Product group:	Limit switch box wave	**Product type:**	EV...-IA / EA...-IA	wave	**EN**
Certifications:					

		
EVP-IA	**EVE-IA**	**EAE-IA**

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Thank you for choosing a EUROTEC product. By selecting our brand, you have opted for a high-quality solution. To ensure optimal performance and your safety, please read these operating instructions thoroughly before starting the installation process. If you have any questions or need further assistance, please contact us:

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1. Device description

Limit switch boxes are designed to provide feedback and control the position of industrial valves, which are operated by pneumatic actuators. The shaft of the limit switch box is directly connected to the actuator's shaft and rotates in sync with the actuator's movement. Actuating cams mounted on the shaft trigger the installed sensors, enabling electronic signal transmission for reliable feedback.

The wave Ex ia limit switch boxes from EUROTEC, available in EV and EA models, feature various sensor configurations depending on the type. These may include a single potentiometer, one to four mechanical limit switches, or intrinsically safe proximity switches. Sensor options consist of one to four V3 proximity switches, one to three slot-type sensors, one to two cylindrical sensors, or one dual sensor.

2. Intended use

The wave Ex ia limit switch boxes from EUROTEC Antriebszubehör GmbH, when used with intrinsically safe circuits in accordance with DIN EN 60079-25:2010, are approved for operation in hazardous areas classified as Zone 1 and Zone 2 where gas, mist, or vapor may be present, as well as in Zone 21 and Zone 22 where combustible dust is a concern. The following ambient temperature ranges are authorized for use:

Vestamid:	-25°C...+70°C	-13°F to +158°F
Aluminum:	T6: -55°C/-40°C/-25°C...+70°C	-67°F/-40°F/-13°F to +158°F
	T4: -55°C/-40°C/-25°C...+100°C	-67°F/-40°F/-13°F to +212°F

The permitted ambient temperature range depends on the type of sealing compound and the installed switch type. You can find the specific temperature range in the relevant data sheet and on the product label. Lower temperature limits down to -55°C (-67°F) or -40°C (-40°F) and upper limits up to +100°C (+212°F) apply to limit switch boxes that are constructed from components rated for these extremes.

The electrical input ratings are specified by the independently certified intrinsically safe inductive sensors being used. You will find the values for Ui, Ii, Pi, Ci, and Li on the product label of your limit switch box as well as in the sensor's instruction manual.

For mechanical switches with gold contacts, the following electrical ratings must be observed:
Ui = 30 V, Ii = 52 mA, and Pi = 120 mW.

For potentiometers, the required ratings are:
Ui = 13.8 V, Ii = 35 mA (T4) or 10 mA (T6), and Pi = 121 mW.

3. Labeling

The labeling on the housing may differ based on the installed switch type. Below the CE mark, you will find the number of the designated responsible body for the quality management system, as well as the serial number. The serial number includes the year of manufacture and the corresponding order number.

Approval	Certificate	Marking
ATEX/IECEx	IBExU 11 ATEX 1154 X IECEx IBE 13.0042 X	II 2G Ex ia IIC/IIB T4/T6 Gb II 2D Ex ia IIIC T80°C/T110°C Db
CCC Ex	2021322304003956	Ex ia IIC/IIB T4-T6 Gb Ex iaD 21 T80-T110



The housings are not designed to be used as steps or for climbing. Doing so may damage the housings and compromise their functionality. If the housing is damaged, water, dirt, or flammable materials can enter, potentially causing a short circuit. In addition, the buildup of such materials inside the housing can lead to excessive heating of the device, increasing the risk of explosion.

4. Special conditions of use

The allowable ambient temperature range is determined by the components, the device design, and the specified temperature class. Please refer to the operating instructions for the relevant values.
Models equipped with an OCT visual indicator must be installed in locations that are protected from high charging processes.

5. Safe activation

To ensure proper installation and safe operation, only qualified professionals should set up, connect, and commission these devices. These experts must have proven knowledge of intrinsic safety principles (Ex ia/ib) as well as all applicable regulations and standards for equipment used in explosive environments. The limit switch boxes are designed and manufactured in accordance with the following harmonized standards: EN IEC 60079-0:2018 (IEC 60079-0, Edition 7.0) and EN 60079-11:2012 (IEC 60079-11, Edition 6).

Before putting the device into operation for the first time, it is essential to follow these safety instructions:



Failure to follow the safety precautions outlined in these operating instructions, or improper use or handling of the device, will void any liability on our part. In addition, any warranty coverage for the devices and their accessory components will be forfeited.

- Before installation, verify by checking the labeling that the device is suitable for your specific application.
- Follow all applicable national regulations, provisions, and installation specifications.
- Implement measures to prevent unintentional activation or any unauthorized interference with the device.
- Remove any existing sealing plugs immediately before inserting the wires to prevent dirt from entering the housing.
- Ensure that all connecting cables are adequately strain-relieved or securely routed.
- Refer to the documentation for cable connections and only use approved conductor cross-sections and tightening torques.
- Protect the device and cables from any potential damage.
- Prevent static buildup on plastic parts and cables.
- All metal housing components must be included in the equipotential bonding using the appropriate mounting method.
- Dissipative plastic housings with metal brackets achieve equipotential bonding through the bracket and actuator.
- Dissipative plastic housings with plastic brackets are included in equipotential bonding via the ground plate screw.
- Operate the device only when it is fully assembled.
- Never disconnect connector cables while they are under power.
- Connect the switch box only to intrinsically safe circuits that have a valid type examination certificate and do not exceed the maximum values for the proximity switches (Ui, Ii, Pi, Ci, and Li).
- Each sensor inside the switch box housing has its own separate intrinsically safe circuit. For configurations with two sensors inside the housing, we recommend using one of the following 2-channel barriers as associated electrical equipment: IFM N0533A, P+F KFD2-SR2-Ex2.W, Turck IM1-22EX-R, or Turck IM36-11EX-U/24VDC (for potentiometers).

6. Assembly on actuators

Using the included mounting hardware, you can quickly and easily assemble the modules onto the designated actuator in accordance with VDI/VDE 3845 (Association of German Engineers/German Electrical Engineering Association) standards.

- First, set your actuator to its end position so that the groove in the drive shaft is aligned parallel to the actuator housing. Next, place the switch box with the appropriate mounting bracket onto the actuator. Secure the mounting bracket firmly to the actuator using the supplied locking screws.
- Loosen the four cover screws and open the housing, taking care not to remove the screws completely—they should remain in the cover. Feed the system cable through the cable gland into the housing and connect the individual wires to the terminal block. Refer to the terminal diagram found on the relevant data sheet or on the inside of the housing cover, and ensure the housing is connected to the equipotential bonding.
- Close the housing by attaching the cover, making sure the seal is properly positioned, and then tighten the cover screws securely.

7. Mounting on manual valves

Limit switch boxes featuring the F05 interface on the underside of the housing can also be installed on manual valves using our "MSH" mounting kit. To do so, your manual valve must have a top flange that complies with ISO 5211 (F03–F16) and a threaded bore in the valve shaft. For step-by-step assembly instructions, please refer to the "MSH" operation manual.

8. Electrical connection

The approved cable diameter for the limit switch box can be found in the appropriate data sheet. The terminal wiring diagram is located either on or inside the housing cover, as well as in the data sheet for the limit switch box. Each sensor inside the switch box housing is equipped with its own separate intrinsically safe circuit.

As an alternative to the cable gland, other suitable connection devices—such as M12 plugs or connectors—may also be used. These alternatives must comply with the separation distances specified in Table 5 of EN 60079-11. Any unused connectors must be sealed with a dust-tight cap.



When tightening the cable gland, ensure that the base of the gland—already screwed into the housing—does not turn as well. If the base rotates, the sealing washer may shift out of place and compromise the seal. For best results, use two open-end wrenches: one to hold the base of the cable gland steady and the other to tighten the locknut.

Standard terminals:

Terminal	Producer	Wire cross-section	Thightening torque	Stripping length	Colour
AK100...	PTR	single-wire fixed: 0,2 - 4,0 mm² fine-wire flexible: 0,2 - 2,5 mm² With end ferrule: 0,2 - 2,5 mm²	0,45 - 0,50 Nm	7 mm	light blue

9. Disassembly

When disassembling the unit, be sure to follow the guidelines provided in Chapter 4.

- Disconnect the device from the power supply.
- Remove the housing cover by loosening the four cover screws. Take care not to unscrew them completely; the screws should remain in the cover to prevent them from falling out.
- Disconnect the system cables from the terminal strip inside the limit switch box.
- Next, unscrew the four screws securing the box bracket to the actuator, then carefully remove the limit switch box from the actuator.

10. Adjusting the swivel range

The cams are factory-set by EUROTEC Antriebszubehör GmbH for a standard swivel range of 0-90°. If your application requires a different swivel range, please follow these steps:

Rectangular V3 Limit Switches and Slot Type Sensors

- Move the actuator to the desired end position 1. Adjust the lower cam by pressing it down and rotating it until it activates the switch. Release the cam so it locks back into the gear mechanism. (See Fig. 1)
- Next, move the actuator to the desired end position 2. Press the upper cam down and rotate it until it triggers the switch. Release the cam so it engages securely with the gear mechanism.
- After adjustments, test your settings by repeatedly operating the actuator to confirm proper switching.

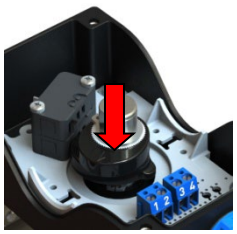


Fig. 1: Setting of cams

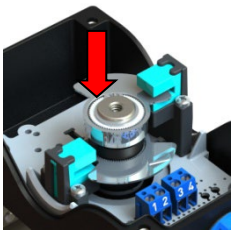


Fig. 2: Slot type cams

Cylindrical Limit Switches

- Loosen the M6 nut and carefully remove the upper cam. (See Fig. 3)
- Unscrew the threaded rod, then move the actuator to your desired end position 1. Adjust the lower cam as needed, and securely tighten the threaded rod again. (See Fig. 4)
- Next, move the actuator to your desired end position 2. Adjust the upper cam, then tighten it firmly with the nut. (See Fig. 5)
- After completing these steps, test your settings by repeatedly operating the actuator to ensure proper switching and functionality.



Fig. 3: Loosen nut screw



Fig. 4: Fixation of cam 1



Fig. 5: Fixation of cam 2

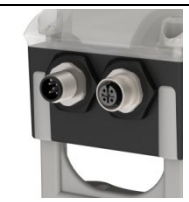


Risk of Injury! During actuator operation, there is a possibility of pinching fingers or other body parts between the switch and cam. Always keep a safe distance from the actuator while switching to avoid injury.
Caution: Improper cam adjustment can damage the switch. Make sure the cam does not strike the switch when operating the actuator.

11. Connecting magnetic coils

Depending on the model, EUROTEC wave Ex ia limit switch boxes allow you to connect either one or two intrinsically safe solenoid coils (Ex i) inside the enclosure. Models designed for a single coil feature '-MA' in the part number and come equipped with a 500mm cable that is pre-wired to the internal terminal block and routed outside the enclosure through a cable gland. The cable leads must be connected to the solenoid coil's plug connector. Be sure to follow the coil manufacturer's operating instructions and refer to the circuit diagram found on or inside the limit switch box cover or on the corresponding technical data sheet.
For installations requiring two solenoid coils, choose models with the '-2MA' designation in the part number, which provide two separate 500mm cables. Additionally, the "-2KV" and "-2NPT1/2" models offer optional Ex i solenoid valve connections on terminals 7-9. Always follow the same guidelines for wiring and documentation as outlined above.

Do not exceed the following maximum values:
For IIC circuits, the input voltage (Ui) must not be greater than 28V and the input current (Ii) must not exceed 200mA. For IIB circuits, the input voltage (Ui) must not be greater than 30V and the input current (Ii) must not exceed 450mA.

				
-MA	-2MA	-2KV	-2NPT1/2	-2M12-MA12

12. Outdoor use

If you plan to install the limit switch boxes outdoors, make sure they are equipped with a pressure compensation element. This element helps prevent water condensation inside the housing caused by changing outdoor temperatures. Always verify that a pressure compensation element is present; if it is missing, order limit switch boxes with the "-DAE" addition in the item number.

The enclosures are rated for IP66 and IP67 protection. However, heavy rainfall can occasionally result in water entering the housing. For vertical installations, we recommend positioning the cable glands downward to minimize the risk of water seeping in through the cables. Take suitable precautions to prevent water intrusion along the cables due to capillary action.

13. Maintenance & Cleaning

Limit switch boxes approved for use in ATEX areas may be opened during operation or in the presence of an explosive atmosphere, as maintenance can be performed within the Ex zone thanks to intrinsically safe circuits. When these switch boxes are used outdoors for extended periods or are exposed to extremely high or low ambient temperatures, the cover and shaft seals can become porous over time. To ensure ongoing safe operation, the housing must remain leak-proof. Replace all seals as soon as they show signs of wear, or at least every five years. Replacement seals are available from EUROTEC.
Additionally, strong vibrations or significant temperature fluctuations may cause the cover screws to loosen. To maintain proper sealing, retighten the cover screws every two years. Any other modifications to the device are strictly prohibited.

The housings offer protection in compliance with IP66 and IP67 standards.

- IP6X: Completely dust-tight, preventing any dust from entering the enclosure.
- IPX6: Resistant to powerful water jets—tested using a 12.5 mm nozzle at a distance of 2.5 to 3 meters, with a flow rate of 100 liters per minute (±5%) for 3 minutes.
- IPX7: Protected against temporary immersion in fresh water at a depth of 1 meter for 30 minutes.

Limit switch boxes are precision devices and should not be cleaned with pressure washers or similar equipment. For proper maintenance, we recommend wiping them down with a damp cloth.

14. Malfunctions

If a malfunction occurs, first inspect the wiring, line connectors, and cam positions. Also, check for any condensation inside the housing and ensure that both the valve and actuator are operating correctly. Address any issues you find. If the problem persists, disconnect the housing from the power supply and contact an authorized and trained specialist from the manufacturer.

15. Item number

For detailed information, please refer to the specific order code for the wave EV/EA limit switch box series.

16. EU Declaration of Conformity

EU-Declaration of Conformity
according to the Directive 2014/34/EU

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

EV...IA...	wave limit switch box. Housing Vestamid
EA...IA...	wave limit switch box. Housing Aluminum
EA...IA...-OCT...	wave limit switch box. Housing Aluminum with tower indicator OCT
EV...IA...-3D...	wave limit switch box. Housing Vestamid with Polycarbonate cover (IIB)
EV...IA...-OCT...	wave limit switch box. Housing Vestamid with tower indicator OCT (IIB)

The equipment has been developed and designed in consideration of the following harmonized standards:

EN IEC 60079-0:2018	Explosive atmospheres - Part 0: Equipment - General requirements	
EN IEC 60079-11:2012	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"	
Marking	Ex	II 2G Ex ia IIC/IIB T4/T6 Gb II 2D Ex ia IIIC T80°C-T110°C Db
EU-Type Examination Certificate	IBExU 12 ATEX 1154 X	IBExU Institut für Sicherheitstechnik GmbH Fuchsmühlenweg 7, 09599 Freiberg, Ident-No.: 0637
EU-Certificate Quality Assurance	EPS 25 ATEX Q 116	Bureau Veritas Consumer Products Services Germany GmbH Businesspark A96, DE-86842 Türkheim Ident-No: 2004

22.01.2026
Date

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