Original short form data sheet: IGD-030-SIR/EVP-OP
ESPE electro-sensitive protective equipment

For conception, mounting, installation and operation, it is necessary to take into consideration the complete operating manual!

CE 1258

Ex

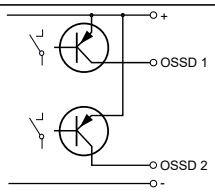
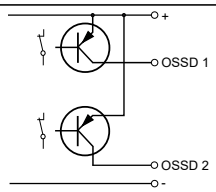
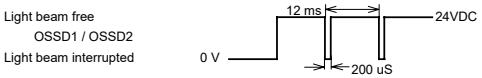
II 2(1)G
II 2(1)D

IECEx BVS 14.0108X

IEC IECEx

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

- ESPE type 2, according to EN 61496-1
- Performance Level PL e, according to EN 13849-1
- Optimal alignment by visualization by LED through the receiver optic
- With pollution indication output "VA"

Technical Data \ Type	IGD-030-SIR/EVP-OP
Designation	Emitter: IGD-030-SIR-OP / Receiver: IGD-030-EVP-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
Performance Level (PL)	PL e, according to EN 13849-1
Safety category	4, according to EN 13849-1
Safety integrity level	SIL 3, according to EN 61508
Type of ESPE	2, according to EN 61496-1
Mean probability of a dangerous failure per hour PFHd	2.47×10^{-8} , according to EN 13849-1 (without PELV power supply)
Light Source	Infrared 870nm
Measuring range	0.1m up to 30m
Min. recognizable object size	20mm
Maximum optical radiant power	<=5mW/mm^2
Maximum optical radiant intensity	< 35mW
Optical aperture angle	maximum 4°
Response time	25ms (Switch off time)
Supply voltage, Ue	24VDC (Power supply type PELV according to EN 60204, item 6.4.2)
Absolute maximum supply voltage, Um	30VDC
Current consumption	Emitter: 55mA / Receiver: 50mA
Maximum power dissipation	Emitter: 1.5W / Receiver: 1.4W
Power up delay time	300ms
OSSD	2x PNP semiconductor, short-circuit protected, cross-circuit monitored
OSSDs, maximum switching current	70mA
OSSDs, maximum load capacity / inductance	470nF / 2H
Max permissible line resistance	10R between device and load
Housing	M30, brass, nickel plated
Pollution indication output "VA"	1x PNP, max. 100mA, short-circuit protected
Enclosure rating	IP67
Weight	1.9kg
Ambient working temperature range, T_{amb}	0°C up to +50°C
Storage temperature range	–25°C up to +70°C
Relative humidity	15% ... 80%
Connection cable	TPU insulation, AWM 20236, 2/5+PE x 0.5mm^2, halogen free, shielded, leads numbering marked, oil resistant cable for trailing, length: 10m
Function and LED Indication	 Light beam interrupted LED shows red  Light beam not interrupted LED shows yellow or green
Function OSSDs	 
Output signal form	
Alignment and controlling by LED display	**LED color** / **Meaning**: red – Light beam interrupted or light barrier very bad aligned; yellow – Lenses polluted or light barrier badly aligned; green – Light beam free and light barrier well aligned; flashing red – Disturbance

Wiring and Connection

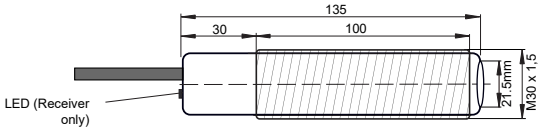
Lead-No	IGD-030-SIR-OP	IGD-030-EVP-OP
1	24VDC	24VDC
2	0V	0V
3	–	OSSD 1
4	–	OSSD 2
5	–	VA
yellow-green	PE	PE
white	Cable shield	Cable shield

EX related markings

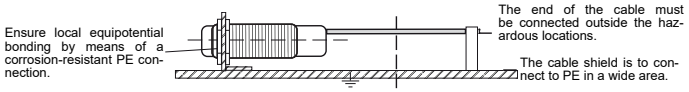
CE 1258
Typ: IGD-030-SIR/EVP-OP
Gas: II 2(1)G Ex db [op is Ga] IIC T6 Gb
ATEX:
IECEx:
Tamb:
Manufacturing date:

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
0°C up to +50°C
Number 5 to 8 of the Serial Number (Year / CW)

Dimensions



Safe equipotential bonding for Ex devices



Short form of the operating manual. It is necessary to take into consideration the complete operating manual!

Correct use

The safety light barrier Gardix is a non-separating protective device at machinery directive 2006/42/EC, appendix IV and a electro-sensitive protective equipment ESPE, at EN 61496-1. With 2 or 3 safety light barriers a protective field can be built. The safety light barriers must be installed such that the hazardous area can only be reached through the protective field. It must not be possible to start the machinery/system as long as personnel are within the hazardous area. Both OSSD are only switched ON, when the light beam is not interrupted. The certificated safety light barriers ESPE are composed of an emitter and a receiver device only of the same type.

The safety light barriers ESPE must only be operated with post-switched emergency-stop devices or programmable safety devices. The single channel safety light barriers ESPE Gardix, type 2 at EN 61496-1, can only be used as access protection to a hazardous area. All relevant standards and directives for the complete system or machinery, for performance level PL e, category 4 at EN 13849-1, must be observed.

The applicant is responsible to realize a restart interlock at the machinery if requisite. This can be realized with a Gardix safety light barrier with integrated restart interlock (WAS) or with external equipment. All warranty claims against Matrix Elektronik AG are forfeited in the case of any other use, or alterations being made to the system – even as part of their mounting or installation.

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 Um = 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.

IGD-030-SIR/EVP-OP: Applicable in Ex zones 1, 2, 21 and 22. The limited optical radiation can operate into hazardous locations (0) and (20) through a certificated viewing glass.

General mounting prescriptions

Because the safety light barriers have a small optical beam angle, they must be mounted solid and free from vibrations. 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.

Power up procedure

At power up the emitter choose one of different variable frequency pattern. The receiver samples the frequency pattern and works only with that pattern. If only the supply voltage of the emitter will be disconnected and restarted the emitter changes the frequency pattern, and the receiver can not recognize the changed frequency and can not switch ON, or switches periodically OFF. The power supply must always connected to the emitter and the receiver simultaneous.

Function

If the light beam is free, both OSSDs are switched ON. If the light beam is interrupted both OSSDs are switched OFF.

Pollution indication output "VA"

The optional pollution indication output VA is activated on polluted lenses or bad alignement. This function gives the possibility to a fast reaction at polluted lenses. The pollution indication output VA is not combinable with the integrated restart interlock function WAS. PNP type, maximum 100mA.

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.

Alignment of the Light Barrier

The three color indication in the receiver optic allows an optimal alignment.

1. The emitter must be aligned this way, that the emitter lens is fully illuminated (By watching from the receiver at the emitter).
2. The receiver should be moved, until the LED (from the receiver) shows "green". Search the middle of the green range.

General safety instructions

Only the complete operating manual provide the machine manufacturer's or machine operator's technical personnel instructions on the safe mounting, configuration, electrical installation, commissioning, and on the operation and maintenance of the Gardix safety light barrier. Please read the operating instructions carefully. When installing and operating with the sensor, it is necessary to take into consideration the relevant international and other national regulations.

Harmonized standards used: EN 61496-1:2009-03,CLC/TS 61496-2:2008-02,EN 13849-1:2008,EN 61508-3:2010,EN 61326-3:2008,EN 60204-1:2005, EN IEC 60079-0:2018, IEC 60079-1:2014, IEC 60079-15:2010, IEC 60079-28:2015, IEC 60079-31:2013, EN 60529, EN 60950-1:2006, IEC 61000-4-2 to IEC 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 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.

EU-Declaration of Conformity

ESPE, type 2, at EN 61496-1. Declaration by manufacturer at machinery directive 2006/42/EC.
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.

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, Luppmenstrasse 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, 20.3.2023

Pablo Ledergerber, Matrix Elektronik AG

Tippkemper-Matrix GmbH
Meegener Str. 43, D-51491 Overath
Tel.: +49 2206 9566-0, Fax -19
info@tippkemper-matrix.de

Matrix Elektronik AG (Manufacturer)
Kirchweg 24, CH-5420 Ehrendingen
Tel.: +41 56 20400-20, Fax -29
info@matrix-elektronik.com