

ML7420A/ML7425A,B

Electric Linear Valve Actuator

SPECIFICATION DATA



ML7420

ML7425

GENERAL

The ML7420A / ML7425A,B actuators are designed for modulating control with controllers providing an analog output of 0...10 Vdc or 2...10 Vdc. They operate Honeywell's standard valves in heating, district heating, ventilation, and air conditioning (HVAC) applications. Spring-return models provide a safety position at power failure.

FEATURES

- Easy and quick installation
- No separate linkage required
- No adjustments required
- Low power consumption
- Force-limiting end stops
- Spring-return models (ML7425A,B)
- Manual operation knob
- Position feedback signal
- 0...10 Vdc or 2...10 Vdc signal input selectable
- Direct / reverse action selectable
- Stroke position on signal failure selectable
- Corrosion-resistant design
- Maintenance-free
- Actuator-valve combinations approved according to DIN 14597 available

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	see section "Models" on pg. 2; 220 °C with High-Temp. Kit (see section "Accessories" on pg. 3)

Signals

Signal input voltage	y = 0...10 Vdc or 2...10 Vdc R _i = 100kΩ
Signal source	1 kΩ max.
Position feedback signal	x = 2...10 Vdc
Load	1 mA max.

Safety

Protection class	II as per EN60730-1
Protection standard	IP54 as per EN60529
Flame retardant housing	V0 as per UL94 (with metal cable gland – not supplied)

Wiring

Wiring terminals	1.5 mm ²
Cable entry	M20x1.5 and two additional knock-outs M16x1.5 and M20x1.5

Weight

non-spring return type	1.3 kg
spring return type	2.4 kg

Material

Cover	ABS-FR
Base	glass fiber reinforced plastic
Yoke	aluminum diecast

MODELS

Model	ML7420A6009	ML7420A6017	ML7425A6008	ML7425A6024	ML7425B6007
Supply voltage	24 Vac $\pm$ 15%; 50/60 Hz				
Medium valve temperature*	150 °C		130 / 150 °C**	150 °C	150 °C
Power consumption	5 VA	7 VA	12 VA	12 VA	12 VA
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	20 mm	20 mm	20 mm	20 mm
Run time at 50 Hz	1 min	0.5 min	1.8 min	1.8 min	1.8 min
Close-off force	$\geq$ 600 N	$\geq$ 600 N	$\geq$ 600 N	$\geq$ 600 N	$\geq$ 600 N
Spring return time	—		$\approx$ 12 s	$\approx$ 12 s	$\approx$ 12 s
Spring return direction	—		actuator stem extends at power failure		actuator stem retracts at power failure

* When equipped with the High-Temp. Kit (see section "Accessories" on pg. 3), all actuators are suitable for medium valve temperatures of up to 220 °C.

** Depending upon the given combination of valves and actuators, see tables below.

*** Factory setting; can be reversed by pressing the pushbutton (W3) located on the PCB (see Fig. 1).

Medium temp. < 130 °C (DIN Certificate 1F139/13)

valve	dimensions	with actuator
V5016A (PN16)	15-80 mm	ML7425A6008
V5025A (PN25)		
V5328A (PN16)	15-50 mm	
V5049A (PN25/40)		

Medium temp. < 150 °C (not DIN-certified)

valve	dimensions	with actuator
V5016A (PN16)	15-80 mm	ML7425A6008
V5025A (PN25)		
V5328A (PN16)		
V5049A (PN25/40)	15-65 mm	

OPERATION

General

The drive of a synchronous motor is converted into linear motion of the actuator stem via a spur gear transmission. The actuator stem is connected with the valve stem by a button-keyed retainer connection.

An integrated spring package limits the stem force to a factory-set value in either direction.

The actuator switches off precisely when the specified stem force is reached.

Manual Operation

Actuators without spring return are equipped with a manual operation knob used in case of power failure. Manual operation is permitted only after the power supply is switched off or disconnected.

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

In the case of actuators with spring return, the manual operation knob is located under the cover.

Override Option

All actuators have an integrated override function (see also Fig. 3). When the override signal is applied, the actuator drives to the fully-open or fully-closed position, regardless of the controller signal.

Spring Return

The ML7425A,B spring return actuators provide a defined safety position of the valve in case of power failure.

The spring return actuators are shipped from the factory with a shipment stop (to lock the manual operation knob) in order to allow connection of the stem button retainer to the valve stem without power supply.

Electrical Installation

The actuators are delivered with a pre-installed cable gland M20x1.5 and two additional knock-outs for M16x1.5 and M20x1.5. Max. cable length/diameter for field mounting: 200 m / 1.5 mm² (ML7420A6009) or 100 m / 1.5 mm² (ML7420A6017) or 50 m / 1.5 mm² (ML7425xxxxx).

NOTE: To avoid malfunction, it is necessary to connect 24 Vac power and ground (see Fig. 3 on page 4).

Action

The direction of action can be reversed by pressing the left-hand pushbutton (W3) located on the printed circuit board (see Fig. 1). If the corresponding LED is lit, this indicates that the actuator stem will retract at a control signal of 0(2) Vdc (factory setting); if it is dark, the actuator stem will extend at a control signal of 0(2) Vdc.

Input Signal Range

The range of the analog input signal Y can be changed by pressing the right-hand pushbutton (W2) located on the printed circuit board (see Fig. 1). If the corresponding LED is lit, this indicates that the actuator is set for 0...10 V operation (factory setting); if it is dark, the actuator is set for 2...10 V operation.

Input Signal Failure

Using the potentiometer (W1) located on the printed circuit board (see Fig. 1), the actuator can be adjusted such that in case the signal input fails (due, e.g., to a broken wire) or exceeds 12.5 V, the actuator will run to any pre-configured position between 0% and 100%. The factory setting is with the actuator stem in the central position (50%).

NOTE: The two pushbuttons (W3 and W2) and the potentiometer (W1) are accessible after the cover has been removed and are located at the rear side of the protection sheet of the printed circuit board.

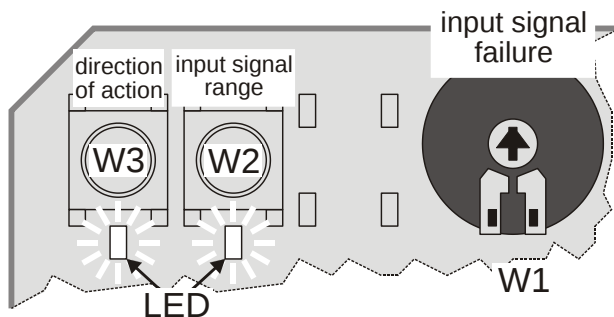


Fig. 1. Pushbuttons and potentiometer (default positions)

Output Signal "POSITION"

An analog output signal 2...10 Vdc "POSITION" is available which represents the actual actuator position. It can be used for remote indication.

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

Accessories

Auxiliary Switches

The actuators can be equipped on-site with an auxiliary switch unit consisting of two switches. Their switching points are adjustable over the full length of the actuator stroke. The switches can be used to switch pumps or provide remote indication of any stroke position. A cable gland M20x1.5 is delivered with the unit.

Part number: 43191680-205

High-Temperature Kit

(for applications >150 °C and < 220 °C medium temperature)

order number High-Temp. Kit	valve	DN
43196000-001	V5011R/V5011S V5013R/V5013E V5328A/V5329A	15 – 50 15 – 50 15 – 32
43196000-002	V5328A/V5329A V5049A V5016/V5025/V5050A	40 – 80 15 – 65 15 – 80

CLOSE-OFF PRESSURE RATINGS

stem force		600 N							
stroke		20 mm							
valve size	mm	15	20	25	32	40	50	65	80
	inch	½	¾	1	1 ¼	1 ½	2	2 ½	3
valves		close-off pressure ratings (in kPa)							
V5011R/S		1600	1600	1000	700	460	260		
V5328A		1600/1000	1000	1000	600	350	200	120	50
V5016A		1600	1600	1600	1600	1600	1600	1600	1600
V5025A		2500	2500	2500	2500	2500	2500	2500	2500
V5049A		1600/1000	1000	1000	600	350	200	120	
V5013R/E		1600	1600	1000	700	460	260		
V5329C		600	600	600	600	480	260	160	100
V5329A		1000	1000	1000	790	480	260	160	100
V5050A		1000	1000	1000	600	350	200	120	50

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

V5011R EN0B-0064GE51

V5328A

EN0B-0291GE51

V5013R EN0B-0065GE51

V5011S EN0B-0085GE51

V5329A/5050A

EN0B-0310GE51

V5013E EN0B-0446GE51

V5016A EN0B-0440GE51

V5025A

EN0B-0442GE51

V5049A EN0B-0238GE51

DIMENSIONS

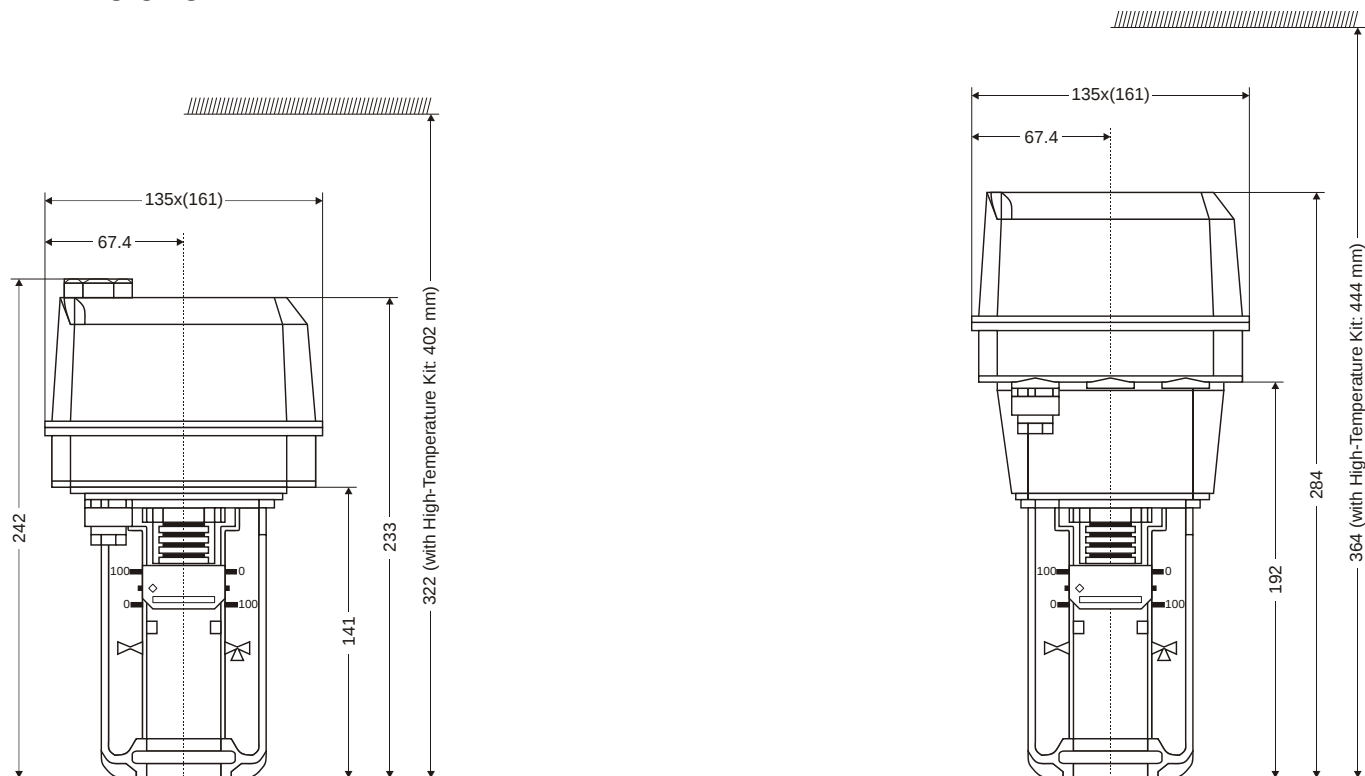


Fig. 2. ML7420A (left) and ML7425A,B (right), dimensions (in mm)

WIRING

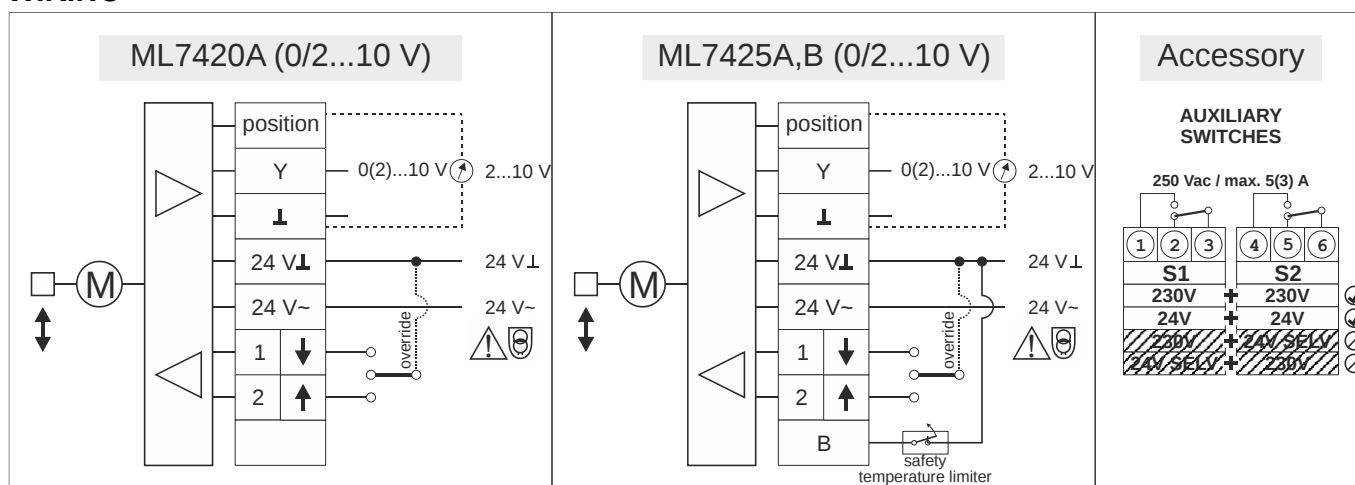


Fig. 3. Wiring

Honeywell

Manufactured for and on behalf of the Connected Building Division of Honeywell Products and Solutions SARL, Z.A. La Pièce, 16, 1180 Rolle, Switzerland by its Authorized Representative:

Home and Building Technologies

Honeywell GmbH
Böblinger Strasse 17
71101 Schönaich, Germany
<http://buildings.honeywell.com>

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