CP-8191-456
CP-8391-456

Electronic Actuator Drive
General Instructions

Application

Electronic actuator drive is used to provide proportional control of an electric gear train actuator from a variable voltage DC signal from a controller.

Features

- Accepts variable Vdc signal and drives certain MP-400, MP-4000, MP-2100, and MP-9000 series actuators in a proportional manner.
- Rugged aluminum case.
- Panel mount (CP-8191-456) and actuator mount (CP-8391-456) models.
- Adjustable start point, span, and hysteresis.
- Typical controller can drive up to three actuator drives.

Applicable Literature

- TAC Cross-Reference Guide, F-23638
- TAC Reference Manual, F-21683
- TAC Application Manual, F-21335

SPECIFICATIONS

Actuator Inputs

Compatible with Variable Vdc Input Signal:

Range, Factory set at 0 to 10 Vdc. Field adjustable to accept ranges such as 1 to 5, 2 to 10, 5.5 to 9.5, 2 to 18.5 and 10 to 20 Vdc.

Operating Span, Factory set at 10 Vdc. Field adjustable 3.5 to 16.5 Vdc.

Start Point, Factory set at 0 Vdc. Field adjustable from –5.5 to 10 Vdc.

Impedance, 19K ohms. Other input impedances can be obtained by adding series and/or parallel resistors.

Grounding, Either or both input wires grounded will not cause damage.

Maximum, 40 Vdc.

Isolation, Optically.

Hysteresis, Factory set for 3% of 10 Volt span or 3 Vdc. Hysteresis is the difference between the input signal which will rotate the actuator shaft one way and the level which will drive it the other way. Hysteresis is field adjustable to a maximum of 0.5 Vdc.

Linearity, 0.15% of actuator rotation.

Power:

Requirements, 120 or 240 Vac, ±10%, with fixed input signal offset of ±1% maximum. 24 Vac units not available.

Consumption, 3.5 VA at 120 or 240 Vac, 50 or 60 Hz.

Connections: See Table-1.

Table-1 Model Chart.

Part Number	Mounting	Field Wiring Connections
CP-8191-456	Panel Mount	Coded Screw Terminal
CP-8391-456	Direct Mount to Actuator	Color Coded Pigtail Leads

Actuator Outputs

Electrical: Triac output compatible with actuators shown inTable-2.

Table-2 Typical Actuators.

Actuator Series	Volts (60 Hz)	Torque		Stroke (Deg.)	Spring Return
		Lb.-in.	N-m		
MP-2130-500*	120	50	5.6	90	—
MP-2150-500*	120	50	5.6	180	—
MP-485*	120	50	5.6	180	CW
MP-475*	120	50	5.6	180	CCW
MP-483*	120	220	24.9	90	—
MP-485*	120	220	24.9	180	—
MP-486*	120	220	24.9	180	—
MP-495*	120	450	50.8	180	—
MP-9750*	120	800	90.4	180	—
MP-9810	120	1300	146.9	180	—
MP-9830	120	1300	146.9	90	—
MP-9910	120	1600	179.2	180	—
MP-4851*	240	220	24.9	180	—

*__CAUTION:__ Remove red and blue transformer wires from terminals 7 and 8 of actuator and tape.

Environment

Ambient Temperature Limits:

Shipping, –40 to 140°F (–40 to 60°C).

Operating, –13 to 140°F (–25 to 60°C).

Humidity: 5 to 95% RH, non condensing.

Locations: NEMA Type 1 indoor only.

TYPICAL APPLICATIONS (wiring diagrams)

CP-8391-456 Wire Color

CP-8191-456 Terminal Identification shown in ( )

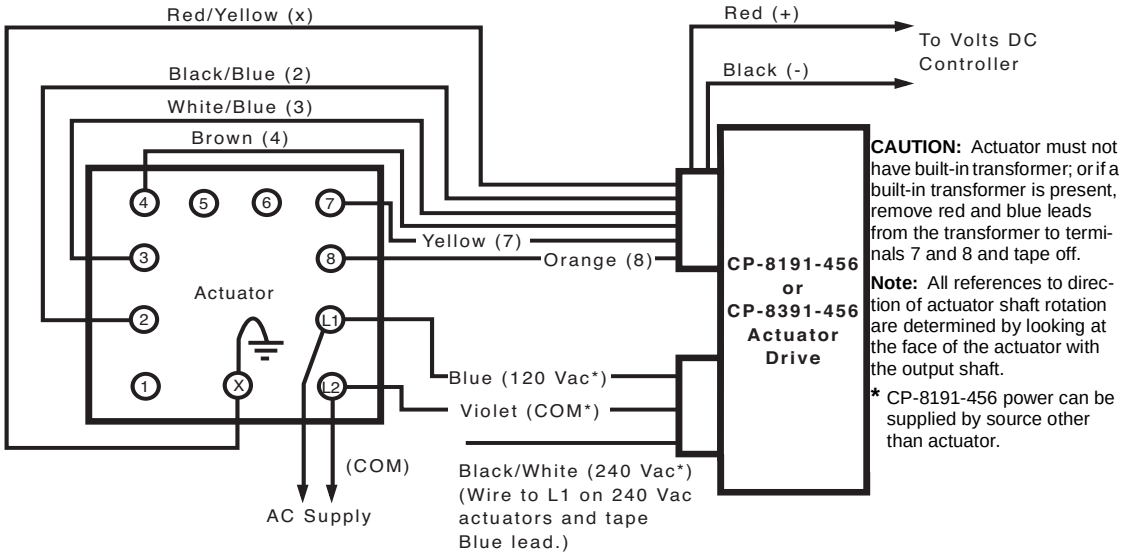

Figure-1 Typical Wiring Diagram, CP-8X91-456 to MP-4XX & MP-21XX Series and MP-9750 Actuators, Increasing Input Signal, CCW Actuator Rotation.

CP-8391-456 Wire Color

CP-8191-456 Terminal Identification shown in ( )

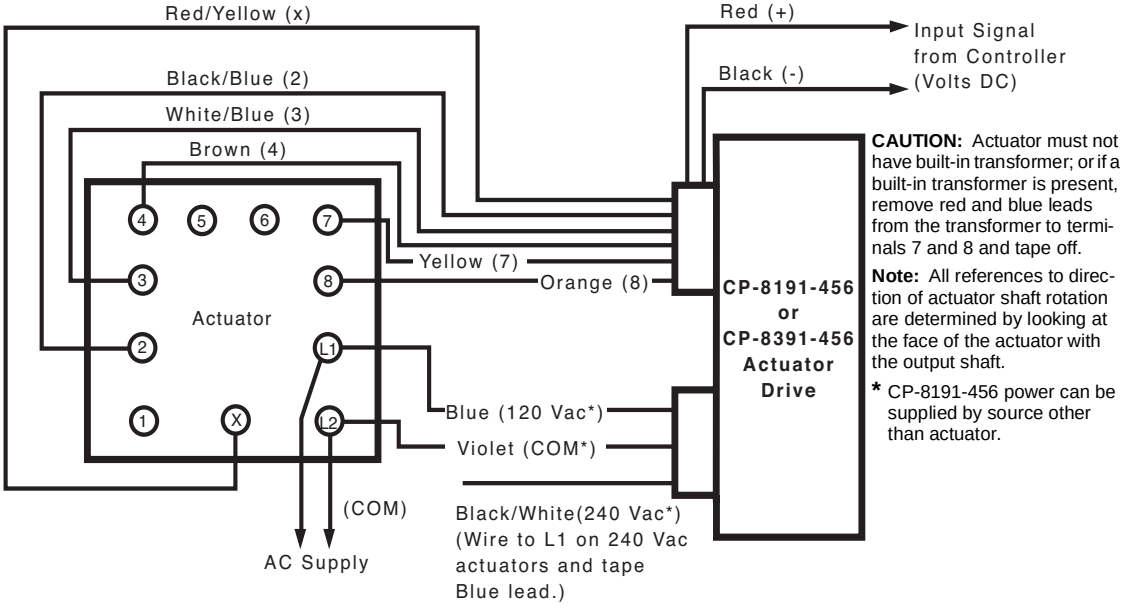

Figure-2 Installation Wiring Diagram, CP-8X91-456 to MP-4XX & MP-21XX Series and MP-9750 Actuators, Increasing Input Signal, CW Actuator Rotation.

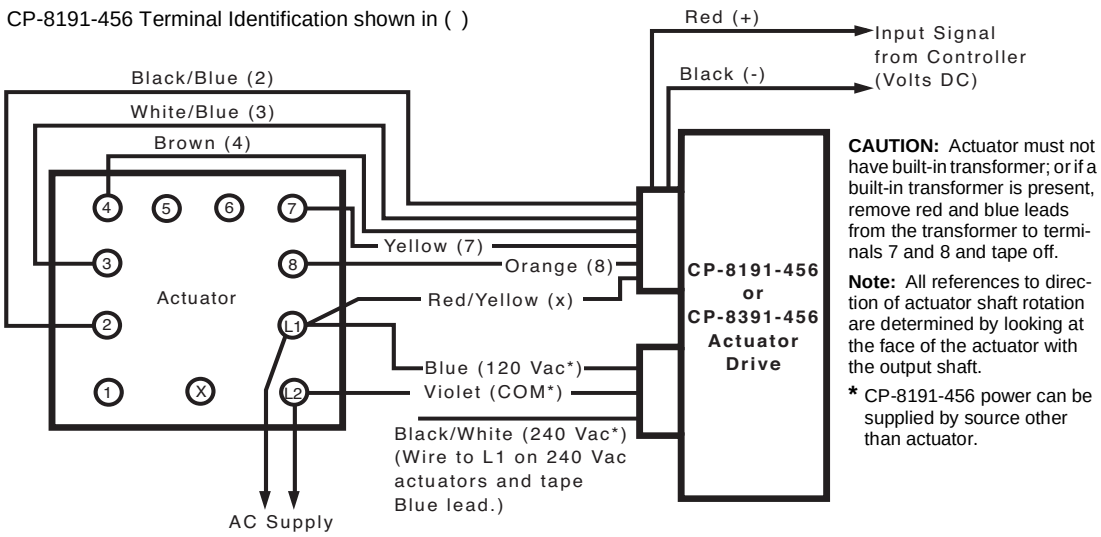

Figure-3 Installation Wiring Diagram, CP-8X91-456 to MP-98XX & MP-99XX Series Actuators, Increasing Input Signal, CCW Actuator Rotation.

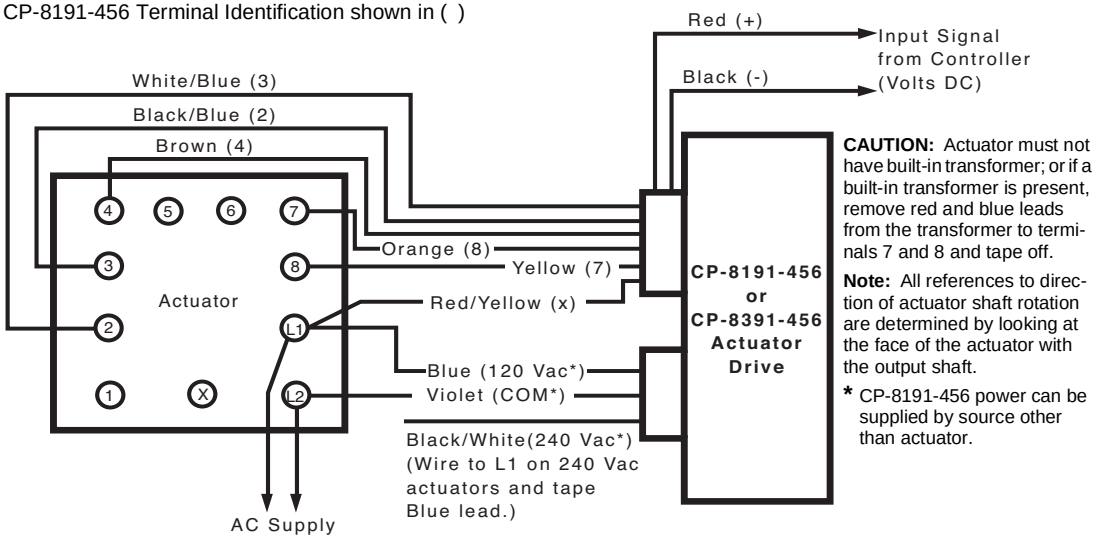

Figure-4 Installation Wiring Diagram, CP-8X91-456 to MP-98XX & MP-99XX Series Actuators, Increasing Input Signal, CW Actuator Rotation.

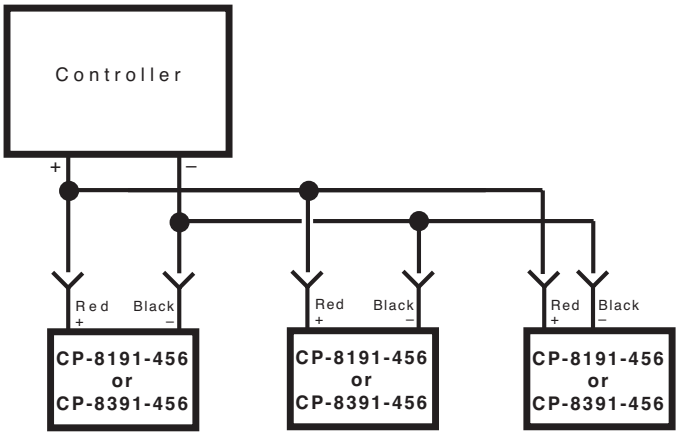

Figure-5 Wiring for Parallel Application.

INSTALLATION

Inspection

Inspect the carton for damage. If damaged, notify the appropriate carrier immediately. Inspect the device for obvious damage. Return damaged products.

Requirements

- Job wiring diagrams
- Tools (not provided):
  Common, single slotted screwdriver
  CP-8191-456, appropriate drill and bits
  CP-8391-456, wire cutters, ballpeen hammer, electrical tape
- Training: Installer must be a qualified, experienced technician

▼CAUTION

- Disconnect the power supply (line power) before installation to prevent equipment damage.
- Make all connections in accordance with the wiring diagram and in accordance with national and local electrical codes. *Use copper conductors only.*
- Do not exceed ratings of the device(s).
- Avoid locations where excessive moisture, corrosive fumes, or vibration is present.

Mounting

Locate the instrument to avoid dust or oil accumulations and moisture. If installed outdoors, the CP-8X91-456 must be protected from moisture and kept within ambient temperature limits. Upright mounting of the CP-8391-456 is preferred, but other positions are acceptable. (See Figure-6.) See Figure-7 for panel mounting of CP-8191-456.

CP-8391-456: Mount the CP-8391-456 to either side of the actuator by inserting the two conduit connectors into the 1/2" knockouts on the actuator. Secure the drive with the two (2) locknuts provided. (See Figure-6 and Figure-7.)

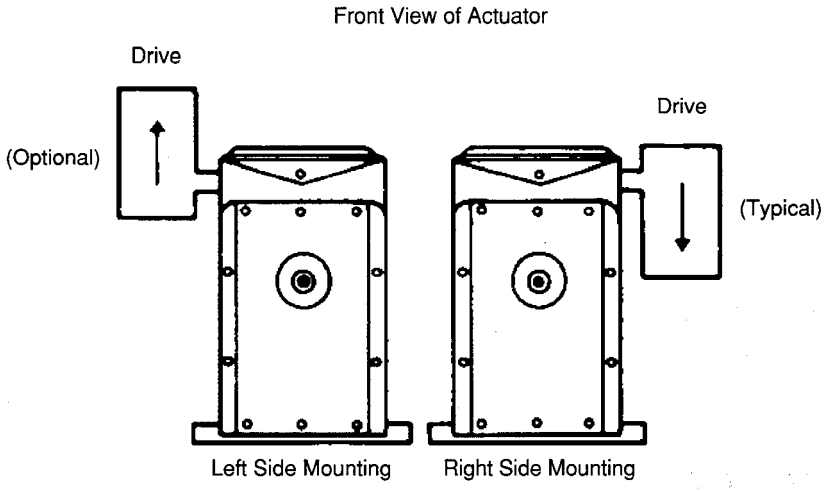

Figure-6 Typical Mounting for CP-8391-456.

CP-8191-456: Panel mount the drive using the four (4) mounting holes provided. (See Figure-7 for mounting holes.)

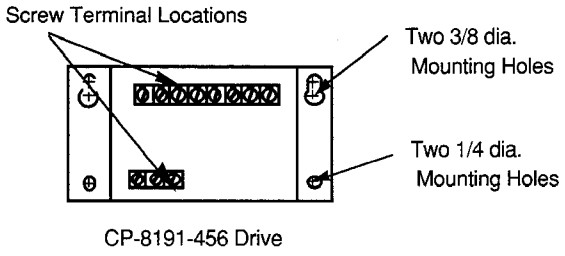

Figure-7 Panel Mounting for CP-8191-456.

Wiring Requirements

Control Leads

The two input wires of the CP-8X91-456 which must be connected to the controller are coded Black (–) and Red (+), respectively. (See Table-3 and Figure-1 through Figure-5.)

CAUTION

- Use three-conductor twisted shielded wire when it becomes necessary to install the control leads in the same conduit with power wiring or when RFI/EMI generating devices are near.
- Do not connect shield or conduit to earth ground.

Table-3 Control Wiring Data.

Wire Size (GA)	Maximum Wire Run in ft. (m)
18	1000 (304)
16	2250 (685)
14	4000 (1210)

Power Leads

CP-8391-456: When the CP-8391-456 is mounted on an electric actuator, all power is supplied by the electric actuator. (See Figure-1 through Figure-4.) Unused line voltage wire of the CP-8391-456 drive should be clipped and carefully insulated. (See Figure-1 through Figure-4.)

The Violet lead is power line common. The Blue lead is for 120 Vac. The Black/White lead is for 240 Vac.

CP-8191-456: Power can be supplied by source other than the actuator. (See Figure-1 through Figure-4.) Wire to coded screw terminals.

Wiring Connections

CP-8391-456

1. Wire the appropriate eyelet pigtail leads, from the group of eight from one side of the drive, to the screw terminals on the actuator.
2. Wire the appropriate eyelet pigtail leads, from the group of three from the drive, to the screw terminals on the actuator. Note: One of the leads will be taped-off; see Power Lead section.
3. Wire the Red (+) and Black (–) pigtail leads to the Vdc controller.
4. Replace the actuator cover.

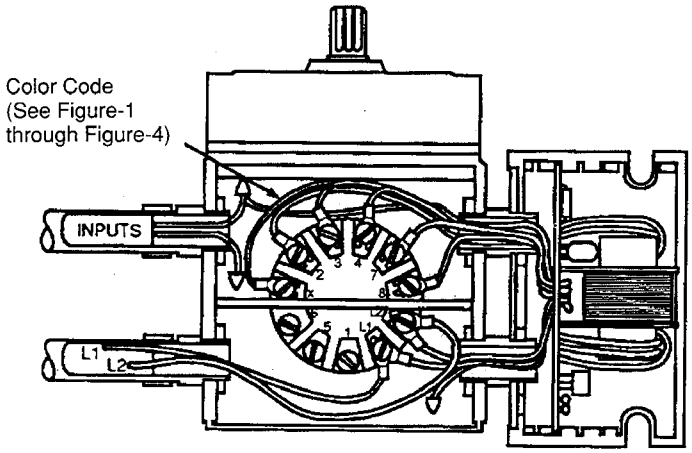

Figure-8 CP-8391-456 Wiring and Mechanical Arrangement
(shown for MP-400, MP-2100 series and MP-9750 actuators).

CP-8191-456

1. Pull all wires to the drive.
2. Wire to the appropriate screw terminals on the drive. See Figure-7 for locations.

Adjustments

Remove the cover of the CP-8X91-456. (See Figure-9.)

Start Point and Span

1. Connect power to the CP-8X91-456 and the actuator.
2. Connect the driving controller providing the input voltage.
3. Connect the electric actuator.
4. Apply the minimum voltage signal for the new range from the controller to the input terminals.
5. Adjust the START POINT potentiometer so that the actuator slidewire drives to its minimum signal limit.
6. Apply the maximum signal for the new range from the controller to the input terminals.
7. Adjust the SPAN potentiometer so that the actuator slidewire drives to its maximum signal limit.
8. Reapply the maximum and minimum inputs and check the end points.

Hysteresis

Hysteresis is adjustable by potentiometer (see Figure-9) to a maximum of 0.5 Vdc. Do not reduce the hysteresis so that the actuator oscillates.

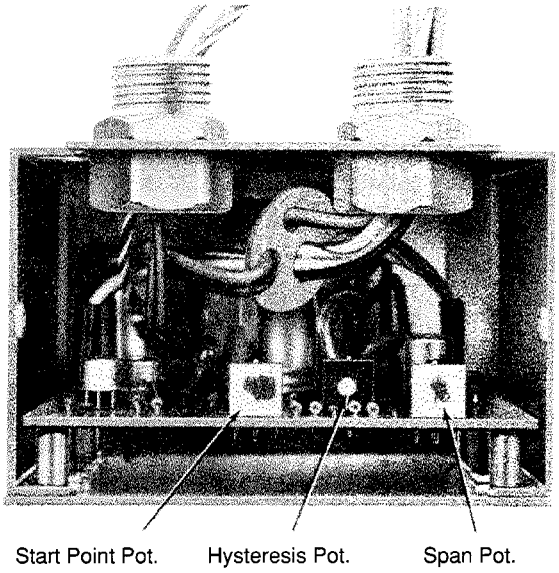

Figure-9 Adjustment Locations.

CHECKOUT

After the entire system has been installed and powered, apply minimum and maximum input signals to CP-8X91-456 and check for correct operation of the actuator.

MAINTENANCE

Regular maintenance of the total system is recommended to assure sustained optimum performance.

SERVICE

See Figure-10 and Figure-11 for wiring diagrams if additional wiring information is required on actuator/electronic drive combinations.

CAUTION

Actuator must not have built-in transformer; or if a built-in transformer is present, remove red and blue leads from the transformer to terminals 7 and 8 and tape off.

FIELD REPAIR

No field repair is possible.

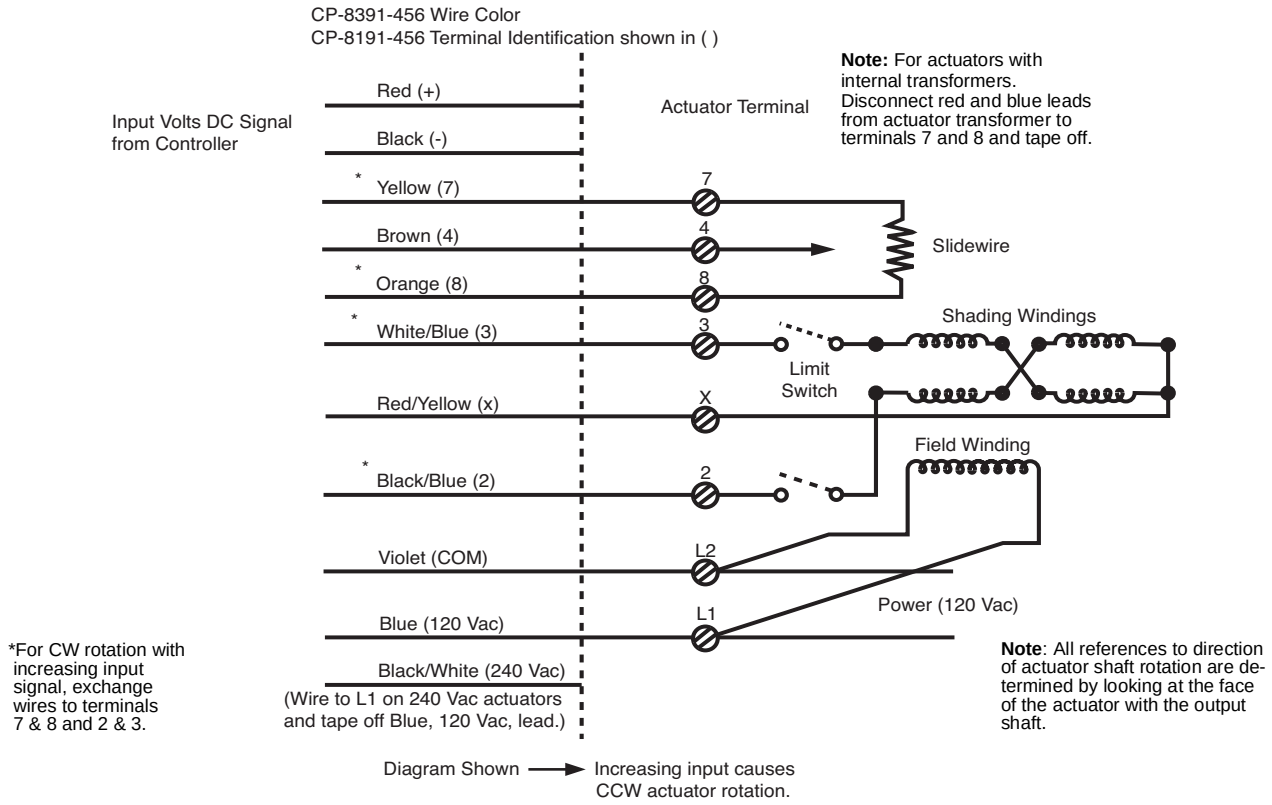

Figure-10 Service Application Wiring Diagram, CP-8X91-456 to MP-4XX & MP-21XX Series and MP-9750 Actuator Connections (see Table-2 for specific actuators).

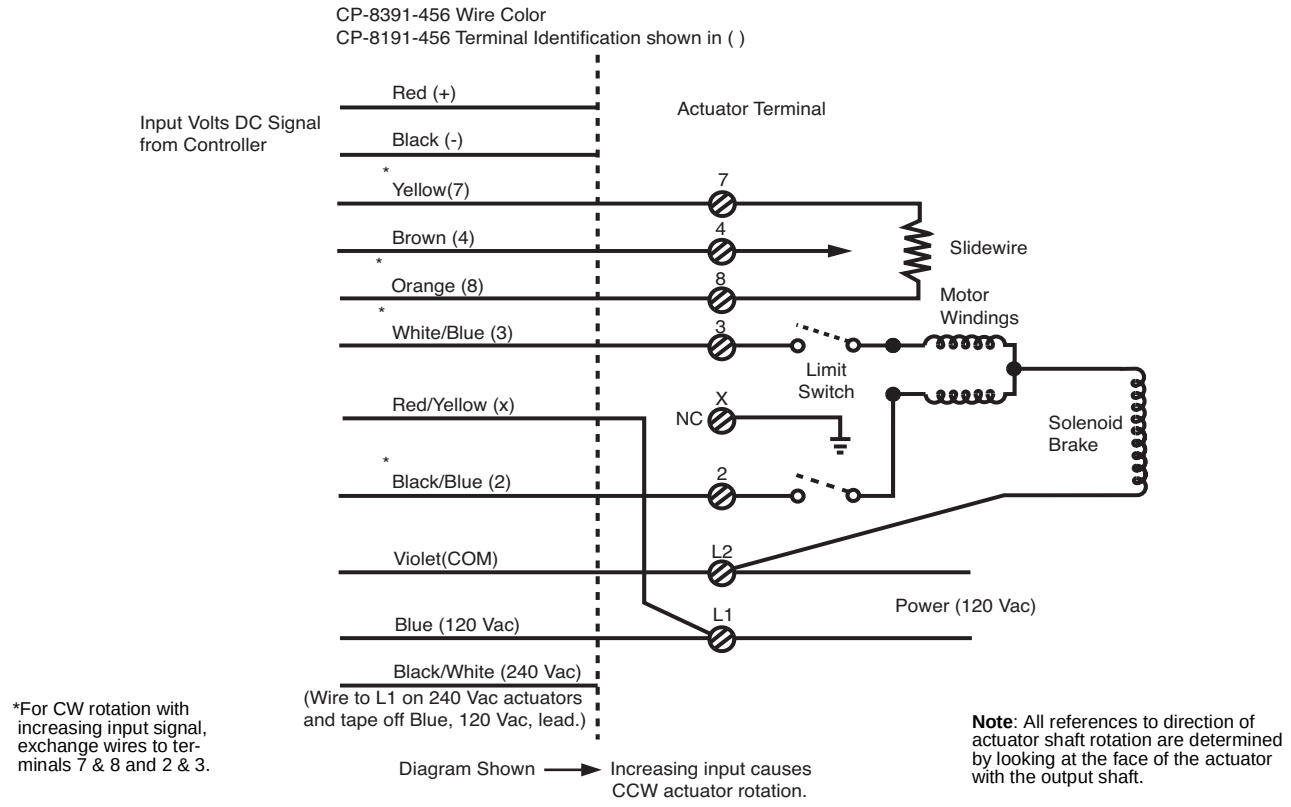

Figure-11 Service Application Wiring Diagram, CP-8X91-456 to MP-98XX & MP-99XX Series Actuator Connections (see Table-2 for specific actuators).

DIMENSIONAL DATA

All dimensions are in inches (millimeters in brackets). See Figure-12 and Figure-13.

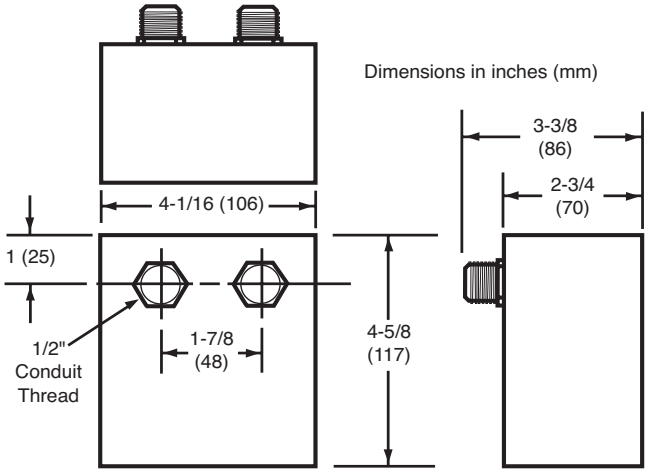

Figure-12 CP-8391-456 Mounting Dimensions.

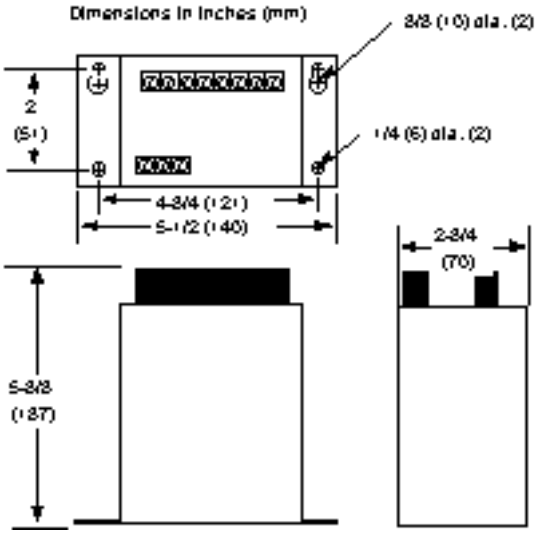

Figure-13 CP-8191-456 Mounting Dimensions.

F-24190-3

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