



Whether you plan to operate from a simple pushbutton or a programmable controller, the MCS-2000 series controls can make your system easy to design and install and simple to operate. Designed to drive Electrak actuators, MCS-2000 series controls are equipped with easy-to-use terminal strip input and output wiring, built-in power supply for DC actuators or capacitor for AC models, and three controls have touch sensitive membrane key pads.

Quick Reference Guide

Control	Description	Input Voltage	Actuator Model
Remote Switch 	The enclosed remote switch is used to directly operate any Electrak actuator. AC actuators must also have the capacitor wired into the circuit.	12, 24 VDC 115, 230 VAC	All actuators
DE-14 Series 	Specific control for Electrak 050 actuator. m 115 VAC input. Hand held pendant operator.	115 VAC	Electrak 050
DF-14 Series 	Specific control for Electrak 150 actuator. 115 VAC input. Hand held pendant operator.	115 VAC	Electrak 150
MCS-2005/2006 	Compact control for one actuator and an auxiliary device such as a photoscanner. Extend/Retract switch, 120 VAC input.	115 VAC 230 VAC	Electrak 1
MCS-2007/2008 	Similar to MCS-2005, but with LCD digital display for position feedback and limit switch adjustments in the control.	115 VAC 230 VAC	Electrak 1 with feedback
MCS-2015 	Basic power supply for on-off and emergency stop. 115 VAC or 230 VAC input.	115 VAC 230 VAC	Electrak 1 Electrak 10 Electrak 100
MCS-2025 	Intermediate control with power supply for on-off, emergency stop, jog, run and remote control functions.	115 VAC 230 VAC	Electrak 1 Electrak 10 Electrak 100
MCS-2035 	An advanced control with all the features of the MCS-2025 plus a readout display for positional feedback.	115 VAC 230 VAC	Electrak 100
MCS-2041/2042 	Specific control for Electrak 5. MCS-2041 for 115 VAC input and MCS-2042 for 230 VAC input. Extend/Retract switch.	115 VAC 230 VAC	Electrak 5
MCS-2051/2052 	Specific control for the new Electrak 205. MCS-2051 for 115 VAC input and MCS-2052 for 230 VAC input. All the advanced features of the MCS-2035 except dynamic braking.	115 VAC 230 VAC	Electrak 205

Actuator Controls

Remote Switch

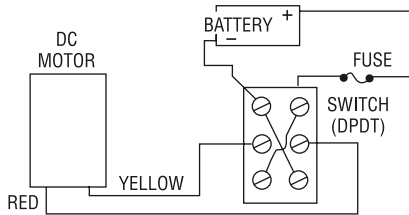
Use with Electrak 1, 2, 5, 10, 050, 100 and 150

Features

- Double pole, double throw
- 15A rating at 270 VAC
- Center "off"
- Two momentary contacts
- Pigtails with wire nuts supplied
- Wiring diagram on label
- "L" bracket for easy mounting
- 2 versions available (with or without enclosure)

Remote Switch (830-8004-016) without enclosure

Actuators require double-pole double-throw switches. McGill switch no. 0121-004, Cutler-Hammer switch no. 8835-K4, or equivalent are recommended and are usually available locally. The required switch can be purchased from Danaher Motion under part number 830-8004-016.



Remote Switch Wiring Connection

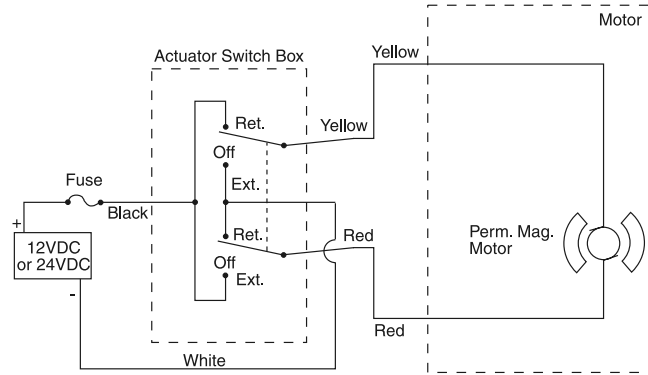
Remote Switch (6932-101-054) with enclosure



The enclosed remote switch is used to directly operate any Electrak actuator. AC actuators must also have the capacitor wired into the circuit. The switch has a mounting bracket and the wiring diagram is included on the label. The switch is wired between the power supply and the actuator and two momentary contacts are used to extend or retract the actuator.

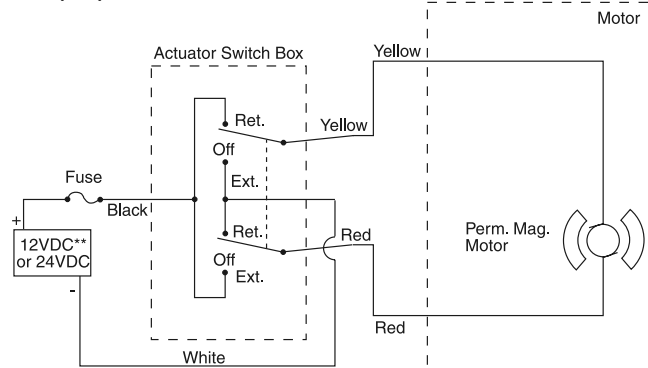
Wiring Connections

Electrak 1



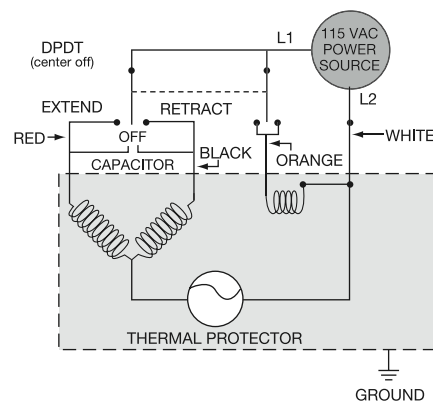
* Note: Red for Electrak 1
White for 12 VDC Electrak 1 with feedback
Black for 24 VDC Electrak 1 with feedback

Electrak 2, 10, 100



** Note: Electrak 2 is 12 VDC

Electrak 5 (A12-A22 Series)



DE14 series

Use with Electrak E050

DF14 series

Use with Electrak E150



DE14 and DF14 series actuator controls operate Electrak E050 and E150 actuators respectively. Available with one or two 24 VDC outputs, each has a handset to manually control bi-directional motion on each of its control outputs, independently. It has quick disconnect sockets and cable adapters in 5, 10, and 15 ft. lengths to connect to the actuator. Each output has a circuit breaker that automatically resets approximately 20 seconds after a short circuit is removed. DF14 control also has a built in ELS circuit to protect the Electrak 150 actuator at end of stroke.

Specifications

Input	DE14-1E	120 VAC, 50/60 Hz
	DE14-2E	120 VAC, 50/60 Hz
	DF14-1F	120 VAC, 50/60 Hz
	DF14-2F	120 VAC, 50/60 Hz
Output	DE14-1E	24 VDC, one output, 2.5 amps max.
	DE14-2E	24 VDC, two output, 2.5 amps per channel max., 5.0 amps total
	DF14-1F	24 VDC, one output 6.5 amps max.
	DF14-2F	24 VDC, two output 6.5 amps per channel max. 6.5 amps total

Ambient Temperature
15° to 104°F (-26° to 40°C)

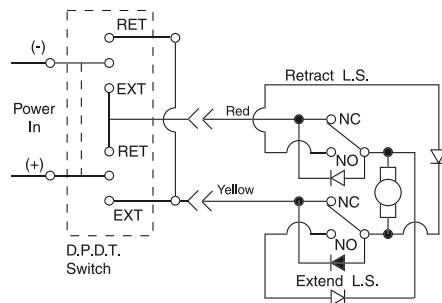
Duty Cycle 25% max.

Wiring Connections

E050 Wiring

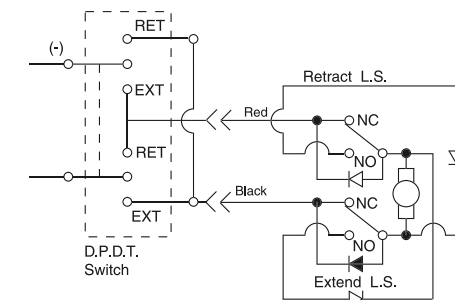
Electrak actuators should be connected in accordance with the wiring diagram shown below.

Make sure the power is off before attempting to wire the actuator. To extend the actuator, connect yellow to positive and red to negative. To retract the actuator, connect red to positive and yellow to negative.



Metric Version

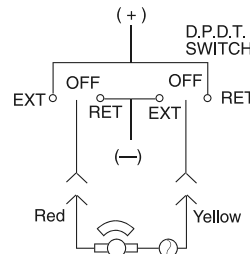
To extend the actuator, connect black to positive and red to negative. To retract the actuator, connect red to positive and black to negative.



E150 Wiring

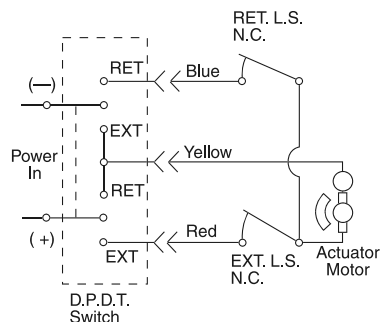
Without Limit Switches

To extend actuator, connect red to positive and yellow to negative. To retract actuator, connect red to negative and yellow to positive.



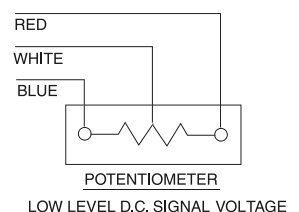
With Limit Switches

To extend actuator, connect red to positive and yellow to negative. To retract actuator, connect yellow to negative and blue to positive.



Potentiometer

Resistance measured across the white and blue leads will increase as the actuator extends and decrease as the actuator retracts. Resistance measured across the white and red leads will decrease as the actuator extends and increase as the actuator retracts.



Actuator Controls

MCS-2005/MCS-2006

For Electrak 1 actuators



The MCS-2005 linear actuator control converts 120 VAC input current to 24 VDC output to operate an Electrak 1 actuator. This compact control is designed to operate one actuator and an auxiliary device such as a photoscanner simultaneously. The control has two outputs, a 24 VDC source controlled by the rocker switch on the cover and a second 24 VDC source which is unswitched. The source operated by the rocker switch is used when operation through the control is desired. The constant output source is used when a remote switch is to control the actuator. An auxiliary device, such as a photoelectric control which draws up to 200 mA may also be connected to the auxiliary output.

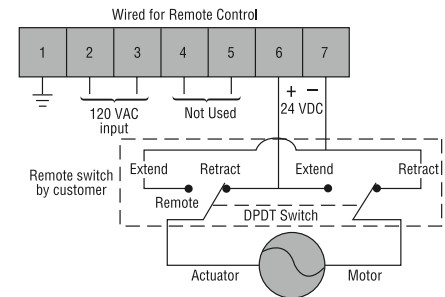
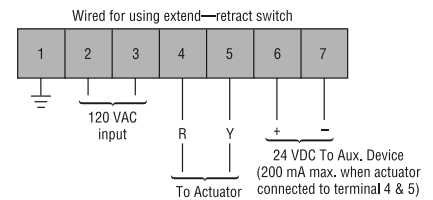
When the extend side of the rocker switch is pressed the actuator will begin to extend and will continue until either the switch is released or the actuator reaches the end of its stroke and the limit switch stops it. The actuator may be stopped by the control anywhere along the

total stroke length but it must not be stalled in mid-stroke. A fused output protects the motor against overloads and stalling mid-stroke. Depressing the retract side of the rocker switch will cause the actuator to retract as long as the switch is held or until the actuator reaches the end of its stroke and the limit switch again stops it.

Features

- Standard 120 VAC input (MCS-2005)
- Standard 240 VAC input (MCS-2006)
- One 24 VDC actuator output for operation by front panel rocker switch
- One 24 VDC output for auxiliary device such as a photoelectric sensor
- Fused ratings – 1 Amp, 250 VAC (within control) – protects actuator in case of stalling caused by overload
- Compact size
- “Power On” light illuminates whenever power applied to the control
- Terminal strip for easy electrical connection
- Output filtered, but unregulated. Varies from 20-30 VDC, depending on input voltage. (2.8 amps rated continuous)

Wiring Connections



MCS-2007/MCS-2008

For Electrak 1 actuators with feedback



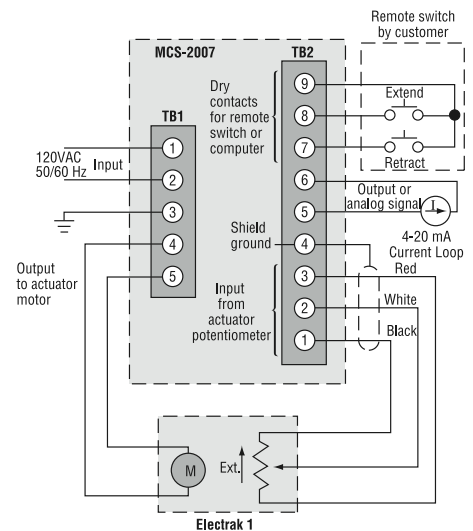
Compact control displays the feedback position on a digital LCD meter on the front cover. The control provides a 4-20 mA signal for a remote meter.

Extend and retract limit switches are set by adjusting two trim pots in the control.

Features

- Standard 120 VAC input (MCS-2007)
- Standard 240 VAC input (MCS-2008)
- One 24 VDC actuator output (2.8 amps rated continuous)
- Extend/retract switch
- Fuse protection
- Compact size
- 4-20 mA current loop for remote meter
- Dynamic braking
- LCD digital readout on front cover displays position feedback
- Extend/retract limit switches set by adjusting trim pots in control. Actuator need not be accessible to set limit switches.
- Accepts switch/inputs

Wiring Connections



MCS-2015

For Electrak 1, 10, and 100



Common Features

- 115 VAC or 230 VAC input
- 24 VDC output to Electrak 1, 10 and 100 actuators
- 8 amps output continuous
- Dynamic braking
- Compatible with programmable controllers and Danaher Motion Photoscanners
- Power on indicator
- Emergency stop/off pushbutton remains in position when activated
- NEMA 1 enclosure
- Accepts switch/inputs
- Provisions for 2 external limit switches or integral actuator limit switches

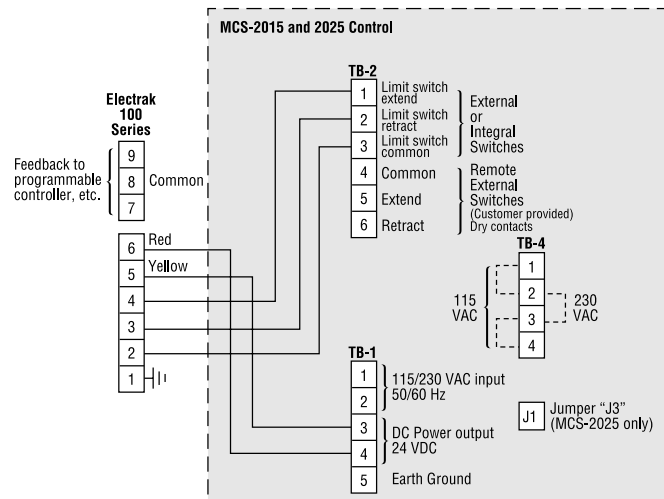
On-off power supply

The MCS-2015 is a basic power supply providing on-off and emergency stop functions.

Wiring Connections

MCS-2025

For Electrak 1, 10, and 100



Combined control and power supply

The MCS-2025 intermediate control and power supply is equipped with cover mounted membrane switches and LED indicator lights for extend, retract, jog, run and remote control.

Additional features of the MCS-2025

- 8 amps output continuous
- Cover mounted membrane switches with LED indicator lights for extend, retract, jog, run and remote control
- Internal jumper for automatic return from end of stroke in run mode

Terminal Block Codes

Wiring to Electrak 1 Series

Wire Terminal Block 4 as shown. Connect the yellow lead from the actuator to terminal 4 of TB-1 and the red lead to terminal 3 of TB-1. TB-2 can be used for external switch connections. If limit switches are not used, terminals 1, 2 and 3 on TB-2 must be jumpered.

Wiring to Electrak 10 Series

Wire Terminal Blocks 1 and 4 as shown, TB-2 can be used for external limit switch connections. If limit switches are not used, terminals 1, 2 and 3 on TB-2 must be jumpered.

"Run" mode

Inserting jumper "J1" causes the actuator to reverse automatically upon reaching the extend limit switch. The actuator automatically retracts until reaching the other switch.

Remote control

When used with these controls a programmable controller, photoscanner or other such remote control device must have a minimum output rating of 24 VDC at 15 mA (MCS-2015 requires 48 VDC at 15 mA). The maximum saturation voltage of the remote control solid state output is 2 VDC. The maximum allowable leakage current of the remote control output is 2 mA.

Actuator Controls

MCS-2035

For Electrak 100 actuators with feedback



Positioning control and power supply

The MCS-2035 is an advanced control unit with cover mounted membrane switches for extend, retract, jog, run and remote control functions plus a percent of full stroke meter.

Features

- 115 VAC or 230 VAC input
- 24 VDC output to Electrak 100 actuators
- 8 amps output continuous
- Dynamic braking
- Compatible with programmable controllers and photoscanners
- Power on indicator
- Emergency stop/off pushbutton remains in position when activated
- Cover mounted membrane switches with LED indicator lights for extend retract, jog, run and remote control
- NEMA 1 enclosure
- Accepts switch/inputs
- Internal jumper for automatic return from end of stroke in run mode
- Provisions for 2 external limit switches or integral actuator limit switches
- Percent of full stroke meter
- Receives potentiometer feedback from Electrak 100 actuators
- Output current loop (0-20 or 4-20 mA) for use with a remote meter

Terminal Block Codes

AC Line Voltage Selection

Jumper connections on TB-4 must be set for line voltage to be used. For 115 VAC, jumper terminals 1 to 2 and 3 to 4 on TB-4. For 230 VAC jumper terminals 2 to 3 only on TB-4. There are no external wiring connections to TB-4.

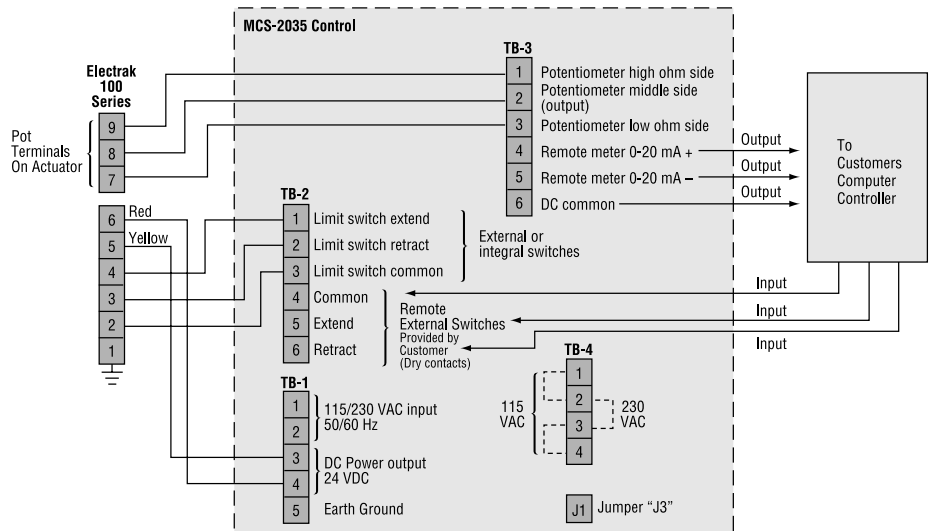
“Run” mode

Inserting jumper “J1” causes the actuator to reverse automatically upon reaching the extend limit switch. The actuator automatically retracts until reaching the other switch.

Remote control

When used with the MCS-2035 control, a programmable controller, photoscanner or similar remote control device must have a minimum output rating of 24 VDC at 15 mA. The maximum saturation voltage of the remote control solid state output is 2 VDC. The maximum allowable leakage current of the remote control output is 2 mA. The remote meter output loop is a 0-20 or 4-20 mA signal.

Wiring Connections



MCS-2041/2042 For Electrak 5 actuators



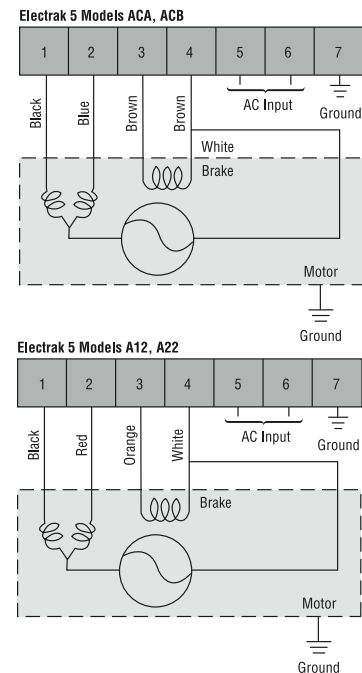
The MCS-2041 and 2042 linear actuator controls are specifically designed to operate Danaher Motion Electrak 5 linear actuators. These compact controls switch both the actuator motor and its anti-coast brake to provide optimum performance. When the extend side of the rocker switch is pressed, the actuator will begin to extend and will continue until either the switch is released or the actuator reaches the end of its stroke and the ball detent clutch slips. Depressing the retract side of the rocker switch will cause the

actuator to retract as long as the switch is held or until the actuator reaches the other end of its stroke. The ball detent clutch will also slip on overloads. The actuator's brake engages when the switch is released or in case of power failure.

Features

- 115 or 230 VAC versions
- 15 amps output continuous
- Rocker switch to control extend and retract movement
- "Power On" light illuminates whenever power applied to the control
- Fuse ratings
MCS-2041 10Amps@250V
MCS-2042 5Amps@250V
- Prewired capacitor
- Terminal strip for easy field connections
- Compact size

Wiring Connections



MCS-2051/2052 For Electrak 205 actuators with feedback



An advanced control unit for the new Electrak 205 actuator with a digital LCD meter to display the feedback position and a 4-20 mA output signal to operate a remote meter or provide an input to a programmable controller. Same membrane function switches as the MCS-2035.

Features

- 15 amps output continuous
- Compatible with programmable controllers and photoscanners
- Power on indicator
- Emergency stop/off pushbutton remains in position when activated
- Cover mounted membrane switches with LED indicator lights for extend, retract, jog, run and remote control

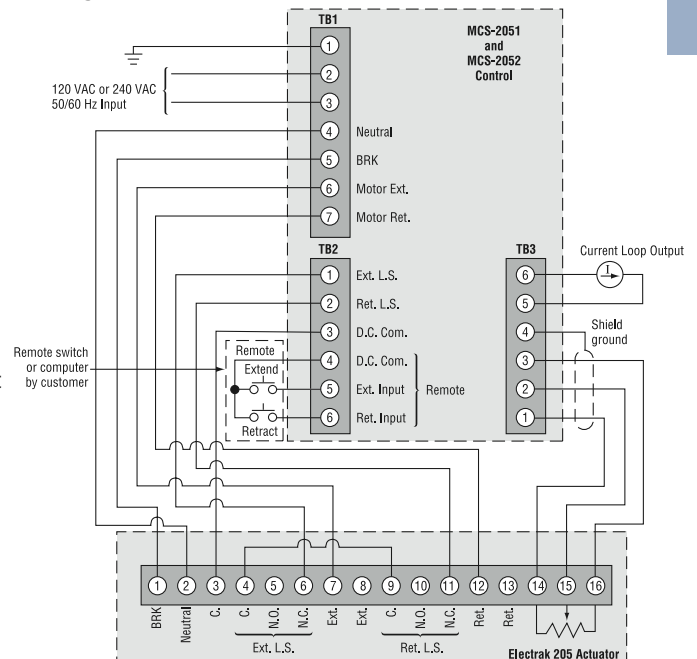
- NEMA 1 enclosure
- Accepts switch/inputs
- Internal jumper for automatic return from end of stroke in run mode
- Provisions for 2 external limit switches or integral actuator limit switches

- LCD display for feedback position
- Receives potentiometer feedback from Electrak 205 actuators
- Output current loop (4-20mA) for use with remote meter

Remote control

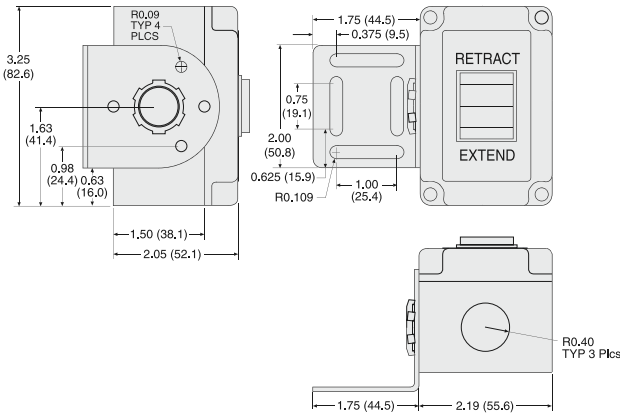
When used with the MCS-2051 or MCS-2052 control, a programmable controller, photoscanner or similar remote control device must have a minimum output rating of 24 VDC at 15 mA. The maximum saturation voltage of the remote control solid state output is 2 VDC. The maximum allowable leakage current of the remote control output is 2 mA. The remote meter output loop is a 4-20 mA signal.

Wiring Connections

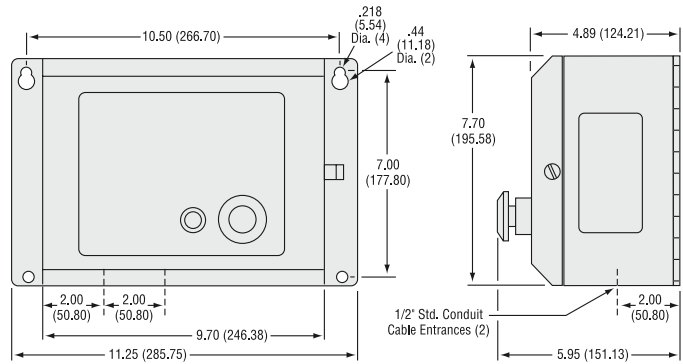


Actuator Control

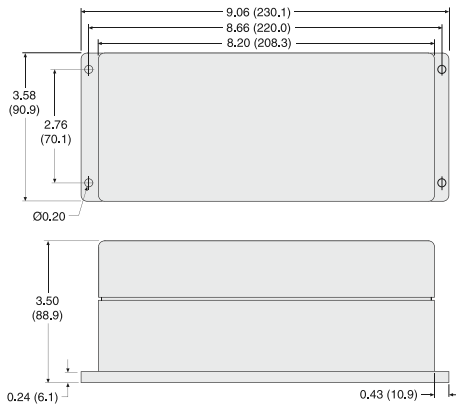
Remote Switch (6932-101-054)



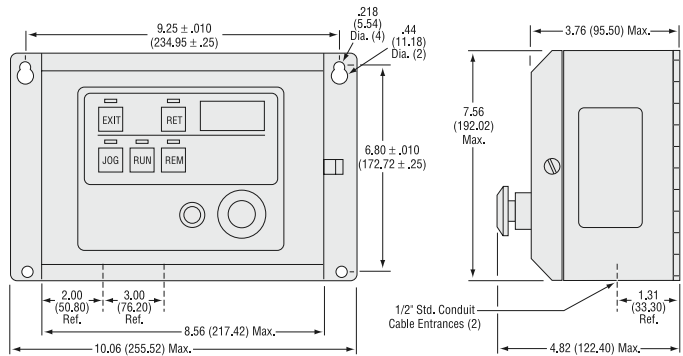
MCS-2015, MCS-2025, MCS-2035



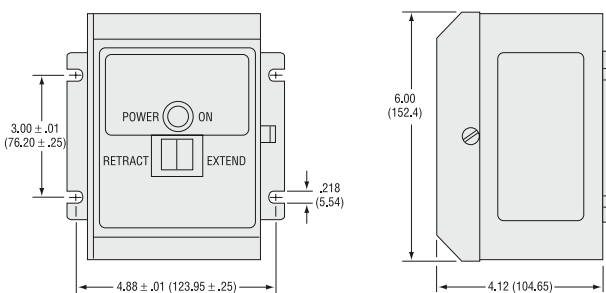
DE14/DF14



MCS-2051, MCS-2052



MCS-2005/2006, MCS-2007/2008, MCS-2041/2041



Dimensions in () denotes millimeters