

ME-4940 Normally Closed Spring Return Up Modulating Actuators for Terminal Unit Valves



ME4940 0/2-10Vdc

is a normally closed on power failure spring return modulating microprocessor based control valve actuator.

This actuator is used on 2, 3 or 4 port terminal unit or zone valves for the control of hot water, chilled water, or 50% glycol **using only an EB type balanced cartridge**, and low pressure steam **using an EV type cartridge**.

At power up the actuator performs self test and respan operation and is programmed for 4mm travel.

The exact valve position can be determined from the 1-5V volts output from the green wire, to monitor by others.

Upon power failure the motor will be returned to its' default down or closed position.

General Actuator Specifications

Supply: 24Vac +10%/-5%, 60Hz/50Hz

Travel Time: Under signal control; 16 sec. Opening - 10sec. Closing
Under loss of power: 3 sec. Closing

Motor Type: AC hysteresis brushless

Nominal Consumption: 6 Watts (9VA)

Maximum 4 units per 40 VA transformer

Ambient operating temperature: 0-50°C (32-120°F)

Signal input: 0/2-10Vdc

Signal output: 1-5Vdc +/- 0.1 Volts, Impedance 1 Kohms.

0V represents a loss of power;

1 V represents actuator in up position

5V represents actuator in down position

Note: Used for monitoring of valve position

Output force: 28lbs (120N)

Motor jam recovery: if an unexpected stall occurs – i.e. in midrange – the system reverses the motor, backs up, and then again attempts to move to the calculated position

Microprocessor: PIC16F1824 - 8-bit PIC Microcontrollers

Position feedback (internal): Quadrature optical encoder using two LEDs and two photo transistors

Drift: no detectable drift after 100,000 cycles.

Re-span automatically at each full close position

Input Protection: inputs will accept 30Vac continuously without damage.

Misconnection (mixing) of the connections to unit will not cause damage

Wiring Connection: 32" PVC or optional Plenum cable

Enclosure: IP20 (NEMA 1)

Agency approval: Conforms to CE/ROHS requirements
Low voltage Class 2 as per UL/CSA standards

Installation Instructions

Power Cube ME-4940 actuators can be installed on all

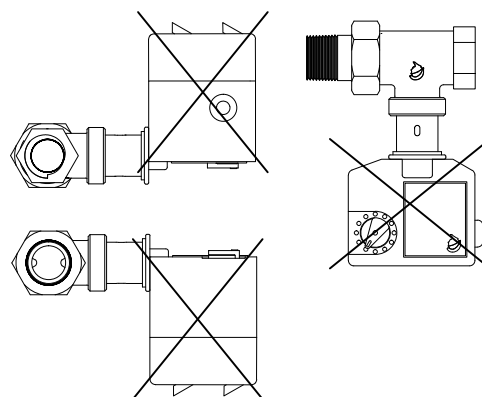
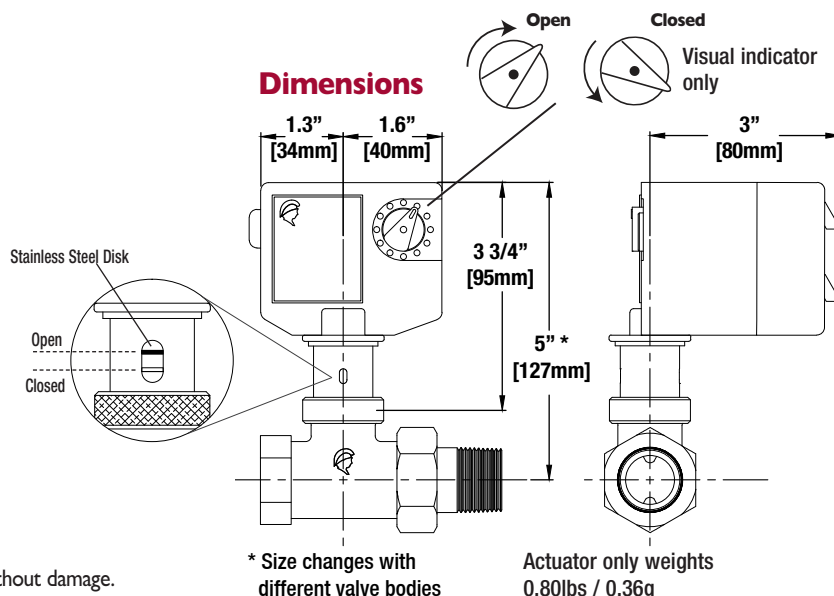
Spartan Zone valve bodies.

The commercial type valve bodies all utilise low zinc anti-dezincification bronze coupled with long life replaceable and inter-changeable internals from 0.15 to 9.0 Cv (0.13 to 7.75 Kv's) in 0.50 Cv increments

Refer to Control Valve Bodies and Cartridge Data Sheets

Important: The actuator can be installed vertically, or at any angle not exceeding the horizontal. Fig 1. Care must also be taken to not install the actuator with the back facing down or up. Fig 2.

The Actuator mounting thumbnut is to be hand-tightened only, using tools may result in over-tightening.



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PROPORTIONAL (ME-4940)

Input Signal: 0-10Vdc or 2-10Vdc

Input Impedance: 200 K Ω (0.05mA at 10Vdc)

Dead Band: 0.15V

Delay: two seconds before implementing motor direction change

End Update: When the input signal is within ~0.2V of an end value the valve is driven in until stall is detected.

Re-span (standard): after each power up

The ME-4940 is factory set to 2-10Vdc, direct acting.

If you require alternative control range settings, order the part numbers below, or follow the jumper instructions to change to your required range.

Part No.	Stem Up	Stem Down	Part No.	Stem Up	Stem Down
ME-4940	2Vdc	10Vdc	ME4940C	10Vdc	0Vdc
ME-4940A	10Vdc	2Vdc	ME4940H	4mA	20mA
ME4940B	0Vdc	10Vdc	ME4940I	20mA	4mA

JUMPER FUNCTIONS

Jumper J2

Direct Mode

0 or 2Vdc driving valve stem up

Reverse Mode

0 or 2Vdc driving valve stem down

Jumper J3

Input signal selection range: 0-10 or 2-10Vdc

Jumper J4

Input signal type: Proportional (P)

Jumper J6

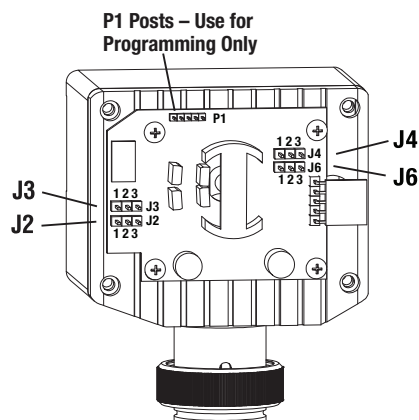
Input signal type: Current (mA) or Voltage (V)

Note: When using 4-20mA input signal set the jumper J3 to 2-10Vdc position 1-2

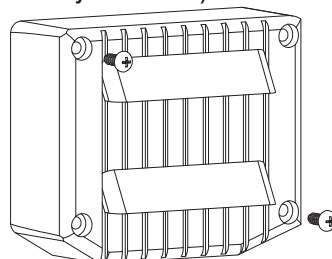
JUMPER CONFIGURATION

Input Signal Range	Action Mode	Valve Stem UP	Valve Stem Down	Part No:	Jumper J2	Jumper J3	Jumper J4	Jumper J6
2-10Vdc	Direct Acting	2Vdc	10Vdc	ME4940				
10-2Vdc	Reverse Acting	10Vdc	2Vdc	ME4940A				
0-10Vdc	Direct Acting	0Vdc	10Vdc	ME4940B				
10-0Vdc	Reverse Acting	10Vdc	0Vdc	ME4940C				
4-20mA	Direct Acting	4mA	20mA	ME4940H				
20-4mA	Reverse Acting	20mA	4mA	ME4940I				

JUMPER POST POSITIONS



Cover: (removed by two screws)



WIRING DIAGRAM

