

# DM1.1F(S) New-Generation MODULATING spring-return actuators



**Universal, accurate and reliable!**



The JOVENTA® Type DM1.1F(S) range of MODULATING electric spring-return actuators has been specially designed to operate safety dampers, e.g. for frost protection, smoke extraction and sealing purposes. The actuators are operated by 0(2)...10 V and 0(4)...20 mA control signals and, in addition, the working range of the signals can be adjusted by potentiometer. The control signals themselves can be changed by repositioning internal jumpers. An output signal equivalent to the input signal provides position indication or slave control.

As the drive motor moves the damper to its normal operating position it also tensions the integral closing spring. If the electric power supply is interrupted for any reason, the stored energy in the spring immediately moves the damper to the safe position. The actuator can also be operated manually by means of a crank handle (e.g. when there is no power supply) to lock the damper in any required position. The locking is cancelled automatically when the actuator is operated electrically. The actuator can be mounted on damper spindles of up to 20 mm diameter and 16 mm square by means of a patented universal adapter system whose great advantage is that the actuator can always be mounted and connected in the same position. The direction of rotation of the return spring can be changed by simply reversing the adapter sleeve. The actuators are maintenance-free and power consumption at the holding positions is reduced to a minimum.

## Type designations/Specifications/Technical data

DM1.1F Spring-return damper actuator 24 V ≈ MODULATING  
 DM1.1F(S) Spring-return damper actuator 24 V ≈ MODULATING with two auxiliary switches

	<b>DM1.1F(S)</b>
Power supply	24 V AC ±20%/DC ±10%
Frequency	50...60 Hz
Power consumption, operating	8 W
For wire sizing	12 VA
Drive torque, min. (Nm)	16
Spring-return torque, min. (Nm)	16
Max. damper area (m <sup>2</sup> )	4
Angle of rotation/working range	95° max. (mech. adjustable)
Angle of rotation/limiting	30...90° adjustable
Running time, drive ca. (s)	90
Running time, spring ca. (s)	10
Position indicator	mechanical
Protection class	II
Degree of protection	IP 44, IP 54 with Pg 11 cable gland (installer supply)
Auxiliary switch rating	3 (1,5) A 24 V
Ambient temperature range	-20° C...+ 50° C
Sound power level, max.	45 dB (A)
EMC	to EN 5008-1
Noise immunity	to EN 50082-2
Equipment specification	to EN 60204-1
Maintenance	maintenance-free
Weight	2900 g

Subject to technical modifications without notice.

# DM1.1F(S) MODULATING spring-return actuators 24 V AC/DC

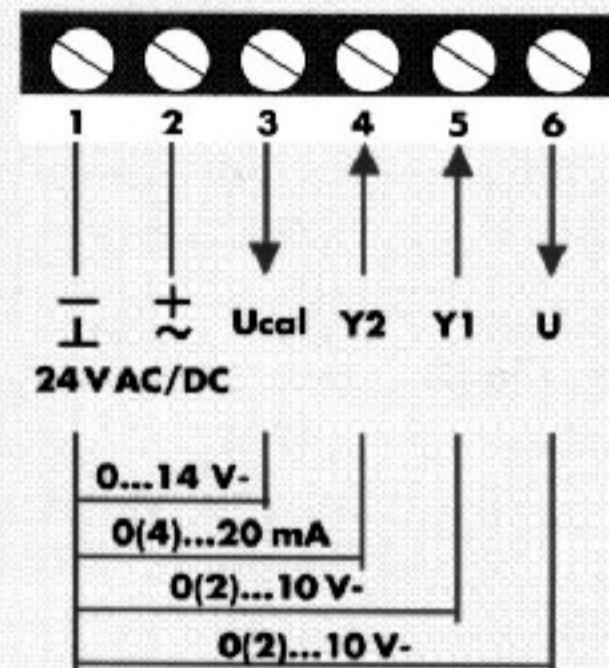


## Terminal diagrams

### Controllers

Type DM1.1F(S) actuators can be operated by electronic controllers providing a control signal of 0(2)...10 V DC or 0(4)...20 mA. It is also possible to adjust the working range to 0...16 V-.

### DM1.1 F(S)



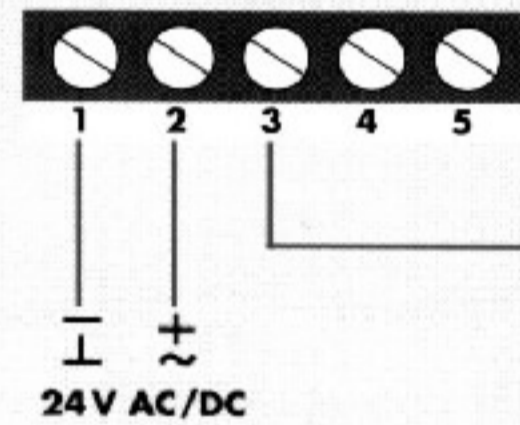
Output Ucal may only be used for adjustment purposes.

Control signal Y1	0(2)...10 V-
Input resistance Y1	100 k $\Omega$
Control signal Y2	0(4)...20 mA
Input resistance Y2	500 $\Omega$
Control signal, var. Y1	0...16 V-
Control signal, var. Y2	0...32 mA
Starting point U <sub>o</sub>	adjustable 0...6 V- (0...12 mA)
Working range $\Delta U$	adjustable 3...10 V- (6...20 mA)
Factory setting	U <sub>o</sub> = 0 V-, $\Delta U$ = 10 V-
Output signal U	0(2)...10 V-
Load resistance U	> 50 k $\Omega$
Calibration output Ucal	0...14 V-

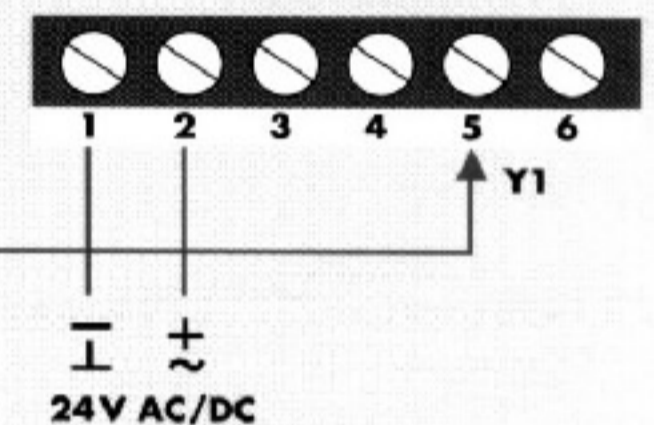
### Position transmitter

Type DM1.1F(S) actuators can also be operated by position transmitters providing a control signal of 0(2)...10 V DC.

### PA, PF



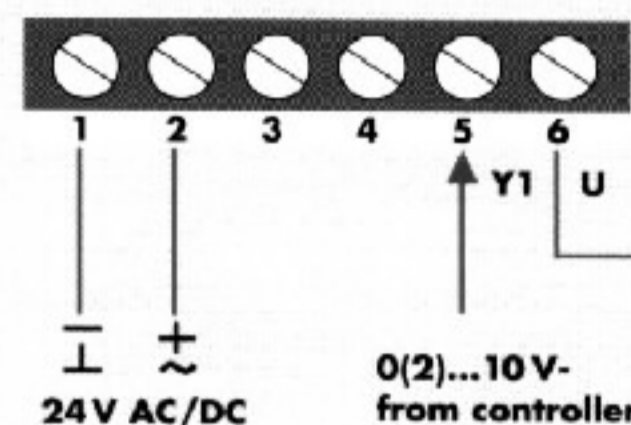
### DM1.1 F(S)



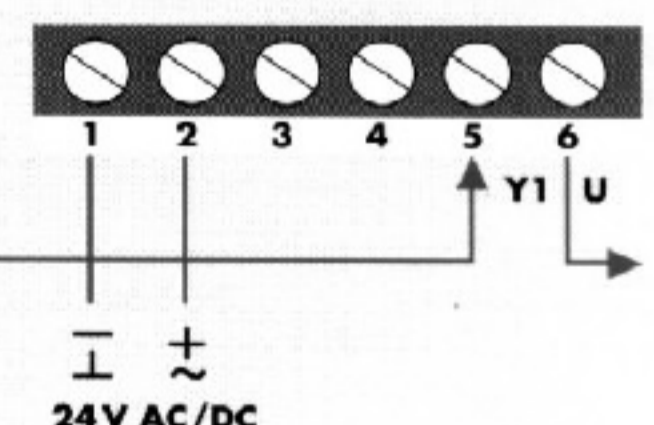
### Slave control

Output signal U = 0(2)...10 V- can be used for the slave control of DM1.1F(S) actuators.

### DM1.1 F(S)



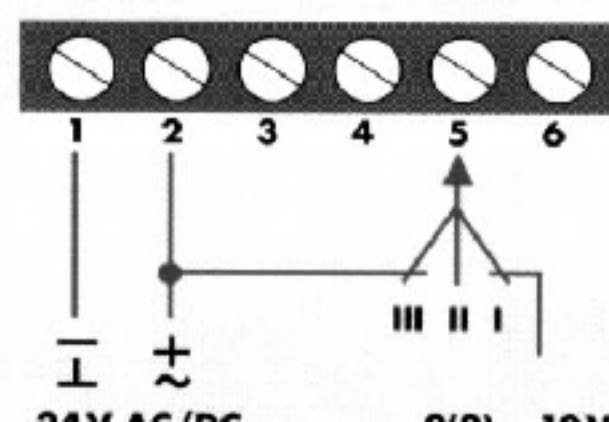
### DM1.1 F(S)



### Override control

Override control of Type DM1.1F(S) actuators can be effected as shown in the adjacent diagrams.

### DM1.1 F(S)



- I Control mode
- II Actuator runs to 0(2) V
- III Actuator runs to 10 V

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## Jumper adjustments

### Changing the control signals

The control signals are factory-adjusted to 0...10 V- and 0...20 mA. The signals can be changed to 2...10 V- and 4...20 mA by means of this jumper.

Y1	0...10 V-	
Y2	0...20 mA	
U	0...10 V-	
Factory setting		
Y1	2...10 V-	
Y2	4...20 mA	
U	2...10 V-	

### Action changing

The action of the actuator can be reversed by means of this jumper. The action of the output signal is changed at the same time.

Clockwise	
Factory setting	
Anticlockwise	

### Adjusting the working range

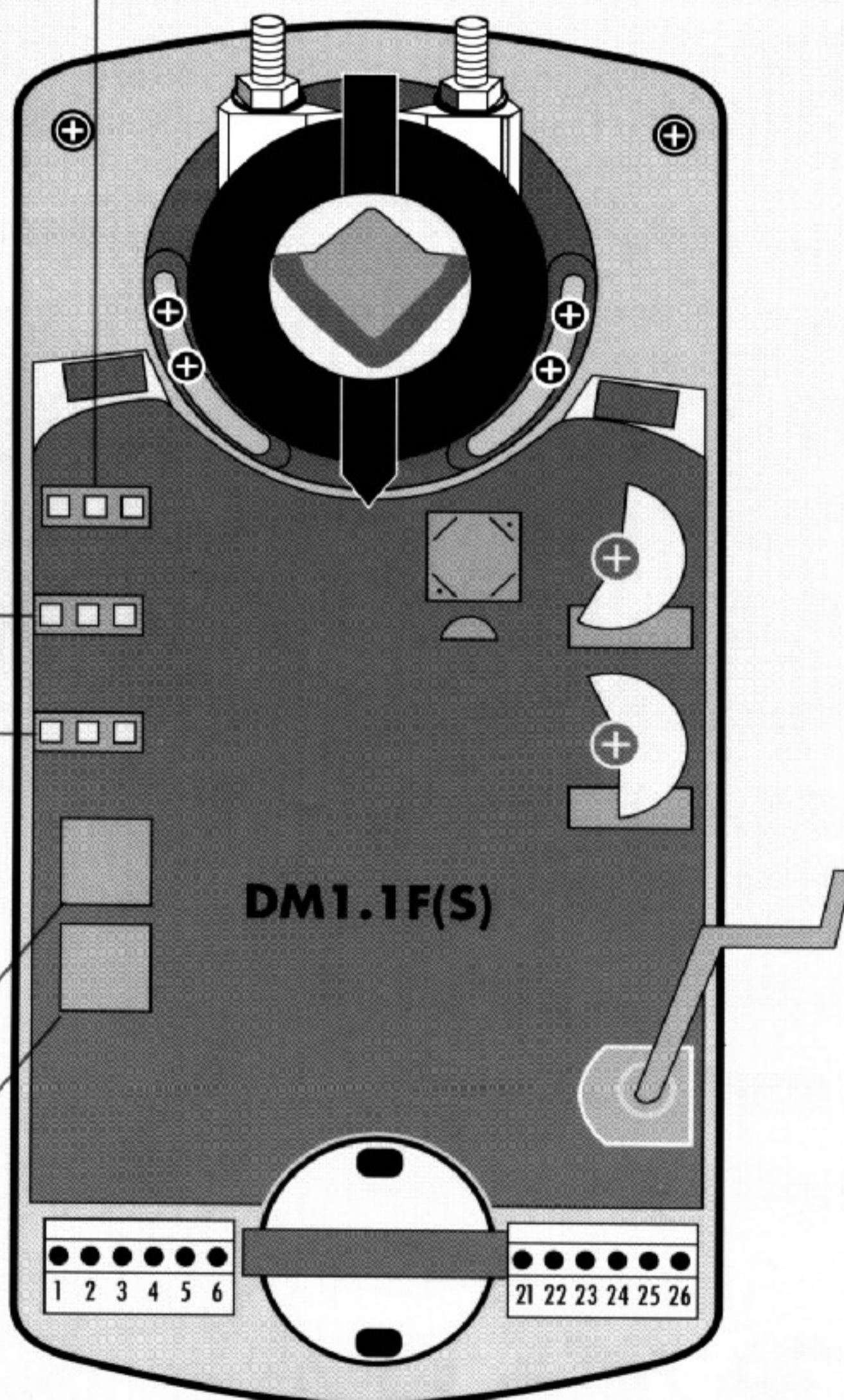
The working range of the actuator can be adjusted by means of this jumper. The output signal is adjusted at the same time.

Fixed working range	
Y1	0(2)...10 V-
Y2	0(4)...20 mA
U	0(2)...10 V-



Adjustable working range, by means of the working-range and starting point potentiometer. Select the starting point potentiometer.

Y1	0...16 V-
Y2	0...32 mA
U	0...10 V-



### Adjusting the working range

**Example:** You want to adjust a starting point of 3 V- and a working range of 5 V-.

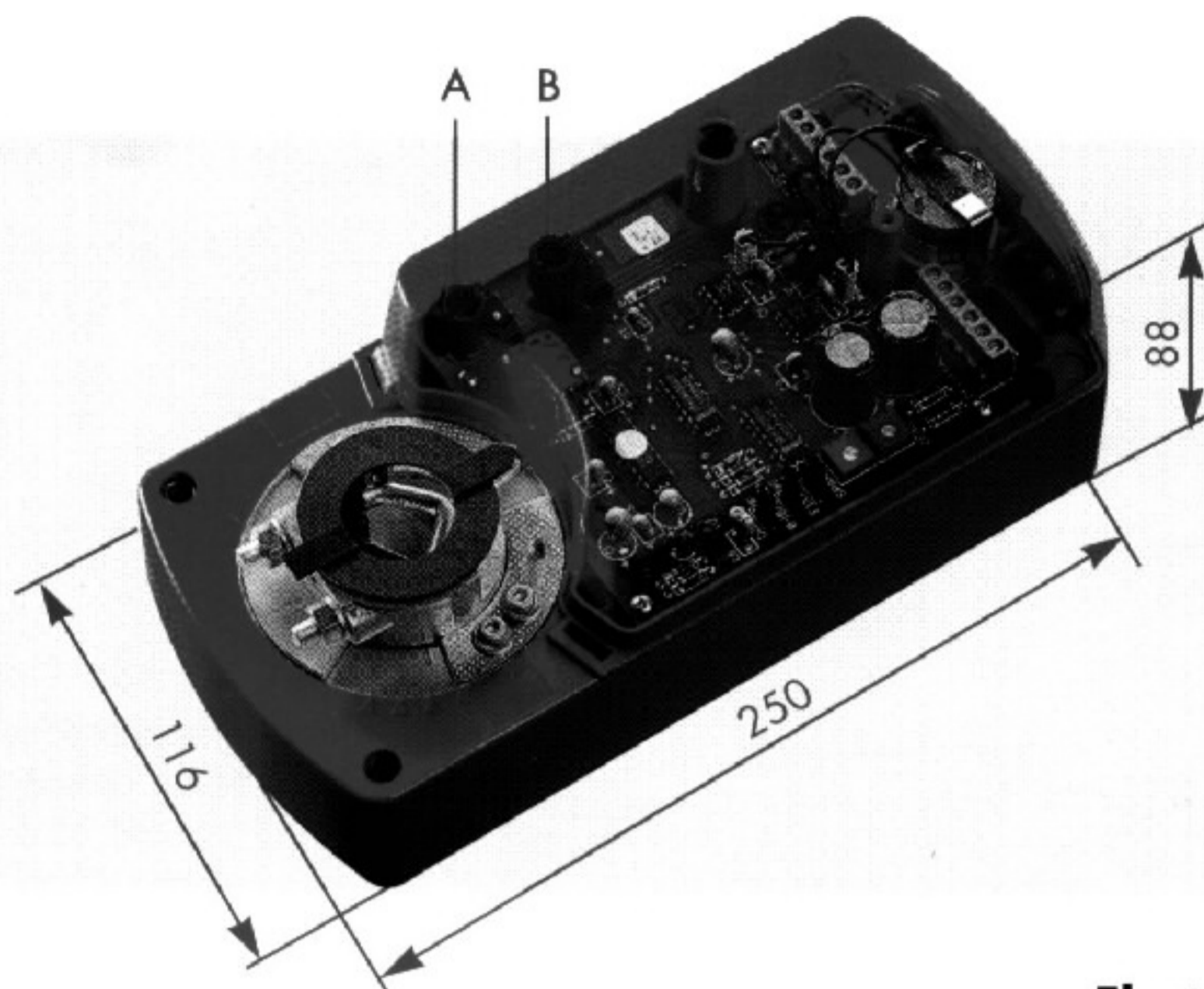
Connect a voltmeter, with the range set to 20 V-, to the positive input terminal 3 and the negative input terminal 1 of the actuator. Position the working-range jumper for «adjustable working range». Switch on the power supply to the actuator. Apply a 3 V- control signal to terminal 5 and rotate the starting-point potentiometer anticlockwise until the voltmeter reads zero. Next, inject maximum control signal to terminal 5. In this particular case it will be 8 V- which produces a working range of 5 V-. Rotate the working-range potentiometer clockwise until the voltmeter is reading 10 V-.

The starting point of the actuator (0°) is now adjusted to 3 V- and the working range (90°) to 5 V-. The output signal U will be 0 V- when the control signal is 3 V- and 10 V- when it is 8 V-.

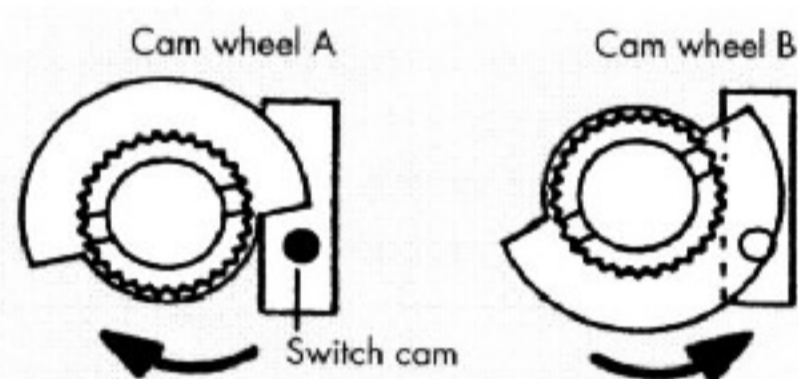
**Note:** Due to the delay with which the actuators respond to control signals, they do not produce mechanical motion instantly.

**The actuators will not function correctly if the two motor jumpers are reversed!**

# DM1.1F(S) First-class actuators technology



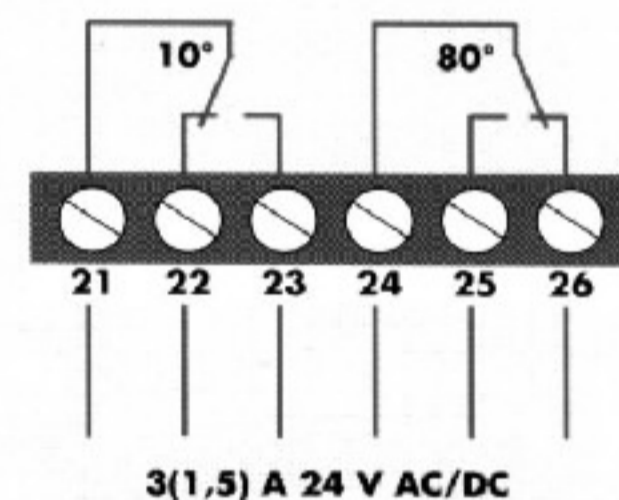
## Auxiliary switches



The two auxiliary switches A and B are set at the factory to approximately 10° (A) and 80° (B). They can be used for end position signalling or for general switching functions.

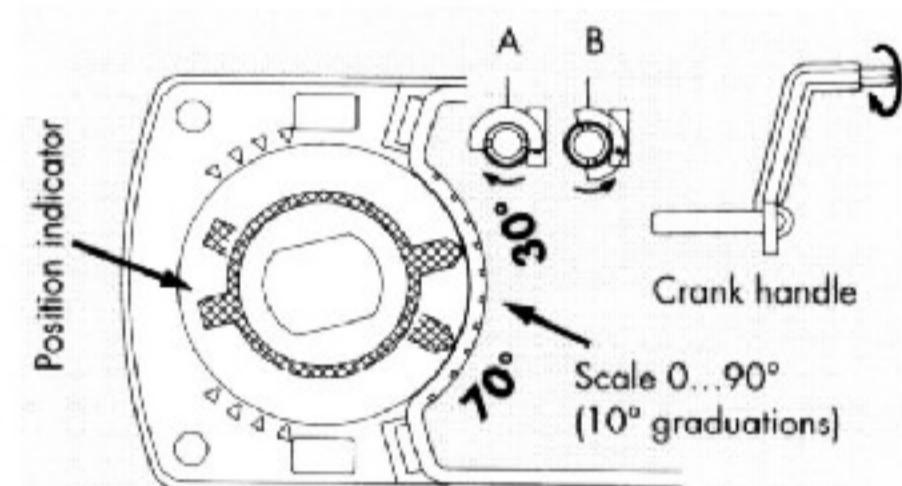
## Electrical terminal connections 24 V AC/DC

### Auxiliary switches DM1.1F(S)



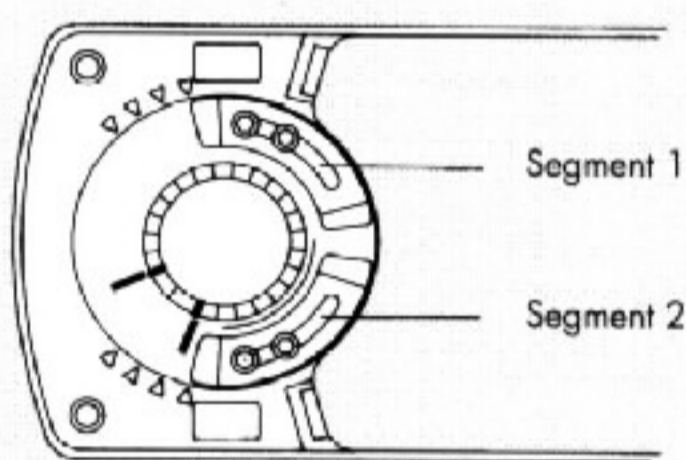
Actuator at zero position

## Auxiliary switch adjustment



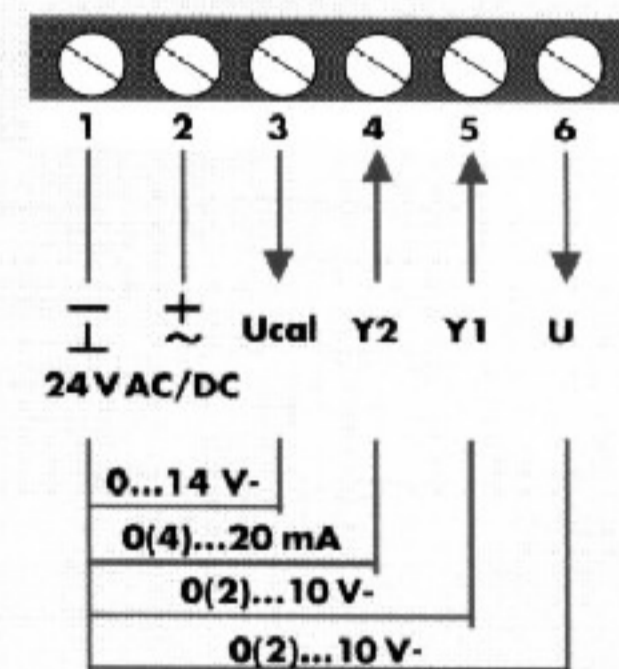
The switching positions of the auxiliary switches are simple to adjust manually as required. Use the crank handle supplied to turn the actuator to the required switching position and then position the cam wheel over the switch cam.

## Angle-of-rotation limiting



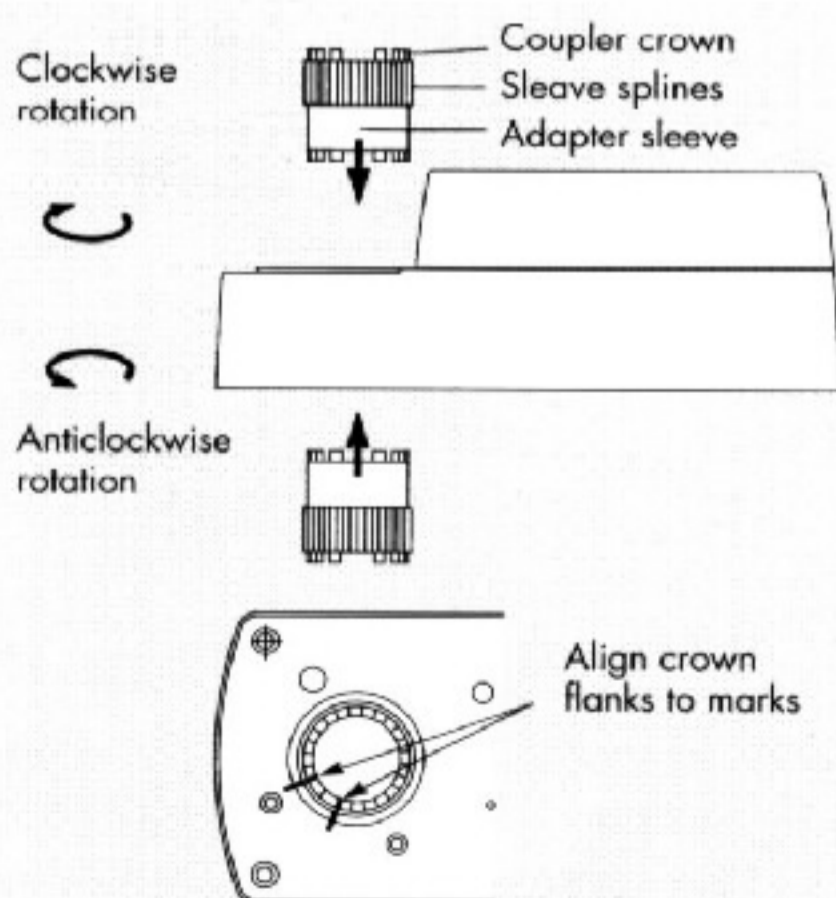
The angle of rotation/working range of 90° can be reduced by up to 30° from each end position by means of Segments 1 and 2.

## Actuator



Output Ucal may only be used for adjustment purposes.

## Changing direction of rotation



The direction of rotation can be changed by simply reversing the adapter sleeve.

**Factory setting / Clockwise rotation.**