

M100, M100Y valve actuating drives

M100 and M100Y valve actuating drives are used to control air valves, heating mixers and throttle valves.



Subject to change

Contents	Page
M100, M100Y valve actuating drives	1
Information on device description	2
Safety instructions.....	2
Qualified technicians.....	2
Application.....	3
Types	3
Technical data.....	3
Accessories.....	3
Dimensions	4
Installation	4
Connection	5
Manual setting.....	6
Installation	6
Commissioning.....	7

Issue date: 08.05.2007

Information on device description

The description contains information for using and installing M100 and M1020Y valve actuating drives. If questions that are not covered by the device description arise, contact the supplier or manufacturer for further information.

The specified regulations/guidelines for installation and assembly apply for the Federal Republic of Germany. When the units are used in other countries, local regulations are to be complied with at the personal responsibility of the system installer or operator.

Operating personnel are to be instructed according to the description of the technical data sheet.

Safety instructions

The valid work protection, accident prevention and VDE regulations are to be observed for installing and using the units.

Installation and set-up work on the units may only be carried out by qualified technicians. See section "Qualified technicians".

Each person who uses the units must have read and understood the descriptions on the technical data sheet.

If the unit is not used according to the unit description, the protection provided could be impaired.

Meanings of symbols on the technical data sheet:



Danger

Warning of dangerous electric voltage



Danger

Warning of general hazard



Caution

General warning – must be observed



Note

Additional note to be observed

Danger Means that non-observance could lead to life-threatening danger, serious bodily injury or major material damage.

Caution Means that non-observance could risk injury or material damage.

Note Indicates information pointing out something that should be given special attention.

Qualified technicians

Qualified technicians in the context of the technical data sheet are persons who are familiar with the described units and have the necessary qualifications for their job.

This includes, for example:

- Authorization to connect the units in accordance with VDE regulations and the local energy supply company regulations, as well as authorization for switching on, off and enabling devices under observance of in-house regulations.
- Knowledge of accident prevention regulations.
- Knowledge of the use of devices within the system.
- etc.

Device description**M100, M100Y Valve actuating drives****Application**

M100 and M100Y valve actuating drives are used to control air valves, heating mixers and throttle valves.

The drives are supplied with a set rotational angle of 90°.

The rotational angle can easily be adjusted to the actuating linkage with a range of 0° to 90°.

Types

M100	For 3-point control	230 V AC
M100-A90	For 3-point control	24 V AC
M100Y	For continuous control	0 .. 10 V DC, 24 V AC



M100 with actuating lever L90

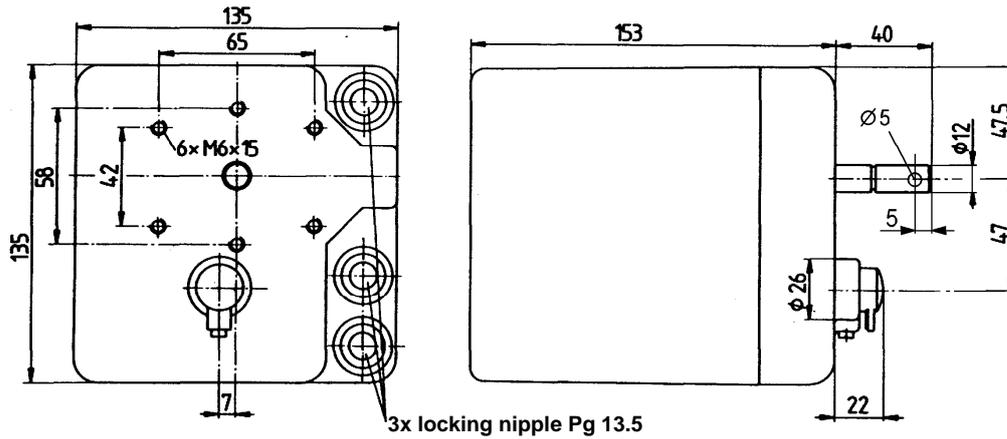
Technical data

Mains	M100	230 V AC; 4.5 VA
	M100-A90	24 V AC; 5.0 VA
	M100Y	24 V AC; 6,7 VA, 400 mA fuse, fast-acting
Actuating signal	M100	3-point signal: 230 V AC for Open/Stop/Closed
	M100-A90	3-point signal: 24 V AC for Open/Stop/Closed
	M100Y	Continuous signal Y: 0..10 V DC; 0.5 mA
Motor	Reversible synchronous motor, 1-pole	
Drive	Sintered bronze bearing	
Torque	35 Nm at the drive shaft	
Holding torque	20 Nm at the drive shaft	
Rotational angle	0..90°, can be adjusted with cam discs (delivery setting: rotational angle = 90°)	
Positioning time	130 s for 90° rotational angle	
Position indicator	M100Y only: 0.. 10 V DC, 0.5 mA for 90° rotational angle	
Manual setting	By pressing the red button next to the drive shaft	
Ambient temperature	0..50°C	
Degree of protection	IP54 (drive shaft points downward to horizontal position)	
Protection class	I in acc. with EN 60730 M100	
	III in acc. with EN 60730 M100-A90 and M100Y	
	I in acc. with EN 60730 with end switch E	
Installation position	As required, if the drive shaft points upwards, the drive must be protected against penetrating dampness	
Maintenance	Maintenance-free	
Weight	2.5 kg	

Accessories

E	Additional floating end switches on both sides, max. 3 A / 250 V AC
R1/100	Feedback resistance 100 Ω
R1/1000	Feedback resistance 1000 Ω
L90	Actuating lever 90 mm for valve axles Ø 10..18 mm, □ 10..14 mm
KG8	2 ball joints M8
W/M100	Wall bracket
Z27	Mounting set for mixer MMD/MMV
Z28	Mounting set for mixer GMD/GMV (additional mounting sets on request)

Dimensions



Installation



Danger

Caution – 230 V mains voltage for M100 valve actuating drive and when using end switch E, a mains voltage of 230 V may be present at the connection terminals of the end switch. The electrical installation and the device connection may only be carried out by qualified technicians, e.g. an electrician.

VDE regulations and local regulations are to be complied with here.

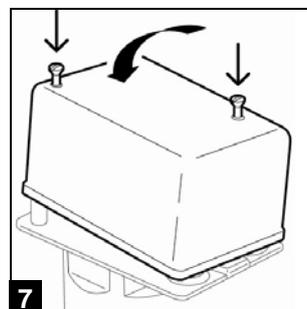
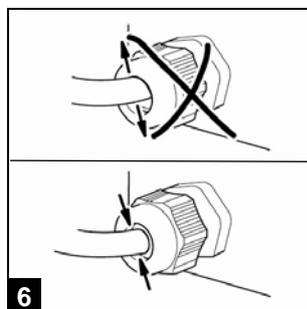
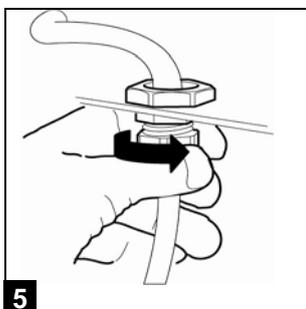
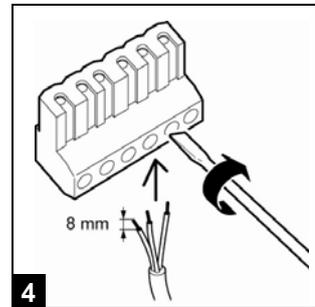
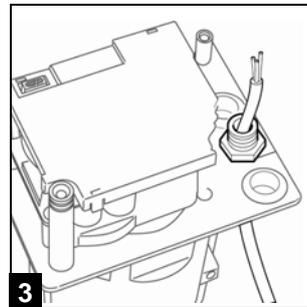
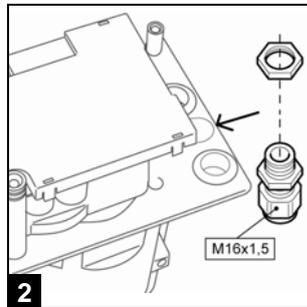
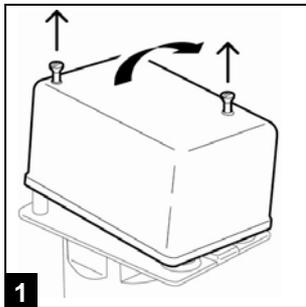
The device is connected according to the system circuit diagram, which is legally binding.



Danger

The electrical connection of the valve actuating drive must be carried out as a fixed installation.

A M16 x 1.5 screw fitting is enclosed in the scope of delivery of the valve actuating drive to be used as a strain relief device. The electrical connection is to be made on the screw terminals (connection diameter 0.3 ..2.3 mm).

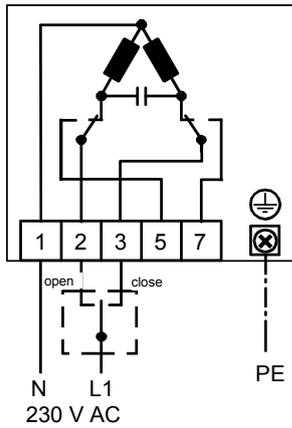


Device description

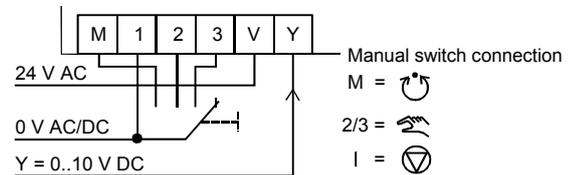
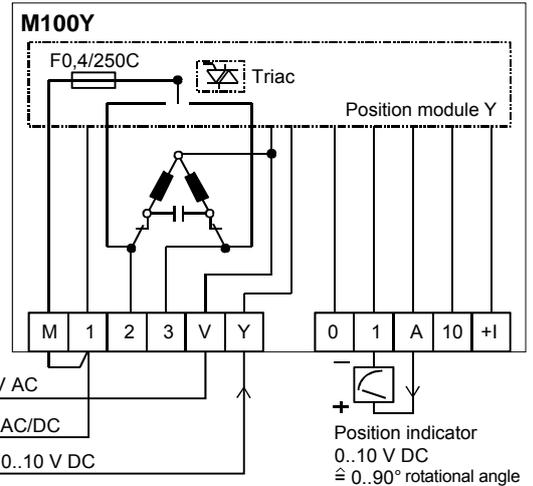
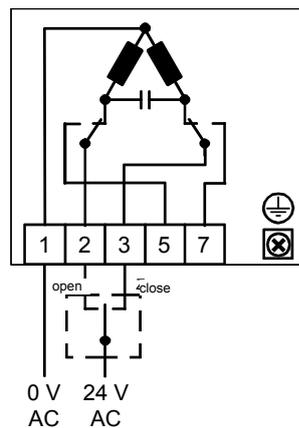
M100, M100Y Valve actuating drives

Connection

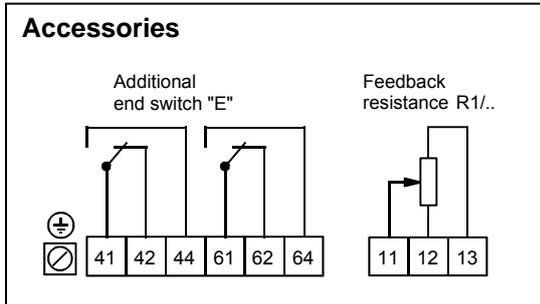
M100



M100-A90



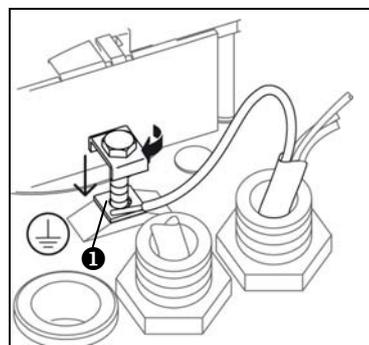
Connection accessories



If low voltage (230 V AC) is applied, the device must be installed to meet the requirements of protection class I.

The contacts on the end switches must only be used with voltages of the same installation category.

The wiring of the PE terminal must be connected between the terminal clip and the square washer (Cupal washer), with the copper-coated side of the washer facing the terminal clip.

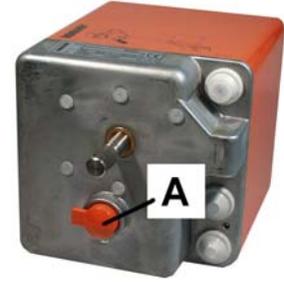


❶ Copper-coated side of the square washer (Cupal washer)

Manual setting

By pressing red button **A** next to the drive shaft, the gear motor in the actuating drive is decoupled. The connected control linkage (e.g. air valve) can now be moved manually.

For constant manual setting, you can lock red button **A** by turning it. After the manual setting has been made, unlock button **A** again.



Installation

- The installation position is to be selected so that the ambient temperature at the actuating drive is kept between 0..50 °C.
- If the drive shaft points upwards, the valve actuating drive must be protected against penetrating dampness.
- To remove the actuating drive hood, approx. 120 mm of room is required above the base of the hood.
- Secure the valve actuating drive directly to the 6 M 4x15 housing bores or with wall bracket W/M100 (Accessories). Mounting sets Z27/Z28 are available as accessories for mounting the device on to a mixer.
- The system parts to be attached (actuating linkage/throttle valve/mixer) must be checked for freedom of movement.
- An L90 actuating lever and two KG8 ball joints are available as accessories for connecting the actuating linkage to the drive shaft of the M100 valve actuating drive.

Commissioning



Danger

Caution - 230 V mains voltage for M100 valve actuating drive and when using end switch E, a mains voltage of 230 V may be present at the connection terminals of the end switch.

The actuating drive may only be commissioned by qualified technicians. Before removing the actuating drive hood, the valve actuating drive must be safely disconnected from the mains.

- Before switching on the mains, the valve actuating drive must be inspected to ensure that it is connected correctly and the actuating linkage or mounted valve (mixer/throttle valve) must be checked for freedom of movement.
- The rotational angle and the actuating direction of the valve actuating drive must also be checked.
- The rotational angle of the valve actuating drive must correspond with the connected air valve or the valve spindle (throttle valve/mixer). Any block caused by the actuating linkage or the valve spindle will damage the valve actuating drive. The rotational angle of the air valve can be set at the slotted hole of the L9 actuating lever (Accessories). The rotational angle of the valve actuating drive can also be set.



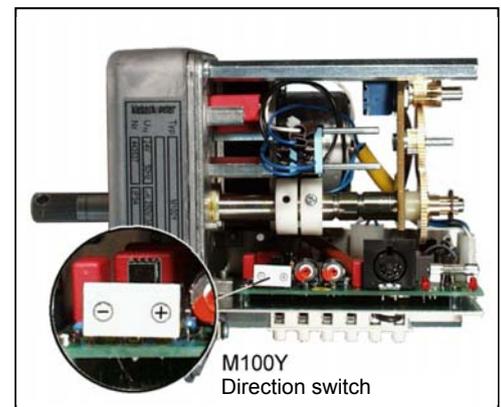
Danger

The following settings must be checked when the valve actuating drive is commissioned and, if necessary, adjusted by the commissioning technician on an uncharged (no voltage) drive.

Actuating direction

M100/M100-A90	M100Y	Actuating direction
Voltage at terminals 1 - 2	Y = 10 V DC	Left 
Voltage at terminals 1 - 3	Y = 0 V DC	Right 

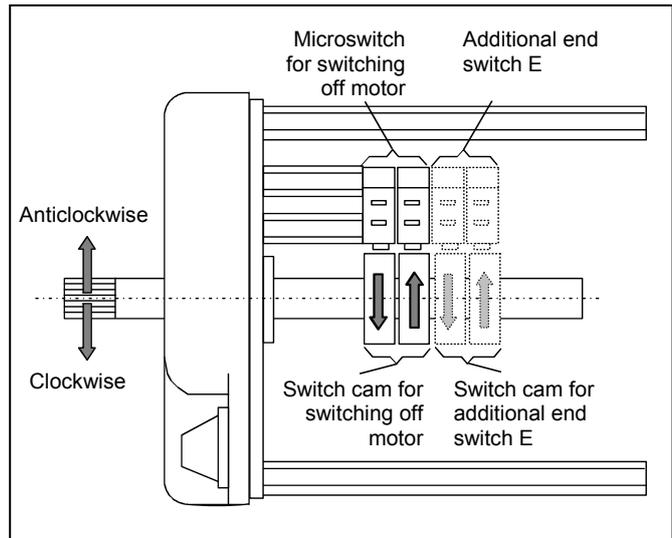
- **M100/M100-A90** – Changing the actuating direction:
 1. Disconnect the valve actuating drive from the voltage supply and remove the hood.
 2. Switch connection lines of terminals 2 and 3, and of terminals 5 and 7.
 3. Replace the hood and check the drive function.
- **M100Y** – Changing the actuating direction:
 1. Disconnect the valve actuating drive from the voltage supply and remove the hood.
 2. Switch the direction switch in the valve actuating drive to (-). The direction switch is located on the circuit board of position module Y.
 3. The connection terminals 2 and 3 must also be changed if direct control, e.g. an electrical manual switch, is used.
 4. Replace the hood and check the drive function.



Setting the rotational angle



1. Disconnect the valve actuating drive from the voltage supply and remove the hood.
2. Loosen the safety screws (hexagonal, 2 mm), set the switch cam and secure.
3. The motor circuit must be interrupted by the motor end switches in both valve end positions or in both end positions of the throttle valve or mixer. Any block caused by the actuating linkage or the valve spindle will damage the valve actuating drive.
4. If additional E end switches are deployed, these must be set with the same procedure.
5. Replace the hood and check the drive function.



Device description

M100, M100Y Valve actuating drives

● Only M100Y:

After the rotational angle has been set, control with the continuous signal must be checked. The continuous signal Y must control both end positions with 0..10 V DC. If necessary, the continuous signal must be adjusted to the new settings on the rotational angle. Briefly switch on the 24 V AC voltage supply for the drive function (sections 7/11..14).

6. Disconnect the valve actuating drive from the voltage supply and remove the hood.
7. Disconnect the connection line for continuous signal Y 0..10 V DC (terminal Y).
Mains to terminal V = 24 V AC (phase) and
Terminal 2 = 24 V AC (neutral conductor) must now be connected.
The valve actuating drive runs to the left end position until the switch cam interrupts the motor circuit.
8. When the left end position has been reached, set potentiometer to 10..20 Ω (measured between brown/blue connection lines).
9. Turn trimmers P2 and P3 to the right stop.
10. Switch the direction switch to (-).
11. Connect mains for controller operation:
Terminal V = 24 V AC (phase)
Terminal 1 = 24 V AC (neutral). LED D17 is illuminated.
12. Slowly rotate trimmer P2 to the left until LED D17 goes out. Slowly rotate trimmer P2 back to the right until LED D17 just lights up again.
LED 18 should not illuminate while making these settings; if it does, turn P2 back to the right stop and repeat the above setting procedure.
13. Switch the direction switch to (+). LED D18 is illuminated, LED D17 is off.
The actuating drive runs to the right end position until the switch cam interrupts the motor circuit.
14. When the right end position has been reached, slowly turn trimmer P3 to the left until LED D18 goes out. Slowly turn trimmer P3 back to the right until LED D18 just lights up again.
LED 17 should not illuminate while making these settings; if it does, turn P3 back to the right stop and repeat the above setting procedure.
15. Re-connect continuous signal Y to terminal Y.
16. Set the direction switch to (+) or (-) depending on the drive function. See "Actuating direction".
17. Replace the hood and check the drive function.

