

## LINEAR ELECTRIC ACTUATORS AVM234S and AVF234S

### DESCRIPTION

The ADCATrol AVM234S / AVF234S valve actuators offer automatic adaptation to the stroke of the valve, precision activation and high energy efficiency with minimal operating noise.

Ideal for use with any DSH series direct steam injection humidifier and in TDS (Total Dissolved Solids) control systems VPC blowdown valves.

In case of power failure/interruption, the AVF234S actuator runs, spring driven, into its respective fail-safe position (thrust rod extended). In modulating duty, the end position seating is made via limit switches.

### MAIN FEATURES

IP 66 protection.

Automatic detection of control signal with LED indications.

Adjustable characteristic curve (linear, quadratic and equal-percentage) and running time via DIP switch.

Automatic adaptation to valve stroke.

Manual operation with disengagement of the actuator motor.

Mechanical stroke indication.

Spring-return feature (AVF234S).

Switching input (2-point or 3-point-step control) or analogue input (0...10 V or 4...20 mA).

### OPTIONS AND

**ACCESSORIES:** Split-range unit for adjusting sequences.  
230 V AC and 100 V AC power supply modules.  
Auxiliary change over contacts.  
Potentiometers, e.g. for 3-point-step in closed loop.  
Adapters for high temperature conditions.

**USE:** Actuation of V series ADCATrol control valves, or others on request.

### AVAILABLE

**MODELS:** AVM234S.  
AVF234S – Fail-safe with spring-return.



## TECHNICAL DATA

| MODEL                               | AVM234S                                                                     | AVF234S   |
|-------------------------------------|-----------------------------------------------------------------------------|-----------|
| Power supply                        | 230 V 50/60 Hz / 110 V 50/60 Hz / 24 V 50/60 Hz / 24 V DC                   |           |
| Power consumption <b>(a)</b>        | 10 W (20 VA) for 24 V 50/60 Hz and 24 V DC; 13 W (28 VA) for 230 V 50/60 Hz |           |
| Running time of motor mm/min (mm/s) | 10 (0,17), 15 (0,25), 30 (0,50)                                             |           |
| Running time of spring <b>(b)</b>   | –                                                                           | 15...30 s |
| Actuating power                     | 2,5 kN                                                                      | 2 kN      |
| Response time for 3-point-step      | 200 ms                                                                      |           |
| Number of spring returns            | –                                                                           | >40,000   |
| Actuator stroke                     | 0...49 mm                                                                   | 0...40 mm |
| Housing material                    | Fire-retardant plastic                                                      |           |
| Control signal 1                    | 0...10 V, Ri=100 kΩ                                                         |           |
| Control signal 2                    | 4...20 mA, Ri=50 Ω                                                          |           |
| Positional feedback 0-10V           | 0...10 V; load > 2,5 kΩ                                                     |           |
| Starting point U0                   | 0 V or 10 V                                                                 |           |
| Control span ΔU                     | 10 V                                                                        |           |
| Switching range Xsh                 | 300 mV                                                                      |           |
| Admissible ambient temperature      | -10...55 °C                                                                 |           |
| Admissible ambient humidity         | < 95% rh, no condensation                                                   |           |
| Temperature of medium <b>(c)</b>    | Max. 130 °C (180 or 200 °C with accessories)                                |           |
| Type of protection                  | IP66 (EN 60529)                                                             |           |
| Protection class                    | III (IEC 60730)                                                             |           |
| EMC Directive 2014/30/EU <b>(d)</b> | EN 61000-6-2, EN 61000-6-4                                                  |           |
| Low-voltage directive 2014/35/EU    | EN 60730-1, EN 60730-2-14                                                   |           |
| Over-voltage category               | III                                                                         |           |
| Degree of contamination             | III                                                                         |           |

**(a)** Choose transformer for this value, otherwise malfunctions may occur.

**(b)** Return time equates to stroke of 14...40 mm and does not depend on set running time.

**(c)** Adaptor needed for higher temperatures (180 or 200 °C) (see accessories and options).

**(d)** EN 61000-6-2: HF immunity, limitation of feedback signal between 80 MHz and 1000 MHz criterion B, otherwise criterion A.

| OPTIONS AND ACCESSORIES                                                                                             | TYPE       |
|---------------------------------------------------------------------------------------------------------------------|------------|
| Split-range unit for adjusting sequences, fitted in separate junction box                                           | 313529 001 |
| Module for 2-point/3-point and analogue activation; additional power 2 VA; 230 V AC ± 15% supply voltage            | 372332 001 |
| Module for 2-point/3-point and analogue activation; additional power 2 VA; 100 V AC ± 15% supply voltage            | 372332 002 |
| Aux. change-over contacts 12...250 V ac; Infinitely variable, min. 100 mA and 12 V permissible load 6(2) <b>(a)</b> | 372333 001 |
| Aux. change-over contacts 12...250 V ac; Gold plated, from 1 mA, to max. 30 V, wider range 3(1) <b>(a)</b>          | 372333 002 |
| Potentiometer 2 kΩ 1 W 24 V                                                                                         | 372334 001 |
| Potentiometer 130 Ω 1 W 24 V                                                                                        | 372334 002 |
| Potentiometer 1 kΩ 1 W 24 V                                                                                         | 372334 006 |
| Adapter required when the temperature of the medium is 130...180 °C                                                 | 372336 180 |
| Adapter required when the temperature of the medium is 180...240 °C                                                 | 372336 240 |

**(a)** Two contacts each.

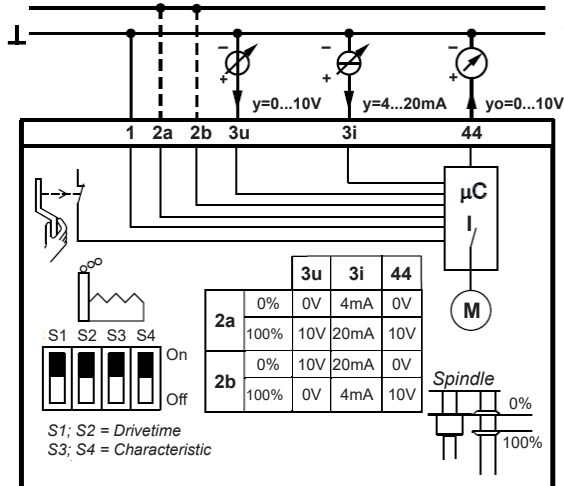
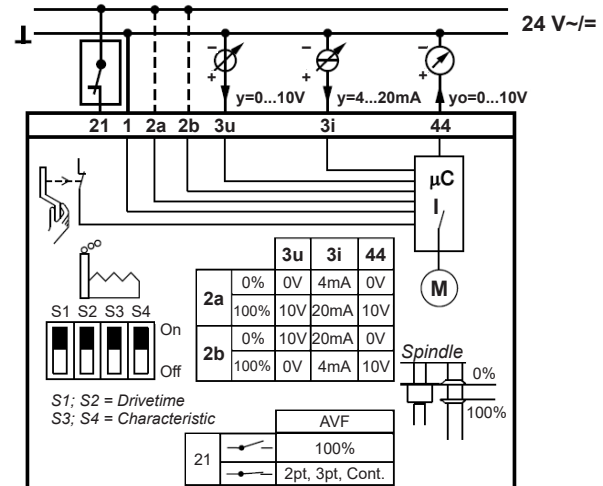
## ELECTRICAL CONNECTIONS

### BASIC WIRING DIAGRAMS

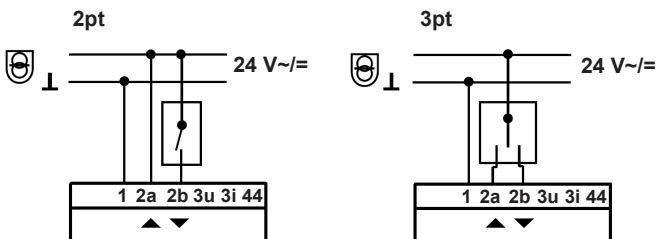
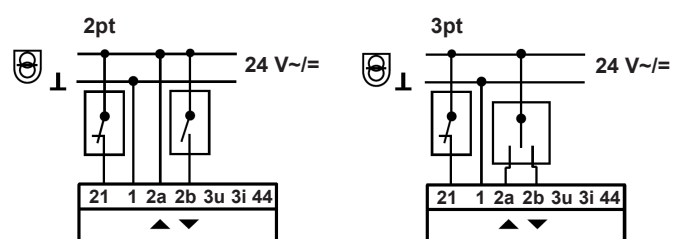
AVM234S

AVF234S

#### ANALOGUE 0...10 V / 4...20 mA INPUT



#### 2-POINT / 3-POINT STEP SWITCHING INPUT

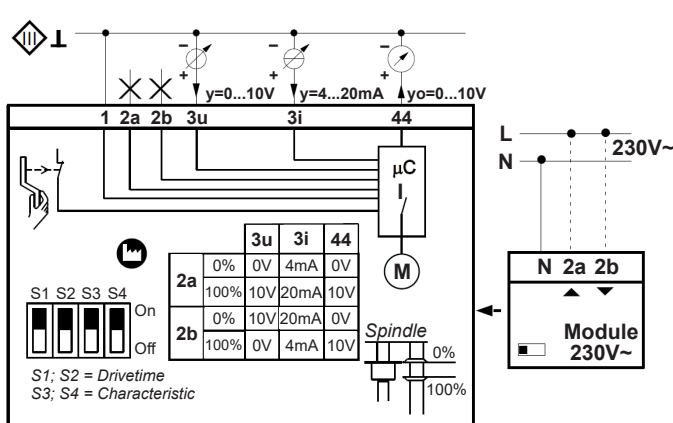
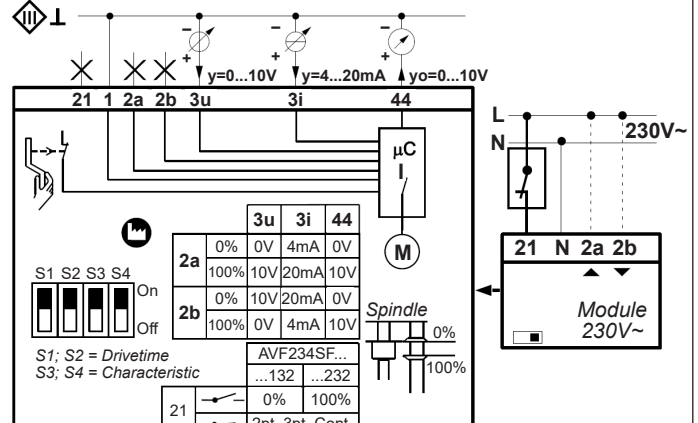


### OPTIONS AND ACCESSORIES WIRING DIAGRAMS

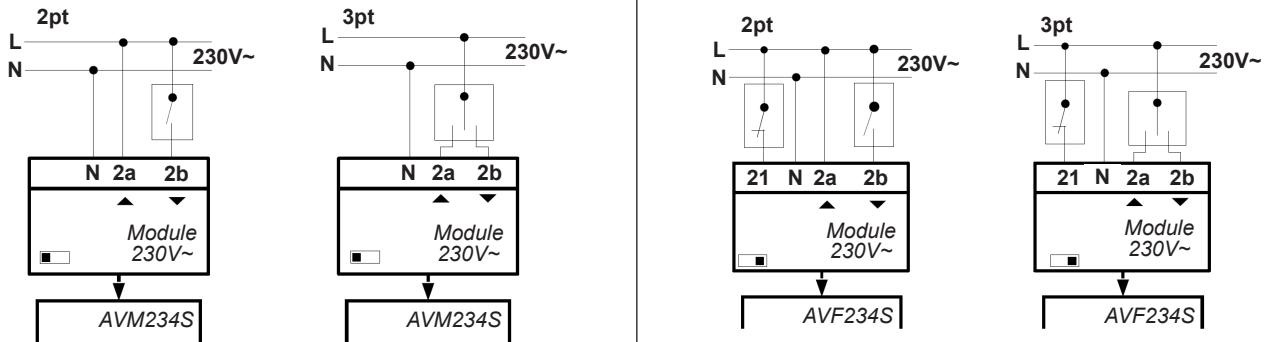
AVM234S

AVF234S

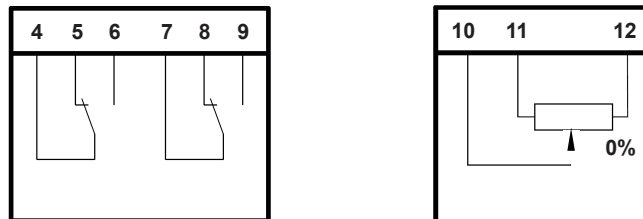
#### ANALOGUE 0...10 V / 4...20 mA INPUT (a)



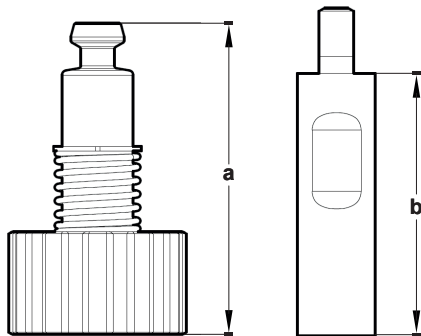
2-POINT / 3-POINT STEP SWITCHING INPUT WITH 230 V AC POWER SUPPLY (a)



AUXILIARY CONTACTS AND POTENTIOMETERS (b)

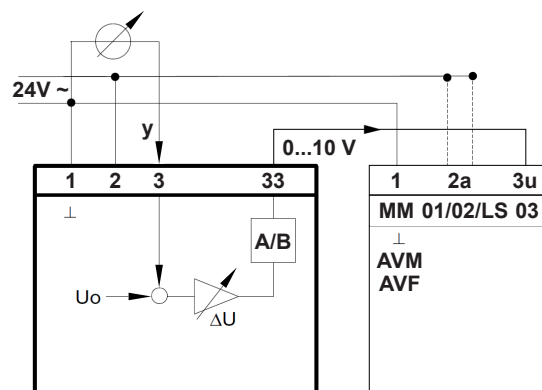


HIGH TEMPERATURE ADAPTERS (c)

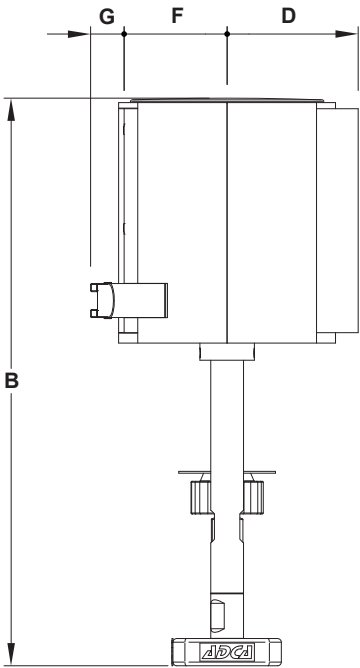
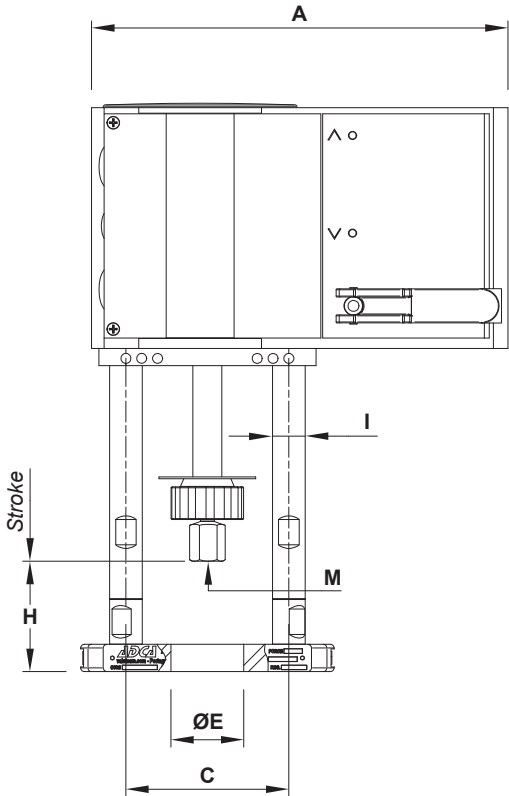


| TYPE       | T (°C) | a (mm) | b (mm) |
|------------|--------|--------|--------|
| 372336 180 | 180    | 69,4   | 60     |
| 372336 240 | 200    | 109,4  | 100    |

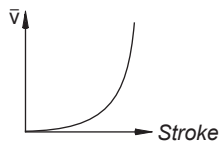
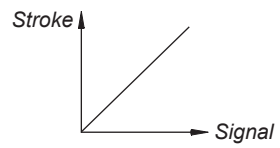
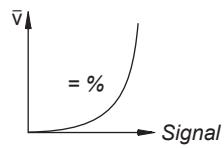
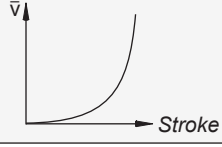
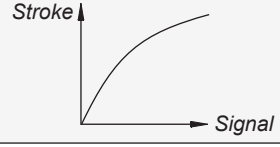
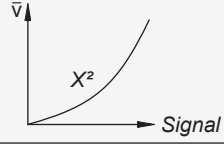
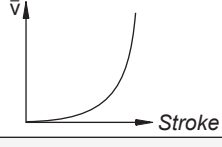
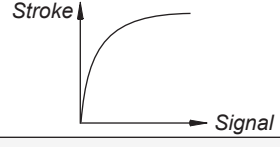
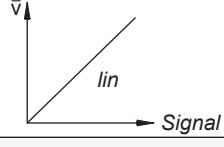
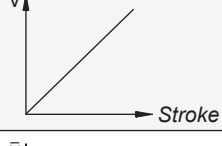
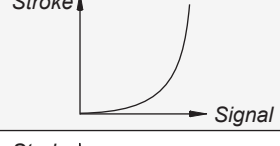
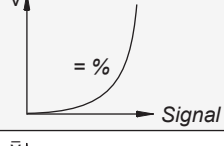
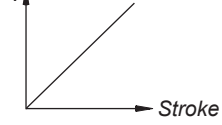
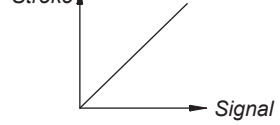
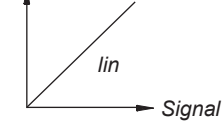
SPLIT RANGE UNIT (d)



- (a) Using accessory type 372332 001. Same connections apply for the 100 V AC modules (type 372332 002).  
 (b) Accessories type 372333 001, 372333 002, 372334 001, 372334 002 and 372334 006.  
 (c) Accessories type 372336 180 and 372336 240.  
 (d) Accessory type 313529 001.



| DIMENSIONS (mm)    |     |     |    |    |    |    |    |    |    |     |             |
|--------------------|-----|-----|----|----|----|----|----|----|----|-----|-------------|
| MODEL              | A   | B   | C  | D  | ØE | F  | G  | H  | I  | M   | WEIGHT (kg) |
| AVM234S<br>AVF234S | 230 | 314 | 90 | 72 | 40 | 57 | 18 | 37 | 18 | M10 | 4,1         |

| TYPE OF CHARACTERISTIC CURVES |                                                                                                                                                                                                                                                  |                                                                                    |                                                                                     |                                                                                      |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| DESIRED CHARAC. CURVE         | SWITCH CODING                                                                                                                                                                                                                                    | CHARACTERISTIC CURVE FOR VALVE                                                     | CHARACTERISTIC CURVE FOR DRIVE                                                      | EFFECTIVE ON VALVE                                                                   |
| Equal percentage              | <div>1 2 3 4</div> <div> <div></div> <div></div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> </div> <div>On</div> <div>Off</div>  |   |   |   |
| Quadratic                     | <div>1 2 3 4</div> <div> <div></div> <div></div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> </div> <div>On</div> <div>Off</div>                                                                                   |   |   |   |
| Linear                        | <div>1 2 3 4</div> <div> <div></div> <div></div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> </div> <div>On</div> <div>Off</div>                                                                                   |   |   |   |
| Equal percentage              | <div>1 2 3 4</div> <div> <div></div> <div></div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> </div> <div>On</div> <div>Off</div>                                                                                   |   |   |   |
| Linear                        | <div>1 2 3 4</div> <div> <div></div> <div></div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> </div> <div>On</div> <div>Off</div>                                                                                   |  |  |  |

 = factory setting.

| MOTOR RUNNING TIME SELECTION GUIDE |                                                                                                                                                                                                  |                           |                           |                           |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------|---------------------------|
| RUN PER TIME (mm)                  | SWITCH CODING                                                                                                                                                                                    | RUN TIME FOR 14 mm STROKE | RUN TIME FOR 20 mm STROKE | RUN TIME FOR 40 mm STROKE |
| 2s                                 | <div>1 2 3 4</div> <div> <div></div> <div></div> <div></div> <div></div> </div> <div>On</div> <div>Off</div>                                                                                     | 28s ± 1                   | 40s ± 1                   | 80s ± 4                   |
| 4s                                 | <div>1 2 3 4</div> <div> <div></div> <div></div> <div></div> <div></div> </div> <div>On</div> <div>Off</div>                                                                                     | 56s ± 2                   | 80s ± 4                   | 160s ± 4                  |
| 6s                                 | <div>1 2 3 4</div> <div> <div></div> <div></div> <div></div> <div></div> </div> <div>On</div> <div>Off</div>  | 84s ± 4                   | 120s ± 4                  | 240s ± 8                  |

 = factory setting.