

Data sheet

Actuator for modulating control

AME 140X - with feedback signal

Description



AME 140X actuator are suitable to operate with VZ or VZL valves whenever feedback signal is required. The actuator can be used in fan coil units, induction units, small reheaters, recoolers, and zone applications in which hot/cold water is the controlled medium.


Main data:

- Modulating control (Y)
- Feedback (X) signal
- Force switch-off at stem down position prevents overload of actuator and valve.
- No tools required for mounting
- Maintenance free during lifetime
- Low noise operation
- Self-positioning process
- Supplied with 1,5 m cable

Ordering

Type	Supply voltage	Speed	Code No.
AME 140X	24 V~	12 s/mm	082H8065

Technical data

Power supply		V	24; $\pm 20\%$; AC
Power consumption	running	VA	1,5
	standby	W	1,0
Frequency		Hz	50/60
Control input Y		V	0-10(2-10); $R_i=200\text{ k}\Omega$
		mA	0-20(4-20); $R_i=500\text{ }\Omega$
Control output X		V	0-10(2-10); $R_{o(\min)}=38\text{ k}\Omega$
Closing force		N	200
Max. stroke		mm	5,5
Speed		s/mm	12
Max. medium temperature			130
Ambient temperature		$^{\circ}\text{C}$	0 ... 55
Storage and transport temperature			-40 ... 70
Protection class			III safety extra-low voltage
Grade of enclosure			IP 42
Weight		kg	0,3
 - marking in accordance with standards		Low Voltage Directive 2006/95/EC, EN 60730-1, EN 60730-2-14 EMC Directive 2004/108/EEC, EN 61000-6-1, EN 61000-6-3	

Installation

Mechanical

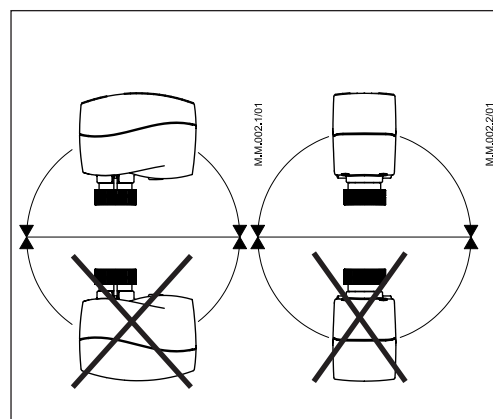
The actuator should be mounted with the valve stem in either horizontal position or pointing upwards.

The actuator is fixed to the valve body by means of a mounting ring which requires no tools for mounting. The ring should be tightened by hand.

Electrical

Important: It is strongly recommended that the mechanical installation is completed before the electrical installation.

Each actuator is supplied with the connecting cable for the controller.



Disposal

The actuator must be dismantled and the elements sorted into various material groups before disposal.

Wiring



AC 24 V
Connect via safety isolating transformer.

Y	V	0-10(2-10); Ri=200 kΩ
	mA	0-20(4-20; Ri=500 Ω
X	V	0-10(2-10); Ro(min)=38 kΩ

Red	24 V	
Grey	Y	
Black	Common	
White	X	

Commissioning

The factory setting of the spindle is the fully stem up position because of easier mechanical connection of the actuator on the valve.

Actuator should be first mechanically connected to the valve because it starts automatically with self stroking procedure when first time connected to power supply.

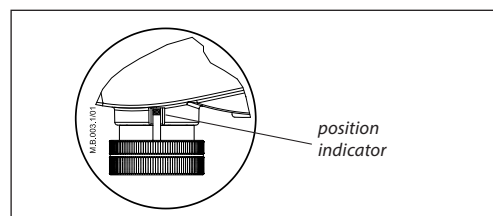
Do not manually operate the drive if power is connected!

Do not dismount the actuator from the valve when it is in a stem down position!

If dismounted in a stem down position, there is a high risk that the actuator gets stuck.

Installation procedure

1. Check the valve's neck. The actuator should be in stem up position (factory setting).
Ensure that the actuator is mounted securely on valve body.
2. Energise the actuator according to the wiring diagram - see wiring.
3. The direction of stem movement can be observed on the position indicator.

**Auto sleep mode**

1. If actuator is not mounted to the valve but connected to the power supply, it will first run to its extracted end position (buzz noise from the motor will appear). This behavior will last for max 3 minutes when power supply will be automatically cut off from electro motor and LED indicators.

2. It is mandatory to drive the spindle of the actuator to upper position before it will be installed on valve (please refer to manual override drawings)!
3. Auto sleep mode switches back to learning mode by pressing RESET button or by cycling power supply.

DIP Switch Setting

(for service purposes only)

The actuator has a function selection DIP switch under the removable cover.

The switch provides the following functions:

• SW1:

0/2 - Input signal range selector

If set to OFF position, the input signal is in the range from 2-10 V (voltage input) or from 4-20 mA (current input).

If set to ON position, the input signal is in the range from 0-10 V (voltage input) or from 0-20 mA (current input).

• SW2:

D/I - Direct or inverse acting selector

If set to OFF position, the actuator is direct acting (stem lowers as voltage increases).

If the actuator is set to ON position, the actuator is inverse acting (stem raises as voltage increases).

• SW3:

---/Seq - Normal or sequential mode selector

If set to OFF position, the actuator is working in range 0(2)-10 V or 0(4)-20 mA.

If set to ON position, the actuator is working in sequential range; 0(2)-5(6) V or 0(4)-10(12)mA or 5(6)-10 V or 10(12)-20 mA).

• SW4:

0-5/5-10 V - Input signal range in sequential mode

If set to OFF position, the actuator is working in sequential range 0(2)-5(6) V or 0(4)-10(12) mA.

If set to ON position, the actuator is working in sequential range; 5(6)-10 V or 10(12)-20 mA.

• SW5:

LIN/MOD - Linear or modified flow through the VZL valves

If set to ON position, the flow through the LINEAR characterized VZL valve will modify to equal percentage-wise equals the control signal.

If set to OFF position, the flow through the valve VZ or VZL remains same as is valve characteristic in accordance to the control signal.

• SW6:

---/ASTK - Anti-blocking function is not needed to be activated when operation with Danfoss VZ or VZL. To be activated when actuator is used by (competitors) valves which have possibility to be blocked.

Exercises the valve to avoid blocking in periods when the heating/cooling is off.

If set to ON position (ASTK), the valve motion is switched on. The actuator opens and closes the valve every 7 days.

If set to OFF position (---), the function is disabled.

• SW7:

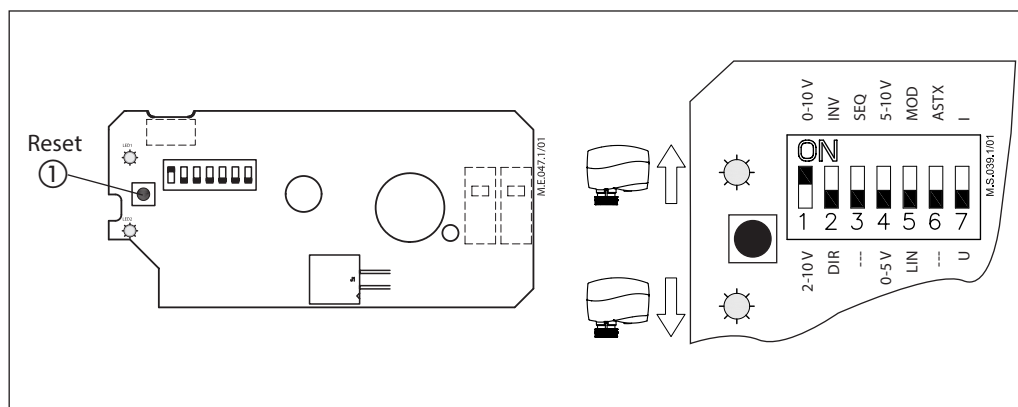
U/I - Input signal type selector

If set to OFF position, voltage input is selected.

If set to ON position, current input is selected.

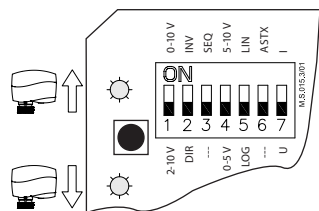
• Reset button

Press the reset button ① will cause the actuator to go through a self stroking cycle (press it for 2 s).



LED signalisation

- - lit
- - no
- ⚙ - flashing



LED	Indication type	Operating mode
Green	<div> <div>↓</div> <div>○</div> <div>Constantly lit</div> </div>	Positioning mode - Actuator is retracting the stem
	<div> <div>↑</div> <div>○</div> <div>Constantly lit</div> </div>	Positioning mode - Actuator is extracting the stem
	<div> <div>↓</div> <div>⚙</div> <div>Flashing (1 s cycle)</div> </div>	Self stroking mode - Actuator is retracting the stem
	<div> <div>↑</div> <div>⚙</div> <div>Flashing (1 s cycle)</div> </div>	Self stroking mode - Actuator is extracting the stem
Yellow	<div> <div>↓</div> <div>○</div> <div>Constantly lit</div> </div>	Stationary mode - Actuator has reached upper end position (retracted stem)
	<div> <div>↑</div> <div>○</div> <div>Constantly lit</div> </div>	Stationary mode - Actuator has reached bottom end position (extracted stem)
	<div> <div>↓</div> <div>⚙</div> <div>Flashing (2,5 s cycle)</div> </div>	Stationary mode
Red	<div> <div>↓</div> <div>⚙</div> <div>Flashing (1 s cycle)</div> </div>	Error Mode
Dark	No indication	No power supply

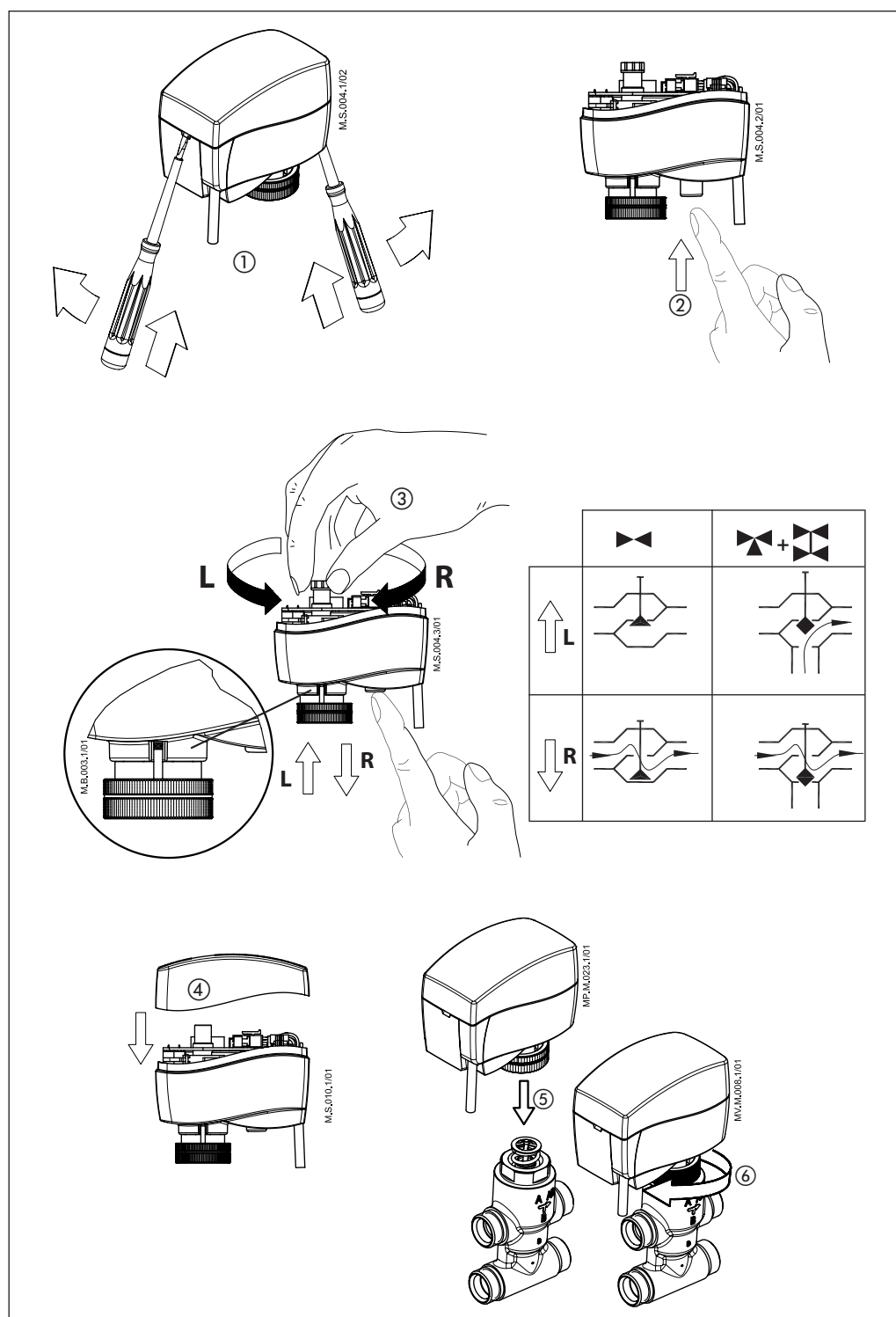
Manual override
(for service purposes only)



Caution:
Do not manually operate the drive if power is connected!

Do not dismantle the actuator from the valve when it is in a stem down position!

If dismantled in a stem down position, there is a high risk that the actuator gets stuck.

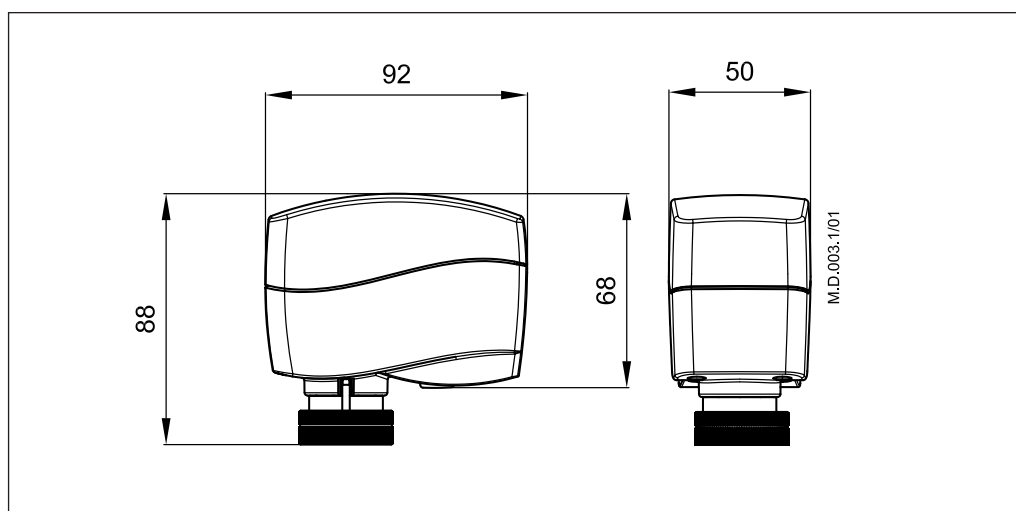


- Remove cover ①
- Press and hold the button ② (on the bottom side of the actuator) during manual override ③
- Replace cover ④
- Install actuator on valve ⑤, ⑥

Remark:

A 'click' sound after energising the actuator indicates that the gear wheel has jumped into normal position.

Dimensions



Actuator - valve combinations

