

Product group:	Limit switch box i-box	Product type:	IP	i-box®	EN
Certifications:	CE				



IP

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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 i-box limit switch boxes contain 1 to 2 mechanical micro switches or inductive proximity switches in V3 design.

### 2. Intended use

The standard i-box 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 above the CE symbol. It contains the year of manufacture and the referring production number.



Fig. 1: Labeling



**Do not use the housings as ladder to climb in the facility. By doing so, the housings could be damaged and affected in their function. Damaged housings are no longer protected against dirt and water. This can cause a short circuit.**

### 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:



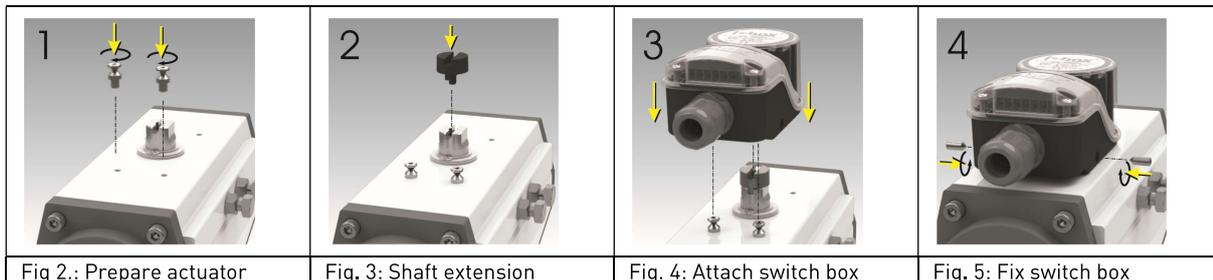
**If you do not observe the safety instructions in these operational instructions or if you use or handle the device improperly, our staff cannot be held liable. Furthermore your warranty for the device and its accessory components will be void.**

- ☞ 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. Mounting on pneumatic actuators

The limit switch boxes can be mounted quickly and easily on your actuator with the delivered screws according to VDI/VDE 3845. The direct mounting is only possible with actuators with hole spacing 80x30 and an actuator shaft height of 20 or 30mm. The maximum actuator shaft diameter is 32mm. For all other actuators you will need our adjustable mounting bracket IMBHV.

1. Bring the actuator in the end position in which the flute of the actuator shaft is in parallel to the actuator housing.
2. Screw the delivered adaption screws into one side of the actuator hole spacing.
3. Attach the switch box to the actuator and fix it from the side with the delivered grub screws. In case of 30mm shaft height, please remove the shaft extension (SI-WV10) from the switch box.
4. Release the 4 cover screws and open the switch box. Do not unscrew them too far so that they do remain plugged into the cover.
5. Lead the system cable through the cable gland into the switch box housing and connect the individual leads to the terminal block. Consider thereto the wiring diagram on the according data sheet or on the switch box cover and connect the housing to the potential equalization.
6. Close the switch box with the cover. Take care that the sealing of the cover is in proper position and tighten the screws firmly.



### 6. Mounting on manual valves

The limit switch boxes with F05 interface at the bottom side of the housing can also be mounted on manual valves by using our mounting kit "MSH". Thereto your manual valve needs a top flange according to ISO 5211 (F03 - F16) and a threaded bore hole in the valve shaft. For detailed assembly instructions please consider the operation manual of the "MSH".

### 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.

	<p><b>Take care that the cable gland body, which is mounted to the housing, does remain in it's 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 it's proper position, it will influence the level of the protection by enclosure (IP).</b></p>
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EUROTEC standard terminal block:

Wire cross section: 0,2 - 4,0mm<sup>2</sup> (single-wire inflexible) / 0,2 - 2,5mm<sup>2</sup> (single-wire flexible or with ferrule)

Stripping length: 7mm

Tightening torque: 0,45 - 0,5 Nm



Fig. 6: Standard terminal block

## 8. Dismantling

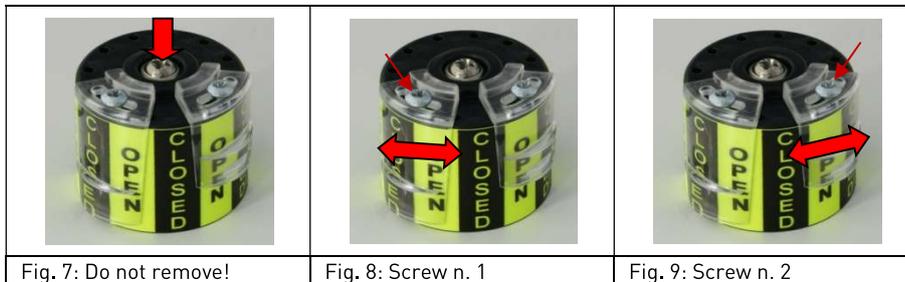
When dismantling, observe the instructions from chapter 4.

1. Disconnect the housing from the power supply.
2. Loosen the 4 cover screws and open the switch box. Do not unscrew them too far so that the screws do remain plugged into the cover.
3. Disconnect the system cable from the terminal block of the limit switch box.
4. Loosen the 2 grub screws that hold the switch box on the actuator and remove the 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:

- a. Bring the actuator in the desired end position 1. Adjust the cam for the lower switch first. Loosen screw n. 1 at the top of the cam and push the cam into the position in which the lower switch is activated. You can also change the cam to another hole to change the swivel range (e. g. for 120°). Then tighten the screw.
- b. Bring the actuator in the desired end position 2. Adjust the cam for the upper switch. Loosen screw n. 2 at the top of the cam and push the cam into the position in which the upper switch is activated. You can also change the cam to another hole to change the swivel range (e. g. for 120°). Then tighten the screw.
- c. Finally verify your presetting through repeated switching.



## 10. Connection of solenoid coils

Depending on the model, the limit switch boxes of EUROTEC provide the possibility to connect one or two solenoid coils inside the housing. The suitable switch boxes for one coil are marked with an additional '-MA' in their part number. This version has a cable with a length of 500mm that is connected to the terminal block inside the housing and lead outside the housing through a cable gland. The leads of this cable have to be wired to the plug connector of the solenoid coil. Please consider the coil manufacturer's operation manual and the circuit diagram on or inside the limit switch box cover or on the according technical data sheet. The same applies to the connection of two solenoid coils. This version is marked with an additional '-2MA' in it's part number and provides two cables with a length of 500mm each. With the model "-MA3" the solenoid valve connection is optional on poles 7-9.



## 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 i-box.