Spartan Peripheral Devices

POWER CUBE CONTROL ACTUATORS DATA SHEET

ME4740

3 YEAR WARRANTY SPARTAN PERIPHERAL DEVICES

PWM MODULATING ACTUATORS

Normally Open Spring Return

ME-4740, normally open on power failure spring return PWM 0.25-5.0 secs. modulating microprocessor based control valve actuators

These actuators are used on 2, 3 or 4 port terminal unit or zone valves for the control of hot water up to 250˚F (120˚C), chilled water to 35˚F (2˚C) 50% glycol, and low pressure steam using an EV cartridge.

A 24Vac hysteresis brushless motor is used to position a valve in response to an input signal (on red wire). A quadrature optical system using two LED's, two phototransistors and a rotating flag on the rear of the motor measure the displacement of the valve. A microprocessor is used to access the input signal, monitor and store the position count, determine the count difference and appropriately control the drive to the motor.

The perceived position outputs (on green wire) as a 1-5V signal to use by others for monitoring of valve position.

Upon power failure, the motor will be returned to its' starting up or open position by the valve spring.

At power up the actuator will start from its normally open position, and is

GENERAL SPECIFICATIONS

Supply: 2Supply: 24Vac +10%/-5%, 60Hz/50Hz

Motor Type: AC hysteresis brushless

Nominal Consumption: 6 Watts (9VA)
Maximum 4 units per 40 VA transfomer

Ambient operating temperature: 0-50ºC (120ºF)

Signal output: 1-5Vdc +/- .1V impedance 1 Kohms.
0 V is perceived as loss of power,
1 V represents actuator in up position
5V represents actuator in down position
NB 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

Position feedback (internal): Quadrature optical encoder

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

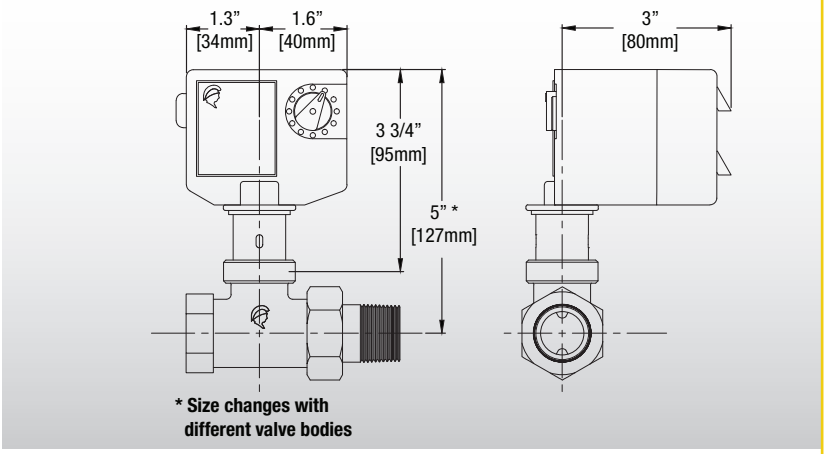
Wiring Connection: 32" PVC or optional Plenum cable

Enclosure: IP20 (NEMA 1)

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

Disclaimer: This product must not be used outside of the specified applications. Installation should only be carried out by a licensed, and trained, installer. All local regulations and codes must be followed, and complied with, during the installation of this product.

DIMENSIONS

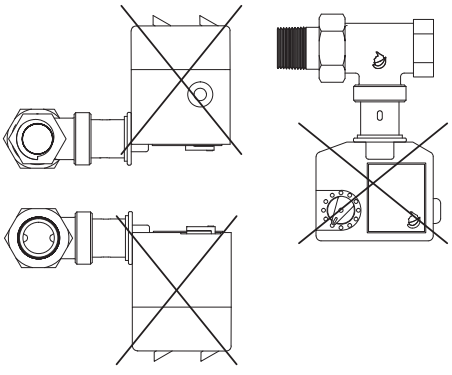


INSTALLATION INSTRUCTIONS

Power Cube ME-4740 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).

Refer to Control Valve Bodies and Cartridge Data Sheets



Important: The actuator can be installed vertically, or at any angle not exceeding the horizontal. Fig1. 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.

1050-1-1-01

Spartan Peripheral Devices

POWER CUBE CONTROL
ACTUATORS DATA SHEET

ME4740

3 YEAR WARRANTY
SPARTAN PERIPHERAL DEVICES

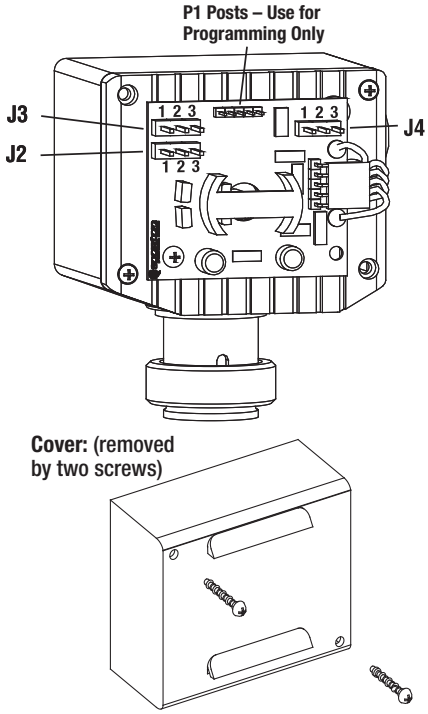
PWM MODULATING ACTUATORS
Normally Open Spring Return

TIME PROPORTIONAL (ME-4740)

In the ME-4740 the input is pulsed either by external relay contact, or solid state device (triac). A network is connected across the input to assure adequate holding current for the triac (<10Ma).

The duration of this signal is timed, and converted to a position command - on the basis that 0.2 seconds requires fully open, 5 seconds requires fully closed (Normal mode) - with 33 intermediate steps.

This time is converted to a Target Position pulse count, which is compared to the actual position count. If the difference exceeds ~0.12 second, the valve is driven to the appropriate position. The circuit can accept a new position command, received while the valve is in transition, which will override the first.



JUMPERS

Jumper J2

Signal input (direct mode):

0.2 secs to 5.0 secs - 5 secs to close

Signal input (reverse mode):

5.0 secs to 0.2 secs - 5 secs to open

Inputs shorter than .1 second are ignored, inputs longer than 5 seconds (e.g. continuous contact closure) initiate fully closed action after 5 seconds. Other time ranges are available.

Number of steps: end-to-end 40

Input polarity: Input to 24Vac line (+/-10%)

Input Impedance/current: 2KΩ or 12mA RMS

Switching: low energy (gold) dry contacts or solid state (triac). If triac is used the controller has to be 24Vac line fired - ground fired triac is not acceptable.

Dead Band: 0.12 seconds

Miniumum off cycle: required between pulses 250msecs

JUMPER POSITIONS

ME-4740

Input Signal PWM - Jumper Position

	Jumper J3	Jumper J4
None / 1-2	□ □ □	■ ■ □

Direct Acting D.A. 0.25 secs Drive Up - Jumper Position

	Jumper J2
1-2	■ ■ □

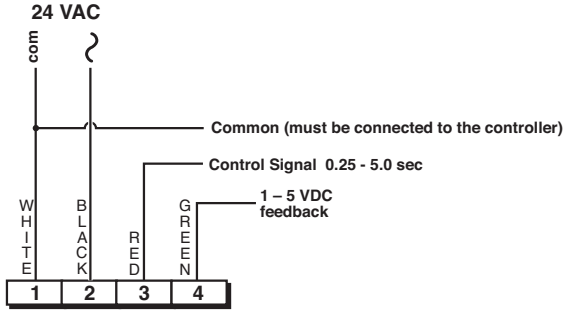
Reverse Acting R.A. 0.25 secs Drive Down - Jumper Position

	Jumper J2
2-3	□ ■ ■

WIRING DIAGRAM

ME-4740

PWM CONTROL



1050-1-1-01