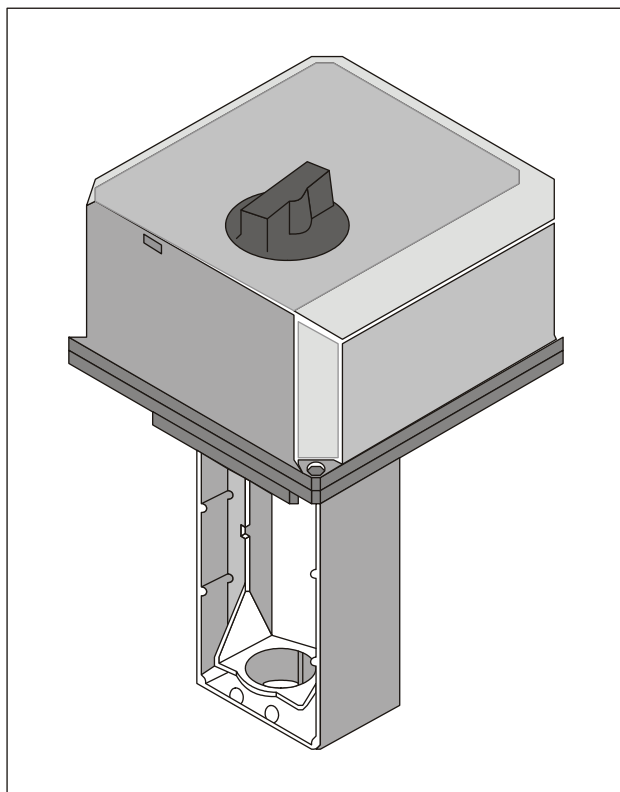


ML7421A,B

Electric Linear Valve Actuators

SPECIFICATION DATA



GENERAL

These actuators enable modulating control in conjunction with controls providing an analog output. The direction of movement is reversible by means of an internal selector plug.

They operate Honeywell's standard valves in heating, ventilation, and air conditioning (HVAC) applications.

FEATURES

- Quick and easy installation
- No separate linkage required
- No adjustments
- Force-limiting end switches
- Manual operator
- Synchronous motor
- Corrosion-resistant design
- Selectable 0...10 Vdc or 2...10 Vdc/0...20 mA or 4...20 mA input signal
- Position feedback signal
- Direct or reverse-acting adjustable
- Selectable stroke position on signal failure
- Maintenance-free

SPECIFICATIONS

Temperature Limits

Ambient operating limits	-10...+50 °C at 5...95%rh
Ambient storage limits	-40...+70 °C at 5...95%rh
Medium valve temperature	Max. +150 °C (220 °C with High-Temperature Kit)

Safety

Protection class	III according to EN60730-1
Protection standard	IP54 according to EN60529
Flame retardant housing	V0 according to UL94, with metal cable gland

Noise level

≤45dB(A)

Signals

Input range	Y = 0(2)...10 Vdc, 0(4)...20 mA
Input impedance for voltage	R _i = 100 kΩ (eff. mA, Table 2)
Input impedance for mA	R _i = 500 Ω
Signal source outp. imped.	Max. 1 kΩ
Output voltage range	Position: 2...10 Vdc
Output load	Max. 1 mA

Wiring

Wiring terminals	1.5 mm ²
Cable entry	M20x1.5 and PG11 (the latter with a knock-out for expansion to M20x1.5)

Material

Cover	ABS-FR
Yoke and Base	Aluminum die-cast

Weight

2.0 kg

Dimensions

see Fig. 3 and Fig. 4

Table 1. Overview of models

model number	ML7421A3004	ML7421B3003
supply voltage	24 Vac (+10%/-15%); 50/60 Hz	
power consumption	14 VA (50 Hz) / 16 VA (60 Hz)	
signal input 0(2) Vdc	Actuator stem retracted. Two-way valve: open, three-way valve port A - AB: closed	
signal input 10 Vdc	Actuator stem extended. Two-way valve: closed, three-way valve port A - AB: open	
stroke	20 mm	38 mm
run-time at 50 Hz	1.9 min	3.5 min
nominal stem force	1800 N	

OPERATION

General

The drive of a synchronous motor is converted into linear motion of the actuator stem by using a worm gear transmission.

The actuator stem is connected with the valve stem by a button keyed retainer connection.

The force sensor switches off the motor precisely when the nominal stem force is reached.

If used as a replacement of an already-installed actuator M7421A,B, the following issue is to be observed:

- Permanent power supply (see section "Electrical Installation")

Manual Operation

The actuators are equipped with a manual operator used in case of power failure. Manual operation is possible only after the power supply has been switched off or disconnected.

To operate, push the manual operator knob down and turn clockwise to move the stem upward and counter-clockwise to move the stem downward. If the actuator returns to automatic control, the manual operator knob unlocks automatically.

NOTE: Manual operation allows a very high closing force capable of jamming the actuator spindle and exceeding the rating of the force switches, so that the motor cannot move. Therefore, after a manually close-off operation, it may be necessary to release the spindle one turn by turning the manual operator knob, so that the manual operator will automatically disengage on power resumption.

Electrical Installation

24 V~ and 24 V_⊥ (see Fig. 3.) must be applied under all operating conditions.

Cable length/diameter for field mounting:

- Max. 200 m / 1.5 mm²

Input Signal

The Vdc- or mA-input signal is selected by shifting jumper plug W4 (see Fig. 2). The factory setting of W4 is "Vdc". No external resistor for mA-input signal is necessary.

Input Signal Range

The range of the analog input signal Y (0...10 Vdc / 0...20 mA or 2...10 Vdc / 4...20 mA) can be selected by changing the position of jumper plug W2 (Fig. 1.). The factory set is at 0...10 Vdc.

Direction of Action

The direction of action (direct or reverse) can be selected by changing the position of jumper plug W3 (Fig. 1.). The factory set is: stem extends at increasing signal (direct acting).

NOTE: Jumper plugs W1, W2, W3, and W4 are accessible after the cover has been removed. They are located on top side of the printed circuit board (see Fig. 2).

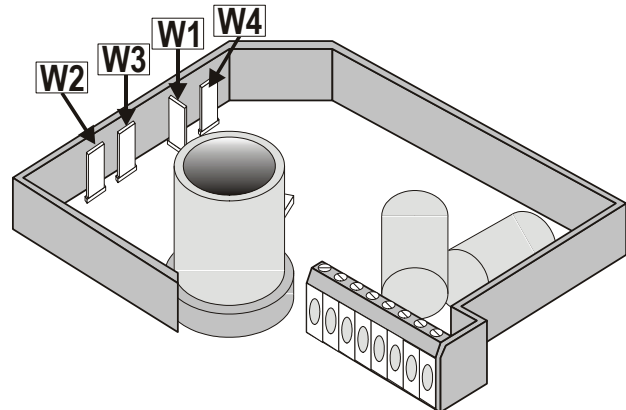


Fig. 1. Location of jumper plugs W1, W2, W3, W4

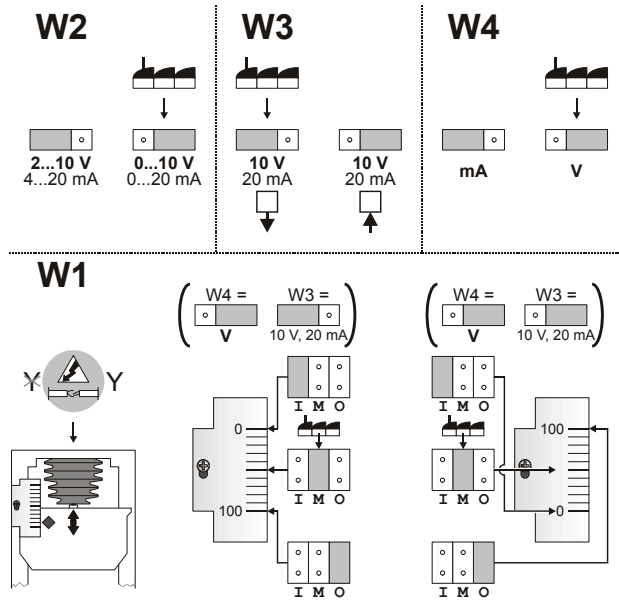


Fig. 2. Effects of jumper plugs W1, W2, W3, W4

Output Signal "POSITION"

An analog output signal 2...10 Vdc "POSITION" representing the actuator stroke 0...100% can be selected. It can be used for remote indication.

When the actuator stem is fully extended, the output signal is 10 Vdc.

Y-Signal Override

To override the Y-signal, inputs 1 and 2 (see Fig. 3.) must be connected as follows:

- stem extended: 24 V_L at input 1; input 2 not connected
 - stem retracted: 24 V_L at input 2; input 1 not connected
- 24 Vac power and ground must be permanently connected.

Input Signal Failure

In case of a failure of the signal input (Y) caused, e.g., by a broken wire, the actuator will run to one of the three positions (possible only if W4 has been set to the "V" position):

Table 2. Actuator stem position after input signal failure

W1 setting	position after failure	input range	effective current	burden
	0%	0(2) ... 10V	+0 ... 0.1 mA	"pull down" at 0V
	50%	0(2) ... 10V	-0.06 ... +0.04 mA	100 kΩ at 6V
	100%	0(2) ... 10V	-0.15 ... -0.05 mA	"pull up" at 15V

Accessories

The following accessories are available upon request.

Auxiliary Switches

The actuators can be equipped on-site with an auxiliary switch unit with two switches. Their switching points are adjustable over the full length of the actuator stroke.

The switches can be used e.g. to switch pumps or to provide remote indication of any stroke position.

A cable gland M20x1.5 is delivered with the unit.

Table 3. Auxiliary switch unit

type	for stroke	order no.
auxiliary switches; 24 Vac / 5 (3) A (package contains 2 SPDT switches)	20 mm 38 mm	43191680-002

High-Temperature Kit

Two options for applications with a medium valve temperature of +150...+220 °C are available for the following valves:

Table 4. High-temperature kits

order number High-Temp. Kit	valve	DN
43196000-001	V5011R/V5011S	15 – 50
	V5013R/V5013E	15 – 50
	V5328A/V5329A	15 – 32
43196000-002	V5328A/V5329A	40 – 80
	V5049A	15 – 65
	V5016/V5025/V5050A	15 – 80
43196000-038	V5328A	100 – 150
	V5016A	100 – 150
	V5025A	100 – 150
	V5049A (PN25/40)	80 – 100
	V5050 (PN16)	100 – 150
V5050 (PN25/40)	100	

CLOSE-OFF PRESSURE RATINGS

Stroke		20 mm								38 mm			
Valve	mm	15	20	25	32	40	50	65	80	80	100	125	150
	inch	1/2	3/4	1	1 ¼	1 ½	2	2 ½	3	3	4	5	6
Valves		close-off pressure ratings (in kPa)											
V5011R													
V5011S													
V5013R													
V5015A											150	120	80
V5016A / V5025A											2500	2500	2500
V5328A		1600	1600	1600	1600	1300	750	470	230				
V5329A (PN16)													
V5329C (PN6)													
V5049A		2500	2500	2500	2000	1300	750	500		230	230	90	90
V5050A		2500	2500	2500	2000	1300	750	500	230		230	90	90

||||| = Use 600 N actuator

For details on the valves, see the following Specification Data No.:

V5011R	EN0B-0064GE51	V5328A	EN0B-0291GE51	V5095A	EN0B-0412GE51
V5011S	EN0B-0085GE51	V5329A/5050A	EN0B-0310GE51	V5013R	EN0B-0065GE51
V5016A	EN0B-0440GE51	V5025A	EN0B-0442GE51	V5013E	EN0B-0446GE51
V5049A	EN0B-0238GE51				

DIMENSIONS

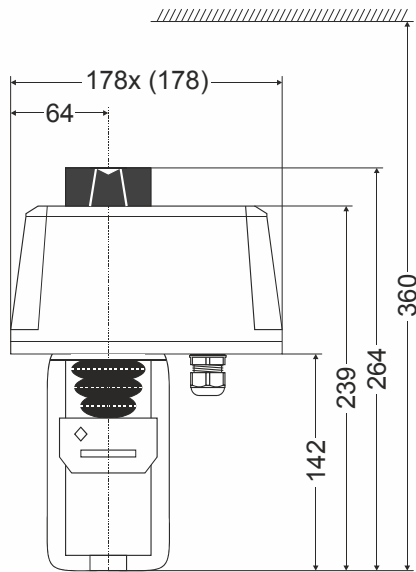


Fig. 3. ML7421A (dimensions in mm)

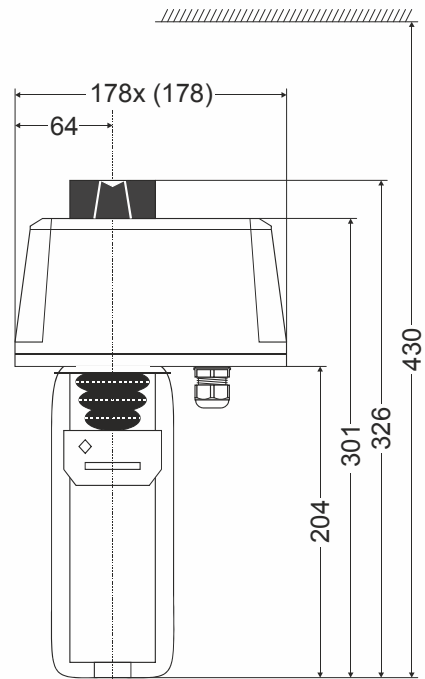


Fig. 4. ML7421B (dimensions in mm)

Wiring

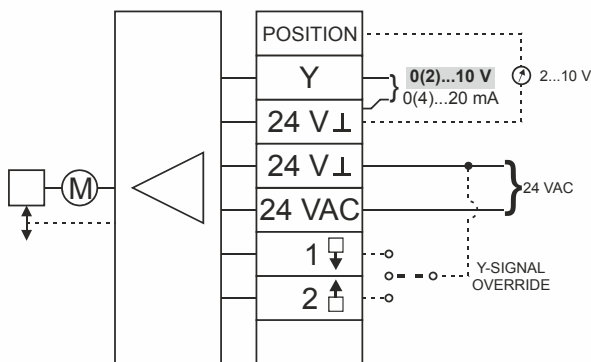
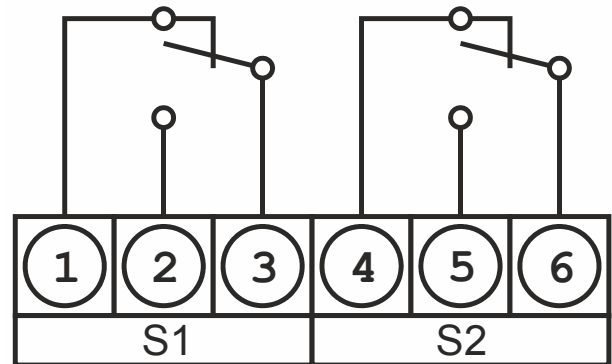


Fig. 5. Wiring ML7421A,B



AUXILIARY SWITCHES
24 VAC / 5 (3) A

Fig. 6. Accessories

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