

Schneider Electric

EcoBuilding Division | North America | 2019

SmartX Damper Actuators Selection Guide



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Schneider Electric is the global specialist in energy management and automation. With revenues of ~€27 billion in FY2015, our 160,000+ employees serve customers in over 100 countries, helping them to manage their energy and process in ways that are safe, reliable, efficient and sustainable.

From the simplest of switches to complex operational systems, our technology, software and services improve the way our customers manage and automate their operations. Our connected technologies reshape industries, transform cities and enrich lives.

At Schneider Electric, we call this Life Is On.

Contents

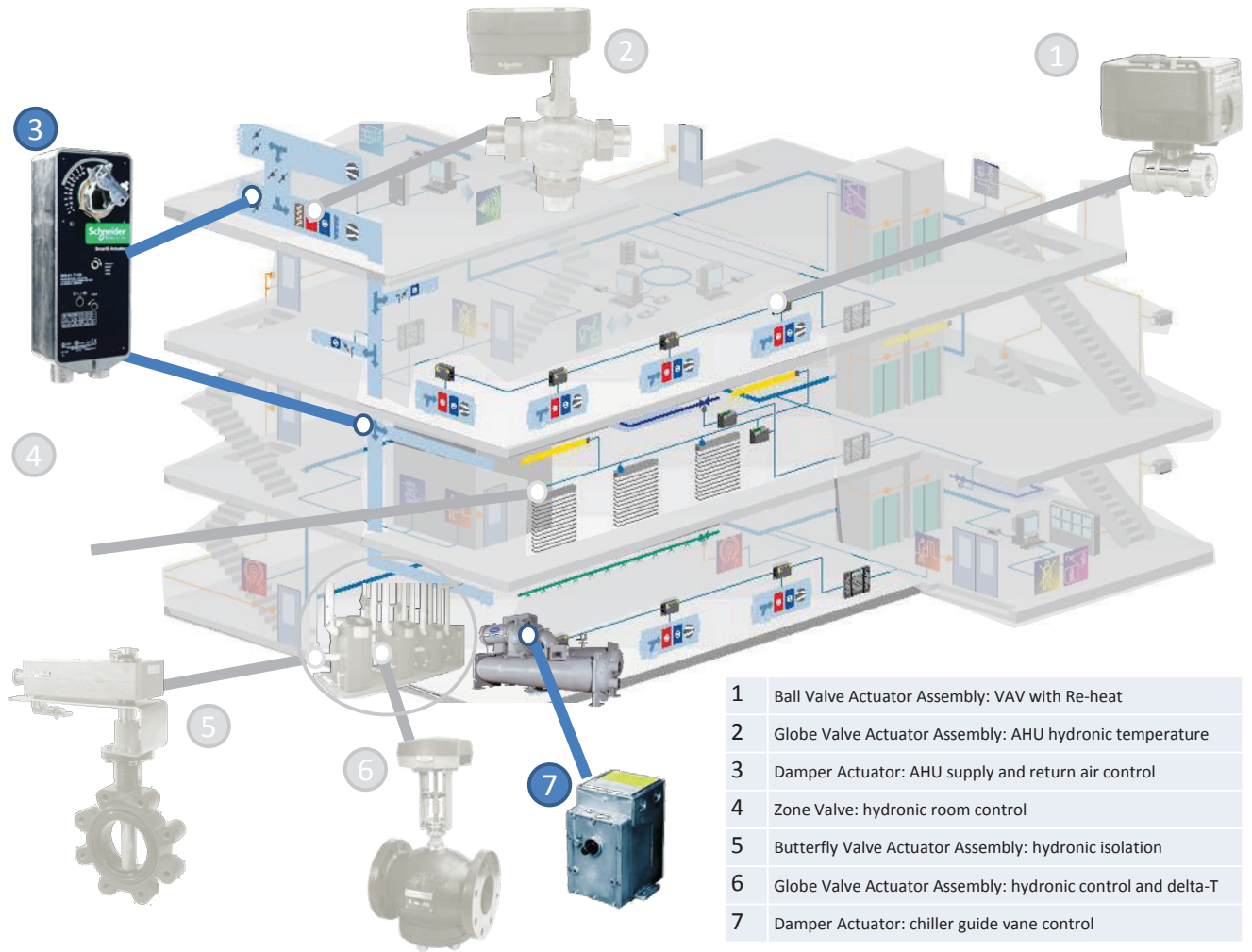
- 4 SmartX Spring-Return Direct Coupled Actuators
- 12 SmartX Non-Spring Return Direct Coupled Actuators
- 18 Damper Accessories

About Specifications

All performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult Schneider Electric. Schneider Electric shall not be liable for damages resulting from product misapplication or misuse.

iPortal

Related documents are important for understanding full capabilities of each product. iPortal enables users to see the latest product associated documents for part numbers and product specifications online. Non-registered users may use a guest login as shown on the website. Registered users may view additional information including pricing structures. Contents in this document are subject to change without notice.



SmartX Spring-Return Direct Coupled Actuators

Schneider Electric offers a complete line of Direct Coupled actuators for all your spring return actuator needs. Direct Coupled easy to install, Spring Return SmartX Actuators are available with torques that range from 30...150 lb-in for two position, floating or proportional control.

Value-Driven General Purpose Applications



Mx4D-703x and Mx4D-803x Series

- Two position models controlled by SPST controller
- Floating models controlled by SPDT floating controllers
- Jumper selectable control function direct/reverse action

Damp and Harsh Environment Applications



Mx40-717x Series

- Direct mount to round or square damper shaft
- 150 lb-in (17 N-m) torque rating, overload protection throughout rotation
- Oil immersed gear train provides continuous lubrication
- Automatic current sensing motor control provides extended reliability and repeatable timing
- Provides true mechanical clockwise or counterclockwise spring return operation for reliable positive close-off in airtight applications
- 5-year warranty, NEMA 4 housing (IEC IP56)
- Can be double mounted (gang mounting) to accommodate high torque application requirements (2 to 4 actuators)
- MS40-717x models provide position feedback signal

High Performance HVAC Applications



Mx40-704x Series

- Direct mount to round or square damper shaft
- 35 lb-in (4 N-m) torque rating
- Overload protection throughout rotation
- Optional built-in auxiliary switches
- True mechanical clockwise or counterclockwise spring return operation for reliable, positive close-off in airtight applications
- Visual position indicator
- Direct acting or reverse acting control mode available on proportional models
- Rotation limiting available
- Rugged die-cast housing for NEMA 2/IP54 rating



Mx41-7xxx Series

- Direct mount to round or square damper shaft
- 60 lb-in (7 N-m) torque rating
- 133 lb-in (15 N-m) torque rating
- Overload protection throughout rotation
- Optional built-in auxiliary switches
- Provides true mechanical clockwise or counterclockwise spring return operation for reliable positive close-off in airtight applications
- Direct acting or reverse acting control mode available on proportional models
- Rotation limiting available
- Rugged die-cast housing for NEMA 2/IP54 rating
- Manual override

High Torque HVAC Applications



Mx41-730x Series

- 270 lb-in (30 N-m) of torque with mechanical spring return, manual override, and Brushless DC Motor.
- Stall protected throughout rotation and reversible mounting.
- Models for Two Position 24 Vac/Vdc, and Two Position 100...230 Vac applications.
- Models for 2...10 Vdc input signal applications (field configurable for other input signals) with a position feedback signal and direct/reverse acting control mode selection switch on both sides.
- Models for auxiliary switch applications.

- Models for NEMA 4 / IP66 outdoor applications.
- 95° of rotation, adjustable with mechanical end stops and graduated position indicator showing 0°...95°.
- Can be double-mounted (gang mounting) to accommodate high torque application requirements.

Spring Return Electronic Damper Actuators

	Torque lb-in minimum	Control Type					2...10 VDC ^a Feedback	0...10 VDC Feedback	Power				Power Input			Running Time (sec)		Auxiliary Switch	Spring Return Position
		Two-Position	Floating	Proportional					24 VAC, 24 VDC	230, 240 VAC	120 VAC	100...240 VAC 100...125 VDC	VA @60 Hz	Watts @ 60 Hz		Powered	Spring Return		
				0...10 VDC	2...10 VDC	4...20 mA								Running	Holding				
MA4D-7030-000	30											7.8	5.0	2.5	<56	<23		CCW	
MA4D-7033-100												5.1							
MA4D-8030-000												7.8	5.0	2.5				CW	
MA4D-8033-100												5.1							
MF4D-7033-100												6.8	4.2	1.9				CCW	
MF4D-8033-100																		CW	
MS4D-7033-100																			
MS4D-7033-150																		CCW	
MS4D-7033-160																			
MS4D-8033-100												6.1	3.4	1.4					
MS4D-8033-150																	CW		
MS4D-8033-160																			
MA40-7040	35											4.3	3.4	1.2	<80	<40	1	CW/ CCW	
MA40-7040-501																			
MA40-7041												4.6	3.9	1.2	<50	<28	1		
MA40-7041-501																			
MA40-7043												4.4	2.9	0.8			1		
MA40-7043-501																			
MF40-7043												5.9	4.4	2.9	<130	<25	1		
MF40-7043-501																			
MS40-7043											5.6	4.2	2.4			1			
MS40-7043-501																			
MA41-7070	60											5.6	3.6	1.2	<80	<40	2	CW/ CCW	
MA41-7070-502																			
MA41-7071												8.0	4.0	1.4	<80	<40	2		
MA41-7071-502																			
MA41-7073												4.8	3.2	0.8			2		
MA41-7073-502																			
MF41-7073												6.2	4.8	2.8	<195		2		
MF41-7073-502																			
MS41-7073											5.8	4.6	2.3			2			
MS41-7073-502																			
MA41-7150	133											10.0	8.4	3.3	<190	<30	2	CW/ CCW	
MA41-7150-502																			
MA41-7151												10.6	8.5	5.0			2		
MA41-7151-502																			
MA41-7153													7.5	2.8	<190		2		
MA41-7153-502																			
MF41-7153												9.7	7.7	3.2			2		
MF41-7153-502																			
MS41-7153												7.4	2.9			2			
MS41-7153-502																			
MA40-7170	150											8.4			<162	<82		CW/ CCW	
MS40-7170												8.5			<147	<65			
MS40-7171												10.8							
MA40-7173												7.4			<162	<82			
MF40-7173												8.1			<162				
MS40-7173											7.8			<147	<65				
MA41-7303	270											16 ¹			75		2	CW/ CCW	
MA41-7303-502																			
MA41-7300												21	9.5		4.5	<20	2		
MA41-7300-502																			
MS41-7303 ³												16 ¹			150 ⁴		2		
MS41-7303-502 ³																			
MS41-7303-W02 ³																			
MS41-7303-WH2 ³											16 21 w/ heater ¹	9.5 21 w/ heater				2			

a - Proportional models with a 2...10 VDC control signal accept a 4...20 mA signal with the use of a 500 ohm resistor.
 1 - Class 2 power source.
 3 - Also compatible with floating, pulse width modulating (PWM), and other DC signal inputs with use of the BEL-ZTH US Handheld Interface Module for Field Programming.
 4 - Timing field adjustable from 60...150 seconds with use of the BEL-ZTH US Handheld Interface Module for Field Programming.

Mx4D-703x and Mx4D-803x Series

30 lb-in Direct Coupled Damper Actuators

Features

- Two position models controlled by SPST controller
- Floating models controlled by SPDT floating controllers
- Jumper selectable control function direct/reverse action
- Spring return models provide 30 in-lb (3.4 N-m) of torque
- Polymer housing rated for NEMA 2/IP54
- Overload protection throughout stroke
- Floating and proportional models automatically adjust input span to match the damper/valve travel
- Compact size allows installation in limited space
- Manual override allows positioning of dampers and valves
- Directly mounts to 1/2...3" Schneider Electric ball valves
- Polymer housing rated for plenum use



Product Description

Designed for controlling air dampers in building systems that require fail safe return, with two position, floating or proportional control.

Specifications	
Control Signal	Refer to the tables for actuator models and control types.
Power Inputs	See table.
Connections	3 ft (91 cm) appliance (see * in table below) or 10 ft. (3 m) plenum cables, enclosure accepts 1/2" (13 mm) conduit connector.
Electrical Outputs	Position Feedback Voltage (proportional or floating only): For voltage ranges, the feedback signal is the same range as the input signal. The 4...20 mA current range and floating actuators have a 2...10 Vdc feedback signal. The feedback signal can supply up to 0.5 mA to operate up to four additional slave actuators.
Mechanical Outputs	Travel: 93° nominal. Manual Override: Allows positioning of damper or valve using manual crank. RA/DA Jumper: Permits reverse acting/direct acting control (MS4D models only).

Ambient Temperature Limits	Shipping & Storage: -40...160°F (-40...71°C). Operating: -22...140°F (-30...60°C). Humidity: 15...95% RH, non-condensing.
Location	NEMA 1, NEMA 2, UL Type 2 (IEC IP54) with customer supplied water tight conduit connectors. Enclosure is air plenum rated.
Agency Listings	UL 873: Underwriters Laboratories (File #E9429 Category Temperature-Indicating and Regulating Equipment). CUL: UL LISTED for use in Canada by Underwriters Laboratories. Canadian Standards C22.2 No. 24-93. This product fits in Installation Category (Overvoltage Category) II per EN 61010-1.
Applicable Literature	F-27170 Installation Instructions

Part Number	Torque lb-in (N-m)	Spring Return	Actuator Inputs			Outputs		Approximate Timing in seconds @ 70°F						
			Control	Voltage	VA @ 60Hz	Feedback	Auxiliary Switch	Powered	Spring Return					
MA4D-7033-100	30 (3.4)	CCW	2 Position	24 Vac/dc	5.1	—	No	56	23					
MA4D-7030-000*				120 Vac	7.8									
MA4D-8033-100				24 Vac/dc	5.1									
MA4D-8030-000*				120 Vac	7.8									
MF4D-7033-100		CCW	Floating	24 Vac/dc	6.8	2...10 vdc	No	85	21					
MF4D-8033-100										0...10 vdc				
MS4D-7033-100		CCW	2...10 vdc			6.1				0...10 vdc				
MS4D-7033-150			0...10 vdc							2...10 vdc				
MS4D-7033-160			4...20 ma							0...10 vdc				
MS4D-8033-100		CW	Floating			24 Vac/dc				6.1	2...10 vdc	No	85	21
MS4D-8033-150											0...10 vdc			
MS4D-8033-160											2...10 vdc			
MS4D-8033-160											4...20 ma			

Mx40-704x Series 35 lb-in Direct Coupled Actuators

Features

- Direct mount to round or square damper shaft
- 35 lb-in (4 N-m) torque rating
- Overload protection throughout rotation
- Optional built-in auxiliary switches
- True mechanical clockwise or counterclockwise spring return operation for reliable, positive close-off in airtight applications
- Visual position indicator
- Direct acting or reverse acting control mode available on proportional models
- Rotation limiting available
- Rugged die-cast housing for NEMA 2/IP54 rating



Product Description

For spring return applications requiring floating, two-position, or proportional modulation control of dampers and valves in HVAC systems. Directly mounts to 1/2"…3" Schneider Electric ball valves.

Specifications	
Control Signal	On-off, SPST control contacts or Triacs (500 mA rated). Floating point control, 24 Vac. Proportional, 2...10 Vdc or 4 to 20 mA dc with a 500 W resistor.
Power Inputs	See table.
Connections	MA40-704x and MA40-704x-501 — 3 ft. (91 cm) long, appliance cables, 1/2 in. conduit connector. For M20 Metric conduit, use AM-756 adaptor. MF40-7043 and MF40-7043-501, MS40-7043 and MS40-7043-501 — 3 ft. (91 cm) long, plenum-rated cables, 1/2 in. conduit connector. For M20 Metric conduit, use AM-756 adaptor.
Electrical Outputs	Position Feedback Voltage "AO": 2...10 Vdc (maximum 0.5 mA) output signal for position feedback or operation of up to four slave actuators. One auxiliary switch available (select models). SPDT 6a resistive @24 Vac or 250 Vac.

Mechanical Outputs	Travel Rotation is limited to 95° ± 5° maximum, adjustable from 40...95 ° with a mechanical stop. RA/DA Switch: selects direct acting or reverse acting for proportional models. Position Indicator: Visual indicator, 0...1 (0 is the spring-return position).
Ambient Temperature Limits	Shipping & Storage: -40 F...160°F (-40...71°C). Operating: -22...140°F (-30...60°C). Humidity: 5...95% RH, non-condensing.
Location	NEMA 2 (IEC IP54)
Agency Listings	UL 873: Underwriters Laboratories (File # E9429 Category Temperature-Indicating and Regulating Equipment). CUL: UL LISTED for use in Canada by Underwriters Laboratories. Canadian Standards C22.2 No. 24.

Part Number	Torque lb-in (N-m)	Spring Return	Actuator Inputs			Outputs		Approximate Timing in seconds @ 70°F		
			Control	Voltage	VA @ 60Hz	Feedback	Auxiliary Switch	Powered	Spring Return	
MA40-7040	35 (4)	CW/CCW	2 Position	120 Vac	4.3	—	—	<50	<28	
MA40-7040-501							1-SPDT (250 Vac)			
MA40-7041							—			
MA40-7041-501							1-SPDT (250 Vac)			
MA40-7043							—			
MA40-7043-501							1-SPDT (24 Vac)			
MF40-7043			Floating	24 Vac/dc	5.9	—	—	1-SPDT (24 Vac)	<130	<25
MF40-7043-501										
MS40-7043										
MS40-7043-501										
			2...10 vdc			2...10 vdc				
							1-SPDT (24 Vac)			

Mx41-7xxx Series

60 lb-in and 133 lb-in Direct Coupled Damper Actuators

Features

- Direct mount to round or square damper shaft
- 60 lb-in (7 N-m) and 133 lb-in (15 N-m) torque rating
- Overload protection throughout rotation
- Optional built-in auxiliary switches
- Provides true mechanical clockwise or counterclockwise spring return operation for reliable positive close-off in airtight applications
- Direct acting or reverse acting control mode available on proportional models
- Rotation limiting available
- Rugged die-cast housing for NEMA 2/IP54 rating
- Manual override
- 5-year warranty



Product Description

Designed for controlling air dampers in building systems that require fail safe return, with two position, floating or proportional control.

Specifications	
Control Signal	On-off, SPST control contacts or Triacs (500 mA rated). Floating point control, 24 Vac. Proportional, 2...10 Vdc or 4 to 20 mA dc with a 500 W resistor.
Power Inputs	See table.
Connections	3 ft. appliance cables, 1/2 in. conduit connector.
Electrical Outputs	Position Feedback Voltage "AO": 2...10 Vdc (maximum 0.5 mA) output signal for position feedback or operation of up to four slave actuators. Two auxiliary switches available (select models). SPDT 7a resistive @24 Vac or 250 Vac.
Mechanical Outputs	Travel Rotation is limited to 95° ± 5° maximum, adjustable from 30...95° with a mechanical stop. Position Indicator: Pointer and scale are provided. Manual Override: manual adjustable rotation -5°...85°.

Ambient Temperature Limits	Shipping & Storage: -40 F...160°F (-40...71°C). Operating: -22...140°F (-30...60°C). Humidity: 5...95% RH, non-condensing.
Location	NEMA 1, NEMA 2 (IEC IP54) with conduit connector in down position.
Agency Listings	UL 873: Underwriters Laboratories (File # E9429 Category Temperature-Indicating and Regulating Equipment). CUL: UL LISTED for use in Canada by Underwriters Laboratories. Canadian Standards C22.2 No. 24.

Part Number	Torque lb-in (N-m)	Spring Return	Actuator Inputs			Outputs		Approximate Timing in seconds @ 70°F				
			Control	Voltage	VA @ 60Hz	Feedback	Auxiliary Switch	Powered	Spring Return			
MA41-7070	60 (7)	CW/CCW	2 Position	120 Vac	5.6	—	—	<80	<40			
MA41-7070-502					8.0		2-SPDT (250 Vac)					
MA41-7071					4.8		—					
MA41-7071-502					10.0		2-SPDT (250 Vac)					
MA41-7073					10.6		—					
MA41-7073-502	9.7			2-SPDT (24 Vac)								
MA41-7150	133 (15)			CW/CCW	2 Position		120 Vac	10.0	—	—	<190	<30
MA41-7150-502								10.6		2-SPDT (250 Vac)		
MA41-7151								9.7		—		
MA41-7151-502								6.2		2-SPDT (250 Vac)		
MA41-7153		9.7	—									
MA41-7153-502	9.7	2-SPDT (24 Vac)										
MF41-7073	60 (7)	CW/CCW	Floating			24 Vac/dc	6.2	—		—	<195	<30
MF41-7073-502							9.7			2-SPDT (24 Vac)		
MF41-7153							9.7			—		
MF41-7153-502	9.7					2-SPDT (24 Vac)						
MS41-7073	60 (7)			CW/CCW	2...10vdc	5.8	2...10 vdc		—	<195	<190	
MS41-7073-502									9.7			
MS41-7153			9.7						—			
MS41-7153-502	9.7		2-SPDT (24 Vac)									

Mx40-717x Series 150 lb-in Direct Coupled Actuators

Features

- Direct mount to round or square damper shaft
- 150 lb-in (17 N-m) torque rating, overload protection throughout rotation
- Oil immersed gear train provides continuous lubrication
- Automatic current sensing motor control provides extended reliability and repeatable timing
- Provides true mechanical clockwise or counterclockwise spring return operation for reliable positive close-off in airtight applications
- NEMA 4 housing (IEC IP56)
- Can be double mounted (gang mounting) to accommodate high torque application requirements (2 to 4 actuators)
- MS40-717x models provide position feedback signal
- Linkage required for Globe Valve Assembly.



Product Description

Designed for controlling air dampers in building systems that require fail safe return, with two position, floating or proportional control.

Specifications	
Control Signal	Two wire, SPST or Triacs. SPDT floating control output, Triacs (500 mA rated), or 2 SPST contacts. Proportional, 2...10 Vdc or 4...20 mA dc with the addition of a 500 ohm resistor (not included).
Power Inputs	See table.
Connections	Class 1: 24 inch (61 cm) long appliance cables, 18 AWG color coded leads. 1/2 in. conduit connector. Class 2 Power and Control: 36 inch (91 cm) Long, 22 AWG color coded appliance cable pigtail leads. 1/2 in. conduit connector.
Electrical Outputs	Travel: Electronically limited to 92° ±1° (MS). MF-MA Mechanically limited To 101° ±1°.

Mechanical Outputs	Position Indicator: Pointer and scale are provided.
Ambient Temperature Limits	Shipping & Storage: -40 F...160°F (-40...71°C). Operating: -25...140 °F (-32...60 °C). Humidity: 5...95% RH, non-condensing.
Location	NEMA 1 (IEC IP10), NEMA 4 (IEC IP 56) with customer supplied water tight conduit connectors.
Agency Listings	UL 873, Underwriters Laboratories (File #9429 Category Temperature-Indicating and Regulating Equipment). Canadian Standards C22.2 No. 24-93.
Applicable Literature	

Part Number	Torque lb-in (N-m)	Spring Return	Actuator Inputs			Outputs		Approximate Timing in seconds @ 70°F	
			Control	Voltage	VA @ 60Hz	Feedback	Auxiliary Switch	Powered	Spring Return
MA40-7170	150 (17)	CW/CCW	2-Position	120 Vac	8.4	—	No	162	82
MA40-7173				24 Vac/dc	7.4				
MF40-7173				Floating	8.1				
MS40-7170			2...10 vdc	120 Vac	8.5	2...10 vdc	147	65	
MS40-7171				240 Vac	10.8				
MS40-7173				24 Vac/dc	7.8				

Mx41-730x Series 270 lb-in Spring Return SmartX Damper Actuators

Features

- 270 lb-in (30 N-m) of torque with mechanical spring return, manual override, and Brushless DC Motor.
- Stall protected throughout rotation and reversible mounting.
- Models for Two Position 24 Vac/Vdc, and Two Position 100...230 Vac applications.
- Models for 2...10 Vdc input signal applications (field configurable for other input signals) with a position feedback signal and direct/reverse acting control mode selection switch on both sides.
- Models for auxiliary switch applications.
- Models for NEMA 4 / IP66 outdoor applications.
- Direct mount to 1/2"...3/4" round or 1/2"...11/16" square damper shafts or to 3/4"...1.05" round with the field removal of a clamp insert.
- 95° of rotation, adjustable with mechanical end stops and graduated position indicator showing 0°...95°.
- Can be double-mounted (gang mounting) to accommodate high torque application requirements.
- 5 Year warranty.



Product Description

Mx41-730x Series Spring Return SmartX Actuators are available with Two Position 24 Vac/Vdc, Two Position 100...230 Vac, and 2...10 Vdc input signal applications. It is possible to field configure the 2...10 Vdc input signal models for other input signals such as floating and pulse width modulating (PWM).

Specifications	
Control Signal	Two Position, 2-10 Vdc ¹
Optional Control Signal (MS41 models only)	Floating, Pulse width modulating (PWM), Adjustable start point, and Span DC signal inputs with use of the BEL-ZTH US handheld interface module for field programming
Power Inputs	See table.
Connections	3' appliance cable with 18 Ga. (0.9 mm) conductors and one 1/2" conduit connector -W02/-WH2 models: Removable terminal blocks
Electrical Outputs	Position Feedback: 2...10 Vdc, 0.5 mA max, adjustable with optional BEL-ZTH US Handheld Interface Module for Field Programming Auxiliary Switch: 2 SPDT 3 A (0.5 A) @ 250 Vac (select models; see table)

Mechanical Outputs	Travel: Angle of rotation 95° max. Position Indicator: Graduated position indicator showing 0° ... 95° Manual Override: Actuators provided with 5 mm hex crank
Ambient Temperature Limits	Shipping & Storage: -40 ... 176 °F (-40...80 °C) Operating: -22 ... 122 °F (-30...50 °C) Operating Humidity: 0 ... 95% non-condensing
Location	NEMA 2 and NEMA 4 (select models; see table)
Agency Listings	c-UL-us LISTED per UL 60730-1A & -2-14, and CAN/CSA E60730-1:02, CE compliant to directives 2014/35/EU [LVD], 2014/30/EU [EMC], and 2011/65/EU [RoHS2].
Applicable Literature	F-27870 Installation Instructions

¹ Also compatible with other two position, floating, PWM, and proportional input signals, refer to the SmartX Actuators Spring Return Damper Mx-730x Series Installation Instructions, F-27870.

Part Number	Torque lb-in (N-m)	Spring Return	Actuator Inputs			Outputs		Approximate Timing in seconds @ 70°F			
			Control	Voltage	VA @ 60Hz	Feedback	Aux. Switch	Powered	Spring Return	NEMA 4	Heater
MA41-7303	270 (30)	CW/ CCW	Two Position	24 Vac	16 VA	—	—	75	<20	—	—
MA41-7303-502							2				
MA41-7300				—							
MA41-7300-502				2							
MS41-7303			2...10 Vdc	24 Vac	16 VA	2...10 Vdc	—	2	150	Yes	Yes
MS41-7303-502							16 VA and 21 W heater				
MS41-7303-W02					—						
MS41-7303-WH2	—										

MyExchange Sales Mobile App

Bring more “wow” to your customer meetings! MyExchange mobile app enables sales teams to share the latest marketing and sales content via their iOS or Android tablet or mobile phone – on or off-line – to make meetings and follow up more productive.

With the MyExchange app you can:

- Easily access and view the latest assets (e.g. videos, presentations, specification sheets) while online
- Download assets for availability while offline
- Electronically mark up assets (highlight, pen) and save changes
- Manage a personal “channel” with your own presentation content
- Email assets to others (customers, consultants) and manage sharing activities/history
- Receive news and notifications on updates directly on your device
- To download MyExchange for iOS devices, visit the iTunes® App Store (search for “myexchange Schneider Electric”) or link to (in the U.S.):
 - MyExchange Schneider Electric on the App Store on iTunes.
 - For Android devices, access the app in the Google Play store by searching for ‘myexchange Schneider Electric’. See the Play Store for Android system requirements.

You must self-register on The Exchange before using MyExchange. Register at: <https://ecobuilding.schneider-electric.com/login-register>



SmartX Non-Spring Return Direct Coupled Actuators

Direct coupled easy to install, and available with torque ranges from 44 to 300 lb-in for floating or proportional control.



High Performance HVAC Applications

Mx41-60xx series

- 44 lb-in (5 N-m) and 88 lb-in (10 N-m) torque.
- Compact, lightweight design.
- Easy-to-see position indicator.
- Self-adapting capability for maximum flexibility in damper positioning.
- Quiet, low-power operation.
- Manual Override.
- Plenum cable standard.
- Independently adjustable dual auxiliary switches option available (Mx41-6083-502).
- Feedback position output signal available (MS41-6043/6083 series).
- c-UL-us LISTED and CE marked.



Mx41-6153 series

- Synchronous motor technology with stall protection.
- Unique self-centering shaft coupling.
- Manual override.
- 133 lb-in (15 N-m) torque.
- 5° preload as shipped from factory.
- Mechanical range adjustment capabilities.
- Independently adjustable dual auxiliary switches option available (MS41-6153-502).
- Built-in 1/2" conduit connection.
- c-UL-us LISTED and CE marked.



Damp and Harsh Environment Applications

Mx41-63xx series

- 300 lb-in (34 N-m) torque.
- NEMA Type 4 housing (IEC IP56).
- Custom automatic current sensing motor control provides extended reliability and repeatable timing.
- Direct coupled to the damper shaft with dual industrial hardened universal mounting clamps.
- Integral wiring for proportional control by 2...10 Vdc or 4...20 mA dc.
- Clockwise or counterclockwise rotation is determined by actuator mounting position.
- Manual override for ease of installation and manual operation of damper.
- Accurate 92° travel digitally controlled.
- Integral position indication scale.
- Rugged die-cast housing.
- Oil immersed gear train provides continuous lubrication.
- Rated for operating temperatures up to 140 °F (60 °C).
- Five year warranty.
- MS41-634x SmartX Actuators can be double mounted (gang mounting) to accommodate high torque application requirements (2 to 4 actuators).
- Position feedback signal.
- c-UL-us LISTED and CE marked.

Non-Spring Return Electronic Damper Actuators

	Output Torque lb-in		Type of Control			Feed-back		Power			Power Input (@60Hz)			Running Time (sec)	Auxiliary Switch	
	Min	Max Stall	Floating	Proportional		2...10 VDC	0...10 VDC	24 VAC, 24 VDC	24 VAC	120 VAC	VA @60Hz	Watts @60Hz Running	Watts @60Hz Holding	Powered	SPDT, 6A, Resistive, 24 VAC	SPDT, 4A Resistive, 24 VAC
MF41-6043	44									2.3			90			
MS41-6043										3.3				90		
MF41-6083	88									2.3			125		2	
MF41-6083-502																
MS41-6083											3.3					2
MS41-6083-502																
MF41-6153	133									3			1			
MS41-6153										5	4	4				
MS41-6153-502												1			2	
MF41-6343	300	650								5.7	3.9	2.8	<162			
MS41-6343										5.6	3.6	2.4	<145			
MS41-6340											7.5	4.7	3.0			

a - Proportional models with a 2...10 VDC control signal accept a 4...20 mA signal with the use of a 500 ohm resistor.-

Mx41-60x3 Series

44 lb-in and 88 lb-in Direct Coupled Damper Actuators

Features

- Compact, lightweight design.
- Easy-to-see position indicator.
- Self-adapting capability for maximum flexibility in damper positioning.
- Quiet, low-power operation.
- Manual Override.
- Plenum cable standard.
- Independently adjustable dual auxiliary switches option available (Mx41-6083-502).
- Feedback position output signal available (MS41-6043/6083 series).



Specifications	
Control Signal	MF41-60x3 — Floating three-position control, 24 Vac. MS41-60x3 — Proportional, 0 to 10 Vdc; input resistance 100 kW.
Power Inputs	See Table.
Connections	3 ft. (0.9 m) appliance cable, 18 AWG plenum-rated leads
Electrical Outputs	Position feedback voltage for MS41-6043/6083: 0...10 Vdc, 1 mA. Auxiliary Switches: Dual auxiliary switches available with MF41-6083-502, MS41-6083-502 when these actuators are ordered as separate units. Auxiliary switches are not offered with factory ball valve assemblies.

Product Description

These direct coupled 24 Vac Non-Spring Return rotary electric SmartX Actuators are designed for three position (floating) control of dampers.

Mechanical Outputs	Travel: Normal angle of rotation is 90°, limited to a maximum of 95°. Field adjustable to limit travel on either end of stroke.
Ambient Temperature Limits	Shipping and storage: -40...158 °F (-40...70 °C) Operating: -25...130 °F (-32...55 °C) ambient. NOTE: Check the valve operating temperature limit. The minimum valve temperature limit is 20 °F (6.7 °C) 5...95% RH, non-condensing.
Location	NEMA Type 2 (IEC IP54)
Agency Listings	c-UL-us LISTED per UL 873 and CAN C22.2 No.24-93. CE compliant to directives LVD, EMC, and RoHS2.

Part Number	Torque lb-in (N-m)	Actuator Inputs			Outputs		Approximate Timing in sec. @ 70°F
		Control	Voltage	VA @ 60Hz	Feedback	Auxiliary Switch	Powered
MF41-6043	44 (5)	Floating	24 Vac	2.3	—	—	90
MF41-6083	88 (10)						125
MF41-6083-502							2-SPDT
MS41-6043	44 (5)	0...10 vdc	3.3	0...10 vdc	0...10 vdc	—	90
MS41-6083	88 (10)						125
MS41-6083-502							2-SPDT

Mx41-6153 Series 133 lb-in Direct Coupled Damper Actuators

Features

- Synchronous motor technology with stall protection
- Unique self-centering shaft coupling
- Manual override
- 133 lb-in (15 N-m) torque
- 5° preload as shipped from factory
- Mechanical range adjustment capabilities
- Independently adjustable dual auxiliary switches option available (MS41-6053-502).
- Built-in 1/2" conduit connection
- UL and cUL LISTED, CE certified



Product Description

The direct-coupled, 24 Vac, non-spring return electronic SmartX actuator is designed for modulating and three-position control of building HVAC dampers requiring up to 133 lb-in (15 N-m) torque.

Specifications	
Control Signal	MF41-6153 — Floating three-position control, 24 Vac. MS41-6153, MS41-6153-502 — Proportional, 0 to 10 Vdc; input resistance 100 kW.
Power Inputs	See Table.
Connections	3 ft. (0.9 m) long, 18 AWG leads
Electrical Outputs	Position output signal (wires 9-2) MS41-6153 Series Voltage-output 0...10 Vdc Maximum output current ±1 mA

Mechanical Outputs	Nominal angle of rotation 90° Maximum angular rotation 95°
Ambient Temperature Limits	Operating: -25°F...130°F (-32°C...55°C) Storage: -40°F...158°F (-40°C...70°C) Ambient humidity: 95% rh (non-condensing)
Location	NEMA 1/IP54 accableing to EN 60 529
Agency Listings	c-UL-us LISTED per UL 873 and CAN C22.2 No.24-93. CE compliant to directives LVD, EMC, and RoHS2.

Part Number	Torque lb-in (N-m)	Actuator Inputs			Outputs		Approximate Timing in sec. @ 70°F
		Control	Voltage	VA @ 60Hz	Feedback	Auxiliary Switch	Powered
MF41-6153	133 (15)	Floating	24 Vac	3	—	—	125
MS41-6153		0...10 vdc		5	0...10 vdc		
MS41-6153-502					2-SPDT		

Mx41-634x Series 300 lb-in Direct Coupled Damper Actuators

Features

- 300 lb-in (34 N-m) rated torque
- NEMA Type 4 housing (IEC IP56)
- Custom automatic current sensing motor control provides extended reliability and repeatable timing
- Direct coupled to the damper shaft with dual industrial hardened universal mounting clamps
- Integral wiring for proportional control by 2...10 Vdc or 4...20 mA dc¹
- Clockwise or counterclockwise rotation is determined by actuator mounting position
- Manual override for ease of installation and manual operation of damper
- Accurate 92° travel digitally controlled
- Integral position indication scale
- Rugged die-cast housing
- Oil immersed gear train provides continuous lubrication
- Rated for operating temperatures up to 140 °F (60 °C)
- Five year warranty
- MS41-634x SmartX Actuators can be double mounted (gang mounting) to accommodate high torque application requirements (2 to 4 actuators)
- Position feedback signal



Product Description

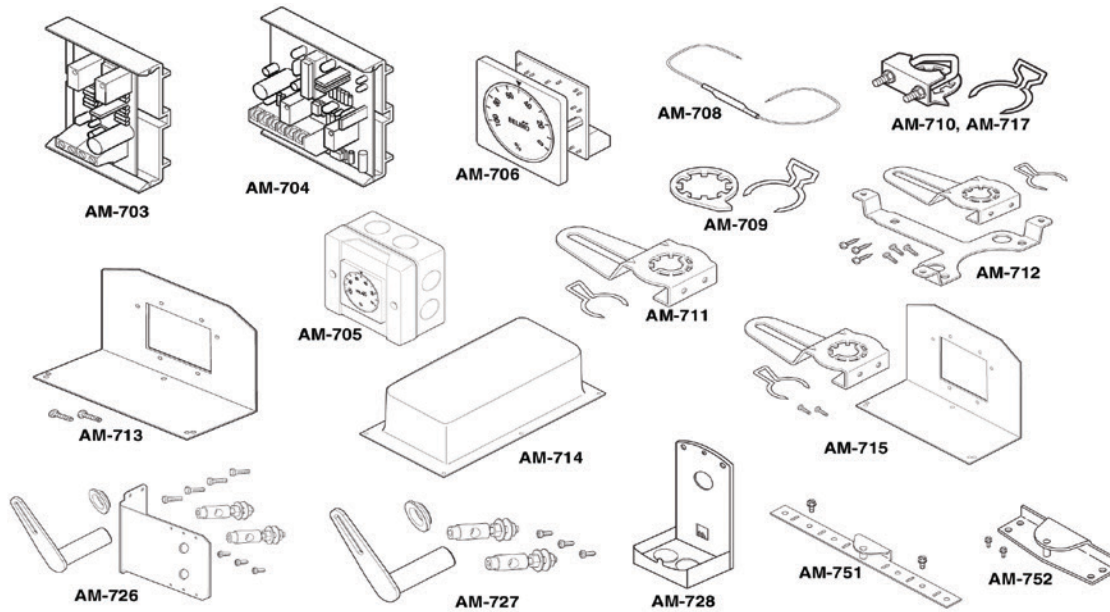
Direct Coupled SmartX Actuators are designed to be used in both damper and valve control applications. The MS41-634x series actuators are over the shaft non-spring return actuators compatible with 2...10 Vdc or 4...20 mA dc¹ control signals.

Specifications	
Control Signal	SPDT floating control input; Triacs (500 mA rated) or 2 SPST contacts Floating: 24 Vac ± 20% Proportional: 2-10 Vdc 4-20 mAdc ^a
Power Inputs	See table.
Connections	3 ft. (91 cm) Appliance cable, ½" conduit connectors
Electrical Outputs	Travel: Mechanically limited to 101° ±1°
Mechanical Outputs	Overload Protection: Throughout rotation. Angle of Rotation: 93° nominal. Position Indication: Scale numbered from 0...95° Manual Override: Allows manual positioning.

Ambient Temperature Limits	Shipping & Storage: -40...160°F (-40...71°C). Operating: -25...140°F (-32...60°C). Humidity 5...95% non-condensing
Location	NEMA Type 1, NEMA Type 4 (IEC IP56) with customer supplied water tight conduit connectors
Agency Listings	c-UL-us LISTED per UL 873 and CAN C22.2 No.24-93. CE compliant to directives LVD, EMC, and RoHS2.

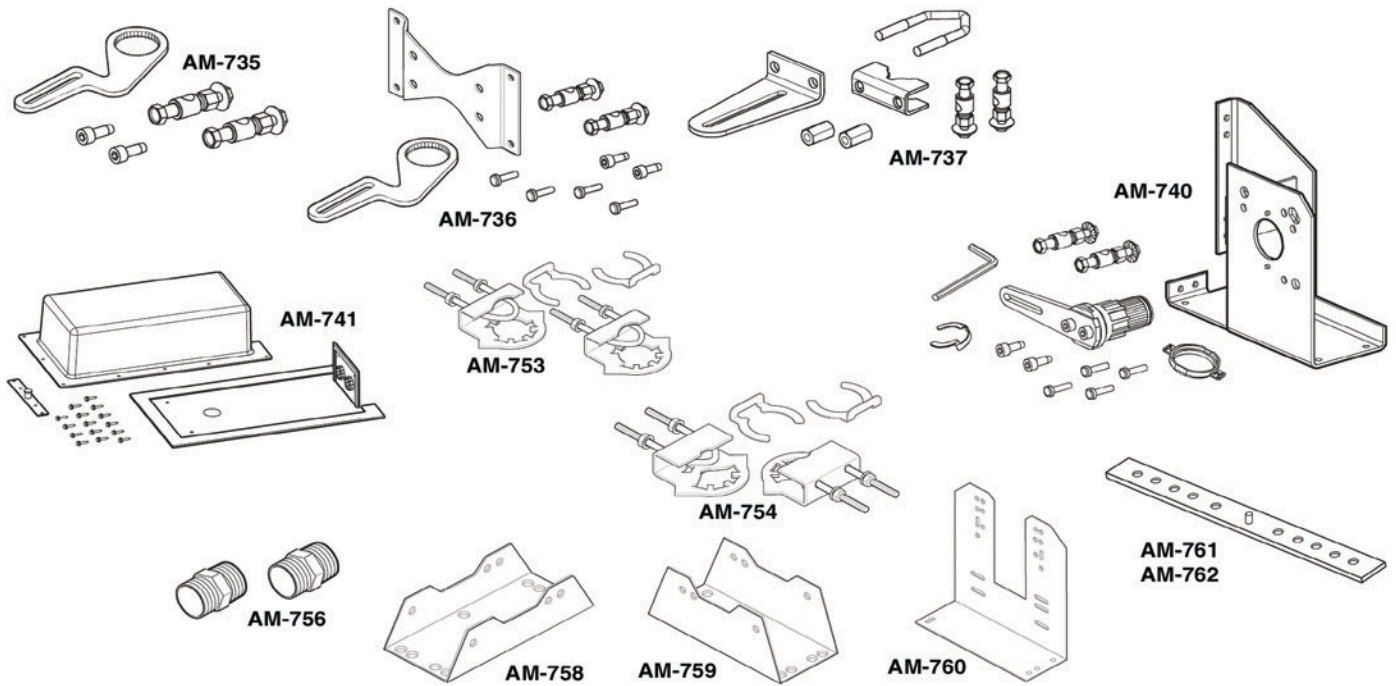
a - With the addition of a 500 ohm resistor (AM-708).

Part Number	Torque lb-in (N-m)	Actuator Inputs			Outputs		Approximate Timing in sec. @ 70°F Powered
		Control	Voltage	VA @ 60Hz	Feedback	Auxiliary Switch	
MF41-6343	300 (34)	Floating	24 Vac/dc	5.7	—	No	162
MS41-6343		2...10 vdc		5.6			2...10 vdc
MS41-6340		120 Vac	7.5				



Part Number	Description	Spring Return Actuators										Non Spring Return Actuators							
		MA40-7043 MF40-7043	MS40-7043	MA41-7073 MF41-7073	MS41-7073	MA41-7153 MF41-7153	MS41-7153	MA40-717x MF40-7173	MS40-7173	MS4D-x033	MF41-6043	MS41-6043	MF41-6083	MS41-6083	MF41-6153	MS41-6153	MF41-6343	MS41-6343	Mx41-730x
AM-703	Span Adjustment																		
AM-704	Modulation Interface																		
AM-705	Positioner																		
AM-706																			
AM-708	500 Ω Resistor																		
AM-709	Position Indicator & Stroke Limiter																		
AM-710 ^a	V-clamp																		
AM-711	Crank Arm Adaptor Kit																		
AM-712																			
AM-713	Bracket																		
AM-714	Weather Shield																		
AM-715	Crank Arm Adaptor Kit																		
AM-717	Replacement Universal Clamp																		
AM-726	Crank Arm Adaptor																		
AM-727																			
AM-728 ^b	Conduit Adaptor																		
AM-751	Anti-rotation Bracket																		
AM-752																			
AM-801	Mx41-730x-xxx Actuator Crank Arm Kit																		
AM-802	Mx41-730x-xxx Actuator Crank Arm Kit with Actuator Mounting Bracket and Two Ball Joints																		
AM-803	9-3/4" damper Shaft Extension for 5/16" ... 1" Diameter Round Shafts																		
AM-804	Jackshaft Linkage (requires AM-805 Support Plate for Mx41-73xx Actuators)																		
AM-805	Support Plate for Mx41-73xx Actuators																		
BEL-ZTH	US Handheld Interface Module for Field Programming of the MS41-7303-xxx Models																		

a - For shafts up to 3/4" (19 mm) diameter round up to 1/2" (13 mm).
 b - Cannot be used when creating a linked valve/actuator assembly.



Part Number	Description	Spring Return Actuators										Non Spring Return Actuators					
		MA40-7043 MF40-7043	MS40-7043	MA41-7073 MF41-7073	MS41-7073	MA41-7153 MF41-7153	MS41-7153	MA40-717x MF40-7173	MS40-7173	MS4D-x033	MF41-6043 MS41-6043	MF41-6083	MS41-6083	MF41-6153	MS41-6153	MF41-6343	MS41-6343
AM-735	Crank Arm Kit																
AM-736	Crank Arm Kit with Bracket																
AM-737	Universal Crank Arm ^a																
AM-740	Replacement Kit																
AM-741	Weather Shield																
AM-753 ^b	Mounting Clamp																
AM-754 ^c	Mounting Clamp																
AM-755	Manual Override Crank																
AM-756	Metric Conduit Adaptor																
AM-758	Short "U" Mounting Bracket																
AM-759	Tall "U" Mounting Bracket																
AM-760	Slotted "L" Mounting Bracket																
AM-761	7-inch Anti-rotation Bracket																
AM-762	9-inch Anti-rotation Bracket																
AM-763	Manual Override Crank			d	d	d	d										

a - For Honeywell Floor Mount Mod. Motor.
 b - For shafts 1/4" (19 mm) round and 5/8" (15.9 mm) square.
 c - For shafts 3/8" ... 1/2" (10...13 mm) round and square.
 d - Only used on Mx41-707x-xxx, Mx41-715x-xxx.

