

Produkt group:	limit switch box flex	Models:	EFX...	<b>flex</b>	EN
Approvals:	<b>CE</b>				



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Thank you for choosing a EUROTEC product. With this limit switch box you have purchased a quality product. To ensure functionality and for your own safety, please read these operating instructions carefully before you begin the installation. If you have any further questions, please contact:

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### 1. Device description

Limit switch boxes serve as position feedback and control unit of valves that are operated by pneumatic part turn actuators. The shaft of the limit switch box is connected form-fit to the shaft of the actuator and will turn when you shift the actuator. The cams which are mounted on the shaft of the limit switch box will then activate the switches which are responsible for the transmission of the electrical signal. Depending on the model, the flex limit switch boxes contain 1 to 4 mechanical micro switches or inductive proximity switches, 1-3 slot type sensors, 1-2 cylindrical sensors or 1 dual sensor.

### 2. Intended use

The standard flex limit switch boxes from EUROTEC are suitable for use in non-hazardous areas. The ambient temperature range depends on the housing material and the integrated switch type. It is indicated on the referring technical data sheet and on the product label.

### 3. Labeling

The product label on the housing is shown in figure 1. Each switch type has its own label. The serial number is to be found below the CE symbol. It contains the year of manufacture and the referring production number.

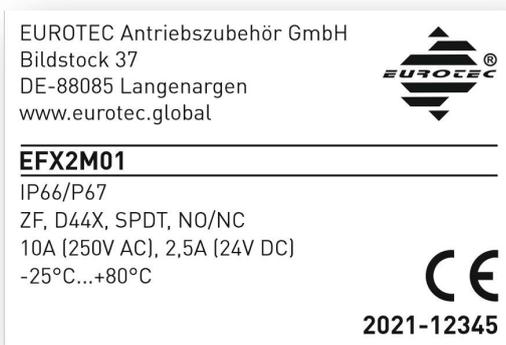
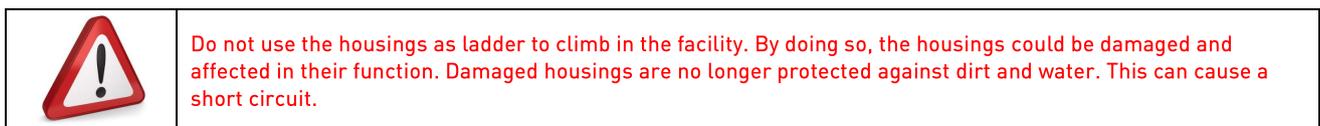
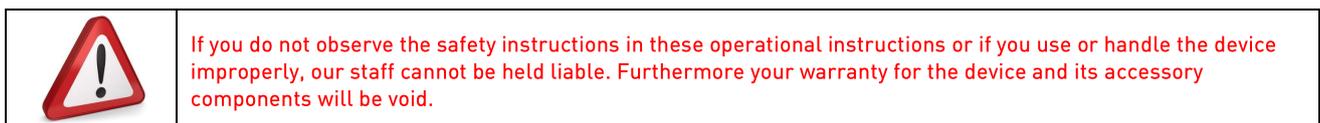


Fig. 1: Product label



### 4. Safe installation

To avoid mistakes, only a specialist is permitted to set up, connect and put the devices into operation. Always observe the following safety instructions before set up:



- ☞ Verify if the classification on the label is appropriate to your application.
- ☞ Please consider the respective national regulations and legal requirements, as well as the requirements of the manufacturer and the generally accepted rules of technology.
- ☞ Please take appropriate measures to avoid accidental activation and improper external influence.
- ☞ Do not remove possibly existing cable entry devices until inserting the cables to ensure that any dirt remains outside the limit switch box.
- ☞ Ensure an adequate strain-relief for the supply cable or a static installation.
- ☞ Protect the equipment and cables effectively from any damage.
- ☞ Avoid static charging of plastic parts and cables. Thereto clean the equipment only with an antistatic or wet cloth.
- ☞ Connect all conductive metal parts, including accessories, to the potential equalisation.
- ☞ The equipment may only be operated in completely assembled status.
- ☞ Never disconnect energised cables or systems.

## 5. Assembly on actuators

Using the enclosed mounting material, the modules can be quickly and easily assembled to the provided actuator according to VDI (Association of German Engineers)/VDE (German Electrical Engineering Association) 3845.

1. Adjust your actuator to the final position, in which the groove of the actuator shaft is parallel to the actuator housing.
2. Now, place the box with the appropriate mounting bracket on the actuator.
3. The mounting bracket can now be screwed tightly onto the actuator using the provided lock screws (4 pcs.).
4. Unscrew the four cover screws and open the housing. Make sure you do not unscrew the screws too far; they should remain in the cover.
5. Insert the system cable into the housing through the cable gland and connect the individual wires to the terminal block. When doing so, please refer to the terminal diagram on the respective data sheet or on the cover of the housing and connect the housing to the equipotential bonding.
6. Close the housing using the cover. When attaching the cover, please make sure that the seal is correctly positioned and tighten the cover screws.

## 6. Assembly on manual valves

The boxes with an F05-connection on the bottom of the housing, can also be assembled on manually operated valves using our assembly kit "MSH". It is important that your manual valve has a head flange according to ISO 5211 and a threaded hole in the shaft. Please use the "MSH" instruction manual for detailed assembly instructions. For the assembly onto the bigger sizes starting with F10, additional assembly parts are needed. Please contact our sales team for assistance.

## 7. Electrical connection

The permitted sheath diameters are indicated on the according data sheet of the limit switch box. The circuit diagram is indicated on or inside the limit switch box cover as well as on the according data sheet.



**Take care that the cable gland body, which is mounted to the housing, does remain in its position when tightening the cable gland nut. Please use 2 fork wrenches for this procedure. One to prevent the cable gland body from turning and the other to tighten the cable gland nut. If the cable gland sealing leaves its proper position, it will influence the level of the protection by enclosure (IP).**

EUROTEC standard terminal block:  
Wire cross section: 0,5 - 2,5mm<sup>2</sup>  
Stripping length: 8mm



Abb. 2: Standard terminal block

## 8. Disassembly

During dismantling you must observe the instructions in Chapter 4.

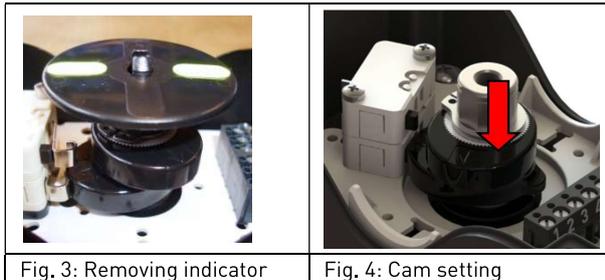
1. Disconnect the device from the power supply.
2. Open the cover of the housing by unscrewing the 4 cover screws. Make sure that you do not unscrew the screws too far; they should remain in the cover and not be able to fall out.
3. Disconnect the cables in the system from the terminal strip in the limit switch box.
4. Now, unscrew the 4 screws with which the bracket of the box is attached to the actuator and remove the limit switch box from the actuator.

## 9. Setting of the swivel range

In delivered status the cams are always preset on a swivel range of 0 - 90°. If you need another swivel range, please proceed with the following steps:

1. Rectangular V3 limit switches

- a. Remove the visual indication. (Fig. 3)
- b. Bring the actuator in the desired end position 1. Adjust the lower cam first. Press the cam down and turn it into the position in which it actuates the switch. Now let the cam engage again with the tothing. (Fig. 4)
- c. Bring the actuator in the desired end position 2. Press the upper cam down and turn it into the position in which it actuates the switch. Now let the cam engage again with the tothing.
- d. Finally verify your presetting through repeated switching.
- e. Mount the visual indication to the shaft of the limit switch box.



2. Cylindrical limit switches

- f. Remove the visual indication. (Fig. 5)
- g. Loosen the M6 nut screw and remove the upper cam. (Fig. 6)
- h. Unfasten the threaded rod, bring the actuator in the desired end position 1, and adjust the lower cam. Then tighten the threaded rod again firmly. (Fig. 7)
- i. Bring the actuator in the desired end position 2, adjust the upper cam and tighten it again by means of the nut screw. (Fig. 8)
- j. Finally verify your presetting through repeated switching of the actuator.
- k. Mount the visual indication to the shaft of the limit switch box. Take care that the indication is in line with the upper end of the threaded rod. This will prevent the indication from touching upon the fixture or the cover.



	<p><b>Danger of injury. During the switching process of the actuator you might squeeze body parts between switch and cam. Stay far enough away from the source of danger when switching the actuator. Attention, the switch can be damaged by the cams in the event of a wrong presetting. Take care that the cam does not hit the switch when switching the actuator.</b></p>
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10. Connection of solenoid coils

The flex limit switch boxes from EUROTEC offer the option of connecting a maximum of two magnetic coils. For the connection of a magnetic coil replace one protection plug by a cable gland M20x1,5 together with a suitable seal insert for your cable diameter. Ensure that the IP protection class as well as the ambient temperature of your cable gland match at least the characteristics of the flex box housing. Verify that with the data sheet of your cable gland.

Matching cable glands can be purchased from EUROTEC:

- |                          |                                |
|--------------------------|--------------------------------|
| Cable diameter: 6 - 13mm | Part number: SE-KVM20x1,5SZ    |
| Cable diameter: 4 - 13mm | Part number: SE-KVM20x1,5SZ-RK |

The cable for the magnetic coil connection needs to match the terminal block as well as the cable gland.

The wires of your cable need to be connected to the terminal block and possibly as well with the magnetic coil. Consider the referring operation instructions of the coil manufacturer and the wiring diagram inside the switch box cover or on the technical data sheet of the limit switch box.



#### 11. Outdoor use

If you like to use the limit switch boxes for an outdoor application, you will need a venting element. This venting element will help to avoid condensation water inside the switch box housing due to ambient temperature variations. Please verify if a venting element is present at your limit switch box. Otherwise you need to order a suitable limit switch box with venting element. The order code "-DAE" needs to be added to the actual part number.

#### 12. Maintenance

With the long-term outdoor use of the switch boxes and with extremely high or low ambient temperatures, the cover and shaft sealings can become porous. A safe use can only be guaranteed with a leak-proof housing. Sealings need to be replaced as soon as they are worn out, but no later than after 5 years. The necessary sealings can be ordered from EUROTEC.

#### 13. Malfunctions

If a malfunction occurs, check the electric line connections, the supply voltage, the cam position, condensation water inside the housing, the proper function of the pneumatic actuator and of the valve below the actuator. Rectify any possible faults. If this does not rectify the malfunction, be sure there is no pressure on the device and disconnect the device from the power supply voltage. Consult an authorised and trained specialist member of the manufacturer's staff.

#### 14. Part number

Please refer to the related order code of the switch box series flex EFX.