

Operating manual: ILD-235-STA/ETA-OP Photoelectric Light Barrier



IECEX BVS 14.0108X



Ex db [op is Ga] IIC T6 Gb
Ex tb [op is Da] IIIC T100°C Db

- Robust light barrier for industrial applications
- Alignment aid by 3-color LED at the rear side of the receiver

CCC Explosion-proof signs:

Ex db IIC T6 Gb
Ex tb IIIC T100°C Db

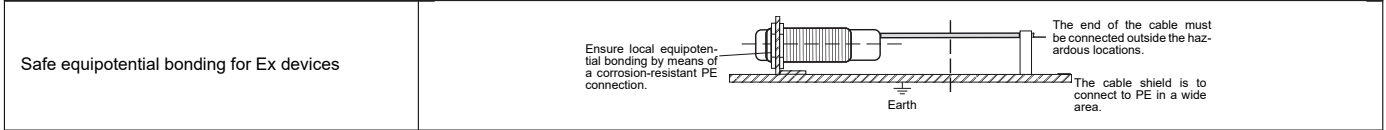
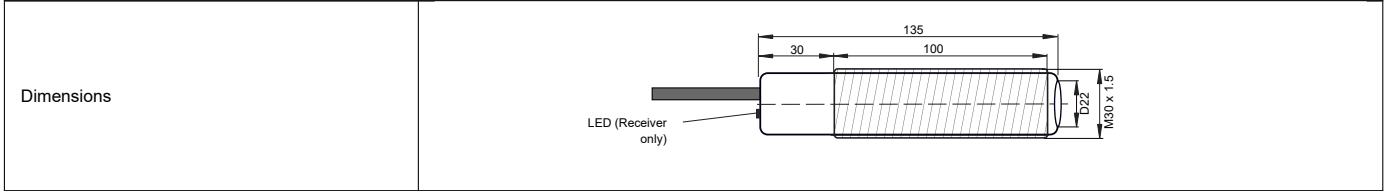


Technical Data	Type	ILD-235-STA/ETA-OP									
Designation		Emitter: ILD-235-STA-OP / Receiver: ILD-235-ETA-OP									
Gas Ex protection designation		II 2(1)G Ex db [op is Ga] IIC T6 Gb									
Dust Ex protection designation		II 2(1)D Ex tb [op is Da] IIIC T100°C Db									
For use in Ex Zones		Zones (0), 1, 2, (20), 21, 22									
Light Source		Infrared 870nm and visible red light 623nm									
Measuring range		200m									
Min. recognizable object size		22mm (Avoid deflections on reflective surfaces)									
Maximum optical radiant power		<=5mW/mm ²									
Maximum optical radiant intensity		< 15mW									
Optical aperture angle		Emitter: approx. 8° / Receiver: approx. 12°									
Response time		5ms									
Output type		1x PNP, max. 100mA, short-circuit protected									
Pollution degree		4, according to EN 60664-1:2007									
Supply voltage, Ue		24VDC ± 10%									
Absolute maximum supply voltage, Um		30VDC									
Current consumption		Emitter: 60mA / Receiver: 50mA									
Maximum power dissipation		Emitter: 1.6W / Receiver: 1.3W									
Power up delay time		500ms									
Housing		M30, brass, nickel plated									
Pollution indication output "VA"		1x PNP, max. 100mA, short-circuit protected									
Enclosure rating		IP67									
Ambient working temperature range, T _{amb}		-20°C up to +50°C									
Storage temperature range		-20°C up to +70°C									
Relative humidity		15% ... 80%, noncondensing									
Connection cable		TPU insulation, AWM 20236, 2/3/4+PE x 0.5mm ² , halogen free, shielded, leads numbering marked, oil resistant cable for trailing, length: 10m									
Accessories		Included	Optional								
		• 4x Nuts M30 (or 2x Clamps on request)									
Options		ILD-***-***-OP-S094: Special gluing of the lenses ILD-***-***-OP-S292: Special gluing of the lenses and potentiometer ILD-***-***-OP-S323: S094 + Housing M30, stainless steel 1.4404 ILD-***-SDI-OP: With emitter-disable input (DI) ILD-***-***-OP-S156: Working temperature range: -30°C up to 50°C ILD-***-***-OP-S299: Housing made of Stainless Steel 1.4404 (316) with special nuts 1.4404 Cable length: Up to 100m, on request									
Function and LED Indication		<p>Light beam interrupted LED shows red</p>	<p>Light beam not interrupted LED shows yellow or green</p>								
Output circuitry		<p>PNP=OFF R 15Ω OUT 0V</p>	<p>PNP=ON R 15Ω OUT 0V</p>								
Pollution indication output "VA"		Output VA = 0V (LED's shows red)	Output VA = 24V, only if the LED lights are yellow								
Alignment and Controlling by LED Display (Through the receiver lens and at the rear side of the receiver).		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">LED color</th> <th style="text-align: center;">Meaning</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">red</td> <td>light beam interrupted or not aligned</td> </tr> <tr> <td style="text-align: center;">yellow</td> <td>polluted lenses or badly aligned</td> </tr> <tr> <td style="text-align: center;">green</td> <td>light beam free and well aligned</td> </tr> </tbody> </table>		LED color	Meaning	red	light beam interrupted or not aligned	yellow	polluted lenses or badly aligned	green	light beam free and well aligned
LED color	Meaning										
red	light beam interrupted or not aligned										
yellow	polluted lenses or badly aligned										
green	light beam free and well aligned										
EX related markings		CE 1258 Typ: ILD-235-STA/ETA-OP Gas: Ⓜ II 2(1)G Ex db [op is Ga] IIC T6 Gb ATEX: IECEX: Tamb: Manufacturing date:	Manufacturer with Address Electrical data according table Dust: Ⓜ II 2(1)D Ex tb [op is Da] IIIC T100°C Db BVS 10 ATEX E 130 X IECEX BVS 14.0108X -20°C up to +50°C Number 5 to 8 of the Serial Number (Year / CW)								

ILD-235-STA-ETA-OP_e2/2022-09-08/MP

CCC related markings	Typ: ILD-235-STA/ETA-OP Gas: Ex db IIC T6 Gb CCC: Tamb: Manufacturing date:	Manufacturer with Address Electrical data according table Dust: Ex tb IIIC T100°C Db 2021332315000876 -20°C up to +50°C Number 5 to 8 of the Serial Number (Year / CW)
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Wiring Diagram	Lead-No	ILD-235-STA-OP	ILD-235-ETA-OP
	1	24VDC	24VDC
	2	0V	0V
	3	(Optional, SDI) DI	OUT
	4	-	VA
	white	Cable shield	Cable shield
	yellow-green	PE	PE



Operating Manual / EC-/EU-declaration of conformity

Installation prescriptions for Ex hazardous locations

General prescriptions for all Ex devices:
 It is necessary to take into consideration the valid international and national rules and regulations (EN 60079-14). The maximum input voltage $U_m = 30VDC$ must not be exceeded. The local equipotential bonding have to be done. The protective earth (PE) terminal is solid connected with the housing. The cable have to be protected against damages. The cable with termination fittings, or in cable tray systems and installed in a manner to avoid tensile stress at the termination fittings. To connect cables inside hazardous locations only use certificated Ex housings. All cable terminals must be connected outside hazardous locations. Use only original manufactured fibre optics and additional optical lenses, other additional optical lenses are not allowed in hazardous locations.

ILD-235-STA/ETA-OP: Applicable in Ex zones 1, 2, 21 and 22. The limited optical radiation can operate into hazardous locations (0) and (20).

General mounting prescriptions

Do not exceed the maximum ratings. The electrical connections must be exactly as shown in the connection diagram. The cable shield must be connected short. The cable shield should be connected to the protection earth, large-surfaced. Connection cables must not be installed parallel to high voltage cables. During electrical installation, the power must be disconnected from the device.

Type labels for china

For devices going to China, the IECEx type label must be replaced with the included CCC variant. The plant operator must ensure that all devices are labeled correctly.

General function

The light barriers can be used e.g. for the detection of objects (bottles, cans, etc.) on a conveyor belt. This light barrier consists of a transmitter type ILD-235-STA-OP and a receiver type ILD-235-ETA-OP. When both the transmitter and the receiver are correctly positioned and the light beam from the transmitter is not interrupted by an object, the receiver will show green on the indicator LED (rear and/or front) and the output is switched on. If the light beam is interrupted by an object, then the indicator LED (Rear and / or Front) shows red and the output is switched off.

Pollution indication output "VA"

Only when the receiver LED's shows yellow, the pollution indication output VA switches to +24VDC. (Light barrier bad aligned, or lenses polluted or other impairments). If the receiver LED's shows green or red, the output VA is switched to 0V. This function gives the possibility to a fast reaction at polluted lenses.

Arrangement of light barriers (IL*-235-*/A/B/C/D)

If several light barriers are installed close to another, it is necessary to use light barriers with different emitter frequencies (Types A to D). Light barriers with different emitter frequencies have no influence on each other. Precaution: If a receiver is influenced by other emitters of another type, TOFF may increase from 30ms up to 400ms. High speed light barriers type IL*-***-HS and the high temperature light barriers type IRL-235-***-S153, cannot be combined with light barriers types A to D. To avoid interference effects, all emitters should be installed at the same side and all receivers at the other side. For indoor applications the background should be protected against clutters, by using light absorbing materials.

Alignment of the Light Barrier

1. Align transmitter with receiver.
2. The 3-color status display at the back of the receiver enables optimum alignment of the receiver. Align receiver so that the receiver LED shows "green". Look for the center of the green area. If the LED lights up yellow, the light barrier is not optimally aligned or the lenses are dirty.

Maintenance

No special maintenance is required. If the lenses becomes dirty, they should be cleaned with a non-aggressive solvents. Equipment must only be repaired by the manufacturer.

General safety instructions

The ILD-235-STA/ETA-OP light barriers must not be used for accident protection. In the case of a malfunction, the output can have any state. During installation, operation and maintenance, it is mandatory to meet the relevant EU and national regulations and directives, especially with regard to explosion protection: EN 60079-14, Directives 1999/92/EC and 2014/34/EU.

General notes, disposal

We reserve the right to modify our products. Our products are designed in such a way, that it has the least possible adverse effect on the environment. It neither emits or contains any damaging or siliconized substances and use a minimum of energy and resources. No longer usable or irreparable units must be disposed of in accordance with local waste disposal regulations.

Special usage conditions

The widths and gaps of the flameproof joints of this apparatus are not identical with the respective minimum or maximum values required by Table 2 and 3 of IEC 60079-1:2014. Information on the dimensions are to be obtained from the manufacturer. Access to the enclosure is prevented by adhesion. Repair works of the enclosure and thus of the parts forming the flameproof joint can only be carried out by the manufacturer. The instructions contain relevant hints.

CCC-Declaration of Conformity

The product meets the requirements of the following standards: GB/T3836.1-2021, GB/T3836.2-2021 and GB/T3836.3-2021

CCC Designation:

Gas: Ex db IIC T6 Gb
 Dust: Ex tb IIIC T100°C Db
 CCC Certification No.: 2021332315000876
 Ex CB CCC: PCEC, No. 85 No.3 Road Ding Zi Gu, Tianjin, 300131, China

EU-Declaration of Conformity

The product meets the requirements of the following standards and directives: EN IEC 60079-0:2018, IEC 60079-1:2014, IEC 60079-15:2010, IEC 60079-28:2015, IEC 60079-31:2013, EN 60529:2014, EN 61000-4-2 to EN 61000-4-6, EN 61000-6-1/-2, EN 61000-6-4, ATEX directive 2014/34/EU, Machine directive 2006/42/EC, EMC directive 2014/30/EU, RoHS directive 2011/65/EU ATEX/IECEx-Designation:

Gas: II 2(1)G Ex db [op is Ga] IIC T6 Gb
 Dust: II 2(1)D Ex tb [op is Da] IIIC T100°C Db
 ATEX EU-type examination certificate No.: BVS 10 ATEX E 130 X
 IECEx CoC No.: IECEx BVS 14.0108X
 Ex CB IECEx: DEKRA Testing and Certification GmbH, Carl-Beyling-Haus, Dinendahlstrasse 9,

D-44809 Bochum, Ident number: 0158.

ATEX certification of quality management system, type production of Ex devices, in accordance to the directive 2014/34/EU:

Certification No.: SEV 21 ATEX 4580, QAR No.: CH/SEV/QAR21.0009/00, CB: Eurofins Electric & Electronic Product Testing AG, Luppenstrasse 3, CH-8320 Fehraltorf CE 1258.

Pablo Ledergerber, Matrix Elektronik AG, is authorized to generation of documentation. The conformity of the devices with all used standards and directives and the EC-type examination certificate and the observation of the Quality Management System ISO 9001:2015, declares:

Ehrendingen, 8.9.2022

Pablo Ledergerber, Matrix Elektronik AG

ILD-235-STA_ETA-OP_e2/2022-09-08/MP

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