

Original data sheet:
**GARDIX fail-safe inductive sensor ISS/ISN-30-B(-GD)
Safety device at 2006/42/EC, short form data sheet**

When installing and operating the sensor, it is necessary to take into consideration the complete operating manual.



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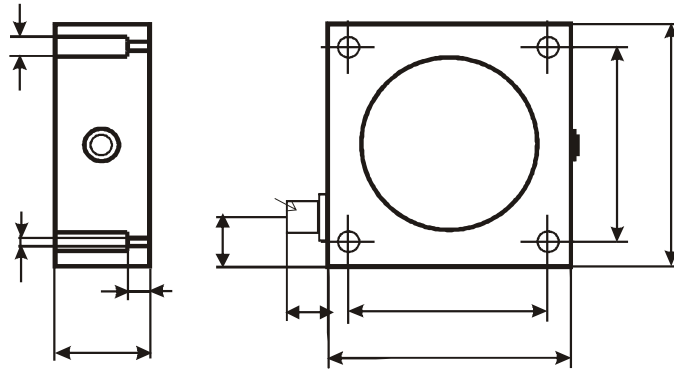

ISN-30-B-GD:
 II 3G Ex nA IIB T4 Gc
 II 3D Ex tc IIIA T135°C Dc IP67

- Housing rectangular, embeddable mounting method (flush mountable)
- PDDb, according to EN 60947-5-3
- Type ISN: For use in Ex Zones 2 and 22

Technical Data	Type	ISS-30-B	ISN-30-B-GD
Type		SRP/CS - SREC, fail-safe inductive sensor PDF-M, I1A30AP1	
Performance Level (PL), EN 13849-1			PL e
Safety category, according to EN 13849-1			4
Safety integrity level, according to EN 62061			SILCL 3
Safety-related reliability PFHd [1/h]			2.47×10^{-8}
MTTFd [Years]			100
DC/CCF/Cat.			99% / 92 / 4
Type of Ex protection Gas, ATEX 2014/34/EU		NONE	II 3G Ex nA IIB T4 Gc
Type of Ex protection Dust, ATEX 2014/34/EU		NONE	II 3D Ex tc IIIA T135°C Dc IP67
For use in Ex zones		NONE	2, 22
Installation method		embeddable (flush) mountable	
Rated operating distance sn,		30mm, (on steel 37, (sn x 3) ² x 1mm), at non flush mounting, EN 60947-2-5	
Enable zone		>=5mm ... <=28mm, (on steel 37, (30mm x 30mm x 1mm))	
Hysteresis		2mm-4mm	
Safe switching off distance s(ar)		90mm	
Repeatability		<100um	
Supply voltage Ue		24VDC +/-10% (Power supply type PELV at EN 60204, item 6.4.2)	
Absolute maximum supply voltage Ui		30VDC	
Rated insulation voltage		75VDC/50VAC	
Current consumption		35mA	
Maximum power dissipation		0.98W	
Response time to safety request		60ms	
Power up delay time		200ms	
OSSD		2 x PNP (A1 and A2)	
Output voltage at 24 V		compatible with EN 61131-2 inputs type 1, 2, 3	
Voltage drop		< 2V, (70mA)	
Current rating		70mA	
Short-circuit protection		yes	
Display		LED green (OSSD=ON), LED red (OSSD=OFF)	
Housing		rectangular 80x80x35.5mm, Aluminum AC110, sensing area: PC	
Enclosure rating, according to EN 60529		IP67	
Ambient working temperature range Tamb		-10°C <= Tamb <= +50°C	
Storage temperature range		-45°C ... +60°C	
EMC, shock and vibration resistance		according to EN 60947-5-2	
Connection cable		4+PE x 0,5mm ² , shielded, TPU jacket, leads numbering marked, diameter: 6.3mm, length: 6m	
ISS/ISN-30-B-GD-S099		male connector M12, 5-pins, type Lumberg RSF-5	
Accessories, only ISN-30-B-GD-S099, included		- 1x Safety lock device, mount at the cable connection, for locking the connection. - 1x Warning plate "Do not open/close when supply voltage connected", self-sealing, for gluing on the cable connector. - 1x Protection cap for the sensor socket.	
Accessories, only ISS/ISN-30-B(-GD)-S099		- Single ended cordset, types RKTS 5-298/xx or RKWTH 5-298/xx, Lumberg, NOT INCLUDED - Cable lengths up to 100m: On request - ISS/ISN-30-B(-GD)-S099: With male connector M12, 5-pins, Type Lumberg RSF 5	
Options			
Function and LED indication		 Object detected, LED green	 No object detected, LED red
Output with dynamic test function Object detected, Outputs switched ON		2 x PNP-Outputs, Transistors conducted.	2 x PNP-Outputs, Transistors open. Safe state
Installation: Lateral protection plates must not rise above the sensor. Sensors for non flush mounting arrangement have the highest operating distance, but a part of the parasitic lateral electromagnetic field can disturb the safe function. Lateral protection plates or other metallic objects must not influence the Sensor. For safe function a lateral free space around the sensor must be guaranteed. The series IS*-30-B(-GD), sensors for flush (embeddable) mounting, no lateral free space is required (A=0). It's possible to realize a better mechanical protection and they have a higher immunity against spurious releasing. In a not embedded mounting arrangement the sensors reach a lower level of operating distance (sa) than sensors for not embeddable mounting.		Other sensors for not embeddable installation method. A=laterale distance	IS*-30-B(-GD): For embeddable installation method A=0mm
ATEX RELATED MARKINGS ON THE SENSOR:		CE 0158 ATEX Certification: Manufacturer with address Device type: ISN-30-B-GD Tamb: -10° <= Tamb <= +50°C Equipotential bonding grounding prescription:	
		Declaration by manufacturer, according to the ATEX directive 2014/34/EU II 3G Ex nA IIB T4 Gc, II 3D Ex tc IIIA T135°C Dc IP67 Date of production: Numbers 5 to 8 of the serial number (year / calendar week)	
		Hazardous location The end of the cable must be connected outside the hazardous location. Check the reliable, noncorrosive holding of the protection earth connection.	
		 The cable shield is to connect to PE in a wide area.	

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Dimensions:



Wire number	ISS/ISN-30-B(-GD)
1	+24VDC
2	OSSD A1
3	0V
4	OSSD A2
yellow-green	PE/PA
white	Cable shield

Wiring	ISS/ISN-30-B(-GD)-S099:
Socket-Pin	Function
1/brown	+24VDC
2/white	OSSD A1
3/blue	0V
4/black	OSSD A2
5/grey	PE/PA

Operating manual, short form, EC-/EU-Declaration of Conformity:

Accident prevention:

Definite Application:

The PDDB types ISS/ISN-30-B(-GD) is a fail-safe inductive sensor conform the machine directive 2006/42/EC. The sensor detects non-contact metallic objects and is provided for the protection of humans and machines. The outputs (OSSD) will be only unblocked, when metallic objects are detected in the enable range. The fail-safe inductive sensor must only be operated with fail-safe relay or other fail-safe equipment. When installing and operating the sensor, it is necessary to take into consideration the complete operating manual. The sensor must be installed, connected and put into operation only by qualified electrician trained in safety technology. The outputs (OSSD) must not be connected direct to the machinery circuit. The outputs (OSSD) of the sensor must only be connected at emergency stop relay or other approved electronic safety devices. The installation must be protected against defeating. The sensor reacts to metal objects, e.g. the frame of a safety door. Other metal objects that are intended to enable the sensor must not be allowed to enable the sensor, either intentionally or unintentionally. Use the sensor only in the specified environmental conditions. The sensor must only be repaired by the manufacturer. Tampering with the sensor is not allowed. Disconnect the sensor externally before handling it. Also disconnect any supplied relay load circuits. The applicable standards for the corresponding application must be complied with. For installations the requirements according to EN 60204 must be observed. After power-up a complete function and safety test must be executed. Also without supply voltage, leaking currents up to 2mA are possible. All connections and installations must be executed at safety fundamental rules. It must be ensured, that the machinery residuals off after a safe switch-off or a defect of the sensor.

Installation prescriptions for Ex hazardous locations:

It is necessary to take into consideration the valid international and national rules and regulations (EN 60079-14). Do not exceed the maximum ratings. The local equipotential bonding have to be done. The protective earth (PE/PA) is solid connected with the housing and the cable shielding. 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. The maximum rated input voltage $U_m = 30VDC$ must not be exceeded.

Type ISN-30-B-GD(-S099): Only applicable in Ex zones 2, 22. 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 5-298/xx (Straight type) or RKWTH 5-298/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 protection cap for the sensor socket must be fitted, when no connection cable is connected.

Additional safety information related Ex protection:

The plastic part of the housing (sensitive area) must be protected against direct sunlight and UV irradiation.

General mounting prescriptions:

It must be ensured that all requirements of the respective application correspond to the requirements stated in these and the complete operating manual instructions. The sensor can only be flush mounted. Because the sensor reacts to metal objects, it must be ensured, that other metal objects not can enable the sensor, either intentionally or unintentionally (EN 1088). A horizontal mounting is to prefer. Lateral protection plates must not rise above the sensor. Metallic protection plates must not rise above the sensor.

Electrolytic fluids, graphitized greases or other magnetizable substances can disturb the correct function. All post-switched circuits must also be certificated for the required safety level. 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. The maximum allowed capacitance at the outputs must be $\leq 470nF$.

Function:

When a metallic object is entering the detection field, both dynamic tested outputs (OSSD) becomes active (switching ON). Is no object detected both outputs becomes inactive (safe state, OFF). If metallic or other permeable objects are positioned near or direct ($\leq 3mm$) on the sensitive

area of the sensor, both outputs are also switching OFF. The fail-safe inductive sensors of the series ISS/ISN-30-B(-GD) are built in a 2-channel different redundancy. Failures and disturbances results to outputs are switching OFF and the LED is blinking red. The safe-state is the same as no object is detected. (Output is switching OFF). The emergency OFF state is only resetable by separating the supply voltage.

Chemical resistance:

The sensor must not be exposed to the following substance groups: Aldehyds, Alkalis, aromatic and halogenized Hydrocarbons, Ketones, Bases, Acids, Benzines, Benzoles, Oils, Greases.

Maintenance:

The sensor does not require any special maintenance. Magnetic precipitations must be cleared. Equipment must only be repaired or serviced by the manufacturer.

General notes to the operating distance:

The nominal operating distance s_n (EN60947-2-5) does not take into account production tolerances and influences of temperature or voltage. The safe operating distance s_a is the minimal reachable operating distance on steel 37 (90mmx90mmx1mm) on all mounting arrangements. On other materials or smaller objects a reduction factor must be taken into account.

Material	Reduction factor
Steel 37	1
Stainless steel	0,8
Aluminum	0,4

Safety distance s_d : An inductive sensor is safe switched OFF, when the distance between sensor and actuator plate is greater then 3 x nominal distance s_n .

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. Small or bad magnetizable parts, placed direct on or near the sensitive area results not to the near range switching-off. ISN-30-B-GD-S099: "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: EN 60204, EN 60079-14, single directive 1999/92/EC

The sensors are conform to the following directives and standards: Machine directive: 2006/42/EC, ATEX directive: 2014/34/EU, EN 60947-5-1/A2:2015-05, EN 60947-5-2:2014-01, EN 60947-5-3:2014-12, EN 13849-1/A1:2013-09, EN 62061/A2:2015-02; EN 60079-0:2012 + A11:2013, EN 60079-15:2010, EN 60079-31:2014, EN 60529:2014, EN 61326-3-1:2015-06, EMC directive: 2014/30/EU, RoHS directive: 2011/65/EU.

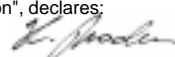
General notes, disposal:

We reserve the right to modify our equipment. Our equipment is designed in accordance with the RoHS directive. 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, short-form

Fail-safe: PDDB according to EN 60947-5-3, declaration by manufacturer according to the machinery directive: 2006/42/EC.

ATEX type ISN: II 3G Ex nA IIB T4 Gc, II 3D Ex tc IIIA T135°C Dc IP67. ATEX declaration by manufacturer according to the ATEX directive 2014/34/EU. ATEX certification of quality type production of Ex devices according to the ATEX directive 2014/34/EU, CE 0158. Certification No: BVS 15 ATEX ZQS / E118, QAR No. DE/BVS/QAR13.0004/01. 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 9001:2008 with the ATEX module "Production", declares:


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