

## M9300 Series Electric Non-Spring Return Actuators Catalog Page

### Description

The M9300 Series Electric Non-Spring Return Actuators provide control of dampers in HVAC systems. Actuators in this series provide rated torques from 70 lb·in (8 N·m) to 310 lb·in (35 N·m).

The series consists of models for on/off and floating control as well as models with Automatic Signal Input Detection, which allows automatic recognition of input signals for on/off, floating, and proportional control.

These actuators are configured for direct mounting and do not require damper linkage. Actuators can be mounted directly with a universal clamp to a round damper shaft from 3/8 in. (10 mm) up to 1-1/16 in. (27 mm), and to a square damper shaft from 3/8 in. (10 mm) up to 3/4 in. (19 mm).

An accessory crankarm and remote mounting kit are available for applications where the actuator cannot be direct-coupled to the damper shaft. An optional line voltage auxiliary switch kit can be field installed to indicate an end-stop position or perform switching functions within the selected rotation range. The M9300 actuators also feature an optional NEMA 4X/IP66 weather shield for applications in harsh environments.

Refer to the *M9300 Series Electric Non-Spring Return Actuators Product Bulletin (LIT-12012069)* for important product application information.

### Features

- models with Automatic Signal Input Detection, on/off, floating, and proportional control with adjustable span and offset
- line voltage on/off and floating models
- high speed on/off and floating models
- easy conversion to valve operation—same actuator used for dampers or valves
- optional accessory kit
- backward compatible auxiliary switch kits and auxiliary potentiometer
- self-calibrating input signal to adjust stroke
- direct-coupled design
- electronic stall detection
- microprocessor-controlled brushless DC motor
- mode configuration switches
- integral cables with colored and numbered conductors
- optional integral 1/2 in. (13 mm) threaded conduit connectors
- plenum-rated models
- small footprint
- NEMA 5/IP54 enclosure
- Underwriters Laboratories Inc.® (UL), CE Mark, and RCM compliance
- manufactured under International Standards Organization (ISO) 9001 quality control standards
- bottom-mounted coupler
- 5-year warranty

### M9300 Series Electric Non-Spring Return Actuator without Accessory Switch Kit



### M9300 Series Electric Non-Spring Return Actuator with Accessory Switch Kit



### Repair Information

If the M9300 Series Electric Non-Spring Return Actuator fails to operate within its specifications, replace the unit. For a replacement electric actuator, contact the nearest Johnson Controls® representative.

## M9300 Series Electric Non-Spring Return Actuators Catalog Page (Continued)

### Selection Charts

#### M9300 Series Electric Non-Spring Return Actuators

Code Number	Running Torque	Rotation Time For 90°	Power Supply		Input Signal			Position Feedback				Auxiliary Switches		Electrical Connection		
	lb-in (N·m)	Running (Seconds)	AC/DC 24 V	VA 85 to 264 V	On/Off	Floating	Proportional DC 0 (2) to 10 V (with Adjustable Span and Offset)	DC 0 (2) to 10 V	140 Ω	1 k Ω	2 k Ω	10 k Ω	1 x SPDT, 3 (0.5) A, AC 240 V	2 x SPDT, 3 (0.5) A, AC 240 V	120 in. (3 m) Plenum Cable	48 in. (1 m) Halogen-Free Cable
M9308-AGA-2Z	70 lb-in (8 N·m)	8	X		X	X			X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>2</sup>	X	
M9308-AUA-2Z	70 lb-in (8 N·m)	8		X	X	X			X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>2</sup>		X
M9310-AUA-2	90 lb-in (10 N·m)	90		X	X	X			X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>2</sup>		X
M9310-HGA-2	90 lb-in (10 N·m)	90	X		X	X	X	X <sup>3</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>2</sup>	X	
M9320-AUA-2	180 lb-in (20 N·m)	90		X	X	X			X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>2</sup>		X
M9320-HGA-2	180 lb-in (20 N·m)	90	X		X	X	X	X <sup>3</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>2</sup>		X
M9335-AUA-2	310 lb-in (35 N·m)	150		X	X	X			X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>2</sup>		X
M9335-HGA-2	310 lb-in (35 N·m)	150	X		X	X	X	X <sup>3</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>2</sup>		X

1. With optional external feedback potentiometer kit (M9300-140, M9300-1K, M9300-2K, or M9000-10K).

2. With optional external auxiliary switch kit (M9300-1 or M9300-2).

3. Feedback is available when 0 (2) to 10 V proportional input is used.

## M9300 Series Electric Non-Spring Return Actuators Catalog Page (Continued)

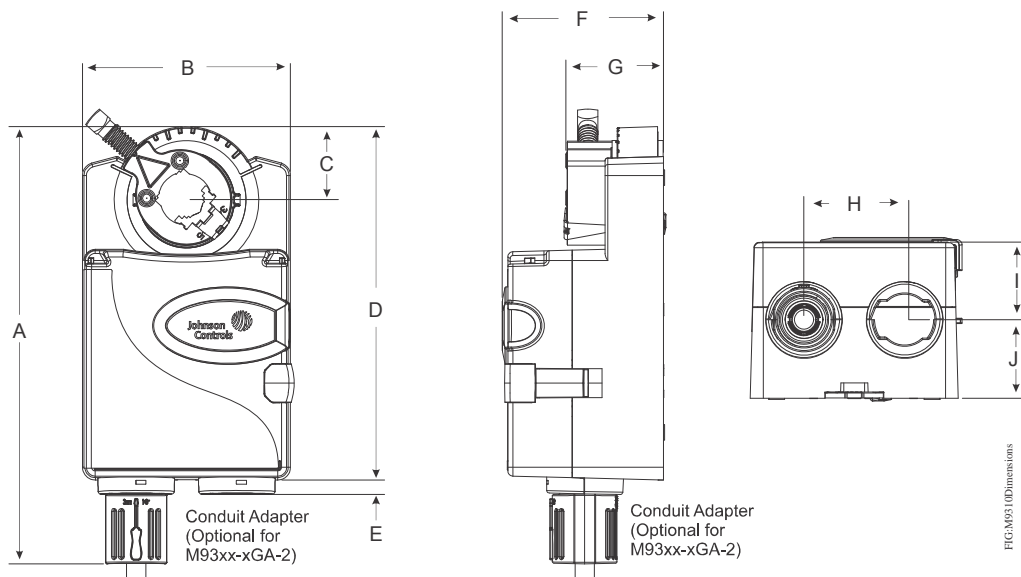
### Accessories (Order Separately)

Code Number	Description
DMPR-KC003 <sup>1</sup>	7 in. (178 mm) blade pin extension without bracket for Johnson Controls® direct-mount damper applications
M9000-158	Tandem mounting bracket for mounting two M9335 Series Electric Actuators in damper applications
M9000-322	NEMA 4X/IP66 weather shield kit for Johnson Controls M9102, M9104, M9203, M9208, M9308, and M9310 Series Electric Damper Actuators
M9000-323	NEMA 4X/IP66 weather shield kit for Johnson Controls M9320 and M9335 Series Electric Damper Actuators
M9000-400	Jackshaft linkage kit
M9000-604	Replacement anti-rotation bracket kit
M9000-606	Position indicator (five per kit)
M9300-1	External auxiliary switch kit; one single-pole, double-throw (SPDT)
M9300-2	External auxiliary switch kit; two SPDT
M9300-100	Threaded conduit adapters for 1/2 in. (13 mm) electrician's fittings (five per kit)
M9300-140	External auxiliary feedback potentiometer, 140 ohm (optional for 140 ohm position feedback)
M9300-1K	External auxiliary feedback potentiometer, 1k ohm (optional for 1k ohm position feedback)
M9300-2K	External auxiliary feedback potentiometer, 2k ohm (optional for 2k ohm position feedback)
M9300-10K	External auxiliary feedback potentiometer, 10k ohm (optional for 10k ohm position feedback)
M9000-151	Remote mounting kit, with crankarm and damper linkage for Johnson Controls M9108, M9116, M9124, and M9300 Series Electric Damper Actuators
M9310-500	Ball valve linkage kit for converting Johnson Controls M9308 and M9310 Series Electric Damper Actuators into VA9308 and VA9310 Series Electric Valve Actuators
M9310-600	Standard coupler kit for Johnson Controls M9308 and M9310 Series Electric Damper Actuators; round 3/8 to 3/4 in. (10 to 19 mm) and square 3/8 to 5/8 in. (10 to 16 mm)

1. Furnished with the damper and may be ordered separately.

### M9300 Dimensions

**M9308 and M9310 Series Electric Damper Actuators, Dimensions (without Switch Kit or Potentiometer Kit)**

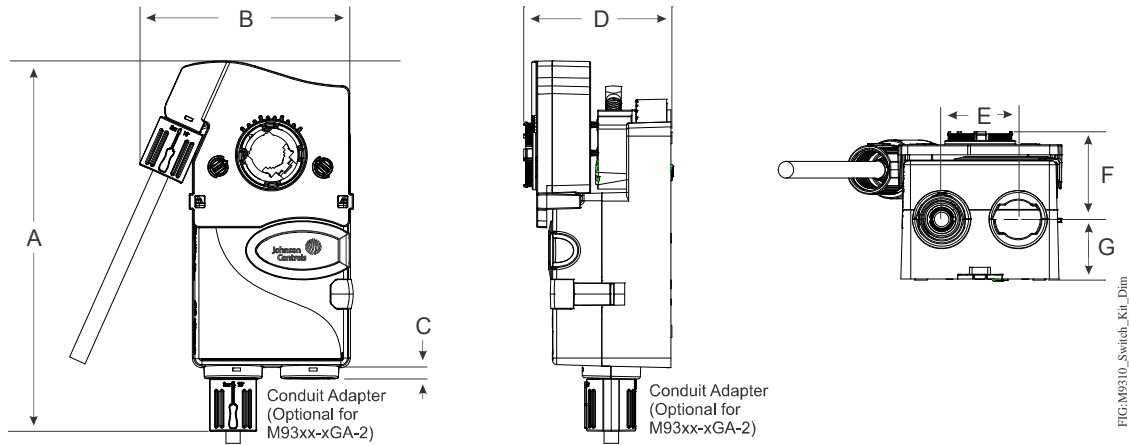


**M9308 and M9310 Series Electric Damper Actuators, Dimensions (without Switch Kit or Potentiometer Kit)**

Dimensions, in. (mm)	A	B	C	D	E	F	G	H	I	J
	6-21/32 (169)	3-3/16 (81)	1-3/32 (28)	5-13/32 (137)	1/4 (6)	2-7/16 (62)	1-1/2 (38)	1-17/32 (39)	1-3/16 (30)	1-7/32 (31)

## M9300 Series Electric Non-Spring Return Actuators Catalog Page (Continued)

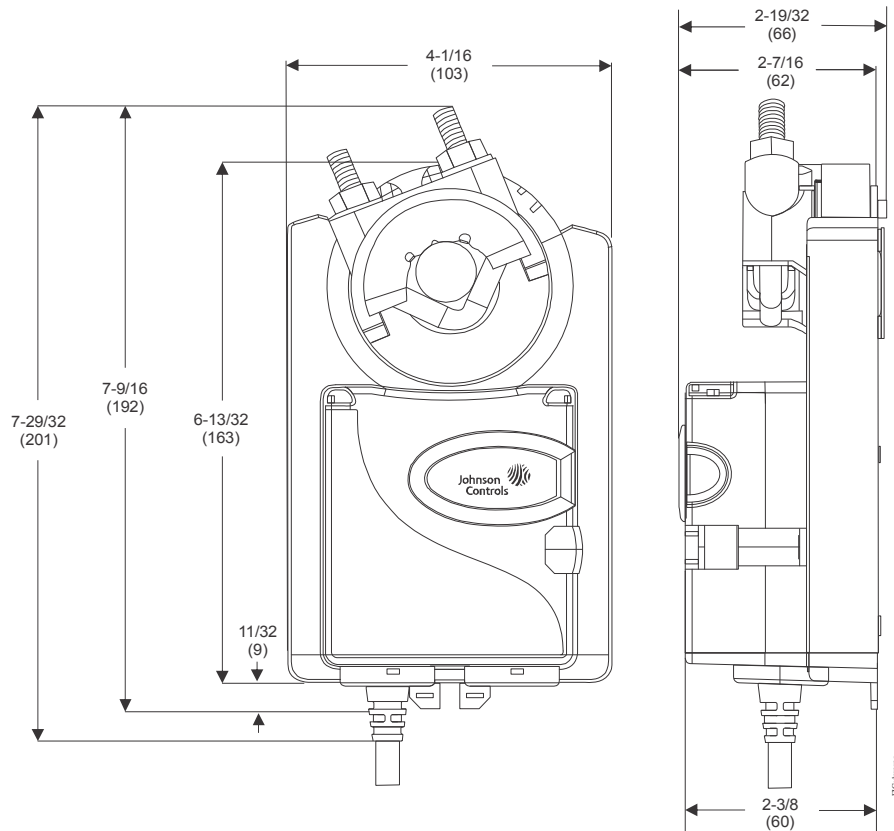
### M9308 and M9310 Series Electric Damper Actuators, Dimensions (with Switch Kit or Potentiometer Kit)



### M9308 and M9310 Series Electric Damper Actuators, Dimensions (with Switch Kit or Potentiometer Kit)

Dimensions, in. (mm)	A	B	C	D	E	F	G
	7-3/16 (183)	4-3/16 (106)	1/4 (6)	2-31/32 (75)	1-17/32 (39)	1-3/4 (45)	1-7/32 (31)

### M9320 and M9335 Series Electric Damper Actuators, Dimensions, in. (mm)



## M9300 Series Electric Non-Spring Return Actuators Catalog Page (Continued)

### Technical Specifications

M9308-AxA-2Z and M9310-AUA-2 Series Electric Non-Spring Return Actuators			
<b>Product Description</b>	<b>M9308-AGA-2Z:</b> Floating and on/off mode	<b>M9308-AUA-2Z:</b> Floating and on/off mode	<b>M9310-AUA-2:</b> Floating and on/off mode
<b>Power Requirements</b>	AC 24 V $\pm$ 20% at 50/60 Hz, Class 2 (North America) or SELV (Europe), 12.7 VA running; DC 24 V $\pm$ 10% Class 2 (North America) or SELV (Europe), 5.7 W running	Nominal AC 120 V at 60 Hz: 0.07 A running	Nominal AC 120 V at 60 Hz: 0.04 A running
<b>Transformer Sizing Requirements</b>	$\geq$ 13 VA	—	—
<b>Input Signal/Adjustments</b>	AC 19.2 to 28.8 V at 50/60 Hz or DC 24 V $\pm$ 10% Class 2 (North America) or SELV (Europe)	AC 100 to 240 V (AC 85 to 264 V) at 50/60 Hz	
<b>Running Torque</b>	70 lb-in (8 N·m)		90 lb-in (10 N·m)
<b>Rotation Range</b>	Mechanically limited 35 to 95° ( $\pm$ 3°) in 5° increments		
<b>Rotation Time for 90° of Travel</b>	8 sec, constant at all operating conditions		90 sec, constant at all operating conditions
<b>Cycles</b>	60,000 full stroke cycles; 1,500,000 repositions		100,000 full stroke cycles; 2,500,000 repositions
<b>Audible Noise</b>	<52 dBA at 0 to 70 lb-in (8 N·m) load, at a distance of 39-13/32 in. (1m)		<35 dBA at 39-13/32 in. (1m)
<b>Electrical Connections</b>	120 in. (3.05 m) UL 444 type CMP plenum rated cable with 19 AWG (0.75 mm <sup>2</sup> ) conductors and 0.25 in. (6 mm) ferrule ends	48 in. (1.2 m) halogen free cable with 18 AWG (0.82 mm <sup>2</sup> ) conductors and 0.25 in. (6mm) ferrule ends	
<b>Conduit Connections</b>	1/2 in. NPSM (13 mm) threaded conduit connectors with M9300-100 Conduit Connector (optional with the M9308-AGA-2Z)		
<b>Ambient Conditions</b>	<b>Operating:</b> -22 to 140°F (-30 to 60°C), 95% RH, noncondensing <b>Storage:</b> -40 to 185°F (-40 to 85°C), 95% RH, noncondensing		
<b>Enclosure</b>	NEMA 5/IP54		
<b>Shipping Weight</b>	2 lb (0.9 kg)		
<b>Compliance</b>	<p><b>United States:</b> UL Listed, CCN XAPX, File E27734; to UL 60730-1: Automatic Electrical Controls for Household and Similar Use, Part 1; and UL 60730-2-14: Part 2, Particular Requirements for Electric Actuators. Plenum Rated (UL 2043). Suitable for use in Other Environmental Air Space (Plenum) in accordance with section 300.22 (c) of the National Electrical Code.</p> <p><b>Canada:</b> UL Listed, CCN XAPX7, File E27734; to CAN/CSA E60730-1:02: Automatic Electrical Controls for Household and Similar Use, Part 1; and CAN/CSA-E60730-2-14, Particular Requirements for Electric Actuators.</p> <p><b>Europe:</b> CE Mark—Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and the Low Voltage Directive.</p> <p><b>Australia and New Zealand:</b> RCM Mark, Australia/NZ Emissions Compliant</p>		

## M9300 Series Electric Non-Spring Return Actuators Catalog Page (Continued)

M9310-HGA-2 Electric Non-Spring Return Actuator		
<b>Product Description</b>	<b>M9310-HGA-2:</b> On/off and floating mode	<b>M9310-HGA-2:</b> Proportional mode
<b>Power Requirements</b>	AC 24 V $\pm$ 20% at 50/60 Hz, Class 2 (North America) or SELV (Europe), 4.7 VA running; DC 24 V $\pm$ 10% Class 2 (North America) or SELV (Europe), 1.3 W running	
<b>Transformer Sizing Requirements</b>	$\geq$ 6 VA	
<b>Input Signal/Adjustments</b>	AC 19.2 to 28.8 V at 50/60 Hz or DC 24 V $\pm$ 10% Class 2 (North America) or SELV (Europe)	DC 0 (2) to 10 V or 0 (4) to 20 mA with field furnished 500 ohm 1/4 W resistor Offset: DC 0 to 10 V SPAN: DC 2 to 10 V
<b>Control Impedance</b>	4.7k ohm	100k ohm
<b>Feedback Signal</b>	—	DC 0 (2) to 10 V
<b>Running Torque</b>	90 lb·in (10 N·m)	
<b>Rotation Range</b>	Mechanically limited 35 to 95° ( $\pm$ 3°) in 5° increments	
<b>Rotation Time for 90° of Travel</b>	90 seconds, constant for all operating conditions	
<b>Rotation Time Auto-calibration</b>	35 seconds	
<b>Cycles</b>	100,000 full stroke cycles; 2,500,000 repositions	
<b>Audible Noise</b>	<35 dBA at 0 to 90 lb·in (10 N·m) load, at a distance of 39-13/32 in. (1 m)	
<b>Electrical Connections</b>	120 in. (3.05 m) UL 444 type CMP plenum rated cable with 19 AWG cable (0.75 mm <sup>2</sup> ) conductors and 0.25 in. (6 mm) ferrule ends	
<b>Conduit Connections</b>	1/2 in. NPSM (13 mm) threaded conduit connectors with M9300-100 Conduit Connector (optional with the M9310-HGA-2)	
<b>Ambient Conditions</b>	<b>Operating:</b> -22 to 140°F (-30 to 60°C), 95% RH, noncondensing <b>Storage:</b> -40 to 185°F (-40 to 85°C), 95% RH, noncondensing	
<b>Enclosure</b>	NEMA 5/IP54	
<b>Shipping Weight</b>	2 lb (0.9 kg)	
<b>Compliance</b>	<p><b>United States:</b> UL Listed, CCN XAPX, File E27734; to UL 60730-1: Automatic Electrical Controls for Household and Similar Use, Part 1; and UL 60730-2-14: Part 2, Particular Requirements for Electric Actuators. Plenum Rated (UL 2043). Suitable for use in Other Environmental Air Space (Plenum) in accordance with section 300.22 (c) of the National Electrical Code.</p> <p><b>Canada:</b> UL Listed, CCN XAPX7, File E27734; to CAN/CSA E60730-1:02: Automatic Electrical Controls for Household and Similar Use, Part 1; and CAN/CSA-E60730-2-14, Particular Requirements for Electric Actuators.</p> <p><b>Europe:</b> CE Mark—Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and the Low Voltage Directive.</p> <p><b>Australia and New Zealand:</b> RCM Mark, Australia/NZ Emissions Compliant</p>	



## M9300 Series Electric Non-Spring Return Actuators Catalog Page (Continued)

M9320 and M9335 Series Electric Non-Spring Return Actuators			
Product Description	M9320-HGA-2 and M9335-HGA-2		M9320-AUA-2 and M9335-AUA-2
	On/off and floating mode	Proportional mode	On/off and floating mode
<b>Power Requirements</b>	AC 24 V (AC 19.2 to 28.8 V) at 50/60 Hz, Class 2 (North America) or SELV (Europe) <b>M9320-HGA-2:</b> 5.7 VA running <b>M9335-HGA-2:</b> 6.1 VA running DC 24 V (DC 21.6 to 26.4 V) Class 2 (North America) or SELV (Europe) <b>M9320-HGA-2:</b> 2.1 W running <b>M9335-HGA-2:</b> 2.1 W running		Nominal AC 120 V at 60 Hz <b>M9320-AUA-2:</b> 0.05 A running <b>M9335-AUA-2:</b> 0.05 A running
<b>Transformer Sizing Requirements</b>	≥7 VA		—
<b>Input Signal/Adjustments</b>	AC 19.2 to 28.8 V at 50/60 Hz or DC 24 V ±10% Class 2 (North America) or SELV (Europe)	DC 0 (2) to 10 V or 0 (4) to 20 mA with field furnished 500 ohm 1/4 W resistor Offset: DC 0 to 10 V Span: DC 2 to 10 V	AC 100 to 240 V (AC 85 to 264 V) at 50/60 Hz
<b>Control Impedance</b>	4.7k ohm	100k ohm	—
<b>Feedback Signal</b>	—	DC 0 (2) to 10 V	—
<b>Running Torque</b>	<b>M9320-HGA-2 and M9320-AUA-2:</b> 180 lb·in (20 N·m) <b>M9335-HGA-2 and M9335-AUA-2:</b> 310 lb·in (35 N·m)		
<b>Rotation Range</b>	Mechanically limited 35 to 95° (±3°) in 5° increments		
<b>Rotation Time for 90° of Travel</b>	<b>M9320-HGA-2 and M9320-AUA-2:</b> 90 seconds; constant for all operating conditions <b>M9335-HGA-2 and M9335-AUA-2:</b> 150 seconds; constant for all operating conditions		
<b>Rotation Time Auto-Calibration</b>	<b>M9320-HGA-2 and M9320-AUA-2:</b> 35 seconds <b>M9335-HGA-2 and M9335-AUA-2:</b> 75 seconds		
<b>Cycles</b>	<b>M9320-HGA-2 and M9320-AUA-2:</b> 100,000 full stroke cycles; 2,500,000 repositions <b>M9335-HGA-2 and M9335-AUA-2:</b> 30,000 full stroke cycles; 750,000 repositions		
<b>Audible Noise</b>	<45 dBA at maximum load, at a distance of 39-13/32 in. (1 m)		
<b>Electrical Connections</b>	48 in. (1.2 m) halogen-free cable with 18 AWG (0.82 mm <sup>2</sup> ) conductors and 1/4 in. (6 mm) ferrule ends		
<b>Conduit Connections</b>	Optional 1/2 in. NPSM (13 mm) threaded conduit connectors with M9300-100 Conduit Connector		1/2 in. NPSM (13 mm) threaded conduit connectors with M9300-100 Conduit Connector
<b>Mechanical Connections</b>	<b>Round:</b> 3/4 to 1-1/16 in. (19 to 27 mm) <b>Square:</b> 5/8 to 3/4 in. (16 to 19 mm)		
<b>Ambient Conditions</b>	<b>Operating:</b> -22 to 140°F (-30 to 60°C), 95% RH, noncondensing <b>Storage:</b> -40 to 185°F (-40 to 85°C), 95% RH, noncondensing		
<b>Enclosure</b>	NEMA 5/IP54		
<b>Compliance</b>	<p><b>United States:</b> UL Listed, CCN XAPX, File E27734; to UL 60730-1: Automatic Electrical Controls for Household and Similar Use, Part 1; and UL 60730-2-14: Part 2, Particular Requirements for Electric Actuators.</p> <p><b>Canada:</b> UL Listed, CCN XAPX7, File E27734; to CAN/CSA E60730-1:02: Automatic Electrical Controls for Household and Similar Use, Part 1; and CAN/CSA-E60730-2-14, Particular Requirements for Electric Actuators.</p> <p><b>Europe:</b> CE Mark—Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and the Low Voltage Directive. IEC 60730-1: Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements and IEC 60730-2-14, Automatic Electrical Controls for Household and Similar Use; Part 2—Particular Requirements for Electric Actuators</p> <p><b>Australia and New Zealand:</b> RCM Mark, Australia/NZ Emissions Compliant</p>		
<b>Shipping Weight</b>	3 lb (1.36 kg)		