

# Direct Coupled Damper Actuator—Spring Return

## S20 Series: MS4120; MS7520; MS8120

### Spring Return Direct Coupled Actuator, 175 lb-in



**MS4120, MS7520, MS8120 Spring Return Direct Coupled Actuators (DCA) are used within heating, ventilating, and air-conditioning (HVAC) systems. They can drive a variety of quarter-turn, final control elements requiring spring return fail-safe operation.**

- Brushless DC submotor with electronic stall protection for floating/modulating models.
- Brush DC submotor with electronic stall protection for 2-position models.
- Self-centering shaft adapter (shaft coupling) for wide range of shaft sizes.
- Models available for use with two-position, single pole single throw (spst), line- (Series 40) or low- (Series 80) voltage controls.
- Models available for use with floating or switched single-pole, double-throw (spdt) (Series 60) controls.
- Models available for use with proportional current or voltage (Series 70) controls.
- Models available with combined floating/modulating control in a single device.
- Models available with adjustable zero and span.
- Models available with line-voltage internal end switches.
- Models available with three-foot, 18 AWG color-coded cable.
- Access cover to facilitate connectivity.
- Metal housing with built-in mechanical end limits.
- Spring return direction field-selectable.
- Shaft position indicator and scale.
- Manual winding capability with locking function.
- UL (cUL) listed and CE compliant.
- All models are plenum-rated per UL873.

**Actuator Type:** Damper; Valve  
**Rotational Stroke:** 95 ±3 degrees  
**Fail Safe Mode:** Spring Return  
**Torque Rating:** 175 lb-in. (20 Nm)  
**Spring Return Torque:** 175 lb-in. (20 Nm)  
**Spring Return Direction:** By orientation  
**Dimensions, Approximate:** 9.72 in high x 3.94 in wide x 2.95 in deep  
(247 mm high x 100 mm wide x 75 mm deep)  
**External Auxiliary Switches Available:** Yes, SW2-US  
**Electrical Connections:** Enclosed screw terminal strip (22 to 14 AWG)  
**Environmental Rating:** NEMA2  
**Frequency:** 50 Hz; 60 Hz  
**Manual operation:** Manual crank  
**Mounting:** Direct Coupled  
**Maximum Noise Rating, Holding (dBA @ 1m):** 20 (no audible noise)  
**Maximum Noise Rating, Driving (dBA @ 1m):** 40  
**Rotational Stroke Adjustment:** Mechanically limited 5 degree increments

**Compatible Damper Shafts:** 3/8 to 1.06 in. round or 3/8 to 11/16 in. square (10 to 27 mm round or 10 to 18 mm square)

**Shaft Adapter Type:** Self-centering clamping

**Supply Voltage:** 100 to 250 Vac

**Materials:** Aluminum housing, Plenum rated plastic access cover

**Operating Humidity Range (% RH):** 5 to 95% RH, non-condensing

**Ambient Temperature Range:** -40 F to +140 F (-40 C to +60 C)

**Storage Temperature Range:** -40 F to +158 F (-40 C to +70 C)

**Weight:** 7.4 lb (3.36 kg)

**Includes:** Mounting bracket, self-centering shaft adapter, 3mm crank

**Comments:** Integral 1/2 in. NPSM conduit connection

#### Approvals

**CE:** 89/336/ECC, 73/23/EEC

**C-Tick:** N314

**Underwriters Laboratories, Inc:** UL873, Plenum Rated

**Canadian Underwriters Laboratories, Inc:** cUL C22.2 No. 24-93

# Direct Coupled Damper Actuator—Spring Return

Product Number	Control Signal	Feed-back	Timing (seconds)		Switch Ratings	Power Consumption		Supply Voltage	Input Impedance	Cable Entry	Electrical Connections	Electrical Connection Length		Number of Internal Auxiliary Switch
			Nominal Driving @ 60 Hz	Maximum Spring Return (sec)		Driving	Holding					(m)	(inch)	
MS4120A1001/U	Two position; SPST	—	45 sec	20 sec	—	60 VA	13 VA	100 to 250 Vac	—	—	Enclosed screw terminal strip (22 to 14 AWG)	—	—	0
MS4120A1209/U		—	45 sec	20 sec	250 Vac, 5 A res	60 VA	13 VA	100 to 250 Vac	—	—		—	—	2
MS7520A2007/U	(0)2-10 Vdc (4-20 mA w/ 500 ohm resistor); On/Off; SPDT; Floating	2-10 Vdc (max. output: ±1.0 mA)	90 sec	20 sec	—	16 VA	5 VA	24 Vac ±20%	Min. 95 kOhm	—	18 AWG color-coded cable	—	—	0
MS7520A2205/U			90 sec	20 sec	250 Vac, 5 A res	16 VA	5 VA	24 Vac ±20%	Min. 95 kOhm	—		—	2	
MS7520H2208/U			90 sec	20 sec	250 Vac, 5 A res	16 VA	5 VA	24 Vac ±20%	Min. 95 kOhm	—		—	2	
MS7520W2007/U			90 sec	20 sec	—	16 VA	5 VA	24 Vac ±20%	Min. 95 kOhm	Threaded conduit connector		0.9 m	36 in.	0
MS7520W2205/U	90 sec	20 sec	250 Vac, 5 A res	16 VA	5 VA	24 Vac ±20%	Min. 95 kOhm	Threaded conduit connector	0.9 m	36 in.		2		
	—	—	—	—	—	—	—	—	—	—		—		
MS8120A1007/U	Two position; SPST	—	45 sec	20 sec	—	40 VA	8 VA	24 Vac ±20%	—	—	Enclosed screw terminal strip (22 to 14 AWG)	—	—	0
MS8120A1205/U		—	45 sec	20 sec	250 Vac, 5 A res	40 VA	8 VA	24 Vac ±20%	—	—		—	—	2
MS8120W1007/U		—	45 sec	20 sec	—	40 VA	8 VA	24 Vac ±20%	—	Threaded conduit connector	18 AWG color-coded cable	0.9 m	36 in.	0
MS8120W1205/U		—	45 sec	20 sec	250 Vac, 5 A res	40 VA	8 VA	24 Vac ±20%	—	Threaded conduit connector		0.9 m	36 in.	2