Honeywell

M4100E/K

SMALL LINEAR THERMOELECTRIC ACTUATORS

PRODUCT DATA

Application

The M4100E/K Small Linear Thermoelectric Actuators are used with Honeywell room-temperature controllers for time-coupled modulating regulation of heating and cooling systems. A microprocessor-based positioner guarantees accurate control. The actuators are designed for applications where space is limited.

The actuator (together with the valve adapter included in the delivery) is suitable for use with the following valves (having a closing dimension of 11.5 ± 0.3 mm):

- 2-way and 3-way V58xxA4, V58xxC4, VSO, and PICV V5005 series small linear valves with 2.5 mm stroke, as well as PICV V5004 series with 2.9 mm stroke;
- Thermostatic radiator valves V300 and V2000;
- Therafix thermostatic radiator valves V2464 and V2474 series with 2.5-3-mm stroke

NOTE: Opening and closing times depend upon ambient temperature.

Features

- **Small size allows installation in confined spaces**
- **Function display**
- **Reliable long-term operation**
- **No mounting tools required**
- **Noiseless operation**
- **Ready-to-wire connection cable**
- **Visual valve position indicator furnished with actuator**
- **M30 x 1.5 connection (other connections available, upon request)**
- **Fits on specified Honeywell 2- and 3-way valves and Heimeier thermostatic radiator and zone valves and valve inserts for manifolds and compact radiators**

Specifications

Voltage	
M4100E1510	24 Vac, -10% … +20%, 50/60 Hz
M4100K1515	24 Vdc, -20% … +20%
Control voltage range	0…10 V (reverse polarity-protected)
Max. inrush current	< 320 mA for max. 2 min.
Operating power	1 W
Resistance of control voltage input	100 kOhm
Stroke	4.0 mm (minus 0.5 mm over-elevation)
Actuation delay	30 sec/mm (typical)
Control direction	NC
Actuation force	100 N + 5%
Fluid temperature	0 … +100 °C
Storage temperature	-25 … +60 °C
Ambient temperature	0 … +60 °C
Degree of protection	IP 54
Protection class	III
CE conformity	as per EN 60730
Casing	
material	Polyamide
color	white
type	3 x 0.22 mm^2 PVC
Connection type	plug (cable as accessory)
Weight	92 g (without connection cable, but with adapter)
Overvoltage strength	1 kV (as per EN 60730-1)

Dimensions

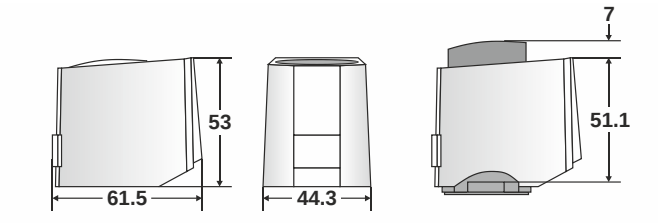

Fig. 1. Dimensions (in mm)

Installation Orientations

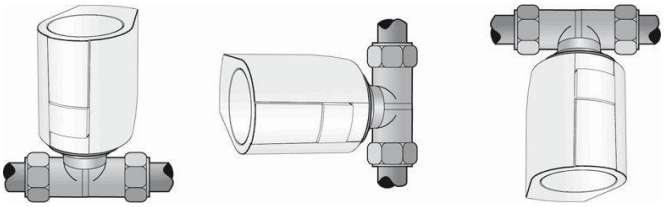

Fig. 2. Installation orientations (vertical, horizontal, "overhead")

The actuator is installed preferably in the vertical or the horizontal orientation.

NOTE: Connection cables must not touch the piping (heat transfer)!
Only a safety-isolating transformer in accordance with EN 60335 may be used. The rated capacity of the transformer must be based on the initial current of the actuators.
Rule of thumb: $P_{TRANSFORMER}$ = n x 6 W (where "n" = the number of drives)

Assembly

The valve adapter assortment guarantees a perfect match of the actuator to almost all valve bottoms and heating circuit distributors available on the market. The actuator is simply plugged on to the valve adapter previously installed manually.

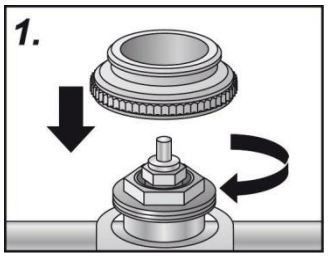

Fig. 3. Step 1: Manually screwing the adapter onto valve

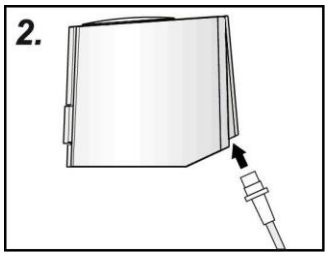

Fig. 4. Step 2: Connecting the cable

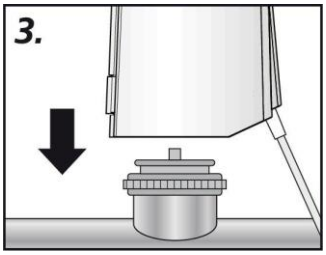

Fig. 5. Step 3: Manually positioning actuator

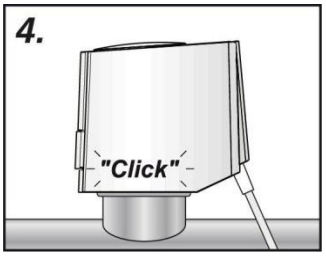

Fig. 6. Step 4: Pressing down actuator onto valve adapter

Wiring Diagram

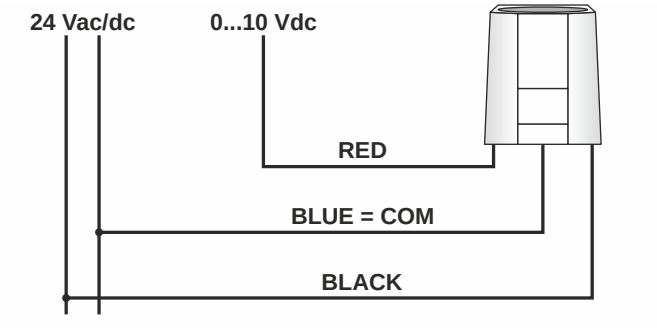

Fig. 7. Wiring diagram

NOTE: To protect against overloading, fusing appropriate to the given cable cross-section must be installed.

Function Display

The function display (all-round display) of the actuator shows at first glance whether the valve is open or closed; this can be also felt in the dark.

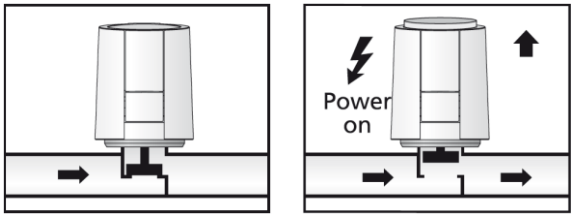

Fig. 8. Extrusion of the function display when valve opens

"First Open" Function

At delivery, the actuator is normally open; this is due to the “First Open” function. This enables heating operation during early construction phases even before completion of the electric wiring. When subsequently commissioning the sys-

tem, the "First Open" function is automatically unlocked by applying the operating voltage (for more than 6 minutes); the actuator then becomes fully operable.
Each time the operating voltage is applied, a calibration process optimally adjusts the actuator to the given valve. During this process, the actuator completely opens and closes the valve, while prominent points are simultaneously stored. The control signal is ignored during this process. After the calibration process, the actuator is ready for use and converts the applied control signal into a proportional stroke. The power-on procedure takes approx. 15 minutes.

Adaption Check

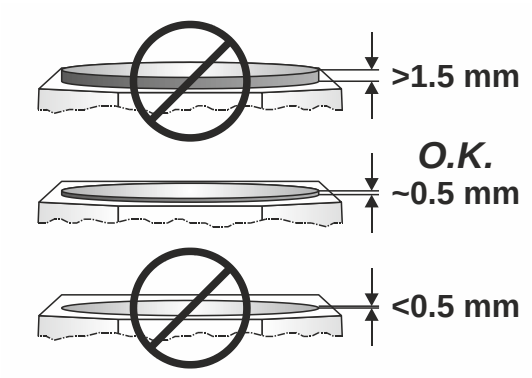

Fig. 9. Adaption check

After the calibration process (drive is stopped), and if no control signal is applied, you can check whether the correct valve adapter is mounted.

- In the case of standard Honeywell valves having a closing dimension of 11.5 mm, when using the adapter included with delivery the actuator's stroke cap will protrude slightly (approx. 0.5 mm), and none of the white will be visible.
- In the case of non-standard or non-Honeywell valves having a smaller closing dimension, when using the standard adapter, the actuator's stroke cap will protrude less, and not even the blue may be visible. In such cases, the M4100-VA50 (accessory) can be used to increase the protrusion by max. 1 mm.

Auto-Calibration

The closing point (drive is closed) is checked twice daily in the active status (U_{ST} > 0.5 V). If there is a deviation, then the calibration process is repeated.

Hash (Disturbing Signals)

The actuator reacts only to a control signal > 0.5 V; this is in order to ignore interference voltage and hum voltage.

Ordering Information

order no.	description
M4100E1510	AC version: thermoelectric actuator, 24 Vac, NC, proportional 0…10 V, incl. M4100-VA10 adapter
M4100K1515	DC version: thermoelectric actuator, 24 Vdc, NC, proportional 0…10 V, incl. M4100-VA10 adapter
M4100-1M/U	Connector cable, 1 meter in length, 3 x 0.22 mm^2, 1 pc.
M4100-1M	Connector cable, 1 meter in length, 3 x 0.22 mm^2, bulk package with 10 pcs.
M4100-3M	Connector cable, 3 meters in length, 3 x 0.22 mm^2, bulk package with 10 pcs.
M4100-MOD-5M	Connector cable, 5 meters in length, 3 x 0.22 mm^2, bulk package with 10 pcs.
M4100-VA50	Valve adapter VA50, M30 x 1.5, bulk package with 10 pcs.; for valves with a closing dimension of 10.5 mm
M4100-1MH	Non-halogen connector cable, 1 meter in length, 3 x 0.22 mm^2, bulk package with 10 pcs.

Characteristic (with the standard valve adapter included with the actuator)

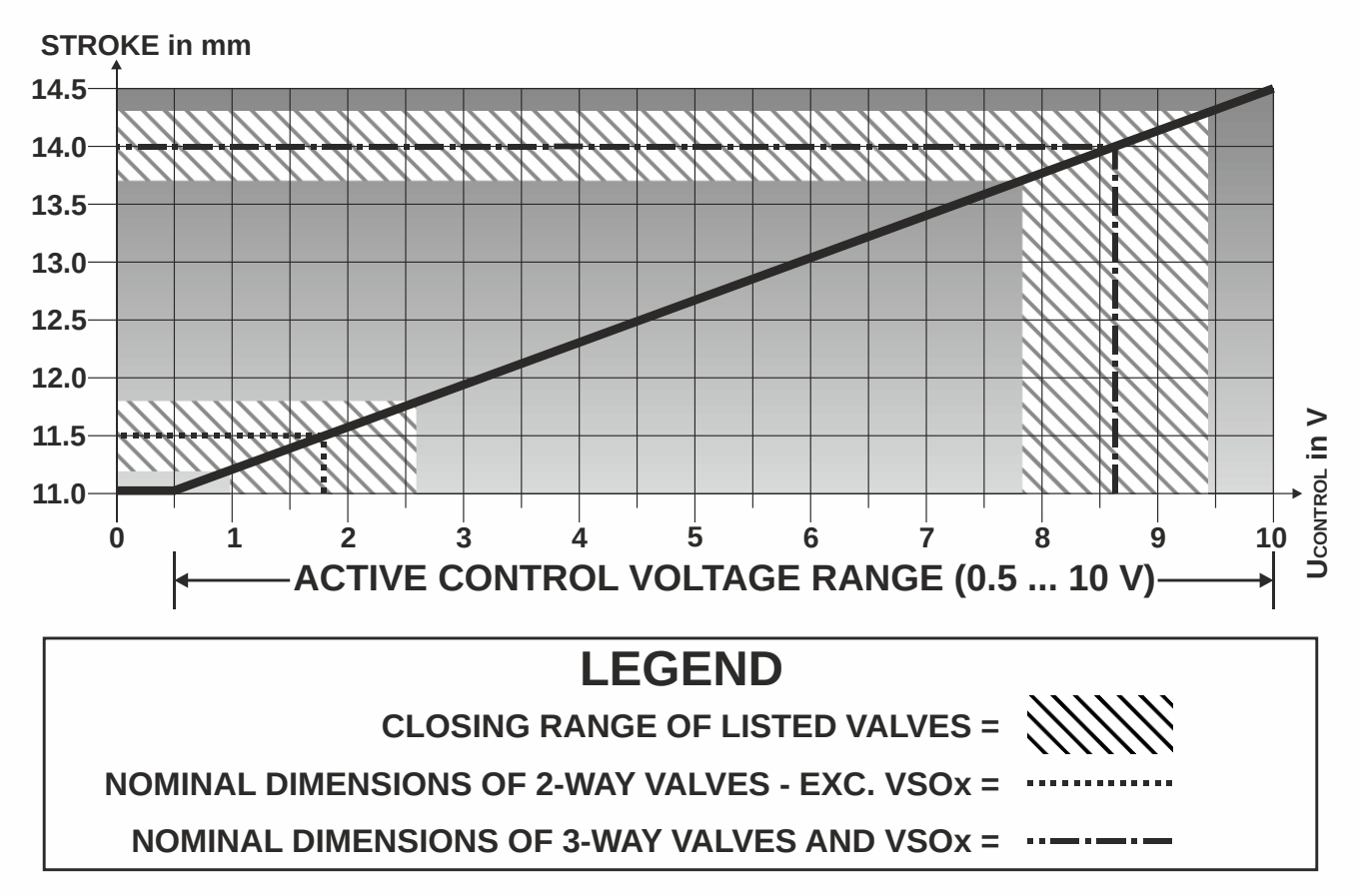

Fig. 10. Characteristic (stroke vs. voltage)