

Operating manual: IRD-005-XB1-OP Photoelectric proximity switch



IECEx BVS 14.0108X

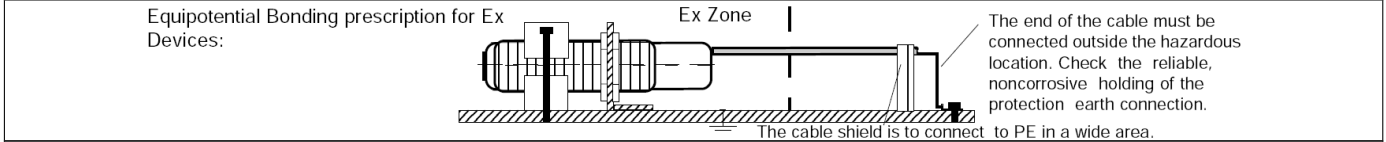
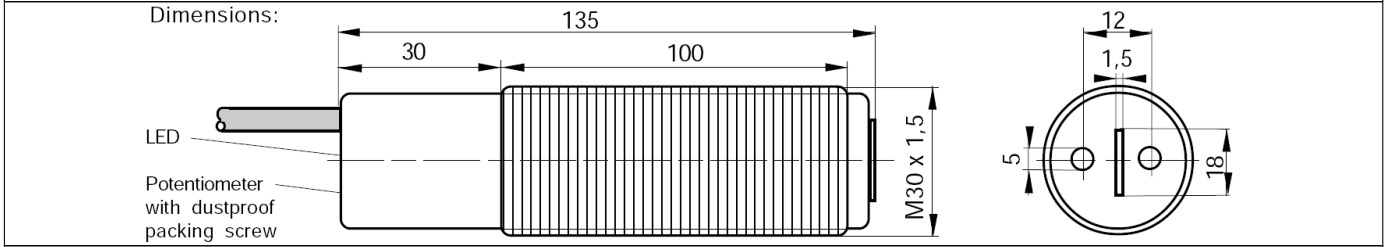
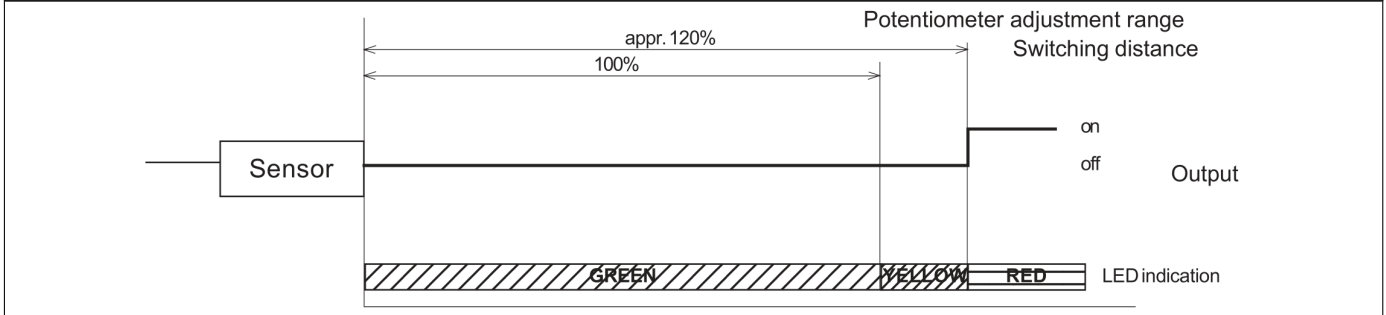

 Ex db [op is Ga] IIC T6 Gb
Ex tb [op is Da] IIIC T100°C Db

- ATEX and IECEx certification.
- For use in Ex Zones (0), 1, 2, (20), 21, 22 optical radiation can operate into Ex Zones 0, 20.
- Also for using with fibre optics
- Robust sensor for industrial applications

Technical Data	Type	IRD-005-XB1-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	
Optical Range		500mm, with potentiometer adjustable	
Light Source		Infrared 870nm	
Maximum optical radiant power		<=15mW	
Maximum optical radiant intensity		<= 5mW/mm ²	
Optical aperture angle		approx. 12°	
Response time		5ms	
Output type		PNP type, 100mA, short-circuit protected	
Pollution degree		4	
Device designation according to EN 60947-5-1/2		D3A30AP1 (according to EN60947-5-2)	
Utilization category according to EN 60947-5-1		DC13	
Supply voltage, Ue		24VDC +/-10%	
Absolute maximum supply voltage, Um		30VDC	
Current consumption		61mA	
Maximum power dissipation		1.1W	
Maximum current consumption		65mA	
Power up delay time		500ms	
Housing		M30, brass, nickel plated	
Enclosure rating		IP67	
Ambient working temperature range, T _{amb}		-20°C up to +60°C	
Storage temperature range		-30°C up to +70°C	
Relative humidity		15% ... 80%, non-condensing	
EMC, shock and vibration resistance		Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms	
Connection cable		3 + PE x 0.5mm ² , TPU, shielded, halogen free, leads numbering marked, for drag chaining, length: 3m	
Accessories	Included	Optional	
		<ul style="list-style-type: none"> • 1x Spare safety screw with packing ring for potentiometer sealing. • 2x nuts M30 	
Options		Cable length: Integrated time functions:	Up to 100m, on request Rise or fall time delays, on request
Function and LED indication		Light barrier with fibre optics Proximity switch Proximity switch with fibre optic Light detected, LED = Yellow or green	Light barrier with fibre optics Proximity switch Proximity switch with fibre optic No light detected, LED = Red
Wiring:		1 = +24VDC 2 = 0V 3 = Output yellow-green = PE white = Cable shield	<p>PNP=OFF R 15Ω 3 Output 2 0V</p>
Wiring for inverted output function:		1 = 0V 2 = +24VDC 3 = Output yellow-green = PE white = Cable shield	<p>PNP=ON R 15Ω 3 Output 2 +24VDC 1 0V</p>

IRD-005-XB1-OP_e3/2024-04-24/MP

ATEX related markings	CE 1258 Typ: IRD-005-XB1-OP Gas: II 2(1)G Ex db [op is Ga] IIC T6 Gb Enclosure rating: ATEX: IECEx: Tamb: Manufacturing date:	Manufacturer with Address Electrical data according to table Dust: II 2(1)D Ex tb [op is Da] IIIC T100°C Db IP67 BVS 10 ATEX E 130 X IECEx BVS 14.0108X -20°C up to +60°C Number 5 to 8 of the Serial Number (Year / CW)
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Operating Manual / EC-/EU-declaration of conformity

Mounting prescriptions Ex Protection:

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) is solid connected with the housing. The cable have to be installed and 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 e housings. All cable terminals must be connected outside hazardous locations. Additional optical lenses are not allowed in hazardous locations. In dust Ex zones, do not operate the sensors without fixed dustproof sealing crew. After adjust the potentiometer, the dustproof sealing crew with undamaged packing ring, must be screwed down. Damaged or lost screws or packing rings must be replaced.

Type IRD/IRF/IRG-005-XB1-OP: Only for use in Ex zones 1, 2, 21, 22. The limited optical radiation can operate into hazardous locations 0 or 20 over certificated fibre optics or through a viewing glass.

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.

Function

The sensor works basically as proximity switch on diffuse optical reflections. If the sensor detects reflected light, the output switches OFF. If the sensor works under safe conditions the LED shows green. If the sensor detects only poor reflected light, the LED shows yellow. If no reflected light will be recognized, the output switches to ON and the LED shows red. The load must be connected to 0V(-).

Function at inversely connection of the supply voltage:

The sensor works basically as proximity switch on diffuse optical reflections. If the sensor detects reflected light, the output switches to ON. If the sensor works under safe conditions the LED shows green. If the sensor detects only poor reflected light, the LED shows yellow. If no reflected light will be recognized, the output switches OFF and the LED shows red. The load must be connected to 0V(-).

Range

The nominal optical range is specified on white paper A4, 80g. The range will be influenced by the color, kind of surface and shape of the object.

Fibre optics

For efficiently detection solutions look for our multiple program of certificated fibre optics, also for high temperature areas.

Maintenance

Protect the sensor and the fibre optics against pollution. If the fibre optics or the sensor lenses are contaminated, clean with alcohol. Do not use aggressive solvents. Optical fibres can be destroyed by strong solvents. Equipment must only be repaired or serviced by the manufacturer.

General safety instructions:

The sensors must not be used for fails-safe applications! In worst case the output can change to any state! Do not turn much too often the potentiometer axis! When installing and operating with the sensor, it is necessary to take into consideration the relevant international and other national regulations: EN60079-14, single directive 1999/92/EC.

The sensors are conform to the following directives and standards: IEC/EN 60079-0:2018, IEC/EN 60079-1:2014, IEC/EN 60079-28:2015, IEC/EN 60079-31:2014, EN 60529:2014, EN 60950-1:2006; 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.

General notes, disposal

We reserve the right to modify our equipment. Our equipment is designed such way, that it has the least possible adverse effect on the environment. It neither emit or contain 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.

EU-Declaration of Conformity

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/QAR21.0009/01, 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, 24.4.2024

Pablo Ledergerber, Matrix Elektronik AG

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Matrix Elektronik AG (Manufacturer)
 Kirchweg 24, CH-5420 Ehrendingen
 Tel.: +41 56 20400-20, Fax -29
 info@matrix-elektronik.com
Trippemper-Matrix GmbH
 Meegerner Str. 43, D-51491 Overath
 Tel.: +49 2206 9566-0, Fax -19
 info@trippemper-matrix.de