

# Original Operating Manual:

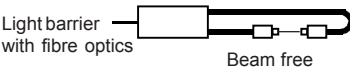

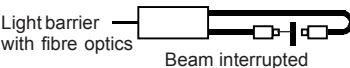

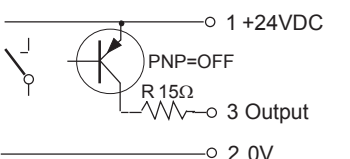
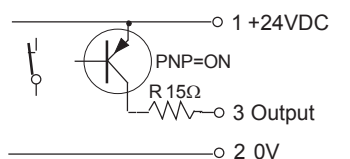
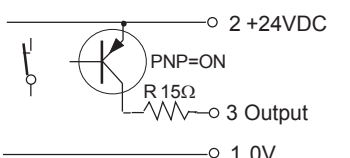
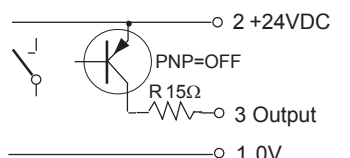
## Photoelectric proximity switch type IRD-010-XB2-OP


II 2(1)G  
II 2(1)D

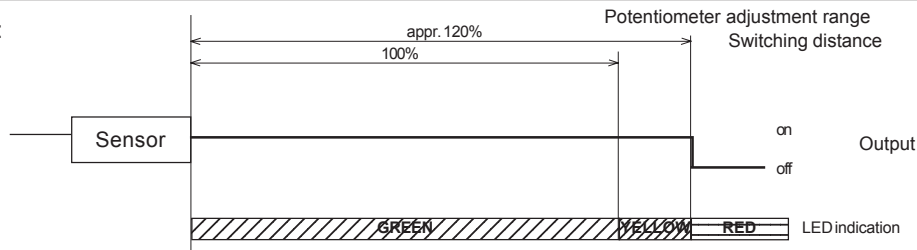
IECEX BVS 14.0108X


IECEX marking:  
Ex db [op is Ga] IIC T6 Gb  
Ex tb [op is Da] IIIB T100°C Db IP67

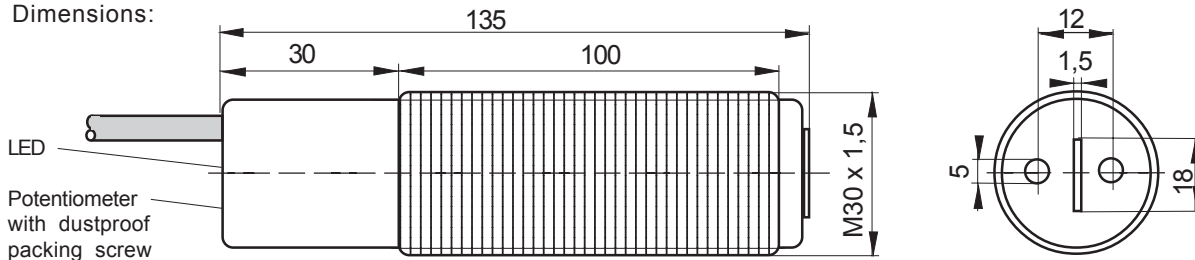
- ATEX and IECEx certification
- For use in Ex Zones (0), 1, 2, (20), 21, 22  
optical radiation can operate into Ex Zones 0, 20
- Also for using with certificated fibre optics
- Robust sensor for industrial applications

Type		IRD-010-XB2-OP	
<b>Technical data</b>			
Optical range		1m, adjustable	
Type of Ex protection Gas, directive 2014/34/EU		II 2(1)G Ex db [op is Ga] IIC T6 Gb	
Type of Ex protection Dust, directive 2014/34/EU		II 2(1)D Ex tb [op is Da] IIIB T100°C Db IP67	
For use in Ex Zones		Zones (0), 1, 2, (20), 21, 22	
Maximum optical radiant power		≤15mW	
Maximum optical radiant intensity		≤5mW/mm²	
Light source		Infrared 870nm	
Optical Beam pattern		appr.10°	
Response time		5ms	
Power-up delay time		500ms	
Supply voltage		24 VDC ±10%	
Absolute maximum supply voltage Um		30VDC	
Current consumption		61mA	
Maximum power dissipation		1.61W	
Output		PNP type, 100mA, short-circuit protected	
Utilization category, EN 60947-5-1		DC13	
Housing		M30, brass, nickel plated	
Enclosure rating, EN 60529		IP67	
Ambient working temperature range Tamb		-20°C up to +60°C	
Storage temperature range		-30°C ... +70°C	
Relative humidity		15% ... 80%, non-condensing	
Vibration and shock resistance		Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms	
Pollution degree, EN 60664-1:2007		4	
Device designation, EN 60947-5-2		D3A30AP1	
Connection cable		3 + PE x 0.5mm², TPU, shielded, halogen free, leads numbering marked, for drag chaining, length: 3m	
Accessories		- 2x nuts M30 (or optional 1 clamp) - 1x Spare safety screw with packing ring for potentiometer sealing	
Options		- Cable length: Up to 100m, on request - Integrated time functions: Rise or fall time delays, on request - Type IRD-010-XB2-OP-S226: Response time = 500us	
Function and LED indication		<div>  <p>Light barrier with fibre optics Beam free</p> </div> <div>  <p>Proximity switch with fibre optic Light detected, LED = Yellow or green</p> </div> <div>  <p>Light barrier with fibre optics Beam interrupted</p> <div>  <p>Proximity switch with fibre optic No light detected, LED = Red</p> </div> </div>	
Wiring: 1 = +24VDC 2 = 0V 3 = Output yellow-green = PE white = Cable shield		 <p>PNP=OFF</p>	
Wiring for inverted output function: 1 = 0V 2 = +24VDC 3 = Output yellow-green = PE white = Cable shield		 <p>PNP=ON</p>	
Wiring for inverted output function: 1 = 0V 2 = +24VDC 3 = Output yellow-green = PE white = Cable shield		 <p>PNP=OFF</p>	
Wiring for inverted output function: 1 = 0V 2 = +24VDC 3 = Output yellow-green = PE white = Cable shield		 <p>PNP=ON</p>	
Ex related designation of the devices		CE 1258 Manufacturer with address II 2(1)G Ex db [op is Ga] IIC T6 Gb II 2(1)D Ex tb [op is Da] IIIB T100°C Db IP67 No: BVS 10 ATEX E130 X DEKRA No: IECEx 14.0108X Electrical data according to the chart Numerals 5 to 8 of the serial number (year/calendar week)	
Type IRD-010-XB2-OP(-S226): ATEX EC-type Certification IECEX Certification Tamb: -20°C up to +60°C Date of production:		(X designation of the certification number: Fibre optics must only be applied with sensors with certificated limited optical power)	

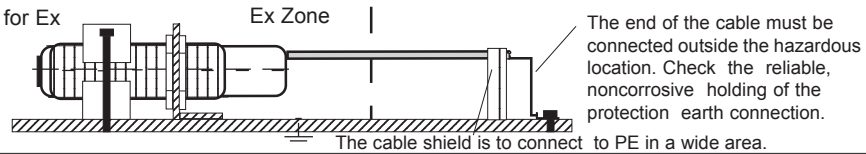
LED indication:



Dimensions:



Equipotential Bonding prescription for Ex Devices:



## 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-010-XB2-OP(-S226): 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. Do not exceed the maximum ratings.

#### Function

The sensor works basically as proximity switch on diffuse optical reflections. If the sensor detects reflected light, the output switches to +24VDC. 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(-).

#### 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 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 +24VDC and the LED shows red. The load must be connected to 0V(-).

#### Range

The nominal optical range is specified on white paper A4, 80. 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 optional 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: EN 60079-14, single directive 1999/92/EC.

### 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.

### EC-/EU-Declaration of conformity

The sensors are conform to the following standards: 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/EU, EMV Directive: 2014/30/EU, RoHS: 2011/65/EU.

IECEX certification: Ex d [op is Ga] IIC T6 Gb, Ex tb [op is Da] IIIB T100°C Db IP67. Certification No. IECEX BVS 14.0108X.

ATEX certification: II 2(1)G Ex db [op is Ga] IIC T6 Gb, II 2(1)D Ex tb [op is Da] IIIB T100°C Db IP67. Certification No. BVS 10ATEX E 130 X, DEKRA EXAM GmbH, Zertifizierungsstelle, Carl-Beyling-Haus, Dinendahlstrasse 9, D-44809 Bochum, Ident number: 0158. ATEX certification of quality type production of Ex devices according to the ATEX directive 2014/34/EU, CE 1258, Eurofins. Certification No.: SEV 21 ATEX 4580, QAR No.: CH/SEV/QAR21.0009/01. The conformity of the devices with the EC standards and directives and the EC-type examination certificate and the observation of the Quality Safety System ISO 9001:2015 with the ATEX module "Production", declares:

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