

Product group:	Limit switch box d-box	Product type:	DA...-D / DE...-D		EN
Certifications:					



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Thank you for choosing a EUROTEC product. In doing so, you have chosen a quality product. To ensure functionality and your own safety, please read these operating instructions carefully before beginning with the installation. Nevertheless, should you have any further questions, please contact:

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1. Device description

Limit switch boxes serve to provide feedback and control the position of industrial valves, which are activated using pneumatic actuators. The shaft of the limit switch box has a positive connection with the shaft of the actuator and is rotated with the rotational movement of the actuator. The actuating cams attached to the shaft, activate the installed sensors, which support the electronic signal transmission. The d-box limit switch boxes are equipped with 1 to 4 mechanical switches, 1 to 4 magnetic reed switches, 1 to 4 inductive proximity switches in V3 design, 1 to 2 slot type sensors or 1 to 2 cylindrical sensors depending on the model.

2. Intended use

The d-box limit switch box from the EUROTEC Antriebszubehör GmbH is intended for use in the explosive area of zones 1 and 2 with gases, mists or vapours and zone 21 and 22 with combustible dust. Its approved for use in the following ambient temperature ranges:
T6/T85°C: -55°C/-40°C/-25°C...+75°C

The approved ambient temperature varies, depending on the sealing compound and the installed switch type. You can find the ambient temperature in the corresponding data sheet and on the product label. A lower temperature range down to -55°C applies to limit switch boxes, which are made of components, that are at least suitable for this temperature.

Rated voltage: max. 250V / Rated current: max. 4A

When separately certified intrinsically safe inductive sensors are used inside the housing, the electrical connecting values of the sensor are applicable.

3. Marking

The marking on the housing is shown in the following table and varies depending on the installed switch type. You can find the number of the indicated responsible office for the QM system and the serial number below the CE mark. It consists of the year of manufacture and the respective order number.

Approval	Certificate	Marking
ATEX/IECEX	EPS 16 ATEX 1031 X IECEX EPS 16.0011 X	II 2G Ex db IIC T6 Gb II 2G Ex db ia IIIC T6 Gb II 2D Ex tb IIIC T85°C Db
UKCA Ex	EPS 22 UKEX 1 142 X	II 2G Ex db IIC T6 Gb II 2G Ex db ia IIIC T6 Gb II 2G Ex db ia IIIC T6 Gb
CCC Ex	2021322304003803	Ex d IIC T6 Gb Ex d ia IIC T6 Gb Ex tD A21 IP66/IP67 T85°C



The housings are not intended to be used as stepladders, to climb into the system. This can lead to damaging them and having a negative effect on their function. If the housing is damaged, water as well as dirt and combustible material can accumulate inside the housing. This can lead to a short circuit. Furthermore, the device can heat up severely due to the accumulation and can cause an explosion.

4. Safe activation

To avoid mistakes, only specialists are permitted to set up, connect and put the devices into operation. The specialists must have expertise in the equipment protection by flameproof enclosures (Ex d) and equipment dust ignition protection by enclosure (Ex t) as well as in all relevant regulations and provisions for operating materials in explosive areas. The limit switch boxes are developed in compliance with the following harmonised/designated standards:

- EN IEC 60079-0:2018 (IEC 60079-0, Ed. 7.0)
- EN 60079-1:2014/AC:2018-09 (IEC 60079-1/ISH1:2020,Ed.7.0)
- EN 60079-31:2014 (IEC 60079-31, Ed. 2.0)
- EN 60079-11:2012 (IEC 60079-11, Ed. 2.0)

It is imperative to observe the following safety instructions prior to initial operation:

	<p>Failure to observe the safety instructions in these operating instructions and using or handling the device improperly, releases us from any liability.</p> <p>Furthermore, the warranty for the devices and accessory components will expire.</p>
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- ☞ Check on the labeling, whether the existing device is suitable for your application.
- ☞ Observe national regulations and provisions as well as the corresponding installation specifications.
- ☞ Take suitable measures to prevent unintentional activation or improper interferences with the device.
- ☞ Remove any existing sealing plugs just before inserting the wires to avoid dirt in the housing.
- ☞ Make sure the strain is sufficiently relieved on the connecting cables or lay them securely.
- ☞ Check the approved conductor cross-sections as well as the approved tightening torques in the documentation for cable connections
- ☞ Effectively protect the devices and cables against damage.
- ☞ Avoid static charge on the cables.
- ☞ Housing components made of metal must be included in the potential equalisation by means of appropriate assembly.
- ☞ This device may only be operated in a fully assembled condition.
- ☞ Never disconnect the connector cables while they have power.

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 grub screw at the side of the cover and open the housing by removing the cover.
5. Choose a suitable Ex d cable gland. Lubricate the thread of the cable gland to ensure a smooth screwing in and screwing out and screw the cable gland it into one of the M20x1,5 cable entries.
6. Seal unused thread connections with suitable Ex d sealing plugs.
7. 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 data sheet and operation manual of the Ex d cable gland, the terminal diagram on the respective data sheet or on the cover of the housing and connect the housing to the equipotential bonding.
8. Close the housing using the cover. After screwing the cover onto the housing, tighten the grub screw on the side again firmly.

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.

7. Electric connection

You can find the approved cable diameter in the corresponding data sheet for the Ex-d cable gland. You can find the terminal diagram for the wiring in the housing as well as on the corresponding data sheet for the limit switch box.

Standard terminals:

Terminal block	Producer	Wire diameter	Multi conductor	Tightening torque	Stripping length	Colour
MK 3/7	Weidmüller	single-wire: 0,5 - 4,0 mm ² fine-wire: 0,5 - 2,5 mm ²	1,5 - 2,5 mm ²	max. 0,45 Nm	5 mm	brown
6E/6DSGW	Wieland	single-wire: 1,0 - 4,0 mm ² fine-wire: 1,0 - 2,5 mm ²	1,0 - 4,0 mm ²	max. 0,4 Nm	5,5mm	white

If you have installed another terminal in the housing, then please find the connection data in the corresponding data sheet for the terminal.

Cable glands:

Only Ex d cable glands that match at least the characteristics of the housing may be used (IP protection, ambient temperature, Ex-protection class, thread type and size). The material of the cable gland must be compatible with the housing material. Cable glands must be lubricated to ensure a smooth screwing in and screwing out. The cable glands must fulfill IP66 and IP67 at least. Thread connections are either M20x1,5, M25x1,5, NPT1/2 or NPT3/4. The permitted ambient temperature of the device is to be found on the product label. Unused openings shall be closed with certified blind plugs.

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 grub screw and unscrewing of the cover.
3. Disconnect the system cables 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. Adjusting the swivel range

The cams are always preset to a swivel range of 0-90° by the EUROTEC Antriebszubehör GmbH. Should you require a different swivel range for your application, please take the following steps:

1. Move the actuator to the required final position 1 and adjust the bottom cam. To do so, press the cam down on the outer ring and turn it to the position in which the switch is activated. Let the cam snap back up into the gearing again.
2. Move the actuator to the required final position 2 and adjust the top cam. To do so, press the cam down on the outer ring and turn it to the position in which the switch is activated. Let the cam snap back up into the gearing again.
3. Finally, check your default setting by switching the actuator several times.

	<p>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.</p>
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10. Connecting solenoid coils

Depending on the model the d-box limit switch boxes from EUROTEC offer the option of connecting a maximum of two solenoid coils in one of the types of protection Ex m, Ex dm or Ex d. The models for the connection of one solenoid coil have the addition '-MA' in their item number. The models for the connection of two solenoid coils have the addition '-2MA' in their item number. These models provide a special terminal diagram which enables the connection of a solenoid coil.

11. Outdoor use

If you would like to use the limit switch boxes outdoors (outdoor installation), the limit switch boxes should be equipped with an Ex-d pressure compensating element. This element has to match the characteristics of the d-box from its type examination certificate. (IP protection, ambient temperature, Ex-protection class, thread type and size, volume, pressure). The pressure compensating element prevents water condensation in the housing in the event of outdoor temperature fluctuations. Please check whether there is a pressure compensating element. If not, you must order respective limit switch boxes. In this case, the addition to the item number is "-DAE".

12. Maintenance

The limit switch boxes for ATEX areas may never be opened during operation or in an existing explosive atmosphere. Opening them can cause an explosion. Therefore, maintenance work is only possible outside of the Ex-area.

The cover locking grub screw can loosen in the event of strong vibrations or temperature fluctuations. Retighten the screw every two years. Any other modifications to the device are prohibited!

13. Malfunctions

In the event of malfunctions, please check the lines, line connectors and the position of the cams. Furthermore, please check whether condensation water has accumulated in the housing and whether the valve and the actuator are functioning properly. Rectify any possible errors. If this does not rectify the malfunction, disconnect the housing from the power supply voltage and contact one of the manufacturer's authorised and trained specialists.

14. Item number

See order code d-box.

15. EU/UK Declaration of Conformity

EU/UK-Declaration of Conformity according to the Directive 2014/34/EU and SI 2016 No. 1107

We herewith confirm that the following-named equipment for the use in hazardous areas does fulfill the requirements of the Directive 2014/34/EU in the delivered version:

DA...-D...	d-box limit switch box. Housing aluminum
DA...-IA-D...	d-box limit switch box. Housing aluminum with intrinsically safe sensors
DE...-D...	d-box limit switch box. Housing stainless steel
DE...-IA-D...	d-box limit switch box. Housing stainless steel with intrinsically safe sensors

The equipment has been developed and designed in consideration of the following harmonised/designated standards:

EN IEC 60079-0:2018 IEC 60079-0, Ed. 7.0	Explosive atmospheres - Part 0: Equipment - General requirements
EN 60079-1:2014/AC:2018-0 IEC 60079-1/ISH:2020, Ed. 7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures „d“
EN 60079-31:2014 IEC 60079-31, Ed. 2.0	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure “t”
EN 60079-11:2012 IEC 60079-11, Ed. 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety “i”

Marking:

 II 2G Ex db IIC T6 Gb
 II 2G Ex db ia IIC T6 Gb
 II 2D Ex tb IIIC T85°C Db

EU/UK-Type Examination Certificate:

EPS 16 ATEX 1031 X / EPS 22 UKEX 1 142 X
Bureau Veritas Consumer Products Services Germany GmbH
Businesspark A96, DE-86842 Türkheim
Ident.-No.: 2004 / 8507

EU-Certificate Quality Assurance:

EPS 25 ATEX Q 116 / EPS 25 UKEX Q 116
Bureau Veritas Consumer Products Services Germany GmbH
Businesspark A96, DE-86842 Türkheim
Ident.-No.: 2004 / 8507

22.01.2026

Date


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