SmartX MU41-6063 / 7063

Fail-Safe/Fail-in-Place 53 lb-in (6 Nm), Rotary, Electronic Damper Actuators



Product Description

The Schneider Electric SmartX direct-coupled fail-safe/fail-in-place electronic actuators are designed for modulating, two-position, and floating control of laboratory fume hoods, constant or variable volume installations for the control of supply/exhaust and terminal units.

Features

- Fast operation, 2 seconds runtime
- One model performs all control signals:
  - 2-position
  - Floating
  - Modulating (0(2)…10 Vdc and 4(0) to 20 mA)
- Feedback standard on all models
- Highly accurate positioning
- Brushless DC motor technology with stall protection
- Unique self-centering shaft coupling
- 53 lb-in (6 Nm) torque
- UL and cUL listed, CE certified
- 24 Vac/dc compatible
- Manual override capability
- Plenum rated

Application

Used in laboratory fume hoods, constant or variable air volume installations for the control of supply and exhaust air terminals; 53 lb-in (6 Nm) torque.

Models designed for applications that require the damper to return to a fail-safe position when there is a power failure; or models for fail-in-place.

NOTICE:

- Personal injury or loss of life may occur if you do not follow a procedure as specified.
- Equipment damage or loss of data may occur if you do not follow a procedure as specified.

Available Models

Product Number	Operating Voltage	Action	
		Fail-Safe	Fail-in-Place
MU41-6063	24 Vac/dc	–	•
MU41-7063		•	–

Specifications

Power Supply		24 Vac/dc
Frequency		50/60 Hz
Power consumption	MU41-7063	MU41-6063
running	20 VA/13W	28 VA/19W
holding	8 VA/5W	8 VA/5W
Equipment rating	Class 2, in accordance with UL/CSA	Class III per EN 60730

Control Signal Y/Y1	
Modulating input signal (wires 8-2)	
voltage input signal	0…10 Vdc (max. 35 Vdc)
	2…10 Vdc (max. 35 Vdc)
Input resistance	>100K ohms
Repositioning resolution	0.4%
Floating input signal (wires 8-2)	0…24 Vac/dc Clockwise
Control Signal Y2	
Floating input signal (wires 7-2)	0…24 Vac/dc Counter-clockwise
Feedback Signal Position	
output signal (wires 9-2)	0…10 Vdc maximum output current DC ± 1mA

Function	
Running torque	53 lb-in (6 Nm)
Maximum torque	142 lb-in (16 Nm)
Runtime for 90°	operating with motor < 2 seconds
Fail-safe (on power loss)	2 seconds (for MU41-7063 only)

Fail-Safe Operation:

MU41-7063 Actuator: On initial power-up, and after a power- fail event, the SmartX Actuator requires up to 90 seconds for the capacitors to fully charge. During this time the actuator will respond to positioning commands, but will not power-fail until the capacitors are fully charged.

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Document Number: F-27892-4

March, 2021 tc

Mounting	
Nominal angle of rotation	90°
Maximum angular rotation	95°
Shaft size	¼…¾" (6.4…20.5 mm) dia. ¼…½" (6.4…13 mm) square
Minimum shaft length	¾" (20 mm)
Housing	
Enclosure	NEMA 1 IP54 according to EN 60 529 (limited positions)
Material	Die-cast aluminum alloy
Gear lubrication	Silicone-free
Ambient Conditions	
Ambient Temperature	
operation	-0°F…122°F (-18°C…50°C)
storage/transport	-26°F…158°F (-32°C…70°C)
Ambient Humidity (non-condensing)	95% rh
Agency Certification	
UL Listed	UL 873
cUL Listed	C22, 2 No. 24-93
CE Electromagnetic compatibility (EMC)	2004/108/EC
Note: These devices were approved for installation in plenum areas by Underwriters Laboratories, Inc. (UL) per UL 1995.	
Miscellaneous	
Cable length	3' (0.9 m) length
Life Cycle	Designed for over 100,000 full stroke cycles and a minimum of seven million repositions at rated torque and temperature
Dimensions	8-3/8" H × 3¼" W × 2-3/8" D (212 mm H × 83 mm W × 60 mm D)
Shipping weight	3 lbs 6 oz

Operation

2-position control

Two-position control requires three wires. Apply 24 Vac/dc power to wire 1 (red) and wire 2 (black). Applying a 24 Vac/dc control signal to wire 7 (orange) causes the actuator to rotate counterclockwise. When the operating voltage is removed from wire 7 (orange), the actuator rotates clockwise.

Floating control

The actuator's angle of rotation is proportional to the length of time the signal is applied. A 24 Vac/dc control signal to wire 8 (gray) causes the actuator to rotate clockwise. A 24 Vac/dc control signal to wire 7 (orange) causes the actuator to rotate counterclockwise. With no control signal applied, the actuator holds its position.

Modulating control

Apply a continuous 0(2)…10 Vdc or 0(4)…20 mA control signal between wire 8 (gray) and wire 2 (black) to operate the damper actuator. The angle of rotation is proportional to the control signal. A 0…10 Vdc modulating output signal is available between wire 9 (pink) and wire 2 (black) to monitor the position of the actuator.

Fail-safe

In the event of a power failure, the SmartX fail-safe actuator returns to the fail-safe position (see Figure 2.)

NOTE: The operation described above is valid for the factory default setting for rotation direction (see Figure 2 and Figure 3).

Life expectancy

An improperly tuned loop will cause excessive repositioning that will shorten the life of the actuator.

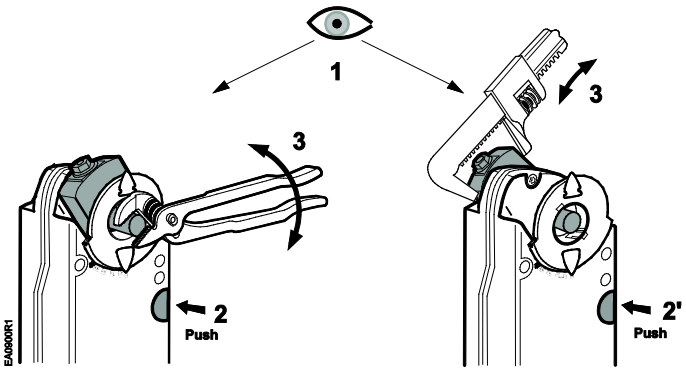


Figure 1. Mechanical Range Adjustment

Actuator Operation Settings

The black position indicates the active switch setting.

On initial power-up, and after a power-fail event, the SmartX Actuator requires up to 90 seconds to fully charge its capacitors.

During this time the actuator will respond to positioning commands, but will not power-fail until the capacitors are fully charged.

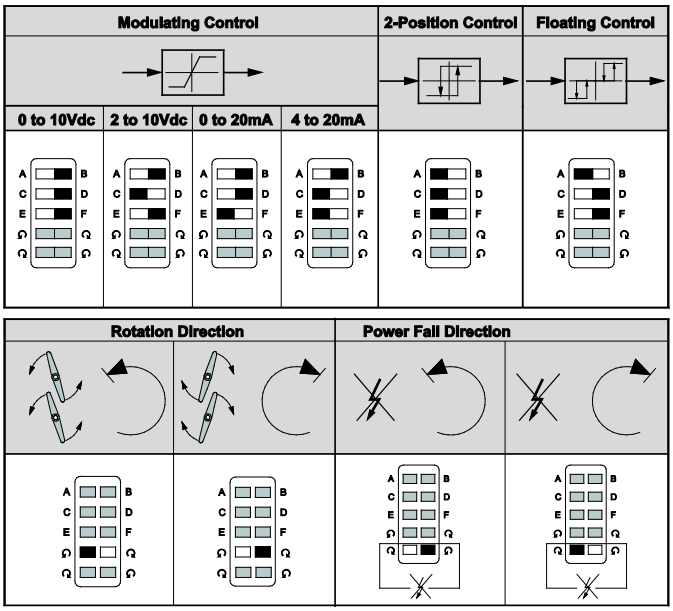


Figure 2. Setting

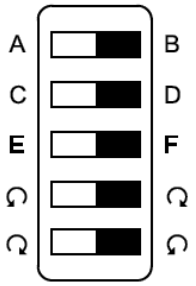


Figure 3. Factory Default Setting

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Wiring

All wiring must conform to NEC and local codes and regulations.

Use earth ground isolating step-down Class 2 transformers. Do not use autotransformers.

The maximum rating for a Class 2 step-down transformer is 100 VA. Determine the supply transformer rating by summing the VA ratings of all actuators and all other components used. It is recommended that one transformer power no more than 10 actuators (or 80% of its VA).

Notice: Mixed switch operation is not permitted to the switching outputs of both auxiliary switches (A and B). Either AC line voltage from the same phase must be applied to all six outputs of the dual auxiliary switches, or UL-Class 2 voltage (SELV for CE conformance) must be applied to all six outputs. With plenum cables only UL-Class 2 voltage (SELV for CE conformance) is permitted.

Installations requiring Conformance

- Except for the auxiliary switches (See Warning above) all wiring for 24 Vac/dc actuators must only be safety extra-low voltage (SELV) or protective extra-low voltage (PELV) per HD384.
- Use safety transformers per EN61558 with double isolation, designed for 100% duty-cycle for supplying SELV or PELV circuits.
- Over-current protection for supply lines is maximum 10A.

Wire Designations

Each wire has the standard symbol printed on it. See Table 2.

Connecting	Standard Symbol	Function	Color	Color Symbol
24 Vac/dc Actuator	1	Supply	Red	RD
	2	Common	Black	BK
	7	2-position control signal Floating (CCW) Control signal	Orange	OG
	8	Modulating: 0 (2) to10 Vdc/0 (4) to 20 mA Floating: (CW) Control signal	Gray	GY
	9	Feedback: 0…10 Vdc	Pink	PK

Table 2. Wire Designations

Wiring Diagrams

2-Position Control

Notice: Two-position control requires three wires.

Unused wires must be properly terminated.

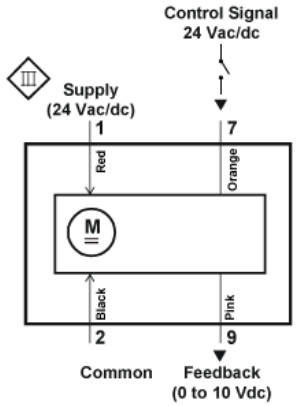


Figure 4. Two-Position Wiring Diagram.

Floating Control

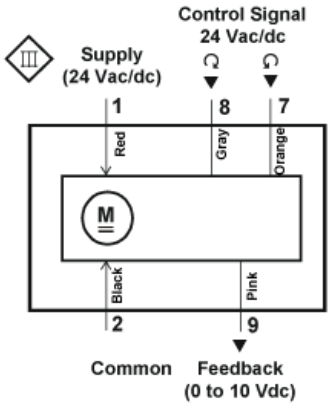


Figure 5. Floating Control Wiring Diagram.

Modulating Control

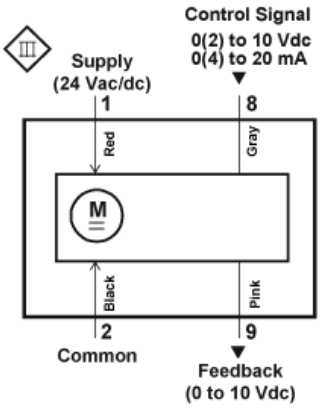


Figure 6. Modulating Control Wiring Diagram

Service

Do not open the actuator. If the actuator is inoperative, replace the unit.

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Troubleshooting

To avoid injury or loss of life pay attention to any hazardous voltage (for example, 120 Vac) when performing checks.

- Check that the wires are connected correctly.
- Check that DIP switches are set correctly, if used.
- Use a Digital Multimeter (DMM) to verify that the operating voltage is within range.

If the actuator is not working, check the damper for blockage. If blocked, remove the obstacle and cycle the actuator power off and on. The actuator should resume normal operating mode.

Dimensions

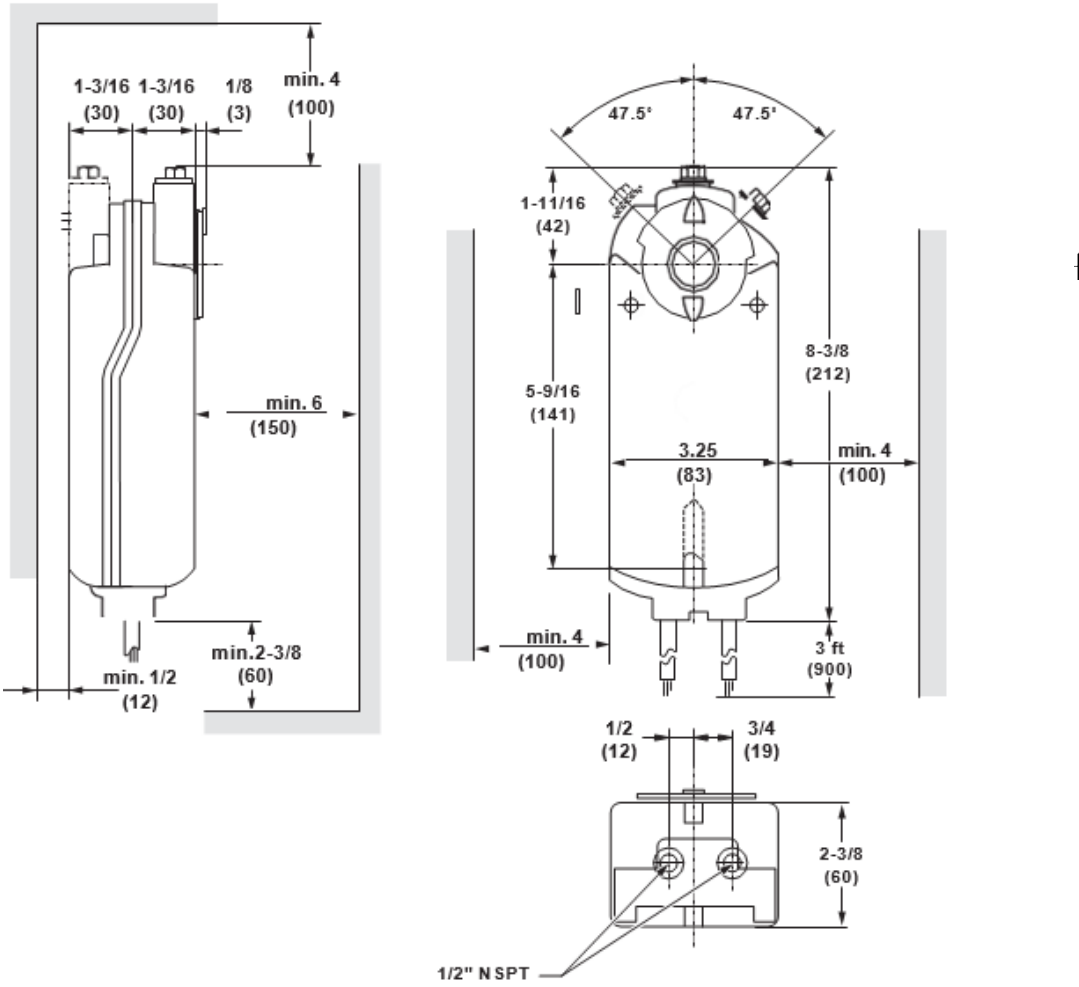


Figure 7. Dimensions in Inches (millimeters).

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