

## ADM 333HF: Motorised actuator

### How energy efficiency is improved

Electric cut-off in end position to save energy

### Features

- Actuates final control elements such as butterfly valves and air dampers
- For controllers with a switching output (3-point)
- Synchronous motor with two limit switches and two auxiliary switches
- Feedback potentiometer with path shut-off
- Maintenance-free metal gearbox
- Positions the control unit to any intermediate position
- Three cable inlets with M16 × 1.5 cable gland for 4.5 to 10 mm cable diameter



ADM333HF12\*



### Technical data

Power supply		
	Power supply 230 VAC	±10%, 50...60 Hz
	Power supply 24 VAC	±20%, 50...60 Hz
Parameters		
	Rotation angle <sup>1)</sup>	90°
	Nominal torque	30 Nm
	Holding torque	60 Nm
	Running time for 90°	120 s (de-energised when idle)
	Admissible damper surface area <sup>2)</sup>	10 m <sup>2</sup>
	Path shut-off	Limit switch (NC/NO changeover switch) Switch rating max. 6(2)A, 250 VAC
	Potentiometer	1 kΩ, loop current 0,2 μA (recommended), max. 0.5 W
Ambient conditions		
	Ambient temperature <sup>3)</sup>	-15...60 °C
	Ambient humidity	5...95% rh
	Storage and transport temperature	-30...70 °C
Design		
	Cable inlet	3 pcs, M16 × 1.5
	Screw terminals	For electrical cables up to 1.5 mm <sup>2</sup>
	Housing material	Cast aluminium, RAL 9005 Cover: powder-coated aluminium, RAL 1018
	Transmission system	Hardened steel
	Dimensions W × H × D	86 × 167 [137] × 153 mm [ ]: Height without end shaft
	Weight	2.3 kg
Standards, directives		
	Type of protection <sup>4)</sup>	IP65 (EN 60529)
	Protection class	I (EN 60730-1)
	Degree of contamination	III

<sup>1)</sup> 90° angle of rotation of end shaft is adjustable from 10° to 330° using a switching cam (from any starting point).

<sup>2)</sup> Admissible damper surface area: The recommended admissible damper surface area refers to equal-sided, smooth-running air dampers

<sup>3)</sup> At temperatures under 0 °C, use heating resistor (accessory)

With a media temperature of up to 110 °C in the final control element, an ambient temperature up to 60 °C is permitted. With a media temperature above 110 °C, the ambient temperature must not exceed 55 °C

<sup>4)</sup> IP65 protection only with M16 × 1.5 cable gland.



CE conformity according to	EMC Directive 2014/30/EU	EN 61326-1 EN 55011 Group 1, Class B
	Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14
	RoHS-RL 2011/65/EU & 2015/863/EU	EN IEC 63000

#### Overview of types

Type	Voltage	Power consumption with 50 Hz	Features
ADM333HF120	230 VAC	5.3 W	Synchronous motor: 2 limit switches, 2 auxiliary switches, potentiometer feedback
ADM333HF122	24 VAC	5.8 W	Synchronous motor: 2 limit switches, 2 auxiliary switches, potentiometer feedback

#### Accessories

Type	Description
0510510010	Heating resistor for ADM 333, 230 V, 3 W
0510510012	Heating resistor for ADM 333, 24 V, 3 W
0510420020	Parallel relay for ADM 333, 230 V with 3-point activation
0510240031	Mounting kit for ADM 333 with butterfly valve DEF, DN 25...65
0510240032	Mounting kit for ADM 333 with butterfly valve DEF, DN 80...125
0510240033	Mounting kit for ADM 333 with butterfly valve DEF, DN 150...200
0510240041	Mounting kit for ADM 333 with butterfly valve DEF, DN 25...65, hand lever
0510240042	Mounting kit for ADM 333 with butterfly valve DEF, DN 80...125, hand lever
0510240043	Mounting kit for ADM 333 with butterfly valve DEF, DN 150...200, hand lever

### Description of operation

The ADM 333 motorised actuator can move the connected final control element to any intermediate position. The integrated cut-off system with switching cams and micro-switches automatically switches off the actuator at the end positions.

The travel of the final control element is transferred via a torque limiter to the rotation angle of the potentiometer and is used for position feedback.

The retaining torque is ensured by the self-locking system.

### Intended use

The motorised actuator ADM 333 may only be used for controlling and regulating HVAC building systems. The device is for actuating control and shut-off devices (dampers, taps, gates etc.). It is particularly suitable for use in combination with SAUTER DEF butterfly valves. Other uses require the prior consent of the manufacturer.

The "Description of operation" section and all product instructions in this data sheet must be observed.

Modifying or converting the product is not permitted.

### Improper use

The motorised actuator ADM 333 may not be used:

- For safety functions
- In potentially explosive atmospheres
- In transport applications or at altitudes above 2000 metres



#### Notice in accordance with California Proposition 65

The product contains lead and bisphenol A (BPA). To be marketed in North America, the appropriate warnings must be affixed to the product or packaging.

### Engineering and fitting notes



#### Note

Only qualified specialists are permitted to fit and connect the device.

The actuator generates operating noise. Plan and select the place of installation accordingly.

Mount the motorised actuator on the final control element according to the fitting instructions.

Mounting kits are available for fitting the actuator on SAUTER butterfly valves; see Accessories. The actuator is mounted on the final control element using a bracket and a coupling. The bracket is fastened to the underside of the actuator with screws (M6).

#### Fitting position

The motorised actuator can be fitted in any position. Adjustment and display elements must be safely and easily accessible.

#### Outdoor installation

When fitted outdoors, the device must be protected from the weather, for example with a canopy.

#### Electrical connection

Open and connect the actuator according to fitting instructions P100018790. It is advisable to lay signal and power cables separately to minimise interference.

Use the ring lug provided to connect the earth conductor. The cross-section of the earth conductor must be at least that of the largest cross-section of the other conductors.

Open, unused cable entries must be properly sealed. Protection class IP65 is only ensured if a cable gland suitable for the cable diameter is used. The cable glands and seals used must ensure at least IP65.

The rotation angle may not be set to more than 90° using the switching cams and limit switches, as otherwise the torque limiter of the potentiometer will be damaged. The 90° rotation angle can be set at any position between 10° and 330°.

The limit switch contacts are adjusted by turning the switching cams SL and SR to the end positions after disconnecting from the power supply. The travel of the actuator is transferred via a torque limiter to the electrical rotation angle of the potentiometer.

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#### NOTICE!



Overloading the motor and blocking the final control element will damage the actuator.

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#### Determining the direction of rotation

Anticlockwise:

When there is voltage at terminal 2, the end shaft turns anticlockwise (looking from the actuator towards the shaft). The rotation in this direction is restricted by the limit switch SL.

Clockwise:

When there is voltage at terminal 3, the end shaft turns clockwise (looking from the actuator towards the shaft). The rotation in this direction is restricted by the limit switch SR.

#### Adjusting the limit switches

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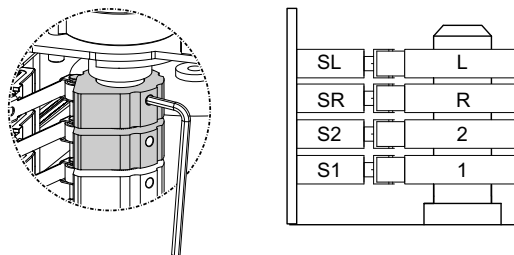
#### WARNING!



Risk of electrocution. The device contains live parts.

- ▶ Observe safety regulations and prevent unauthorised access to the working area.
  - ▶ Use insulated tools.
  - ▶ The following tasks may only be carried out with another person watching.
  - ▶ Do not put the actuator into operation until the limit switches have been adjusted.
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1. Unscrew the cover.
2. Switch on the actuator and move to the first end position (e.g. damper closed) in the corresponding direction of rotation.
3. When the position is reached, switch off the actuator.
4. Turn switching cam L by hand until the limit switch SL is actuated (you hear a click).
5. Tighten the grub screw on switching cam L.
6. To set the second end position, repeat steps 1 to 5 with switching cam R (limit switch SR).
7. Switch on the actuator.  
Move to the set end positions to check them and readjust if necessary by repeating steps 3 to 6.
8. Switch off the actuator.  
Secure the grub screws on the switching cams with threadlocker (optional).
9. Put on the cover and screw it tight.



### Adjusting the auxiliary switches

These are set and adjusted in the same way as the limit switches.



#### Note

The auxiliary switches must be operated in the same voltage range as the motorised actuator. Do not mix low voltage and extra low voltage.

### Potentiometer with torque limiter

Once the limit switches have been adjusted, the potentiometer is adjusted to the travel range automatically via the torque limiter in the potentiometer unit.

The potentiometer unit is connected to circuits with safety extra low voltage (SELV). The low voltage and SELV circuits inside the actuator must be sufficiently separated.



#### NOTICE!

Possible damage to the torque limiter.

▶ Do not set a rotation angle of more than 90°.

The connection terminals for the auxiliary functions are located directly on the corresponding limit or auxiliary switches or on the potentiometer (max. 1.5 mm<sup>2</sup>).

The earthing terminal is in the housing (connection PE). The cross-section of the earth conductor must be at least that of the largest cross-section of the other conductors.

### Extensions

The following components can be added to the basic device:

- 1 heating resistor (0510510010 or 0510510012)
- 1 parallel relay<sup>5)</sup>(0510420020) for parallel operation of multiple actuators via one switching contact

### Heating resistor

At ambient temperatures below 0 °C and to prevent condensation inside the actuator, the heating resistor 0510510010 or 0510510012 must be used.

### Parallel relay

If several actuators are to be controlled simultaneously by one switching contact, parallel relay 0510420020 **must** be used for each actuator.



#### Note

Equipment tolerances mean that continual parallel operation cannot be guaranteed.

## Design and materials

The motorised actuator has a maintenance-free steel transmission system and an end shaft made of stainless steel 1.4021.

The lower housing section with the mounting bracket is made of cast aluminium and is powder-coated in RAL 9005 (jet black).

The cover is made of impact-resistant, corrosion-proof aluminium and is powder-coated in RAL 1018 (zinc yellow).

<sup>5)</sup> The parallel relay can only be used for 230-V actuators

**Additional information**

	Document no.
Fitting instructions for ADM 333	P100018790
Fitting instructions for mounting kit 05102400**	P100020351
Declaration on materials and the environment	MD 51.348

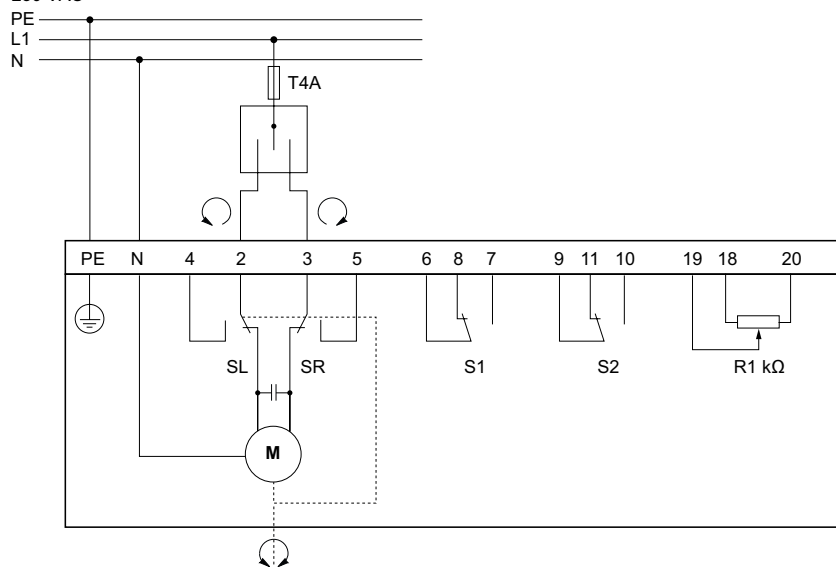
**Disposal**

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 diagrams**

**ADM333HF120**

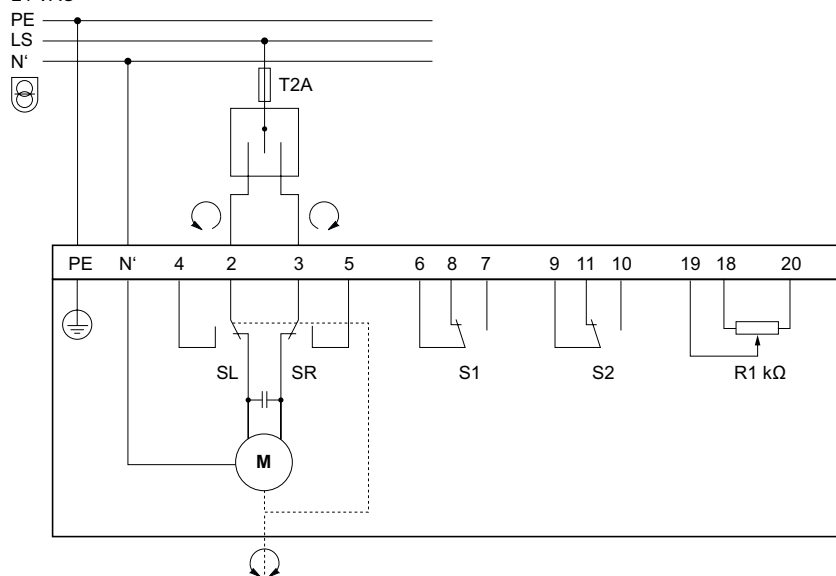
230 VAC



- SL Limit switch (anticlockwise)
- SR Limit switch (clockwise)
- S1 Auxiliary switch 1
- S2 Auxiliary switch 2
- R1 Potentiometer

**ADM333HF122**

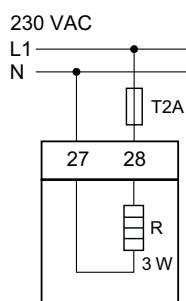
24 VAC



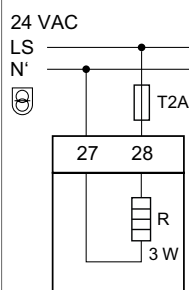
- SL Limit switch (anticlockwise)
- SR Limit switch (clockwise)
- S1 Auxiliary switch 1
- S2 Auxiliary switch 2
- R1 Potentiometer

**Accessories**

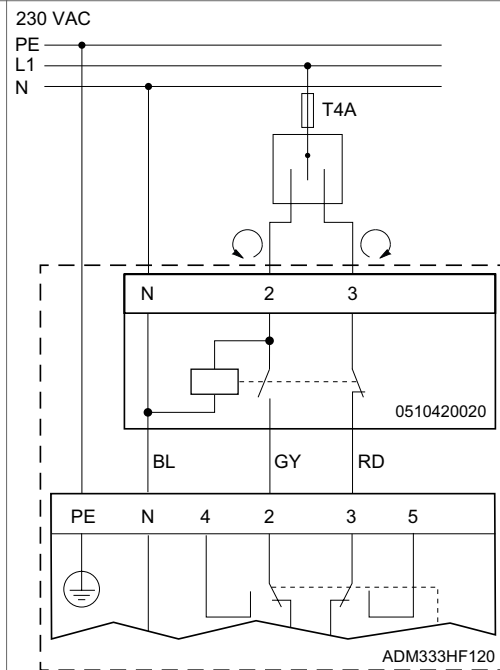
Heating resistor 0510510010



Heating resistor 0510510012

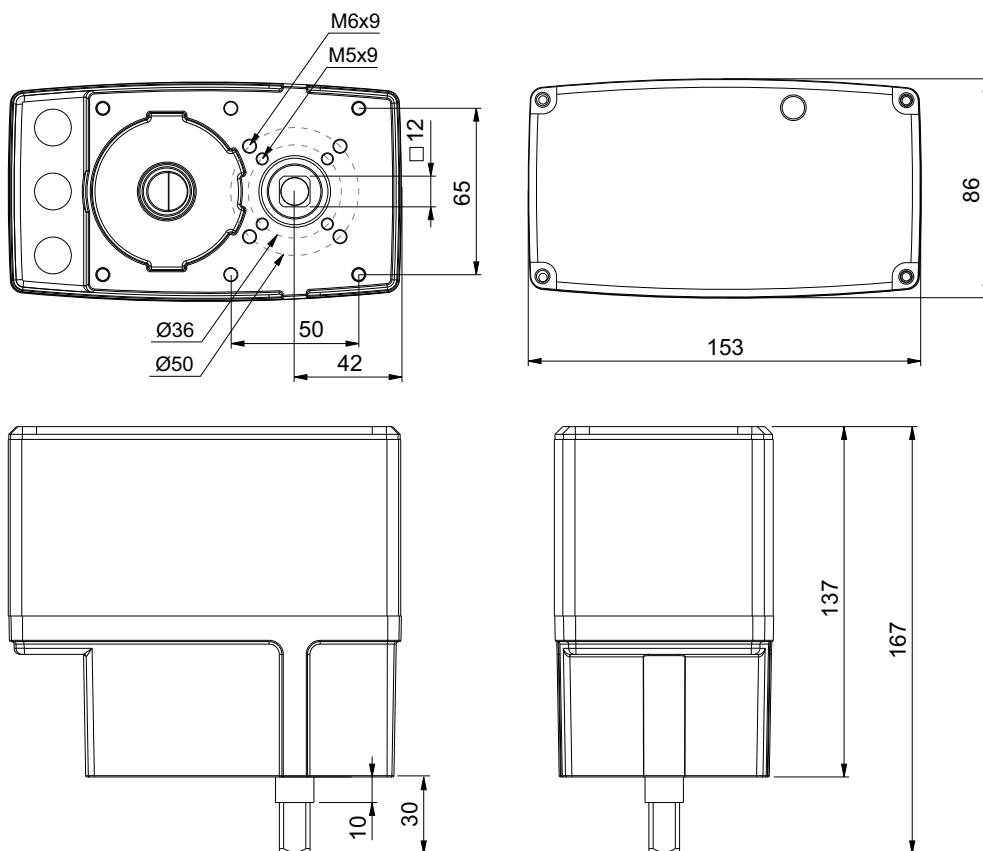


Parallel relay 0510420020

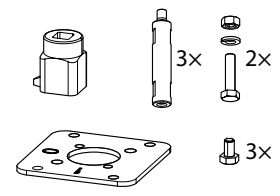
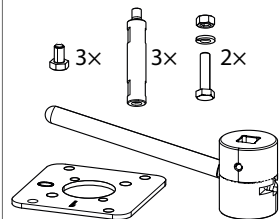
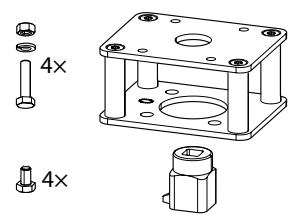


**Dimension drawing**

All dimensions in mm.



Accessories

<p>Mounting kit 0510240031 / 0510240032 Overall height: 58.5 mm</p> 	<p>Mounting kit 0510240041 / 0510240042 Overall height: 66 mm</p> 
<p>Mounting kit 0510240033 Overall height: 53 mm</p> 	<p>Mounting kit 0510240043 Overall height: 69 mm</p> 