ISO 9001:2008 / ATEX

ESPW electro-sensitive protective equipment , types IGS/IGD/IGN-30-S/E(-OP)

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

Short form data sheet

IGD-30-S/E-OP

CE 0158

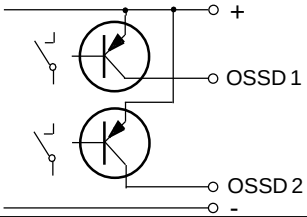
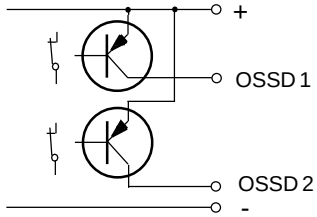
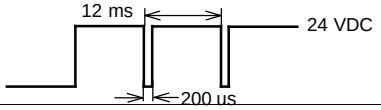
II 2(1)G Ex d [op is Ga] IIC T6 Gb
II 2(1)D Ex tb [op is Da] IIIB T100°C Db IP67

- ESPW type 2, at EN 61496-1
- Performance Level Ple, at EN 13849-1
- IGD: Applicable in Ex Zones (0), 1, 2, (20), 21, 22, optical radiation can operate into Ex Zones 0, 20
- IGN: Applicable in Ex Zones (1), 2, (21), 22, optical radiation can operate into Ex Zones 1, 21
- Optimal alignment by visualization by LED through the receiver optic
- With optional pollution indication output "VA" or with integrated restart interlock (WAS)

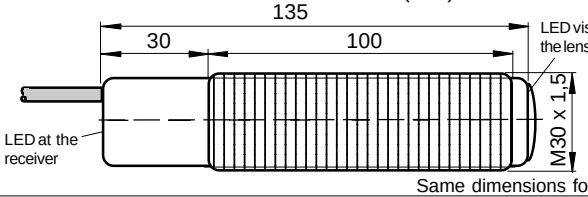
IGN-30-S/E-OP

CE

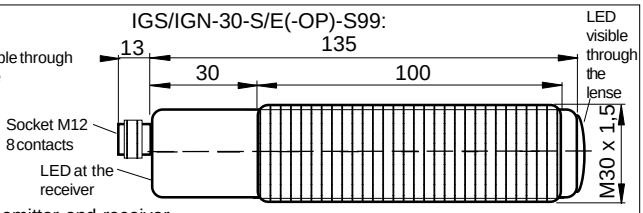
II 3(2)G Ex d [op is Gb] IIB T4 Gc
II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67

Technical data / Types	IGS-30-S/E	IGN-30-S/E-OP	IGD-30-S/E-OP
Designation	S: Emitter / E: Receiver / WAS: Restart interlock		
Type of Ex protection Gas, at 94/9/EC	NONE	II 3(2)G Ex d [op is Gb] IIB T4 Gc	II 2(1)G Ex d [op is Ga] IIC T6 Gb
Type of Ex protection Dust, at 94/9/EC	NONE	II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67	II 2(1)D Ex tb [op is Da] IIIB T100°C Db IP67
Applicable in Ex Zones	NONE	Zones 2(1), 22(21)	Zones 1(0),21(20)
Type of ESPW	Type 2, at EN 61496-1		
Performance Level (PL)	PL e, at EN 13849-1		
Safety Category	4, at EN 13849-1		
Safety Integrity Level (SIL)	SIL 3, at EN 61508		
Mean probability of a dangerous failure per hour PFHd	2.47×10^{-8}, at 13849-1 (without PELV power supply)		
Range	30m		
Light source	Infrared 870nm		
Maximum optical radiant power	Not limited	<=5mW/mm²	<=5mW/mm²
Maximum optical radiant intensity	Not limited	< 35mW	< 15mW
Minimum detectable object size	20mm		
Aperture angle, receiving angle	maximum 10°		
Response time	25ms (Switch off time)		
Power up delay time	300ms		
Supply voltage	24 VDC +-10% (Power supply type PELV at EN 60204, item 6.4.2)		
Current consumption	Emitter: 45mA / Receiver: 50mA		
Max. power dissipation	Emitter: 1.5W / Receiver: 1.4W		
Safety outputs OSSDs	2x PNP semiconductor, short-circuit protected, cross-circuit monitored		
OSSDs, maximum switching current	70mA		
OSSDs, maximum load capacity / inductance	470nF / 2H		
Permissible line resistance between device and load	10R		
Pollution indication output "VA", optional	1x PNP, max. 100mA, short-circuit protected		
Input release restart interlock (WAS), optional	PNP compatible		
Housing	M30, brass, nickel plated		
Enclosure rating, at EN 60529	IP65	IP67	
Ambient operating temperature range T_{amb}	$0°C < T_{amb} < +50°C$		
Storage temperature range	-25°C ... +70°C		
Relative Humidity (noncondensing)	15% ... 80%		
Weight	1.9kg		
Connection cable	TPU insulation, AWM 20236, 2/4/5+PE x 0.5mm², halogen free, shielded, leads numbering marked, oil resistant cable for trailing		
Socket, types IGS/IGN-30-S/E(-OP)-S99	Socket M12, Lumberg, type RSF8, 8 contacts		
Accessories	4 nuts M30 or optional 2 clamps		
Accessories included, only IGN-30-S/E-OP-S99	- 2x Safety lock device, mount at the cable connection, for locking the connection - 2x Warning plate "Do not open/close when supply voltage connected", self-sealing, for gluing on the cable connector. - 2x Protection cap for the sensor socket.		
Accessories included, only IGS/IGN-30-S/E-OP-S99	Single ended cordset, Lumberg types RKTS 8-299/xx or RKWTH 8-299/xx		
Options	-Cable length: Up to 100m, on request -IGS/IGN/IGD-30-E-**WAS**(-OP) : With restart interlock (WAS) -IGS/IGN/IGD-30-E-**VA**(-OP): With pollution indication output (VA) -IGS/IGN-30-S/E(-OP)-**S99**: Socket M12: Lumberg RSF8, 8 contacts -IGS/IGN/IGD-**10**-S/E(-OP): Range 10m, ESPW type 4		
LED indication	Light beam interrupted LED's shows red	Light beam free LED's shows yellow or green	
Function OSSDs			
Output signal form	Light beam free OSSD1 / OSSD2 Light beam interrupted 		
Alignment and controlling by LED display	LED RED: Light beam interrupted or light barrier very bad aligned LED YELLOW: Lenses polluted or light barrier badly aligned LED GREEN: Light beam free and light barrier well aligned LED RED flushing: Disturbance		

Dimensions IGS/IGN/IGD-30-S/E(-OP):



IGS/IGN-30-S/E(-OP)-S99:



Same dimensions for emitter end receiver

Assignment:	IGS/IGN/IGD-30-S:	IGS/IGN/IGD-30-E:	IGS/IGN/IGD-30-E-VA:	IGS/IGN/IGD-30-E-WAS:
+24VDC	1	1	1	1
0V	2	2	2	2
OSSD 1	--	3	3	3
OSSD 2	--	4	4	4
Input release restart interlock "WAS"	--	--	--	5
Pollution indication output "VA"	--	--	5	--
PE	yellow-green	yellow-green	yellow-green	yellow-green
Cable shield	white	white	white	white

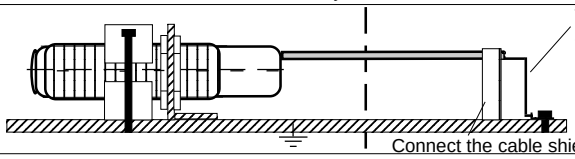
Assignment contacts IGS/IGN-30-S(-OP)-S99:

1 white	+24VDC	5 grey	NC, connect to 0V	
2 brown	0V	6 pink	NC, connect to 0V	
3 green	NC, connect to 0V	7 blue	Protection earth PE	
4 yellow	NC, connect to 0V	8 red	NC, connect to 0V	

Assignment contacts IGS/IGN-30-E(-OP) S99:

1 white	+24VDC	5 grey	VA-output, optional	
2 brown	0V	6 pink	Input release interlock, optional	
3 green	OSSD 1	7 blue	Protection Earth PE	
4 yellow	OSSD 2	8 red	NC, connect to 0V	

Equipotential Bonding for Ex Devices:



The end of the cable must be connected outside the hazardous locations.
Reliable, noncorrosive holding of the protection earth connection.

Connect the cable shield at PE in a wide area

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 ESPW, at EN 61496. 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 ESPW are composed of an emitter and a receiver device only of the same type. The types must not be mixed, f.e. IG.-10-S with IG.-30-E. The safety light barriers ESPW must only be operated with post-switched emergency-stop devices or programmable safety devices.

The single channel safety light barriers ESPW Gardix, type 2 at EN 61496, 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 Ple, category 4 at EN ISO 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 an 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.

Types: IGD-30-S/E-OP(-WAS/VA): Applicable in Ex zones 1, 2, 21, 22. The limited optical radiation can operate into hazardous locations 0 or 20 through a certificated viewing glass.

Types: IGN-30-S/E-OP(-WAS/VA): Only applicable in Ex zones 2, 22. The limited optical radiation can operate into hazardous locations 1 or 21 through a certificated viewing glass.

Types: IGN-30-S/E-OP(-WAS/VA)-S99: Only applicable in Ex zones 2, 22. The limited optical radiation can operate into hazardous locations 1 or 21 through a certificated viewing glass. Do not separate the connector when the supply voltage is connected to the cable. When installing the sensor, the safety lock device must be fitted at the cable connector. The additional adhesive warning label must be fixed to the connector housing at the connection cable. Lumberg cordsets RKTS 8-299/xx (Straight type) or RKWTH 8-299/xx (Right angle type) are allowed ONLY. It is necessary to take into consideration the mounting prescription of the connector manufacturer. In dusty locations, the socket protection cap must be fitted, when the connection cable is not connected.

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 emitter 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.

Restart interlock (WAS)

At devices with restart interlock WAS, the safety light barrier can only be restarted by activating the RELEASE INTERLOCK WAS input. The input RELEASE INTERLOCK WAS must be wired over an contact NC at +24VDC. The light barrier will be restarted be opening and reclosing this contact. If the indication LEDs flushing fast, the light barrier is locked and both OSSDs are switched OFF.

Optional 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.

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.

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

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. Series IGN-30-S/E-OP-S99: "WARNING - EXPLOSION HAZARD - WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES. DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS". The mounting of the sensor in dusty locations without fixed cordset or protection cap results in a high ignition risk. 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 60079-0:2009, EN 60079-1:2007, EN 60079-15:2010, EN 60079-28:2007, EN 60079-31:2010, EN 60529:2000, EN 60950-1:2006, EN 61000-4-2 to EN 61000-4-6, EN 61000-6-1/-2, EN 61000-6-4, ATEX directive: 94/9/EC, Machinery directive: 2006/42/EC, EMC directive: 2004/108/EC, 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.

EC-declaration of conformity, short form

ESPW, type 2, at EN 61496-1. Declaration by manufacturer at machinery directive 2006/42/EC. ATEX, series IGD: II 2(1)G Ex d [op is Ga] IIC T6 Gb, II 2(1)D Ex tb [op is Da] IIIB T100°C Db IP67. Certification number: BVS 10 ATEX E 130 X, DEKRA EXAM GmbH, Zertifizierungsstelle, Carl-Beyling-Haus, Dinendahlstrasse 9, D-44809 Bochum, Number: 0158.

ATEX IGN: II 3(2)G Ex nA [op is Gb] IIB T4 Gc, II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67. Declaration by manufacturer at 94/9/EC and BVS 10 ATEX E 130 X, DEKRA EXAM GmbH for Ex op is. ATEX certification of quality type production of Ex devices at the directive 94/9/EC, CE 0158. Certification No: BVS 12 ATEX ZQS / E118. 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 9001:2008 with the ATEX module "Production", declares:

Hans Bracher, Matrix Elektronik AG

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