

Description and Application

These compact but powerful direct-coupled actuators provide proportional control for small dampers or valves in HVAC systems. The MEP-4042/4842 models are most typically used to control small modulating zone dampers in underfloor air distribution or simple residential and light commercial zoning applications. They may also be field-applied to KMC VEB-43/46 series valve and linkage assemblies for modulating hydronic heat in appropriate applications.

For easy installation, these models feature **six-wire RJ-12 modular jack wiring connections** that supply power and signal to the actuators and allow them to be “daisy-chained” together in parallel. Multiple actuators may be driven in parallel from one analog output provided by an analog room thermostat (such as a KMC CTE-5201-16), digital controller (such as the BAC-5841/5842 series with modular jack outputs), or another manufacturer’s DDC controller with the appropriate cables.

These **proportional** actuators accept a **2–10 VDC** control signal input from a thermostat, controller, or building automation system. “**Anti-jitter**” circuitry significantly reduces hunting and needless wear on the actuator and valve packing or damper components (from unnecessary miniscule position changes caused by undamped analog input signals).

At power up, the actuator initiates a **self-calibration** procedure. It first travels fully CCW and assigns 2 VDC to this position, it then travels fully CW and assigns 10 VDC to that position, and it then begins normal function and goes to the setpoint position.

A minimum torque of 40 (MEP-4042) or 80 (MEP-4842) in-lbs. is available over the actuator’s 95° angular rotation. A non-rotation bracket, to prevent lateral movement, is included with each actuator. A gear disengagement button allows manual positioning of the actuator.

The actuators mount directly to 1/4- to 5/8-inch (6 to 16 mm) round shafts or 1/4- to 7/16-inch (6 to 11 mm) square shafts, eliminating the need for expensive and complicated linkages. However, a crank arm kit is available if desired (see the Accessories section).



(Size Shown Relative to a Quarter)



Features

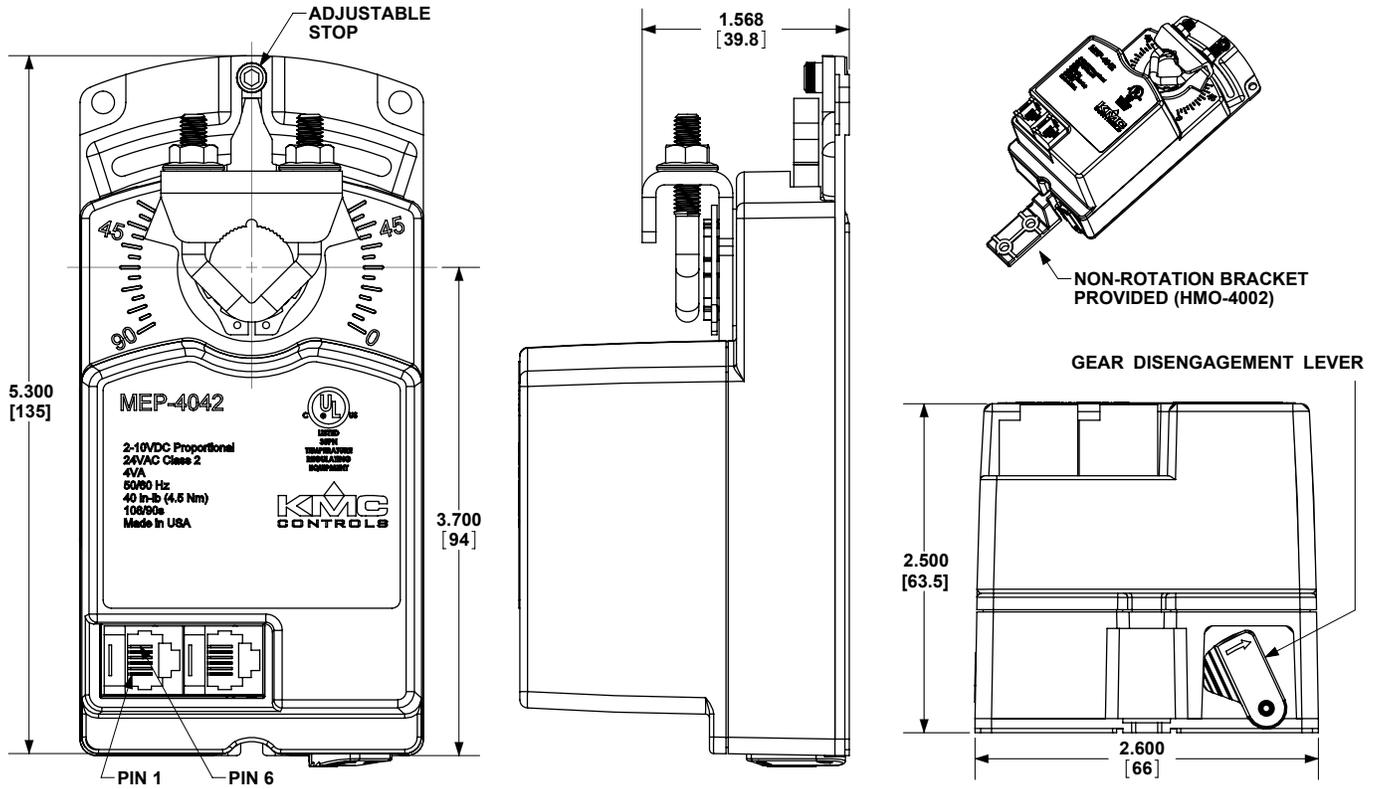
- ◆ Includes self-calibration and “anti-jitter” circuitry
- ◆ Modular RJ-12, six-pin, wiring jacks simplify interconnect wiring
- ◆ Multiple actuators may be driven in parallel from one analog output signal provided by a room thermostat/controller such as a KMC CTE-5201-16, a KMC DDC controller such as the BAC-5841/5842 series, or another manufacturer’s DDC controller (with appropriate cables)
- ◆ Direct mounting to standard shaft sizes
- ◆ Gear disengagement button and adjustable mechanical end stop

Models

| | |
|----------|-----------------------------|
| MEP-4042 | 40 inch-lbs. minimum torque |
| MEP-4842 | 80 inch-lbs. minimum torque |

Details

All dimensions are in inches (mm)



Specifications

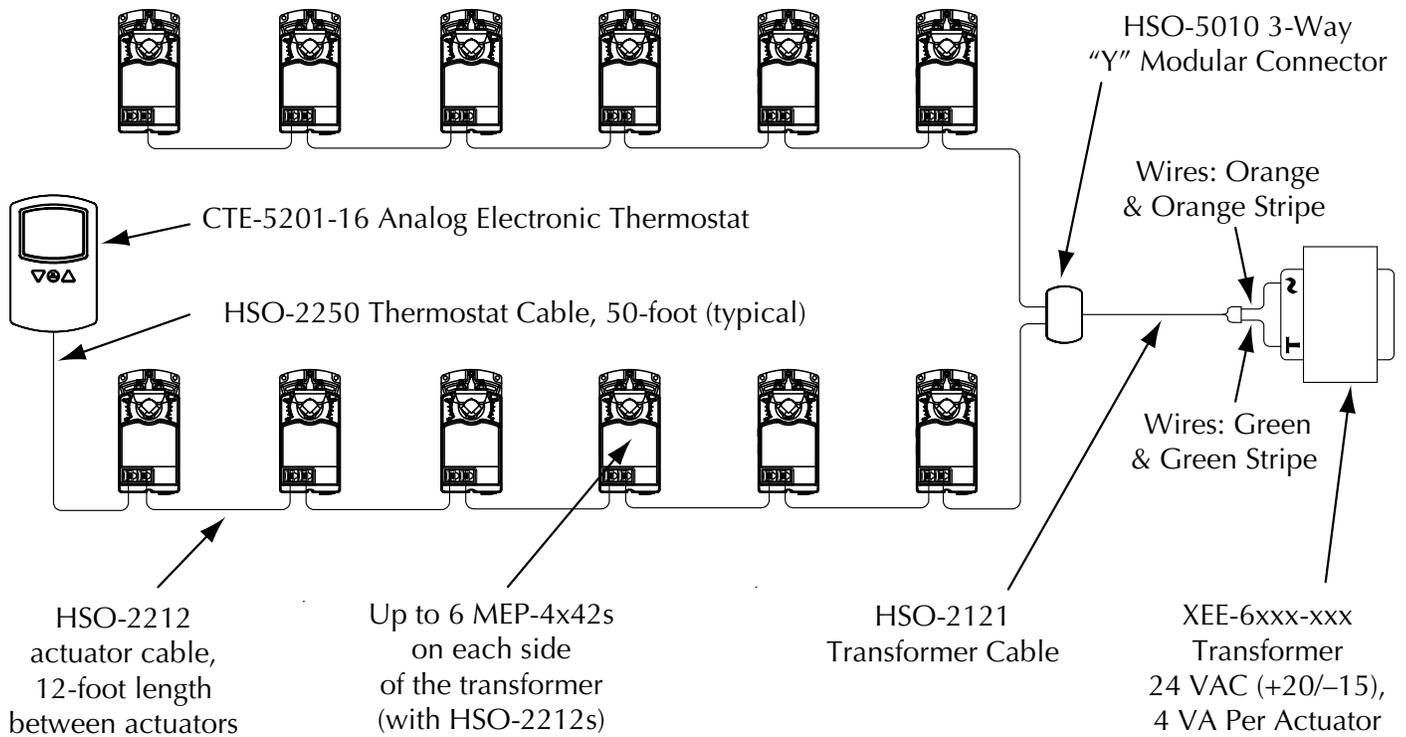
| | |
|-------------------------|---|
| Supply Voltage | 24 VAC (+20%/–15%), Class 2 |
| Supply Power | 4 VA max. |
| Control Signal | Proportional, 2 to 10 VDC |
| Frequency | 50/60 Hz |
| Angular Rotation | 0 to 95°, fully adjustable with mechanical stop |
| Motor Timing | 90 seconds for 90° @ 60 Hz; 108 seconds for 90° @ 50 Hz |
| Torque | (MEP-4042) 40 in-lbs. (4.5 N•m); (MEP-4842) 80 in-lbs. (9 N•m) |
| Mounting | Direct to 1/4 to 5/8 inches (6–16 mm) round or 1/4 to 7/16 inches (6–11 mm) square shaft by adjustable “V” bolt and non-rotational bracket HMO-4002 (supplied); minimum recommended damper shaft length is 1-5/8 inches |
| Dimensions | 5.3 x 2.6 x 2.5 inches (135 x 66 x 63.5 mm) |

| | |
|-----------------------------|--|
| Weight | 1.1 lb. (0.50 kg) |
| Enclosure | Flame-retardant plastic |
| Noise Level | < 35 dBA max. at 1 meter |
| Approvals | UL 873 Temperature Indicating and Regulating Equipment; FCC Class B, Part 15, Subpart B |
| Environmental Limits | |
| Operating | –22 to 131° F (–30 to 55° C) |
| Shipping | –40 to 176° F (–40 to 80° C) |
| Humidity | 5 to 95% RH (non-condensing) |
| Connections | Two 6-pin RJ-12 modular jacks |

| Connector Pins* | Function |
|-----------------|--|
| 1 and 6 | ~ 24 VAC (phase side) |
| 2 and 5 | Common |
| 3 | 17.4 VDC out @ 10 mA Max. (powers CTE-5201-16) |
| 4 | Signal input (2–10 VDC) |

*See the diagram in the lower left of the Details section

Sample Application

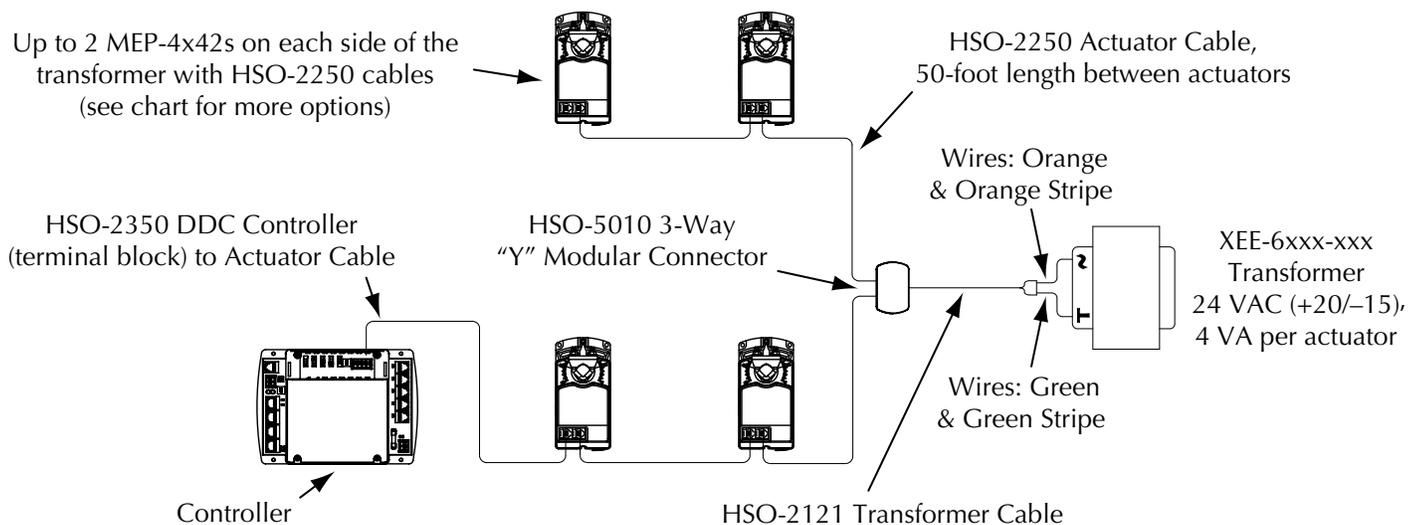


NOTE: See the table on the right for the maximum number of actuators that may be daisy chained for a given cable length. If an HSO-5010 "Y" connector is used (as shown above), the total number of actuators is doubled (with half on each side of the transformer). The example above shows 12 actuators with HSO-2212 cables and an HSO-5010.

NOTE: The transformer must have an internal **circuit breaker** such as the XEE-6311-050 or equivalent **2.25 A external fuse** in the secondary circuit.

| Cable P/N | Cable Length | Max. # of Daisy-Chained MEP-4x42s | |
|-----------|--------------|-----------------------------------|---------------|
| | | Without HSO-5010 | With HSO-5010 |
| HSO-2203 | 3 feet | 6 | 12 |
| HSO-2206 | 6 feet | 6 | 12 |
| HSO-2212 | 12 feet | 6 | 12 |
| HSO-2220 | 20 feet | 4 | 8 |
| HSO-2250 | 50 feet | 2 | 4 |

NOTE: See also the sample applications in the data sheets for the BAC-5841/5842 series and BAC-5841-16/5842-16 series of controllers.



Accessories

Cables

| | |
|----------|--|
| HSO-2350 | DDC controller analog output cable, 50 ft., with RJ-12 plug on one end (provides 2–10 VDC control signal to actuator from remote controller) |
| HSO-2121 | Transformer cable, 12 inches, with RJ-12 plug on one end (provides local power to actuator from transformer mounted at actuator location) |
| HSO-5010 | “Y” connector with 3 RJ-12 jacks (allows powering of two strings of actuators when power is applied through an HSO-2121 and the HSO-5010 “splitter” is mounted in the center of each string) |
| HSO-22xx | Modular cables, RJ-12 plug on both ends (see the table and sample application on the previous page for the appropriate part number) |

Controllers/Thermostat

| | |
|-----------------|--|
| BAC-584x Series | BACnet controllers with modular jack outputs |
| CTE-5201-16 | Analog electronic LCD thermostat with modular jack |

Miscellaneous

| | |
|----------|---|
| HMO-4002 | Replacement non-rotation bracket (included with actuator) |
| HLO-4001 | Crank arm kit |
| HCO-1151 | Weather shield kit |

Power transformer

| | |
|--------------|---|
| XEE-6311-050 | Transformer, 120/240/277/480-to-24 VAC, 50 VA, dual-hub, with circuit breaker |
| XEE-6311-075 | Transformer, 120/208/240/480-to-24 VAC, 75 VA, single-hub, with circuit breaker |
| XEE-6311-100 | Transformer, 120/240/277/480-to-24 VAC, 96 VA, dual-hub, with circuit breaker |

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