AXS 111S: Continuous drive (with positioner) for unit valves

For controllers with a continuous output (0...10 V). For activating valves of the VUL, VXL and BUL, BXL series in conjunction with individual-room control systems (*ecos*, NRT, RDT etc.), or for other HVAC applications. Existing systems can be upgraded with this drive by employing the adaptors.
Housing of fire-retardant plastic in pure white (as per RAL 9010); integrated position indicator.
Fitted to valve with bayonet ring M30×1.5 and bayonet nut. Can be fitted in any position between the vertical and the horizontal. White power cable (2 m in length on standard version, 4 × 0.25 mm²), fixed to the housing.

T10082

Type	Running time		Stroke [2]	Spring force	Power [3]	Weight
	Dead time [1]	Regulation	[mm]	[N]		[kg]
AXS 111S F202	80 s	30 s/mm	4.5 (Standard)	125	24 V~	0.15
AXS 111S F402	80 s	30 s/mm	3 (Standard)	125	24 V~	0.15

Power supply	24 V~	± 20%, 50...60 Hz	
Power consumption:-			
in operation		3 W	
on starting		6 W	
starting current		230 mA	
stand-by current		25 mA	
Control voltage		0...10 V; Ri ≥ 800 kΩ	
Max. operating temperature		100 °C at valve	

Ambient temperature	–5...50 °C
Ambient humidity	< 95 %rh
Degree of protection	IP 44 (EN 60529)
Protection class	III (IEC 60730)
Wiring diagram	A10007
Dimension drawing	M10083
Fitting instructions	MV 505821
Declaration of materials	MD 55.014

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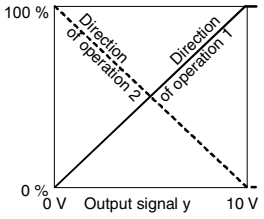

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Variants

AXS 111S F252 As standard version F202 (24 V~), but length of cable is 5 m, weight is 0.4 kg
AXS 111S F272 As standard version F202 (24 V~), but length of cable is 7 m, weight is 0.7 kg

Accessories

0313529 001* Split-range unit for setting sequences; fitted as per MV 505671 in separate junction box
0371235 001 Adaptor for fitting to *Oventrop* valves (M30 × 1)
0371245 001 Adaptor for fitting to *Danfoss* RA 2000 valves (e.g. RA-N, Ø 22 mm)
0371356 001 Adaptor for fitting to *Beulco* or *Tobler* underfloor-heating distribution stations
0371357 001 Adaptor for fitting to *Giacomini* valves, type R450, R452, R456 and Programme 60
0371359 001 Adaptor for fitting to *Danfoss* valves, type RAVL (Ø 26 mm)
0371360 001 Adaptor for fitting to *Danfoss* valves, type RAV (Ø 34 mm)
0371361 001 Adaptor for fitting to *Herz* valves, type Herz-TS'90
0371363 001 Adaptor for fitting to *Tour & Andersson* valves, type TA
0371916 001 Adaptor for fitting to *Markaryd* valves (Swedish product)

*) Dimension drawing and wiring diagram are available under the same number

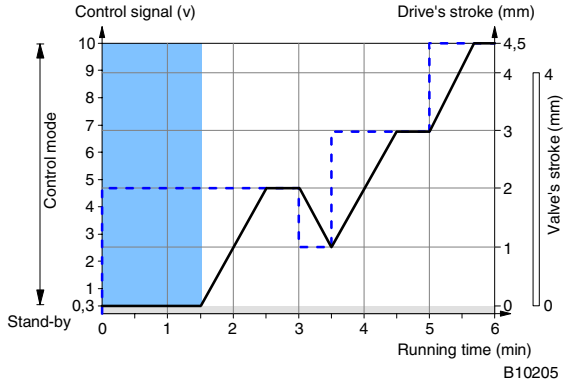
1) After stand-by mode, the dead time must be added to the running time
2) Can be set in the factory to between 3 mm and 4.5 mm according to order
3) Direction of operation if power supply is interrupted: normally closed

Operation

The actuator has an electrically heated, overload-proof expansion element which transfers its stroke direct to the valve. It works silently and requires no maintenance.
When the heating element is switched on from cold, the valve (after a warming-up period of about 80 seconds) starts to open, reaching the maximum stroke of 4.5 mm after about 85 seconds. When the drive is regulating, a movement of 1 mm is carried out in about 30 seconds; the stroke is monitored by a Hall sensor. The closing operation is similar (with regard to time) to the opening operation: the expansion element cools down and the valve is closed by spring pressure.

Running time (warming-up)
From cold, the drive requires a warming-up period of approx. 80 seconds. A similar period is also needed if the drive is in the stand-by position for more than 6 minutes. The drive is then ready for control operations.

Running time (control)
When the drive is in control mode, the stroke of 4.5 mm is attained in approx. 85 seconds. A change of 1 mm in the stroke can be attained within 18 to 30 seconds. This tolerance depends on how long the drive stays in one position, before the positional change is ordered.



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Depending on the way it is wired up (see wiring diagram), the continuous drive can be used as 0...10 V (direction of operation 1) or 10...0 V (direction of operation 2). The output signal is then allocated linearly to this effective stroke. The integrated positioner controls the drive as a function of positioning signal *y*. The continuous drive positions the valve and the position is held as soon as it has been reached. The drive goes to stand-by mode as soon as the control voltage falls below 0.3 V (in the case of direction of operation 1) or rises above 9.7 V (in the case of direction of operation 2). Afterwards, the dead time comes into effect before control can take place.

Direction of operation 1
Power is applied to wires 1 and 3a. As the output signal rises, the spindle retracts and opens either the VUL/VXL through valve or the control passage on the BUL three-way valve. On the BXL three-way valve, the control passage closes and the mixing passage opens.

Direction of operation 2
Power is applied to wires 1 and 3b. As the output signal rises, the spindle extends and closes either the VUL/VXL through valve or the control passage on the BUL three-way valve. On the BXL three-way valve, the control passage opens and the mixing passage closes.

The unused wire (red or white) should not be connected; nor should it come into contact with other wires. We recommend that it be insulated.

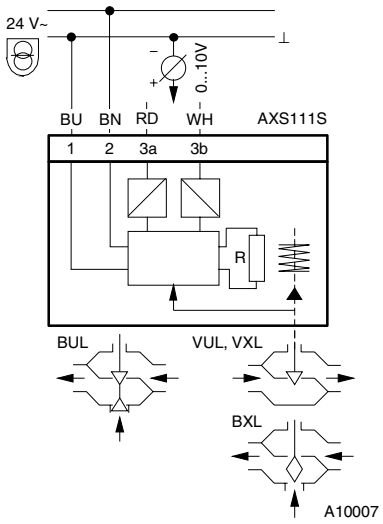
Split-range unit, accessory 0361529 001
The starting point U_0 and the control span ΔU can be set via potentiometer. This means that the controller's control signal can be used to operate several regulating units in sequence or in cascade. The input signal (partial range) is amplified into an output signal of 0...10 V. This accessory cannot be fitted in the drive, but must be mounted externally in an electrical junction box.
The drive can be ordered with an internal split-range function on request, in which case no accessories are needed. The following factory settings are possible: 0...4.5 V and 5.5...10 V.

Engineering and fitting notes
When choosing the switching contacts and the mains fuses, the start-up current of the heating element should be taken into account. The loss in power supply through the electric cable should not exceed 10%, otherwise the stated running time may not be attained.
The drive is fitted onto the valve by means of the bayonet connector. To do this, the bayonet ring is screwed onto the valve first; then the drive with the bayonet nut is slotted on. No tools should be used to fit the drive onto the valve; tightening by hand is sufficient.
Fitting outdoors. If the devices are fitted outdoors, we recommend that additional measures be taken to protect them against the effects of the weather.

CE conformity

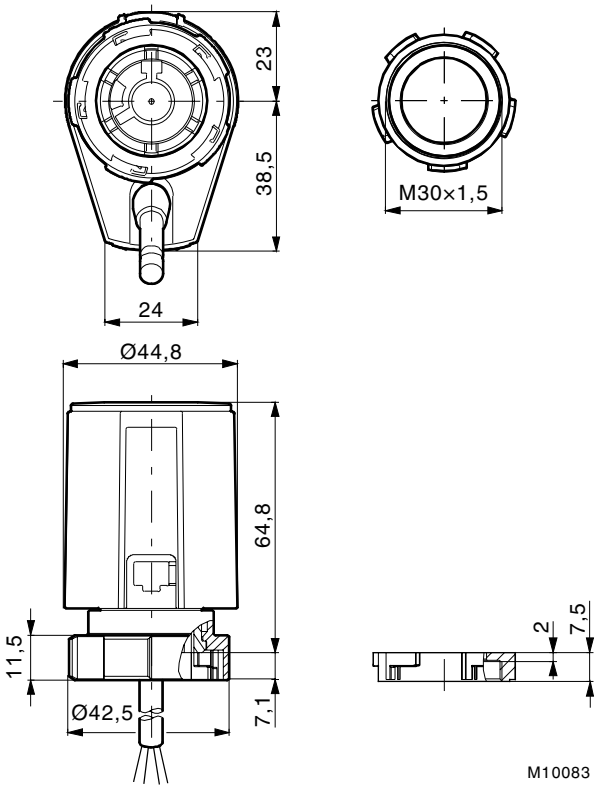
EMC directive 89/336/EEC	
EN 61000-6-1	
EN 61000-6-2	
EN 61000-6-3	Over-voltage category II
EN 61000-6-4	Degree of Pollution II

Wiring diagram



BU = blue
BN = brown
RD = red
WH = white

Dimension drawing



Accessories

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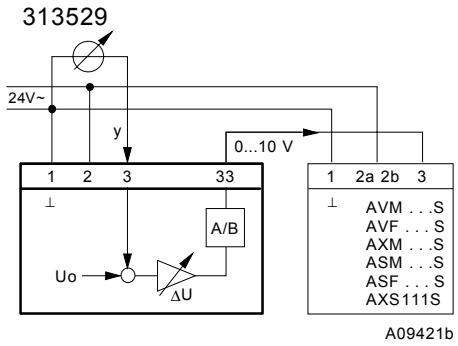

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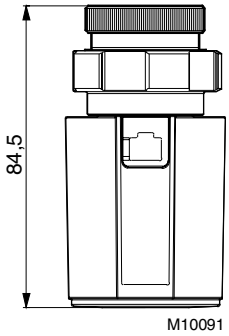

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N.B.: A comma between cardinal numbers denotes a decimal point

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