

Centra MSLM

Small Modulating Linear Actuator

Application

The Resideo MSLM actuators are specifically designed to provide modulating control together with the V5007 pressure independent control valves (PICV) and with VDE/VDE...C/VDE...M/VXE/VXE...M/VYE series of Resideo small linear valves.

The MSLM actuators are used in fan-coil units, induction units, heat interface units, small reheaters and recoolers, and for zone control applications. It is employed in electronic temperature control systems with hot and/or cold water as the controlled medium. This actuator is fully compatible with controllers working with 0(2) - 10 V DC control signal.

The control signal can be adjusted fast through a round selector which can be protected with a cap.

The MSLM actuator is designed for applications where space is limited and minimum power consumption is required. A microprocessor-based, high-performance positioner guarantees accurate control.

Reliable long-term operation is ensured due to the fact that no mechanical feedback potentiometer and no mechanical end switches are needed. The actuator is both attractive and robust in design.

Special Features

- Suitable for 0(2)-10 V DC input signal (quickly adjustable through round selector)
- Microprocessor-based positioner ensures precise stem positioning
- Selectable direction of operation per control signal (direct or reversed acting)
- Miswiring protection
- Fast reference power-up/start-up
- Feedback output signal 0(2)-10 V DC
- Small size allows installation where space is limited
- Low power consumption
- Adjustment possibility for manual operation and switch off control signal
- IP 54 protection class
- Easy mounting on valve via standard M30 x 1.5 screw connection, no tools required for mounting
- Supplied with pre-wired connection cable
- Visual valve position indicator furnished with actuator
- LED status and error code indicator
- Low operating noise level < 28 dB (A) at nominal force and control mode, measuring distance 1 m



Technical Data

Temperature	
Operating temperature:	-5... +60 °C
Medium valve temperature:	Max. 120 °C
Humidity	
Non-condensing humidity:	5 % to 95 % R.H.
Weight	
Weight:	300 g
Mechanical parameters	
Stroke:	2 mm to 8 mm
Stroke calibrated default:	6.5 mm
Stem force:	Depending on type (see Tab. 3) 180 N, 300 N
Running time:	150 s at 6.5 mm stroke
Actuator connection:	M30 x 1.5
Electrical parameters	
Input voltage:	24 V AC / DC +/- 20 %, 50/60 Hz +/- 3 Hz
Power consumption:	0.5 W / 0.9 VA (motor running); 0.2 W / 0.3 VA (motor stopped)
Input signal:	0(2)-10 V DC (adjustable); < 0.1 mA
Feedback signal:	0(2) - 10 V DC, max 1 mA
Operation:	direct /reverse (adjustable)
Protection standard:	IP54 per DIN EN60529
Insulation class:	Class III per EN60730-1
Connection cable:	1.5 m
Suitable valves	
Resideo PICV 5007:	DN 15 - DN 50
Resideo linear valves VDE / VXE / VYE:	DN 15 - DN 25
Resideo pressure balanced linear valves VDE...C:	DN 15 - DN 32
Resideo pressure balanced linear valves VDE...M, VXE...M:	DN 25 - DN 40

Transportation and Storage

Keep parts in their original packaging and unpack them shortly before use.

The following parameters apply during transportation and storage:

Parameter	Value
Min. ambient temperature:	-20 °C
Max. ambient temperature:	70 °C
Min. ambient relative humidity:	5 % *
Max. ambient relative humidity:	95 % *

*non condensing

Method of Operation

The movement of the electric actuator is produced by a screw spindle which is driven in both directions by a brushless motor through a set of gears. The actuator is fixed to the valve body by means of a coupling ring requiring no tools for mounting. The actuator is maintenance-free and supplied completely with a ready-to wire connecting cable.

A microprocessor-based high performance positioner guarantees accurate control. The fast reference start-up/ power-up is initiated automatically during the first start up or after the restore of electrical power. During the fast reference start-up/power up the actuator runs to fully extended position before it starts to follow the control signal.

Installation Guidelines

Safety Guidelines

The MSLM actuators must be installed, commissioned and adjusted only by professionals.

Mounting

The actuator may be mounted in any position. Adjust the valve in the correct position before mounting the actuator.

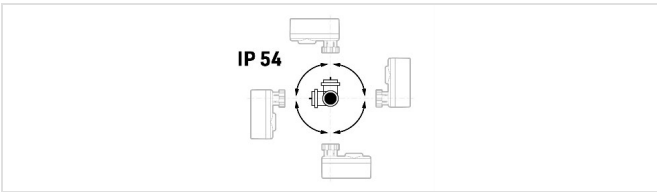


Fig. 1 Mounting positions

Before the actuator is fixed to the valve, the adjustment cap must be removed (Fig. 2). Make sure that the actuator is in the retracted position (factory-supplied position) before fixing the actuator to the valve body.



Fig. 2 Removing protection cap



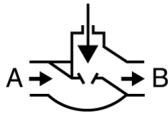
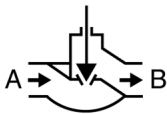
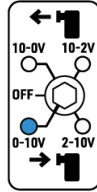
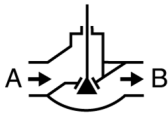
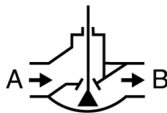
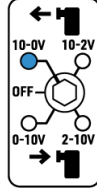
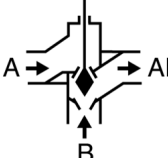
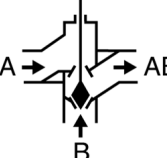
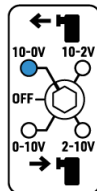
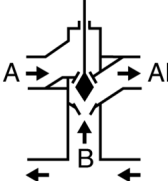
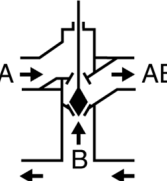
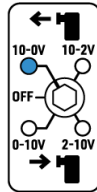
The actuator must be mounted by hand. Do not use tools or additional force, as that could damage the actuator and valve.



Fig. 3 Mounting the actuator

Control signal round selector

The built in control signal round selector offers the selection of the input control signal 0(2)-10 VDC in direct or reverse mode and it must be set also in according to valve type (2-way, 3-way or V5007).

			Control signal selector
V5007	Y = +10 V ... OPEN 	Y = 0 V ... CLOSE 	
VDE	Y = 0 V ... CLOSE 	Y = +10 V ... OPEN 	
VXE	Y = 0 V ... OPEN B-AB 	Y = 10 V ... OPEN A-AB 	
VYE	Y = 0 V ... OPEN B-AB 	Y = 10 V ... OPEN A-AB 	

Tab. 1 Control signal

Fast reference

During the first start up the actuator is using a fast reference and finds its mechanical lower valve stroke limit. In case of power supply interruption the fast reference function is activated as well.

In case actuators are applied with valves with stroke 2.5 mm - 2.9 mm the control signal has to be limited in a following way: 0 - 10 V to 0 - 5 V; 2 - 10 V to 2 - 6 V; 10 - 0 V to 10 - 5 V; 10 - 2 V to 10 - 6 V

Manual Operation

Actuators with the item numbers MSLM-xxxx-151 feature a hexagonal key selector for manual operation. To prevent valve damage, manual operation is permitted only when the control signal selector is in Off position. There is no power applied to the motor in Off position.

During manual operation once the end position is reached a clicking noise occurs (coming from a mechanical protection). The clicking noise can occasionally occur also during manual operation out of end position and does not represent a product failure.

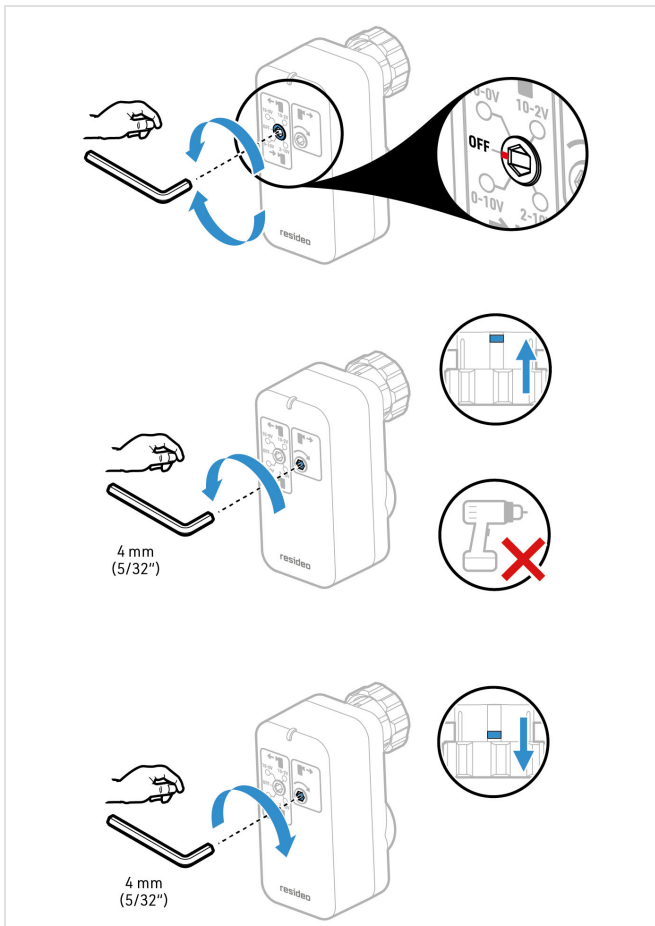


Fig. 4 Manual operation

The manual operation force up to 800 N applied at the MSLM-xxxx-151 actuators (see Tab.3) is compatible with the Resideo linear valves up to 8 mm stroke and V5007 Resideo pressure independant valves with 6 mm stroke (not compatible with V5007 Resideo pressure independant valves with 2.9 mm stroke).

In case MSLM-xxxx-151 actuators are used with valves produced by other manufacturer please check the suitability of the combination related the manual operation force with the manufacturer of the valves.

Wiring

The electrical installation must comply with Fig. 5

If the feedback signal is not used the wire need not have to be connected.

Parallel operation: Max. 10 actuators (if the provided controllers output is sufficient).

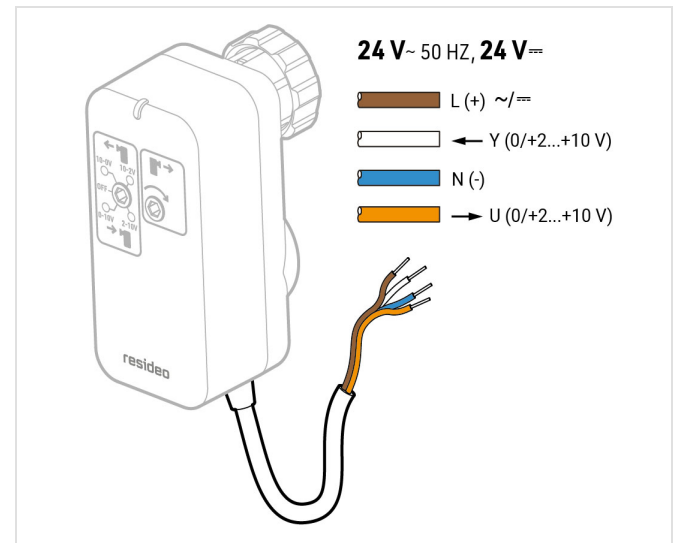


Fig. 5 Electrical wiring

Input signal override

To override the controller output signal, the input signal must be connected to COM (0 %) or 24 V AC/DC (100 %) using an external switch (see Fig. 6).

The input signal override feature can be used only with the signal round selector position 0-10 V or 10-0 V.

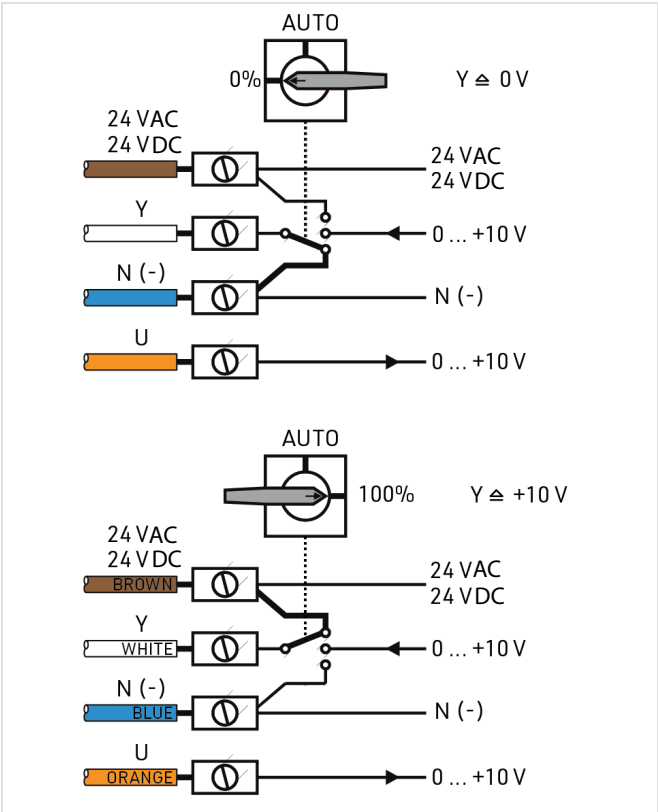


Fig. 6 Input signal override

Commissioning

A functional check of the valve actuator can be carried out by changing the Y input signal. The movement of the actuator stem indicates whether the valve is opening or closing. If the direction of travel is not correct, the correct direction has to be selected by changing the position of the signal round selector (chapter Control signal round selector). The movement and status of the actuator can be monitored also by the LED indicator.

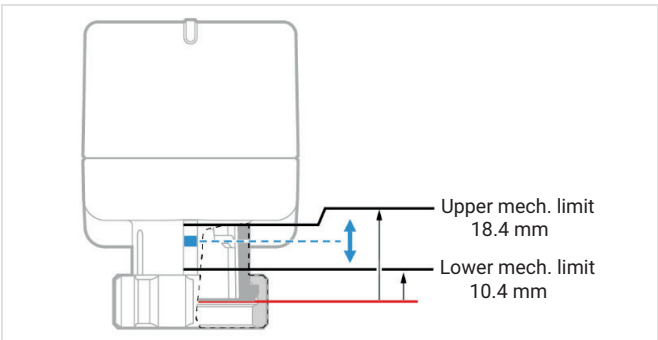
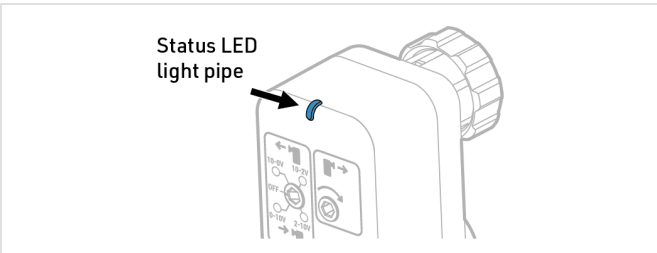


Fig. 7 Mechanical limits of the actuator

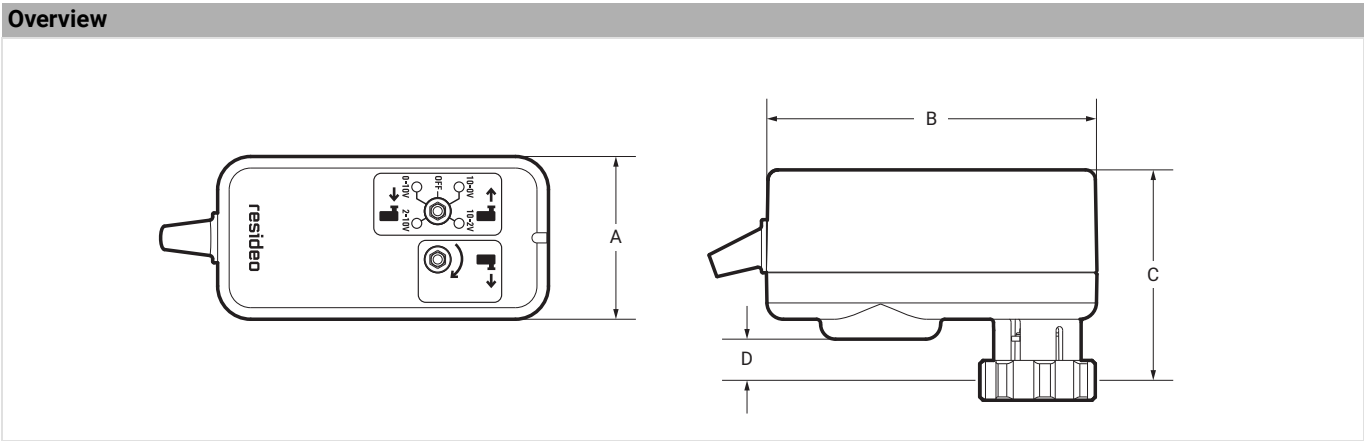
LED indicator



Status		Indication
	Moving	Green light blinking 1 s ON, 1 s OFF
	Position per control signal reached	Solid green
	Manual mode, disconnected control signal (mode selector at position OFF)	Solid orange
	No power supply	LED off
	Error (actual alert or fault) – loss of signal or supply voltage out of range	Red light blinking 1 s ON, 1 s OFF
	Error (actual alert or fault) – valve clogging detection	Solid red

Tab. 2 LED indicator

Dimensions



A	B	C	D
49	100	63	12

Note: All dimensions in mm unless stated otherwise.

Ordering Information

The following tables contain all the information you need to make an order of an item of your choice. When ordering, please always state the type, the ordering or the part number.

Naming of small modulating linear actuators


MS	L	M	-B	018	-15	0
Type of actuator	Voltage	Control mode	Nominal stroke	Stem Force	Cable length	Manual operation
MS = Small linear actuator series	L = 24 V AC/DC	M = Modulating	6.5 mm	018 = 180 N 030 = 300 N	15 = 1.5 m	0 = without manual operation 1 = with manual operation

Options

Force	Voltage	Manual override	Description	Item number
180 N	24 V AC/DC	No	Small linear actuator MS, nominal stroke 6.5 mm, 180 N, 24 V AC / DC, 0(2)-10 V	MSLM-B018-150
180 N	24 V AC/DC	Yes	Small linear actuator MS, nominal stroke 6.5 mm, 180 N, 24 V AC / DC, 0(2)-10 V, with manual operation feature	MSLM-B018-151
300 N	24 V AC/DC	No	Small linear actuator MS, nominal stroke 6.5 mm, 300 N, 24 V AC / DC, 0(2)-10 V	MSLM-B030-150
300 N	24 V AC/DC	Yes	Small linear actuator MS, nominal stroke 6.5 mm, 300 N, 24 V AC / DC, 0(2)-10 V, with manual operation feature	MSLM-B030-151

Tab. 3 Item numbers

Accessories

	Description		Item No.
	MS-COVER	Small linear actuator cover cap can be used to cover the round adjusting elements	MS-COVER
		50 pcs in one bag	