

# ML7420A..T/ML7425A..T,B..T

## Electric Linear Valve Actuator

### SPECIFICATION DATA



ML7420T

ML7425T

### FEATURES

- Easy and quick installation
- No separate linkage required
- No adjustments required
- Low power consumption
- Force-limiting end stops
- Spring-return models (ML7425A..T,B..T)
- 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

### SPECIFICATIONS

#### Temperature Limits

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

#### Signals

|                          |  |
|--------------------------|--|
| Signal input voltage     | $y = 0...10$ Vdc or $2...10$ Vdc<br>$R_i = 100k\Omega$ |
| Signal source            | 1 $k\Omega$ 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) |

### GENERAL

The ML7420A..T/ ML7425A..T,B..T 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.

**Wiring**

|                  |   |
|------------------|---|
| Wiring terminals | 1.5 mm <sup>2</sup>   |
| Cable entry      | M20. Two additional knock-outs M16 and M20 for auxiliary switch and potentiometer accessories |

**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               |

| model number            | ML7420A6009T  | ML7420A6017T | ML7425A6008T                           | ML7425A6024T | ML7425B6007T                            |
|-------------------------|---|--------------|--|--------------|---|
| supply voltage          | 24 Vac ±15%; 50/60 Hz   |              |  |              |   |
| 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         | ≥ 600 N   | ≥ 600 N      | ≥ 600 N                                | ≥ 600 N      | ≥ 600 N                                 |
| spring return time      | —   | —            | ≈12 s                                  | ≈12 s        | ≈12 s                                   |
| spring return direction | —   | —            | actuator stem extends at power failure |              | actuator stem retracts at power failure |

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

## 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..T,B..T 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 mm<sup>2</sup> (ML7420A6009T) or  
100 m / 1.5 mm<sup>2</sup> (ML7420A6017T) or  
50 m / 1.5 mm<sup>2</sup> (ML7425xxxxxT).

**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.

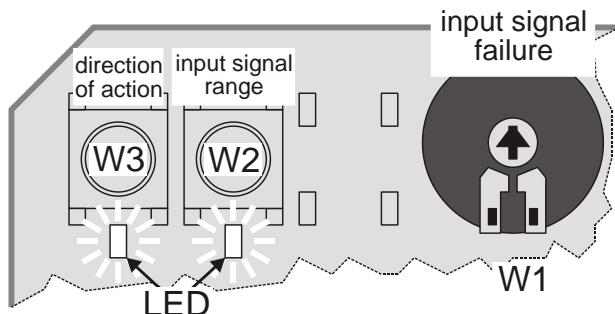


Fig. 1. Pushbuttons and potentiometer (default positions)

## 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 with 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 M20 is delivered with the unit.

Part number: 43191680-205

### High-Temperature Kit

(for applications >150°C medium temperature)

| order number<br>High-Temp. Kit | valve   | DN                            |
|--------------------------------|---|-------------------------------|
| 43196000-001                   | V5011R/V5011S<br>V5013R/V5013E<br>V5328A/V5329A | 15 – 50<br>15 – 50<br>15 – 32 |
| 43196000-002                   | V5328A/V5329A<br>V5049A<br>V5016/V5025/V5050A   | 40 – 80<br>15 – 65<br>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       |      |                                     |      |      |      |      |      |      |      |    |
| 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-0432GE02

V5011S EN0B-0085GE51 V5329A/5050A EN0B-0310GE51

V5016A EN0B-0440GE51 V5025A EN0B-0442GE51

V5049A EN0B-0238GE51

V5013R EN0B-0065GE51

V5013E EN0B-0446GE51

## DIMENSIONS

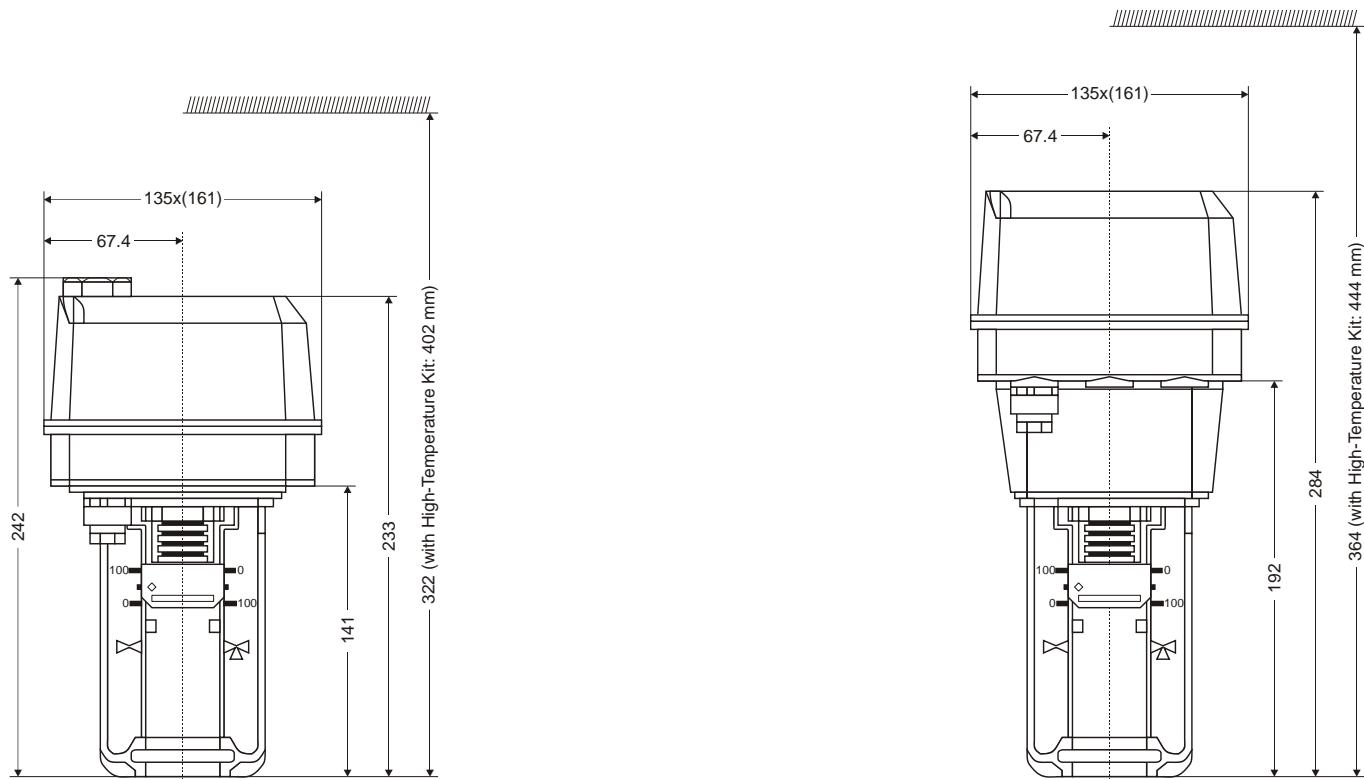


Fig. 2. ML7420A..T (left) and ML7425A..T,B..T (right), dimensions (in mm)

## WIRING

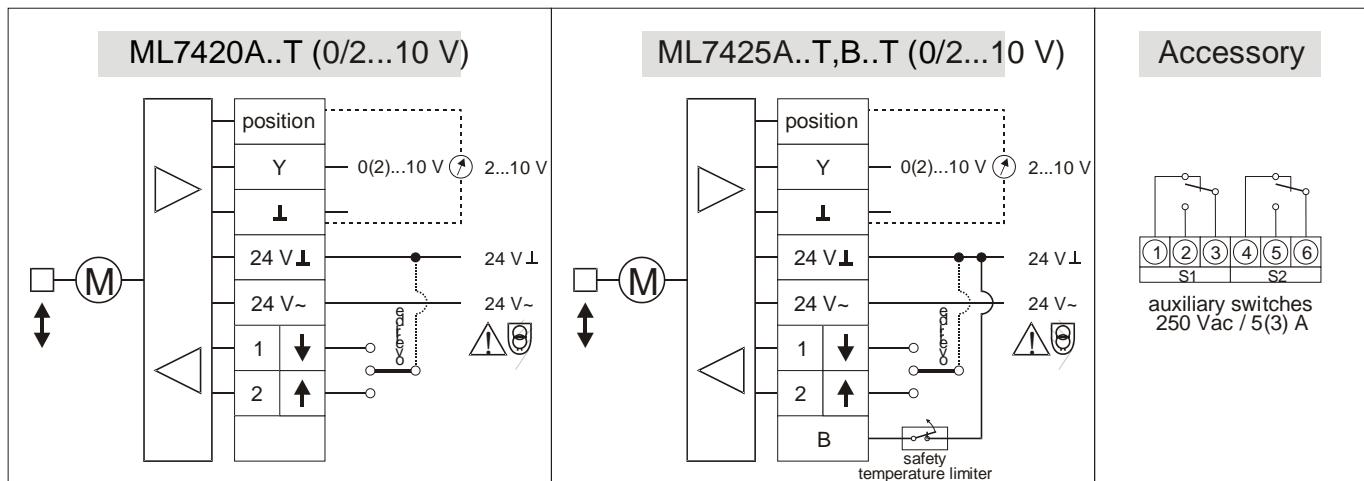


Fig. 3. Wiring

**Honeywell**

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