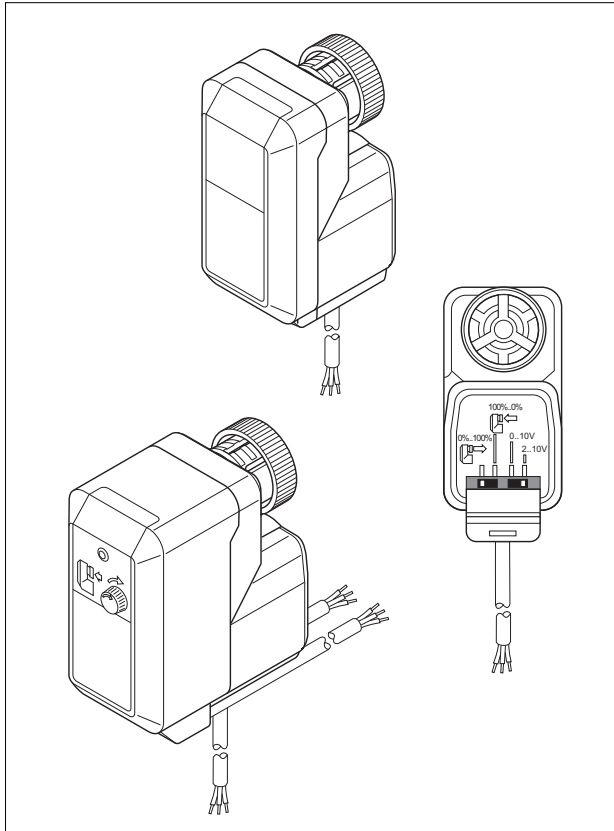


M7410E

SMALL MODULATING LINEAR VALVE ACTUATOR

PRODUCT DATA



GENERAL

The Honeywell M7410E actuators are specifically designed to provide modulating control together with all Honeywell valves having an M30x1.5 interface. For detailed information on the appropriate actuator force, please refer to the respective valve specification.

The M7410E is used in fan-coil-units, induction units, small reheaters and recoolers, and for zone control applications. It is employed in electronic temperature control systems with hot and/or cold water as the controlled medium. This actuator is fully compatible with all controllers providing 0...10 V or 2...10 V output signals.

The M7410E actuator is designed for applications where space is limited and minimum power consumption is required. A microprocessor-based, high-performance positioner guarantees accurate control.

No mechanical feedback potentiometer or mechanical end-switches are needed, thus ensuring reliable long-term operation. Due to an automatic synchronization function, the close-off point is self-adjusting.

Based on a running time of 150 sec (M7410E5001: 70 sec), valve positioning and flow adjustment is very exact. Manual positioning is provided for all actuators. The actuator is both attractive and robust in design. A special version with auxiliary switch is available.

FEATURES

- Microprocessor-based positioner ensures precise stem positioning
- Small size allows installation where space is limited
- Low power consumption
- Suitable for 0...10 V and 2...10 V controller output signal (adjustable on site)
- Easy-to-operate direct/reverse acting switch
- Simple input signal override (e.g., for frost protection function)
- Reliable long-term operation because mechanical feedback potentiometers and mechanical end switches are not required
- Magnetic coupling for stem force limitation and self-adjustment of the close-off point
- Supplied with pre-wired connection cable
- Simple, standardized valve/actuator coupling. No tools required for mounting
- Visual valve position indicator furnished with actuator
- Manual operation provided by the valve adjustment cap, extra knob, or with a hexagon key

SPECIFICATIONS

Motor

Input voltage:	24 Vac $\pm$ 15%; 50/60 Hz
Power consumption:	1.8 VA / 1.2 W (motor running) 0.6 VA / 0.2 W (motor stopped)
Input signal:	modulating 0...10 V, 2...10 V (adjustable); < 0.1 mA
Operation:	direct/reverse (adjustable)
Running time:	150 s (M7410E5001: 70 s) at 50 Hz 125 s (M7410E5001: 59 s) at 60 Hz
Stem force:	depending on type (see table) 90 N (M7410E5001) 180 N (for valves DN 15...20) 300 N (for valves DN 25...40 & V5825B)
Protection standard:	IP 42 in accordance with EN 60529
Insulation class:	III in accordance with EN 60730
Connection cable:	1.5 m (standard; 3 m, 5 m, and 10 m available for 24-V models, upon special request)
Actuator cable (24 V):	3 x 0.3 mm ² , copper, according to VDE 0295
Actuator cable (230 V) and aux. switch cable:	(N)YLHYW 3 x 0.75 mm ² , according to VDE 0281, Part 401
Ambient operating temperature limits:	0...55 °C
Medium valve temperature:	max. 120 °C
Weight:	0.4 kg

Suitable valves: Select in accordance with stem force; see section "Versions" below

Manual operation: see section "Versions" below

Auxiliary Switches

Ratings:	5...24 V max. 100 mA 24...230 Vac, max. 3(1) A
Switch position (factory supplied):	Switch S1 (fix) 17.8 $\pm$ 0.2 mm Switch S2 (adjust.) 11.7 $\pm$ 0.2 mm

OPERATION

The actuator is moved by a screw spindle driven in both directions, through a set of gears, by a synchronous motor. A magnetic clutch limits the torque of the gear assembly and the driving force of the actuator. The actuator is fixed to the valve body by means of a coupling ring requiring no tools for mounting. The actuator is maintenance-free and supplied complete with a ready-to-wire connecting cable.

A microprocessor-based, high-performance positioner guarantees accurate control. The close-off position is self-adjusting by means of an automatic synchronization function (see below).

When powered up, the actuator will interpret the initially measured signal as corresponding to its actual position, and will remain there until the signal changes, after which it will follow the given signal offset. Synchronization is performed whenever the applied control signal has a value of 0 (2) V or 10 V. During synchronization, the actuator drives every minute for 5 seconds towards the end position. This is intended to compensate for and eventually correct previous shifts in position due, e.g., to manual operation.

VERSIONS

	manual operation	stem force	valve stroke	aux. switch S1	aux. switch S2	housing type	OS number
Standard	Provided by the valve adjustment cap	90 N 180 N 300 N	2.9 mm 6.5 mm 6.5 mm	– – –	– – –	B B B	M7410E5001 M7410E1002 M7410E1028
With manual operation	Integrated	180 N 300 N	6.5 mm 6.5 mm	– –	– –	C C	M7410E2026 M7410E2034
With manual operation and auxiliary switches	Integrated	180 N 300 N	6.5 mm 6.5 mm	x x	x x	C C	M7410E4022 M7410E4030
Special version (for 24-V models)	Special cable lengths: 3 m / 5 m / 10 m	--	--	--	--	--	upon special request

MOUNTING POSITION

The actuator may be mounted only beside or above the valve. Adjust the valve in the correct position before mounting the actuator.

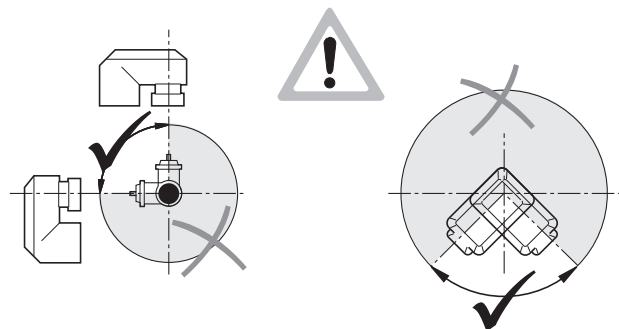


Fig. 1. Mounting positions

MOUNTING

Before the actuator is fixed to the valve, the adjustment cap must be removed (Fig. 2). Make sure that the actuator is in the open position (factory-supplied position) before fixing the actuator to the valve body.

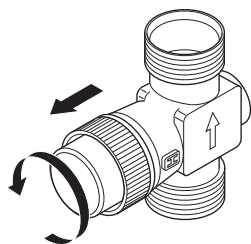


Fig. 2. Removing protection cap

The actuator must be mounted by hand. Do not use tools or additional force insofar as this may damage the actuator and valve.

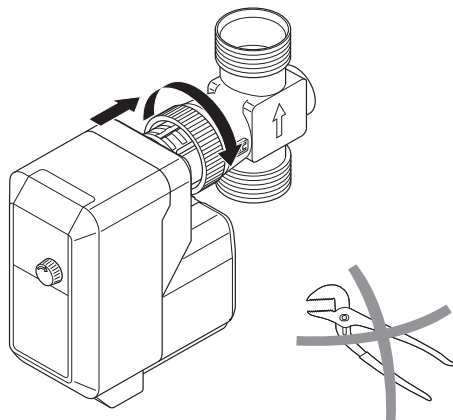


Fig. 3. Mounting the actuator

SWITCH SELECTION

The built-in selector switches must be set according to the valve type (2-way or 3-way), valve size, and the controller output signal (0...10 V or 2...10 V), see Fig. 4.

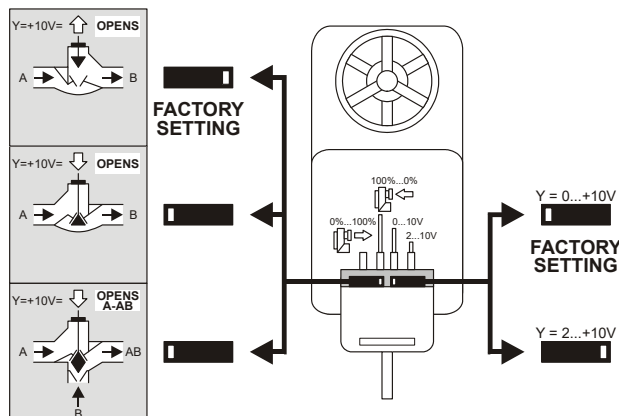


Fig. 4. Selecting valve type and output signal

ELECTRIC WIRING

The electrical installation must comply with Fig. 5.

INPUT SIGNAL OVERRIDE

To override the controller output signal, the input signal must be connected to COM (0 %) or 24 V (100 %) using an external switch (see Fig. 5).

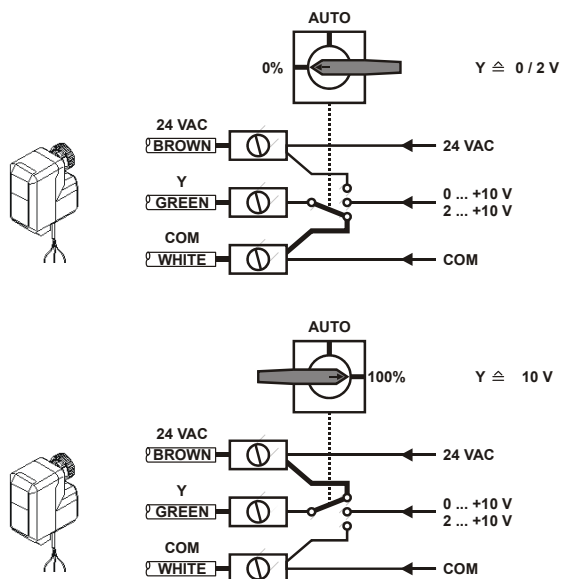


Fig. 5. Connection of input switch

MANUAL OPERATION

Actuators with the OS-number M7410E2... and M7410E4... feature a hexagonal key hole for manual operation. For more comfort, an additional knob for manual adjustment is supplied (packed separately). To prevent valve damage, operation is permitted only when there is no power applied to the motor.

Alternatively, the hexagonal key hole can be sealed by inserting the small white plastic plug (packed separately).

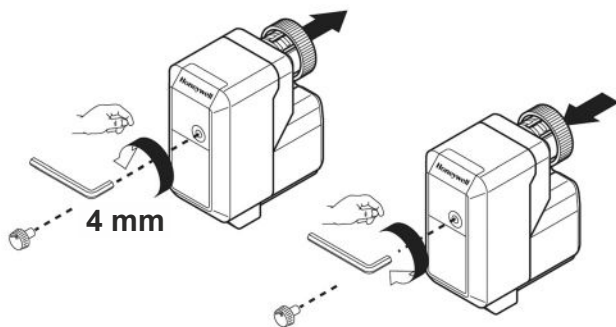


Fig. 6. Manual operation

COMMISSIONING ADVICE

A functional check of the valve actuator can be carried out by changing the Y input signal. The red position indicator indicates the movement of the actuator stem and whether the valve is opening or closing (see Fig. 7) If the direction of travel is not correct, the direct / reverse-switch must be reset.

RED POSITION INDICATOR

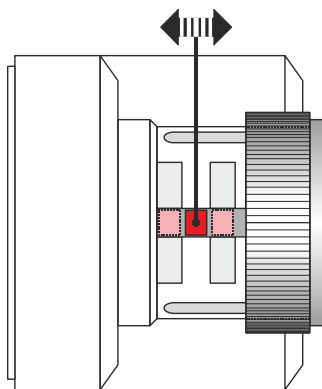


Fig. 7. Movement of the actuator stem (view from above)

AUXILIARY SWITCHES

The M7410E4022 and M7410E4033 feature two auxiliary switches, each with its own cable:

- Auxiliary switch S1 has a fixed switchpoint when the stem position is in.
- Auxiliary switch S2 has an adjustable switchpoint when the stem position is out.

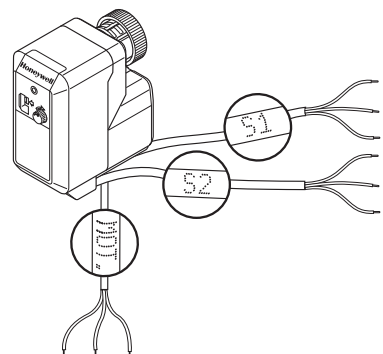


Fig. 8. Auxiliary switch cables

Adjustment of Auxiliary Switch 2

NOTE: The auxiliary switch should be adjusted by a skilled person, only.

Move the actuator to the position where the switch is to be operated. Cut the plastic skin with a sharp knife. The adjustment screw can be accessed below the skin. Turn the screw clockwise until the end stop is reached. Turn the screw counterclockwise until the switch point is achieved. To check that the required position has been set, move the actuator. Finally, seal the adjustment hole by inserting the small white plastic plug (packed separately).

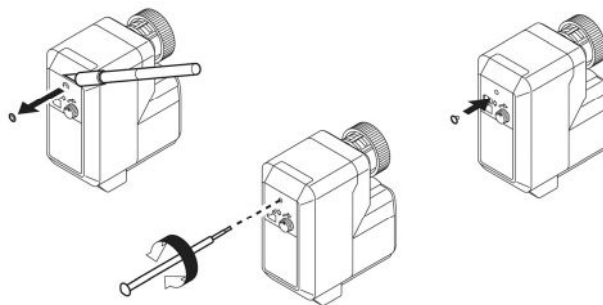


Fig. 9. Adjustment of auxiliary switch S2

Electric Wiring of Auxiliary Switches

The electrical installation must comply with the wiring diagram shown in Fig. 10. If the auxiliary switch is connected to 230 Vac, a switch with a contact gap of at least 3 mm for each pole must be fitted with the installation.

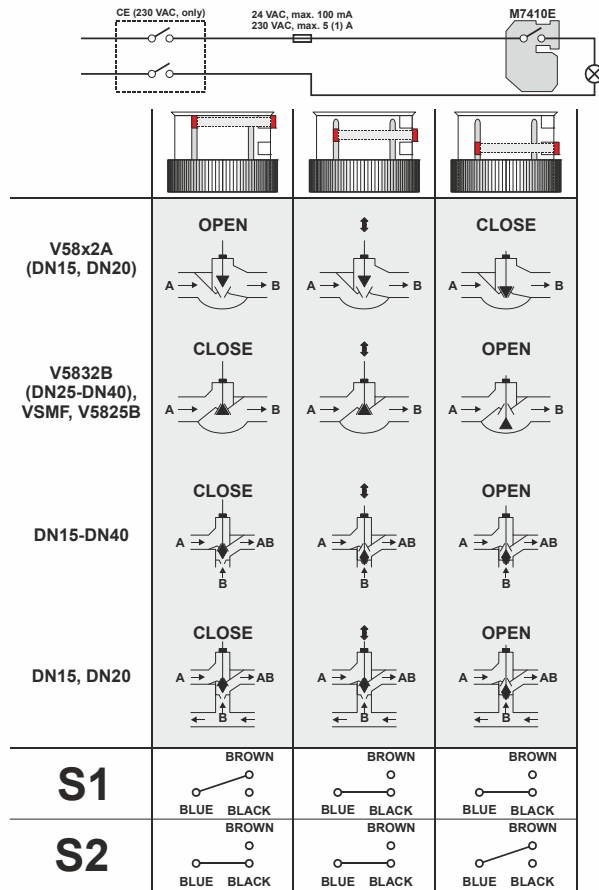


Fig. 10. Electric wiring of auxiliary switch

Application Example: Switching Off an Electrical Appliance 2-Way-Valve (N.O.), S2

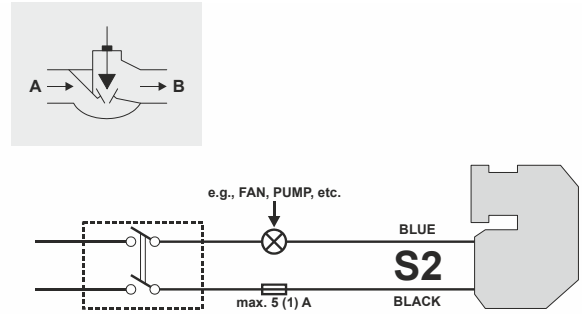


Fig. 11. Electric wiring of auxiliary switch

All Other Valves (N.C.), S1

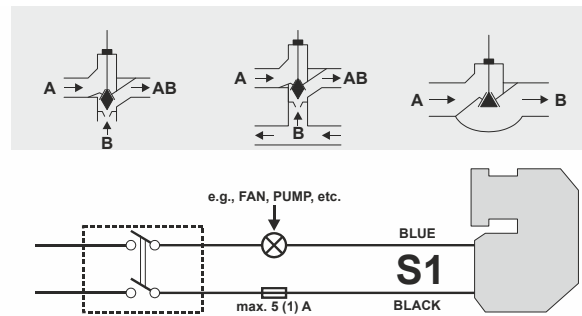


Fig. 12. Electric wiring of auxiliary switch

DIMENSIONS (mm)

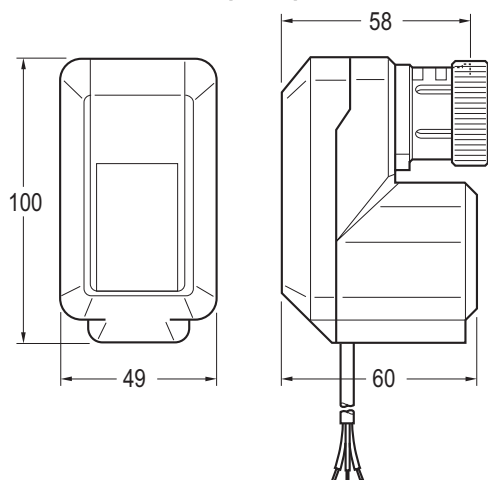


Fig. 13. Housing type B

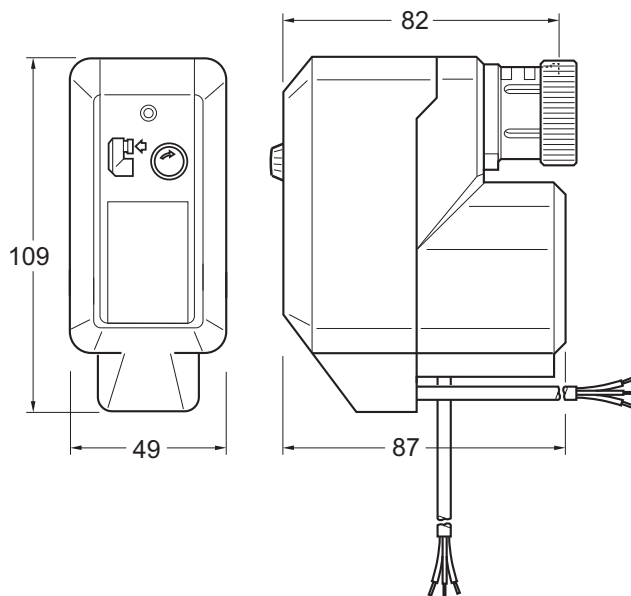


Fig. 14. Housing type C

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