

## AVM 321, 322: Valve actuator

### How energy efficiency is improved

Automatic adaptation to valve, optimal operator convenience, precision activation and high energy efficiency with minimal operating noise

### Features

- In ventilation air conditioning units<sup>1)</sup> For actuating 2-way and 3-way valves of the V6R, VUD, VUE, VUG, VUN, VUP, VUS, B6R, BUD, BUE, BUG, BUN, BUS series
- For controllers with a switching output (2-point or 3-point control)
- Synchronous motor with electronic control unit and load-dependent cut-off
- Direction of operation and positioning time can be set using coding switches
- Crank handle for external manual adjustment with motor cut-off
- Very low operating noise
- Simple assembly with valve; spindle is automatically connected after nominal voltage is applied
- Numerous adaptors enable the unit to be fitted onto non-SAUTER valves
- Electrical parallel operation of five actuators
- Three-piece housing made of flame-retardant yellow/black plastic and seals with degree of protection IP54
- Maintenance-free gear unit made of plastic, threaded spindle and gearbox base-plates made of steel
- Patented drive-valve coupling
- Mounting column made of aluminium
- Fixing bracket made of cast light alloy for valve fitting with 20 mm stroke and made of plastic for valve fitting with 8 mm stroke
- Electrical connections (max. 1.5 mm<sup>2</sup>) with screw terminals
- Two break-out cable inlets for metric cable gland made of plastic M20 × 1.5
- Fitting position vertically upright to horizontal, not suspended



AVM32\*F1\*\*

### Technical data

#### Power supply

Power supply 24 V~	±20%, 50...60 Hz
Power supply 24 V=	-10...20 °C
Power supply 230 V~	±15%

#### Parameters

Nominal force <sup>2)</sup>	1000 N
Operating noise <sup>3)</sup>	< 30 dB (A) at nominal force
Response time	> 200 ms
Temperature of medium <sup>4)</sup>	0...100 °C max.

#### Ambient conditions

Operating temperature	-10...55 °C
Storage and transport temperature	-40...80 °C
Humidity without condensation	5...85% rh

#### Standards and directives

Type of protection	IP 54 (EN 60529)
Protection class	II (EN 60730), III (EN 60730)
CE conformity according to	EMC directive 2004/108/EC EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	Low-voltage directive 2006/95/EC EN 60730-1, EN 60730-2-14 (AVM32*F110 and F120)
Over-voltage categories	III

<sup>1)</sup> To be used outside HVAC applications only after consultation with the manufacturer

<sup>2)</sup> Actuating power 1000 N under nominal conditions (24 V or 230 V, 25 °C ambient temperature, 50 Hz). With boundary conditions (19.2 V~ / 28.8 V~ / 21.6 V= / 28.8 V=, -10 °C / 55 °C, 60 Hz) and positioning time, the actuating/tensile force is minimised to 800 N

<sup>3)</sup> Operating noise with the slowest positioning time, measuring distance 1 m

<sup>4)</sup> At media temperature > 100 °C, appropriate accessory must be used (temperature adaptor). At media temperature < 0 °C, appropriate accessory must be used (stuffing box heater).

Degree of contamination	II
Max. altitude	2000 m
Machine directive 2006/42/EC (according to appendix IIB)	EN 12100

#### Overview of types

Type	Nominal voltage	Power consumption	Positioning time (s/mm)	Nominal stroke	Dimensions W x H x D	Weight
AVM322F120	230 V~	< 2.4 W, < 4.0 VA	6 (12)	20 mm	160 × 241 × 88	1.6 kg
AVM322F122	24 V~/=	< 2.0 W, < 3.0 VA	6 (12)	20 mm	160 × 241 × 88	1.6 kg
AVM321F110	230 V~	< 2.4 W, < 4.0 VA	12 (6)	8 mm	160 × 187 × 88	1.5 kg
AVM321F112	24 V~/=	< 2.0 W, < 3.0 VA	12 (6)	8 mm	160 × 187 × 88	1.5 kg

💡 AVM32\*F1\*2: CSA-certified actuators on request (only for devices with supply voltage 24 V~/=)

💡 Power consumption: at nominal voltage, with movement. For more power consumption data, see table "Power consumption for supply voltage".

#### Accessories

Type	Description
0372336180	Temperature adaptor for media temperature > 100...150 °C
0372336240	Temperature adaptor for media temperature > 130...200 °C
0510600001	Cable module, 1.2 m, 3-wire, PVC
0510600002	Cable module, 1.2 m, 3-wire, halogen-free
0510600003	Cable module, 1.2 m, 6-wire, PVC
0510600004	Cable module, 1.2 m, 6-wire, halogen-free
0510600005	Cable module, 5 m, 3-wire, PVC
0510600006	Cable module, 5 m, 3-wire, halogen-free
0510600007	Cable module, 5 m, 6-wire, PVC
0510600008	Cable module, 5 m, 6-wire, halogen-free
0510240012	Mounting set V6... / B6... up to 20 mm stroke
0510390006	Adaptations for non-SAUTER valves (Siemens) with stroke up to 20 mm and spindle diameter of 10 mm
0510390007	Adaptations for non-SAUTER valves, JCI: VBD-4xx4 DN 15...40, VBD-4xx8 DN 15...40, VBF-2xx4, VBF2xx8, VBB-2xxx, VG82xx VG84xx, VG88xx VG89xx
0510390008	Adaptations for non-SAUTER valves, Honeywell: V5025A DN 15...80, V5049A oder B DN 15...65, V5050A DN 15...80, V5095A DN 15...80, V5328A DN 15...80, V5329A DN 15...80
0510390009	Adaptations for non-SAUTER valves, LDM: RV113 R/M, DN15-80
0510390010	Adaptations for ITT, Dräger: PSVF DN 15...32, PSVD DN 15...32, SVF DN 15...32, SVD DN 15...32
0510390012	Adaptation for non-SAUTER valves, Belimo: H6..R DN15...65, H7..R DN 15...65, H4..R DN 15...50, H5..B DN 15...50, H6..N DN 15...65, H7..N DN 15...65

#### Description of operation

The actuator can be used as a 2-point (OPEN/CLOSE) or 3-point actuator (OPEN/STOP/CLOSE). The running time of the actuator can be set with the S1 switches according to the respective requirements.

Using switch S2, the direction of operation can be changed.

In the end positions (valve limit stop or when the maximum stroke is reached) or upon overload, the electronic motor cut-off (no limit switch) responds and turns off the motor.

The external crank handle enables manual positional setting. After the crank handle is folded back, the actuator can be started again normally. When the crank handle is folded out, the actuator remains in this position.

#### Connection as 2-point actuator (24 V or 230 V)

The OPEN/CLOSE activation is via two wires.

The actuator is connected to a permanent voltage via the terminals MM or N and terminal 01.

When voltage is applied to terminal 02, the actuator spindle extends to the end position.

After switching off the voltage at terminal 02, the actuator spindle extends into the opposite end position.

### Connection as 3-point actuator (24 V or 230 V)

If voltage is applied to the terminals N and MM or 01 (or 02), the valve can be moved to any desired position.

If voltage is applied to terminal MM or N and 01, the actuator spindle extends.

If the electrical circuit is closed via terminal MM or N and 02, the actuator spindle retracts.

If there is no voltage on terminals 01 and 02, the actuator remains in the respective position until voltage is applied.

### Intended use

This product is only suitable for the purpose intended by the manufacturer, as described in the "Description of operation" section.

All related product documents must also be adhered to. Changing or converting the product is not admissible.

### Engineering and fitting notes

The concept of synchronous motor / electronics ensures electrical parallel operation of up to five actuators of the same type.

The actuator is mounted directly on the valve and fixed with screws (no further adjustments are required). The actuator is connected with the valve spindle automatically.

As delivered ex works, the actuator spindle is in the middle position.

Condensate, dripping water, etc. must be prevented from entering the actuator along the valve spindle.

The housing contains two break-out cable inlets for two metric plastic cable glands M20×1.5, which are broken out automatically when the cable inlet is screwed in.

The cross-section of the power cable must be selected based on the cable length and the number of actuators. With five actuators wired in parallel and a cable length of 50 m, we recommend a cable cross-section of 1.5 mm<sup>2</sup> (power consumption of the actuator × 5).

According to building installation regulations, the lines must be protected from overload or short circuit.



Note for UL and CSA applications:

In the United States, the installed lines and cross-sections which are to be connected by the customer must comply with the requirements of NFPA70 (NEC), and in Canada they must comply with the requirements of the standard C22.1-12 (CE Code).

The coding switches are accessible via an opening in the connection area of the actuator. Changes are allowed only in the de-energised state.



Note:

Always disconnect the device from the mains before removing the plastic cover for the connection area.

The actuators are not suitable for use

- in potentially explosive environments,
- on ships or vehicles,
- in plants or machinery where functional safety is required.

Specific standards such as IEC/EN 61508, IEC/EN 61511, EN ISO13849 and the like have not been taken into account.

Local requirements regarding installation, usage, access, access rights, accident prevention, safety, dismantling and disposal must be taken into account.

The housing must not be opened.

### Outdoor installation

In case of installation outside buildings, the devices must also be protected from the weather.

### Additional information

Fitting instructions	P100011900
Declaration on materials and the environment	MD 51.374
Declaration of incorporation	P100012470

**Power consumption at nominal voltage**

Type	Positioning time (s/mm)	Status	Active power P(W)	Apparent power S (VA)
AVM321F110	12 (6)	Operation	< 2.4	< 4.0
AVM322F120	6 (12)	Standstill <sup>5)</sup>	< 0.35	-
		Sizing		≥ 5.0
AVM321F112	12 (6)	Operation	< 2.0	< 3.0
AVM322F122	6 (12)	Standstill <sup>6)</sup>	< 0.3	-
		Sizing		≥ 4.0

**Coding switch**

AVM321F110, AVM321F112		
	12 s/mm	
	6 s/mm	
AVM322F120, AVM322F122		
	6 s/mm	
	12 s/mm	

<sup>5)</sup> Standstill = actuator in the end position, voltage applied to terminal 1 or 2, motor switched off

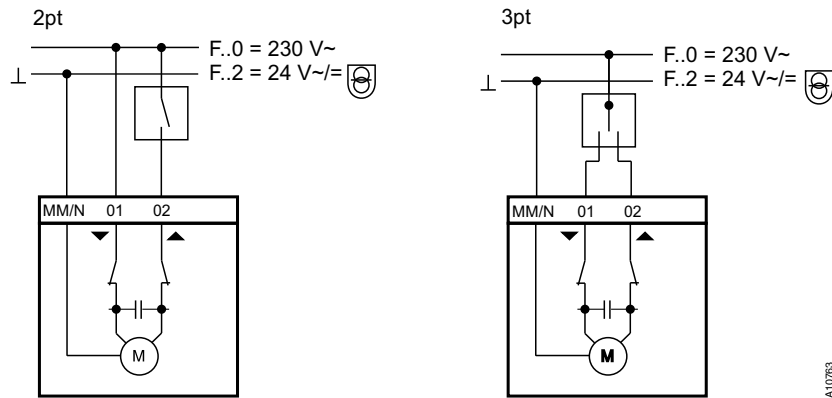
<sup>6)</sup> Standstill = actuator in the end position, voltage applied to terminal 1 or 2, motor switched off.

**Disposal**

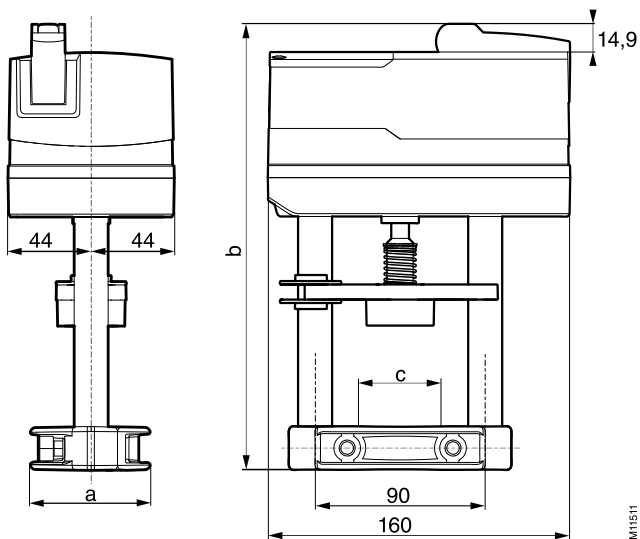
When disposing of the product, observe the currently applicable local laws.  
 More information on materials can be found in the Declaration on materials and the environment for this product.

**Connection diagram**

2pt/3pt multi-position action



**Dimension drawing**



Type	a	b	c
AVM 321	53	187.4	33
AVM 322	64	241	44