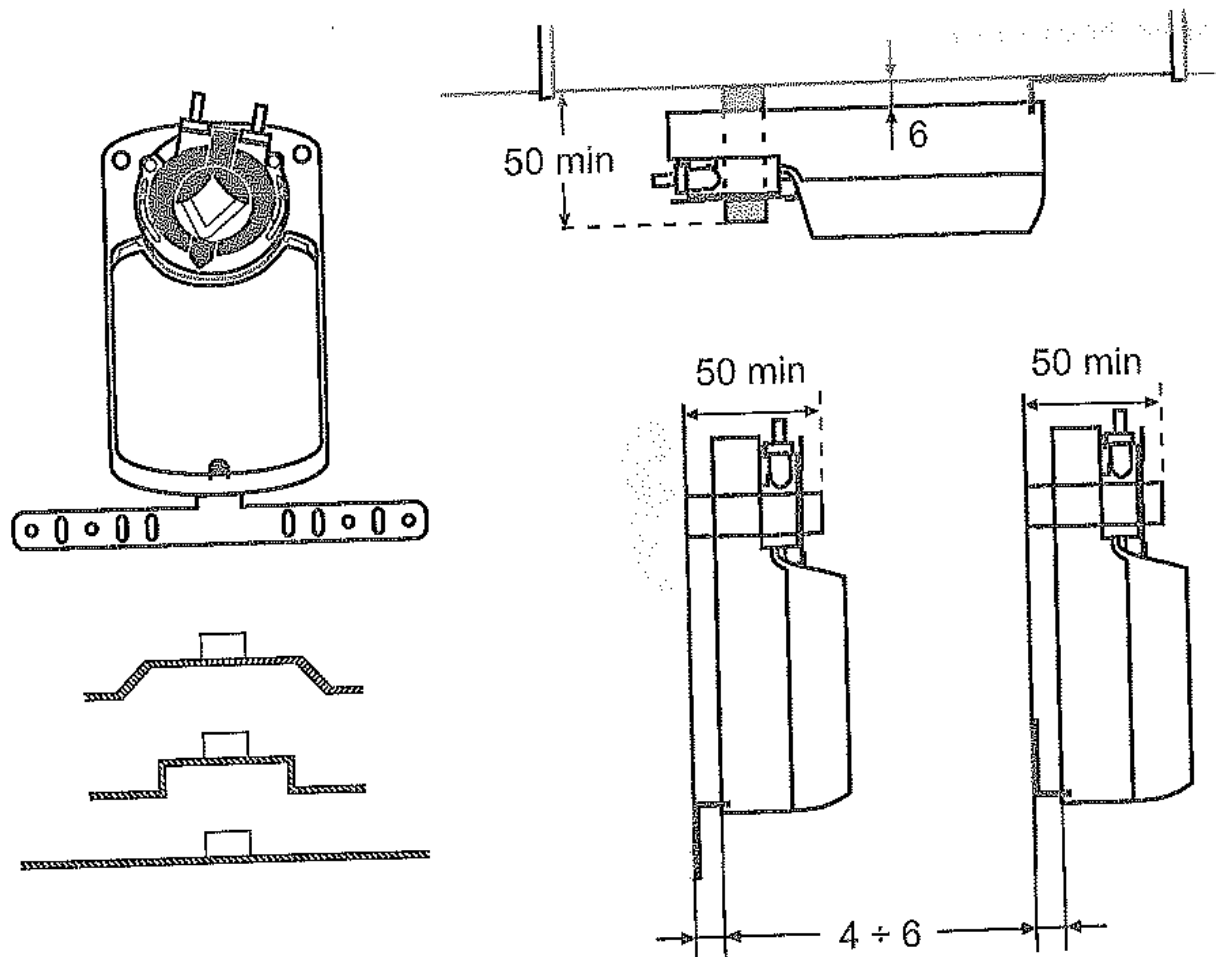


Figure 3: Mounting Instructions

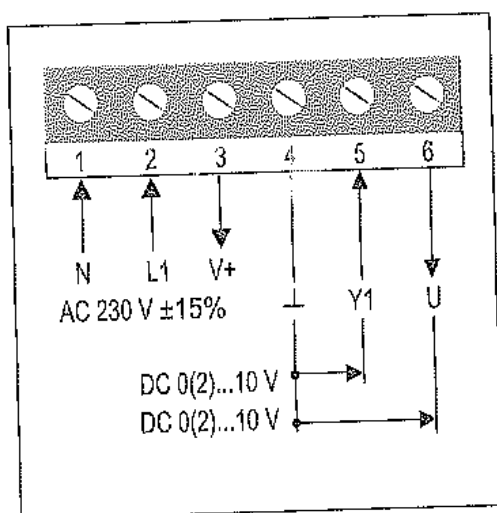


Figure 4: Proportional Control

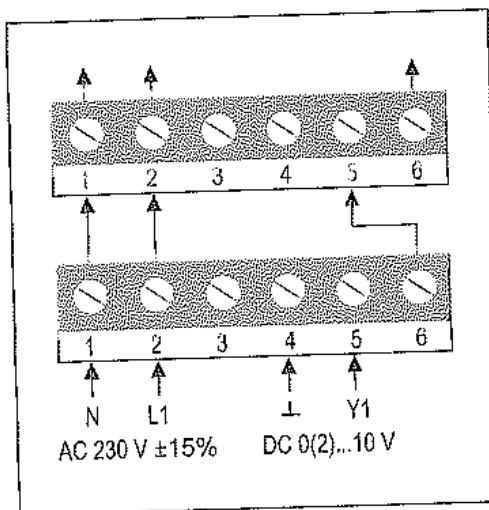


Figure 5: Parallel Connection

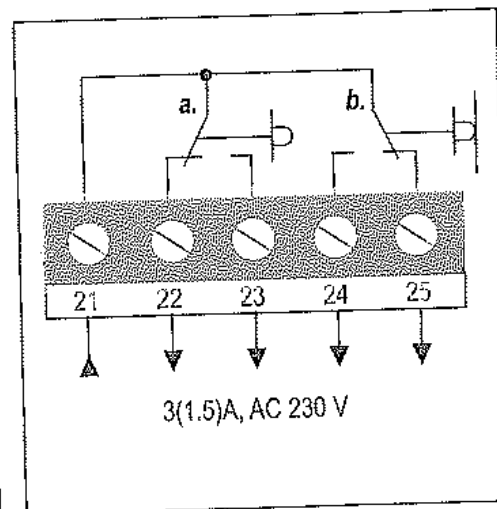


Figure 6: Auxiliary switches

READ THIS INSTRUCTION SHEET AND THE SAFETY WARNINGS CAREFULLY BEFORE INSTALLING AND SAVE IT FOR FUTURE USE

General Features

The actuators are intended for the operation of air dampers in HVAC systems. The universal adapter allows them to be mounted directly on the damper spindle where they are secured with the locking device supplied.

Figure 1: Dimensions in mm

(a). Cover screw

Mode of operation

Figure 2: Actuator open

(a). Auxiliary switch

(b). Auxiliary switch

(c). Direction of rotation

(d). Setting

(e). Manual button

(f). Adapter for:

Round spindles: $\varnothing$ 10...20 mm

Square spindles: $\square$ 10...16 mm

(g). 1 - Angle of rotation limiting

2 - Releasing the adapter

The actuators are controlled by a 0...10 VDC or 2...10 VDC signal. The motor stops running when the damper end-stop or actuator end-stop is reached. For manual operation of the damper the gearing is disengaged by means of the self-resetting button (See Figure 2 e.).



WARNING: When calculating the torque required to operate dampers, it is essential to take into account all the data supplied by the damper manufacturer.

Installation and adjustment

Figure 3: Mounting Instructions

Installation

Attach the actuator to the damper spindle by means of the adapter and secure the locking device with the screws provided.

Angle of rotation limiting

An angle-of-rotation/working range (Figure 2 g1.) of less than 90° can be limited mechanically by repositioning the adapter in 5° steps as required.

The adapter is released by simply pressing the adapter clips on the lower side of the actuator (Figure 2 g2.).

Selecting the direction of rotation

- In order to reverse the direction of rotation (CW/CCW), loosen screw (See Figure 1 a.) and remove the cover.
- By switching microswitch c the direction of rotation can be changed (See Figure 2 c.).
- Factory setting: **Clockwise (CW) rotation.**

Setting range

- The setting range can be changed with the switch (See figure 2 c.).
- Factory setting: DC 0...10 V

Wiring

WARNING:

- The electrical connections for the actuators must be executed in accordance with the relevant legal requirements.
- **In order to avoid any personal injury or damage to the equipment or other property, always isolate the power supply before commencing any work on the electrical wiring.**
- In order to avoid danger to property, it is important for the equipment to be used solely for which it is intended.



WARNING: The integrated circuits in the actuator are sensitive to static electricity. Take suitable precautions.

Wiring Diagrams

Figure 4: Proportional Control

Figure 5: Parallel connection

Figure 6: Auxiliary switches

(a). Auxiliary switch factory set at 10° CW

(b). Auxiliary switch factory set at 80° CW

Actuator at 0° position

Electrical connections via safety isolating transformer

- In order to make the electrical connections, loosen screw (Fig. 1 a.) and remove the cover.
- **Actuator wiring diagram:** according to terminal connection (Fig. 4).
- **Parallel connection:** according to terminal connection (Fig. 5).
- **Auxiliary switches:** according to terminal connection (Fig. 6).
- **Feedback potentiometer:** not possible.
- **The electrical installation work should be carried out by a qualified electrician.**
- Wrong connections can damage the equipment. Check the connections before energizing the power supply.
- Local accident prevention regulations should always be adhered to when installing the actuators.
- The actuator moves about slightly while it is working so it is important to use flexible leads for the electrical connections.

Auxiliary switches adjustment (See Figure 2 a. - b.)

Example:

Switching position adjustment **a.** to 30° and **b.** to 70°.

30°: Depress the manual button (Figure 2 e.) and rotate the adapter (Figure 2 f.) to the 30° position. Slightly loosen the Phillips screw in the cam wheel **a.** so that the wheel can be moved by hand. Rotate the cam wheel **a.** **counterclockwise** until the switch button can be seen. Then tighten-back the Phillips screw in the cam wheel **a.**

70°: Rotate the adapter (Figure 2 f.) in the same manner as before to the 70° position. Slightly loosen the Phillips screw in the cam wheel **b.** so that the wheel can be moved by hand. Rotate the cam wheel **b.** **clockwise** until the switch button can be seen. Then tighten-back the Phillips screw in the cam wheel **b.**

Ordering Codes

Codes	Descriptions
DMx2.2	Actuator AC 230 V
DMx2.2S	Actuator AC 230 V with 2 auxiliary switches

Technical Specifications

Actuators	DMS2.2(S)	DM2.2(S)	DML2.2(S)	DMG2.2(S)
Drive torque	8 Nm	16 Nm	24 Nm	32 Nm
Damper area	1.5 m ²	3.0 m ²	4.5 m ²	6.0 m ²
Running time	30 s	80 s	125 s	140 s
Independent of load, at nominal conditions and room temperature				
Power supply	AC 230 V $\pm$ 15%			
Frequency	50-60 Hz			
Power consumption:				
- operating	5.5 W			
- at end stops	0.6 W			
For wire sizing	6.0 VA / 0.1 A @ 2ms			
Control signals				
	Y1 DC 0(2)...10 V / Ri > 100 K Ω			
	Position Signal U DC 0...10 V / R > 50 K Ω			
Angle of rotation:				
- Working range	90° (93° mech.)			
- Limiting	5°...85° in 5° steps			
Auxiliary switch rating	3 (1.5) A, AC 230 V			
Service life	60'000 cycles			
Sound power level	45 dB (A)			
Protection class	II			
Degree of protection	IP 54 (with cable glands, cable downwards)			
Temperature: operating / store	-20°...+50 °C / -30°...+60 °C			
Humidity	5...95% RH (not condensing)			
Weight	1.2 kg			
Maintenance	Maintenance-free			
CE Compliance	Johnson Controls, Inc., declares that these products are in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC			