

# GARDIX Safety Inductive Sensor ISS-10-B / ISN-10B-GD

ISS-10-B

Housing M30

ISN-10-B-GD

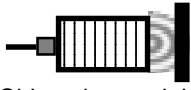
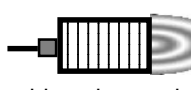
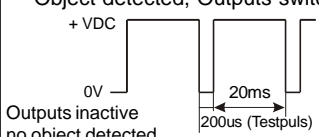
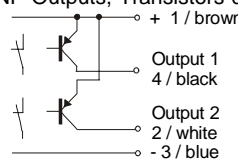
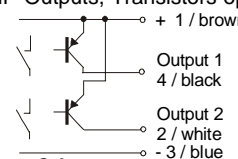
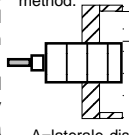
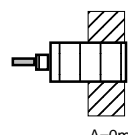
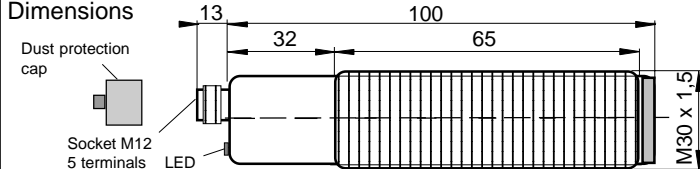


- Safety level 4 at EN 954-1
- Type ISN-10-B-GD: Ex-Protection EEx nA II T5 IP67 T100°C  
Applicable Ex zones 2, 22
- For embeddable installation method

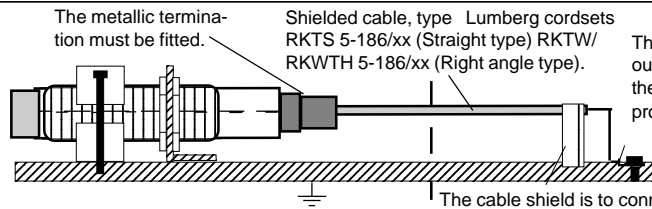


II 3 G EEx nA II T5  
II 3 D IP67 T100°C



Technical Data	Types	ISS-10-B	ISN-10-B-GD
Safety level at EN 954		4	
Type of Ex protection Gas, at 94/9/EG		None	II 3 G EEx nA II T5
Type of Ex protection Dust, at 94/9/EG		None	II 3 D IP67 T100°C
Applicable in Ex zones		None	2, 22
Housing		M30, brass, nickel plated / Sensing area: Synthetic, PEEK mod.	
Installation method		embeddable	
Rated operating distance $s_n$ , (EN60947-2-5)		10mm, (on steel 37, $(s_n \times 3)^2 \times 1\text{mm}$ ), at embedded installation	
Assured operating distance $s_a$		2mm to 8mm	
Hysteresis		0.5-1.5mm	
Safe switched OFF distance $(s_n \times 3)$		30mm	
Protection degree		IP67 at EN 60529	
Supply voltage		24VDC	
Maximum supply voltage $U_i$		28VDC	
Absolute maximum supply voltage $U_m$		--	30VDC
Current consumption		45mA	
Maximum power dissipation		1260mW	
Internal capacitance / inductance		--	$L_i = 0 / C_i = 0$
Response time		20ms	
Outputs		2 x PNP / max. 70mA / short circuit protected	
Ambient working temperature $T_A$		$-10^\circ\text{C} < T_A < +60^\circ\text{C}$	
Connection		Socket M12, Lumberg type: RSF 5, 5 terminals	
Accessories, all types		- 2x nuts M30. (Optional 1x clamp)	
Accessories, types ISN-10-B-GD		- 1x Safety lock device, mount at the cable connection, for locking the connection. - 1x Warning plate "WARNING - Explosion Hazard - Do Not Disconnect While Circuit Is Live Unless Area Is Known To Be Non-Hazardous", self-sealing, for gluing on the cable connector. - 1x Protection cap for the sensor connector.	
Accessories, not included		- Single ended cordset, straight type: RKTS 5-186/xx or right angle type: RKWTH 5-186/xx, Lumberg M12/5P	
Options			
Function and LED indication		 Object detected, LED green	 No object detected, LED red
Output with dynamic test function Object detected, Outputs switched ON  Outputs inactive no object detected		2 x PNP-Outputs, Transistors conducted.  + 1 / brown Output 1 4 / black Output 2 2 / white - 3 / blue	2 x PNP-Outputs, Transistors open.  + 1 / brown Output 1 4 / black Output 2 2 / white - 3 / blue Safe status
<b>Installation:</b> Lateral protection plates must not rise above the sensor. Sensors for not embeddable 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 ISx-10-B, sensors for <b>embeddable</b> 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 embeddable mounting arrangement the sensors reach a lower level of operating distance ( $s_a$ ) then sensors for not embeddable mounting.			
		Other sensors for not embeddable installation method.  A=laterale distance	<b>ISx-10-B: For embeddable installation method</b>  A=0mm
<b>Dimensions</b> 		1/brown +24VDC 2/white Output2 3/blue 0V 4/black Output1 5/grey PE/PA	ISS-10-B +24VDC Output2 0V Output1 PE/PA
<b>ATEX RELATED MARKINGS ON THE SENSORS:</b> CE 0158 Device type File number:		Manufacturer with address ISN-10-B-GD GXIS_AN5/AN_ATEX_1154/N2	
		Electrical data according to the chart Production date: Numbers 4 to 7 of the serial number II 3 G EEx nA II T5 / II 3 D IP67 T100°C TA: $-10^\circ < T_A < +60^\circ\text{C}$	

Equipotential bonding  
grounding  
prescription:



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.

## Operating manual, short form / CE Declaration of Conformity:

### Accident prevention:

When installing and operating the sensor, it is necessary to take into consideration the complete operating manual. All other parts of the safety system must be approved at safety level 4 at EN 954-1. All connections and installations must be executed at safety fundamental rules.

### 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. 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. 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 RKTW 5-186/xx (Straight type) RKTW/RKWTW 5-186/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 socket must be fitted, when the connection cable is NOT connected.

The safety inductive sensor ISN-10-B-GD is only applicable in Ex zones 2 AND 22. The maximum rated input voltage  $U_m = 30VDC$  must not be exceeded.

### General mounting prescriptions

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 safety level 4 at EN954. 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  $\leq 470nF$ .

### Function

When a metallic object is entering the detection field, both dynamic tested outputs becomes active (switching ON). Is no object detected both outputs becomes inactive (switching 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 proofed sensors of the series ISx-10-B are built in a 2-channel different redundancy. Failures and disturbances (at EN954-1), result in outputs switching OFF and the LED is blinking red. The faulty state is the same as no object is detected. (Output is switching OFF - Safety State). The emergency OFF state is only resetable by separating the supply voltage.

### Maintenance

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

### Chemical resistance

The sensor must not be exposed to the following substances: Formic Acid, Chlorosulfonic Acid, Chronic Acid conc., Hydrochloric Acid, Hydrobromic Acid (100%), Oluem, Azotic Acid, Sulphuric Acid, Bromine, Chlorine, Ferric(III)-chlorid, Fluorine, Iodine, Sodium (hot), concentrated Phenol.

### 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 (36mmx36mmx1mm) 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  $s_n$ .

### Safety instructions

When installing and operating with the sensor, it is necessary to take into consideration the relevant international and other national regulations: EN 60079-14, ATEX118a, EX-RL, ElexV, TrbF, TRD, UVV, BetrSichV, Einzel-RL 1999/92/EG

Standards met:

- EN 954-1; EN 50014, EN 50021, EN 50282-1-1; EN 60529
- EN 61000-4-2 bis EN 61000-4-6, EN 61000-6-1/-2, EN 61000-6-4;
- Machine directive: 98/37EG
- Low voltage directive: 73/23/EEG, 93/68/EEG
- EMC: 89/336/EEG, 91/263/EEG, 92/31/EEG, 93/68/EEG
- RoHS: 2002/95/EG
- ATEX-File: GXIS\_AN5/AN\_ATEX\_1154/N3

### General notes

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.

### Declaration of Conformity / Certifications

EC-type examination BG No. 99118, BG-PRÜFZERT No.99117, 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 9001:2000 with the ATEX module "Production", declares:

*Hans Bracher*

Hans Bracher, Matrix Elektronik AG: