

Actuators for CAV controllers

Modulating actuators



For variable volume flows in air conditioning systems

Actuators for mechanical self-powered CAV controllers Type EN, RN, or VFC, and for flow adjustment dampers Type VFR

- Setpoint value adjustment
- Supply voltage 24 V AC/DC
- Control input signal: Voltage signal 0 – 10 V DC or 2 – 10 V DC
- Potentiometer or mechanical stops
- Positive lock connection with CAV controller or flow adjustment damper
- Retrofit possible

Type		Page
Modulating actuators	General information	MOD – 2
	Function	MOD – 3
	Technical data	MOD – 4
	Variants	MOD – 5
	Wiring	MOD – 7

Application

Application

- Actuators for variable adjustment
 - Variable adjustment of volume flow setpoint values of mechanical self-powered CAV controllers Type EN, RN or VFC
 - Setting of various damper blade positions of flow adjustment dampers Type VFR
-

Description

Parts and characteristics

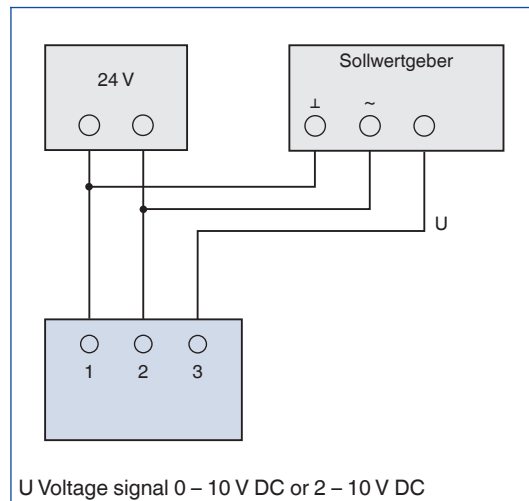
- Potentiometer or mechanical stops for setting the volume flow rate setpoints
- Supply voltage 24 V AC/DC
- Overload protection
- Setpoint value signal 0 – 10 V DC or 2 – 10 V DC

Functional description

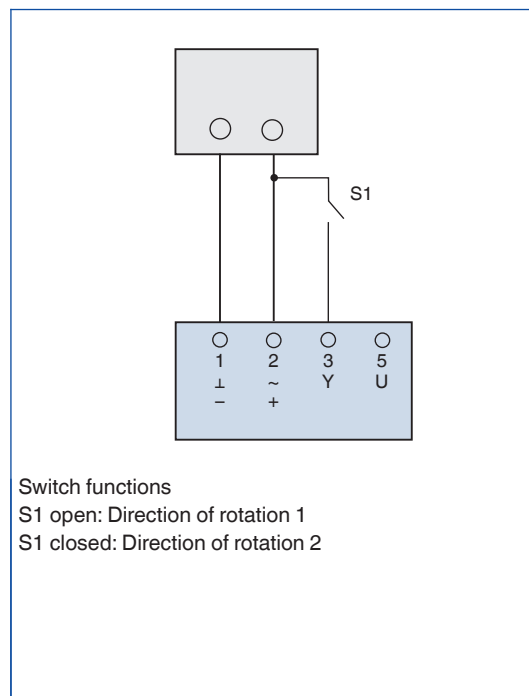
The actuator moves the damper blade mechanism to any position between minimum and maximum. Minimum and maximum positions can be set on potentiometers.

The control input signal is a voltage signal. The output signal indicates the damper blade position rather than the volume flow rate actual value since the CAV controller does not perform any measurements.

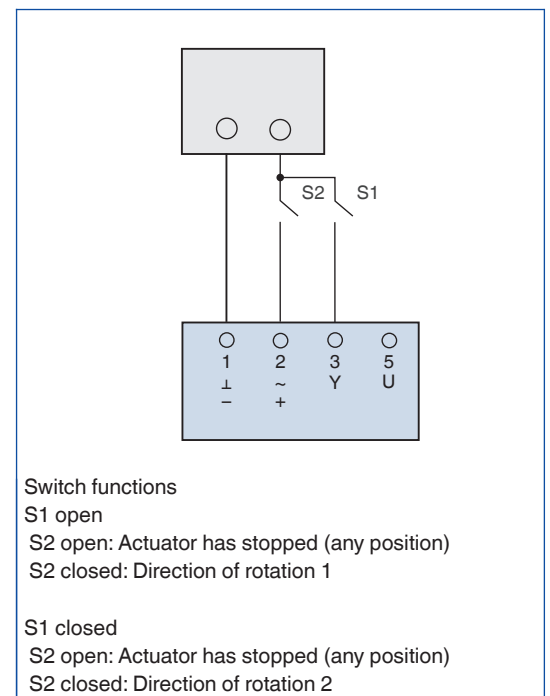
Variable control initiated by a voltage signal



1-wire control for modulating actuators



2-wire control (3-point) for modulating actuators



Control options and effect of actuator action in case of factory setting

Order code detail	Function	Control	Direction of rotation	
			1	2
B70, B72	Variable	Variable control		
B70, B72	Min/Max	1-wire control, 2-wire control	\dot{V}_{\min}	\dot{V}_{\max}
E03	Variable	Variable control		

Actuators LM24A-SR and LM24A-SR-F

Supply voltage (AC)	24 V AC \pm 20 %, 50/60 Hz
Supply voltage (DC)	24 V DC \pm 20 %
Power consumption – when running	1 W
Power consumption – when idle	0.4 W
Power rating for cable sizing	2 VA
Torque	5 Nm
Running time for 90°	150 s
Position feedback	2 – 10 V DC, 1 mA
Control signal	2 – 10 V DC, $R_a > 100 \text{ k}\Omega$
Connecting cable	4 \times 0.75 mm ² , 1 m long
IEC protection class	III (protective extra-low voltage)
Protection level	IP 54
EC conformity	EMC to 2014/30/EU, RoHS 2011/65/EU
Operating temperature	-30 to 50 °C
Weight	0.5 kg

Auxiliary switch S2A

Type of contact	2 changeover contacts ¹⁾
Max. switching voltage (AC)	250 V AC
Max. switching current (AC)	3 A (resistive load); 0.5 A (inductive load)
Max. switching voltage (DC)	110 V DC
Max. switching current (DC)	0.5 A (resistive load); 0.2 A (inductive load)
Connecting cable	6 \times 0.75 mm ² , 1 m long
IEC protection class	II (protective insulation)
Protection level	IP 54
EC conformity	EMC to 2014/30/EU, low voltage to 2014/35/EU, RoHS to 2011/65/EU
Operating temperature	-30 to 50 °C
Weight	0.250 kg

¹⁾ If both auxiliary switches are used the switching voltages must be the same

Actuator 224C-024-03-003

Supply voltage (AC)	24 V AC \pm 20 %, 50/60 Hz
Supply voltage (DC)	24 V DC \pm 20 %
Power rating (AC)	4.5 VA
Power rating (DC)	2.5 W
Torque	2.5 Nm
Running time for 90°	20 – 60 s
Control signal	0 – 10 V DC, $R_a > 100 \text{ k}\Omega$
Connecting cable	3 \times 0.75 mm ² , 1 m long
IEC protection class	III (protective extra-low voltage)
Protection level	IP 42
EC conformity	EMC to 2014/30/EU, RoHS 2011/65/EU
Operating temperature	0 to 50 °C
Weight	0.32 kg

Actuator LM24A-SR-F



Auxiliary switch S2A



Actuator 224C-024-03



Any attachments are to be defined with the order code of the CAV controller.

B7*

Application

- Actuator LM24A-SR for the variable adjustment of volume flow setpoint values of mechanical self-powered volume flow controllers Type RN

Variants

- B72: with auxiliary switch for capturing the end positions

Parts and characteristics

- Supply voltage 24 V AC/DC
- Control input signal: Setpoint value signal 2 – 10 V DC, corresponds to the total rotation range (90°), working range is limited by mechanical stops
- Output: Position feedback 2 – 10 V
- Mechanical stops for setting the volume flow rates
- Switch for setting the direction of rotation
- Positive lock connection with damper blade shaft
- Release button to allow for manual operation

Commissioning

- Set the mechanical stops according to the minimum and maximum volume flow rates
- Change the direction of rotation if necessary, using the switch

B*2

Application

- Auxiliary switch S2A for capturing damper blade end positions (end positions reached through actuator operation)
- Volt-free contacts for signalling or activating switch functions
- Two integral switches, e.g. for damper blade OPEN and damper blade CLOSED
- Potentiometer for setting any switch point

E03

Application

- Actuator 224C-024-03-003 for variable adjustment
- Variable adjustment of volume flow setpoint values of mechanical self-powered CAV controllers Type VFC
- Setting of various damper blade positions of flow adjustment dampers the types VFC and EN (only up to 300 mm)

Parts and characteristics

- Supply voltage 24 V AC/DC
- Control input signal: Setpoint value signal 0 – 10 V DC, corresponds to the working range (set on potentiometers)
- Output: Position feedback 0 – 10 V
- Potentiometer for setting the volume flow rate setpoints
- Positive lock connection with damper blade shaft
- Functional test button: Motor drives first to minimum position, then to maximum position, then returns to the set position
- Indicator light: Actuator has reached setpoint, actuator in motion, actuator blocked

Commissioning

- Use the potentiometer to set the minimum or maximum volume flow rate

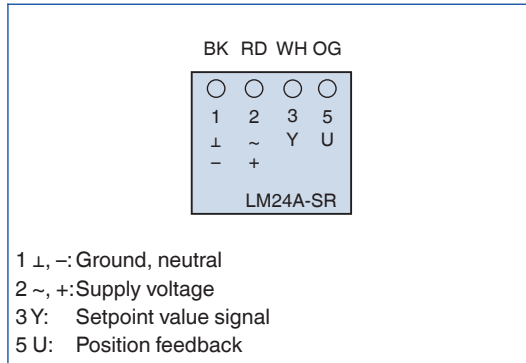
Actuators for volume flow controllers Type RN

Order code detail	Actuator			Auxiliary switch	
	Part number	Type	Supply voltage	Part number	Type
B70	M466DT6	LM24A-SR-F	24 V AC/DC		
B72	M466DT6	LM24A-SR-F	24 V AC/DC	M536AI3	S2A

Actuators for volume flow controllers of types VFC, EN and for flow adjustment dampers Type VFR

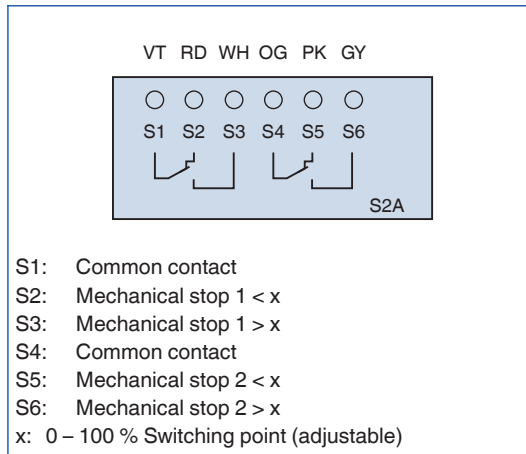
Order code detail	Part number	Type	Setpoint value adjustment	Supply voltage
E03	A00000038360	224C-024-03-003	Potentiometer	24 V AC/DC

LM24A-SR, connecting cable core identification



LM24A-SR and LM24A-SR-F

S2A, connecting cable core identification



224C-024-03-003, connecting cable core identification

