



ACTUATOR LM24A-SR

## 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

## Application ^

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### 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 v

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### 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

## TECHNICAL INFORMATION

### Function, Technical data ^

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**Functional description**

The actuator moves the damper blade mechanism to any position between minimum and maximum.

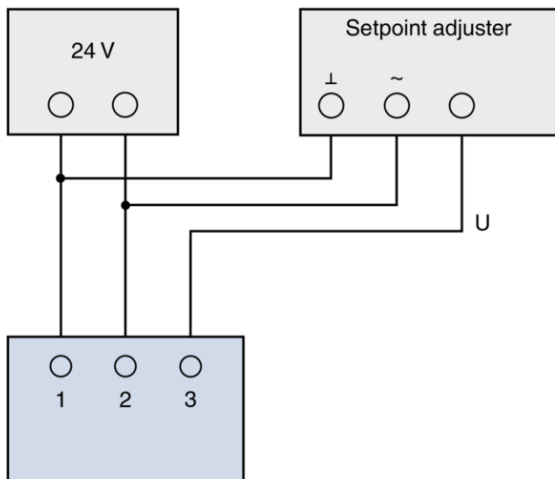
Minimum and maximum positions can be set on potentiometers.

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.

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

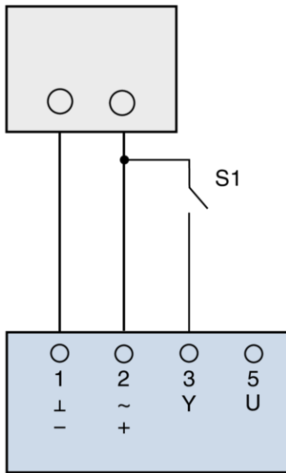
Order code detail	Function	Control	Direction of rotation	
			1	2
B70, B72	Variable	Variable control		
	Min/Max	1-wire control, 2-wire control	V <sub>min</sub>	V <sub>max</sub>
E03	Variable	Variable control		

**Variable control initiated by a voltage signal**



U Voltage signal 0 – 10 V DC or 2 – 10 V DC

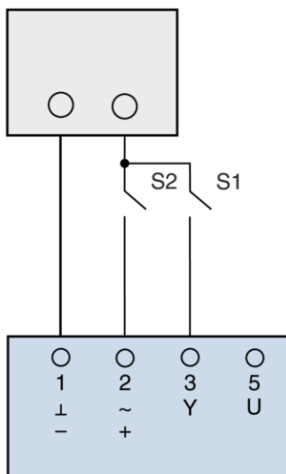
1-wire control for modulating actuators



Switch functions

- S1 open: Direction of rotation 1
- S1 closed: Direction of rotation 2

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



Switch functions

- S1 open
- S2 open: Actuator has stopped (any position)
- S2 closed: Direction of rotation 1

S1 closed

- S2 open: Actuator has stopped (any position)
- S2 closed: Direction of rotation 2

**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 – load	1 W
Power consumption – idle	0.4 W
Power rating	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 <sup>2</sup> , 1 m long
IEC protection class	III (protective extra-low voltage)
Protection level	IP 54
EC conformity	EMC to 2014/30/EU, RoHS to 2011/65/EU
Operating temperature	–30 to 50 °C
Weight	0.5 kg

**Auxiliary switch S2A**

Type of contact	2 changeover contacts <sup>1)</sup>
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 <sup>2</sup> , 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

<sup>1)</sup> If both auxiliary switches are used the switching voltages must be the same

**Actuator 224C-024-02-003**

Supply voltage (AC)	24 V AC $\pm$ 20 %, 50/60 Hz
Supply voltage (DC)	24 V DC $\pm$ 20 %
Power rating (AC)	3 VA
Power rating (DC)	2 W
Torque	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 <sup>2</sup> , 1 m long
IEC protection class	III (protective extra-low voltage)
Protection level	IP 42
EC conformity	EMC according to 2014/30/EU, RoHS to 2011/65/EU
Operating temperature	–30 to 50 °C
Weight	0.5 kg

## Variants



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 or EN (only up to a height of 300 mm)

#### 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-024-02-003 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 Type VFR

#### Parts and characteristics

- Supply voltage 24 V AC/DC
- Control input signal: Setpoint value signal 2 – 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 or EN

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

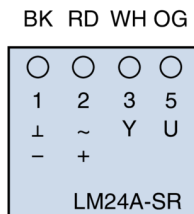
#### Actuators for volume flow controllers Type VFC and for flow adjustment dampers Type VFR

Order code detail	Part number	Type	Setpoint setting	Supply voltage
E03	M466EP7	224C-024-02-003	Potentiometer	24 V AC/DC

#### Actuator LM24A-SR



LM24A-SR, connecting cable core identification



- 1 ⊥, -: Ground, neutral
- 2 ~, +: Supply voltage
- 3 Y: Setpoint value signal
- 5 U: Position feedback

LM24A-SR and LM24A-SR-F

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