

## Inductive Sensors series ISS/ISN/ISD-NS-15-B-GD

**ISN-NS-15-B-GD**
**Housing M30**
**ISD-NS-15-B-GD**


- Type: ISD-NS-15-B-GD: Applicable in Ex zones 1, 2, 20/21, 22
- Type: ISN-NS-15-B-GD: Applicable in Ex zones 2, 2
- For embeddable installation method

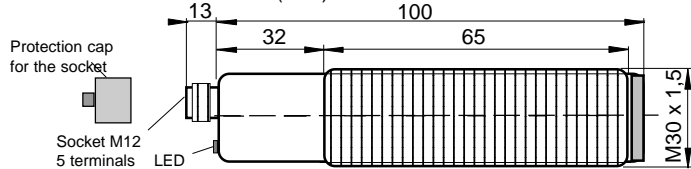

**0158**

**II 3G Ex nA IIB T4  
II 3D Ex tD A22 IP67 T135°C**

**II 2G Ex d IIC T5  
II 1/2D Ex tD A20/A21 IP67 T100°C**

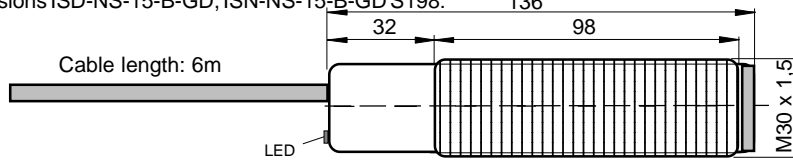
Technical Data	Types	ISS-NS-15-B	ISN-NS-15-B-GD	ISD-NS-15-B-GD
Type of Ex protection Gas, at 94/9/EG		None	II 3G Ex nA IIB T4	II 2G Ex d IIC T5
Type of Ex protection Dust, at 94/9/EG		None	II 3D Ex tD A22 IP67 T135°C	II 1/2D Ex tD A20/A21 IP67 T100°C
Applicable in Ex zones		None	2, 22	1, 2, 20/21, 22
Installation method		embeddable		
Rated operating distance sn, (EN60947-2-5)		15mm, (on steel 37, 45 x 45 x 1mm, at embedded installation)		
Assured operating distance sa		0mm to 10mm, +-1mm (non-embedded installation)		
Hysteresis		0.2-1.5mm		
Safe switched OFF distance (sn x 3)		45mm		
Temperature drift		-0.005mm/K		
Supply voltage		24VDC +-15%		
Absolute maximum voltage Um		30VDC		
Current consumption		20mA to 50mA		
Maximum power dissipation		0.6W		
Response time		2ms		
Power up delay time		70ms		
Output		Push-pull / max. 50mA / short circuit protected		
Application rating at EN 60947-5-1/2		DC13		
Working temperature range Tamb Note 1		-20°C < Tamb < +80°C	-10°C < Tamb < +60°C	-10°C < Tamb < +60°C
Storage temperature range		-40°C ... +90°C		
Housing		M30, brass, nickel plated, sensing area: PEEK mod.		
Enclosure rating		IP67 at EN 60529		
Vibration and shock resistance		Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms		
Pollution degree at EN 60664-1:2007		3		
Connection, type ISD-NS-15-B-GD		Cable: TPU, AWM 20236, 3+PE x 0.5mm <sup>2</sup> , shielded, leads numbering marked, length: 6m		
Connection, type ISN-NS-15-B-GD S198		Cable: TPU, AWM 20236, 3+PE x 0.5mm <sup>2</sup> , shielded, leads numbering marked, length: 6m		
Connection, types ISS/ISN-NS-15-B-GD		Socket M12, Lumberg type: RSF 5, 5 terminals		
Accessories		2 nuts M30. (Optional 1 clamp), (S198: 2 nuts and 1 clamp)		
Accessories, included, only ISN-NS-10-B-GD		- 1x Safety lock device, mount at the cable connection, for locking the connection. (black synthetic device) - 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 ISS/ISN-NS-10-B(-GD)		- Cord Set Lumberg RKTS 5-298/xx (straight type), or RKTW/RKWTW 5-298/xx (right angle type)		
Options		- Other cable length: Up to 100m on request - ISD-NS-15-B-G S198: Working temperature range: -40°C to +60°C, cable: TPU, 6m, Accessories: 2 nuts and 1 clamp Safety sensors PDF-M, Ple, SIL3 at EN 60947-5-3 - ISD-10-B-GD: ATEX II 2G Ex d IIC T5, II 1/2D Ex tD A20/21 IP67 T100°C - ISN-10-B-GD: ATEX II 3G Ex nA IIB T4, II 3D IP67 T135°C - ISS-10-B: Not for hazardous locations		
Function and LED indication		 Object detected, LED green	 No object detected, LED red	
Output signal + VDC	Output high Object detected  Output low No object detected	PNP transistor: ON  30Ω Out  0V	PNP transistor: OFF  30Ω Out  0V	
<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-15-B-GD, 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 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		<b>ISx-NS-15-B-.. For embeddable installation method</b>  A=0mm
<b>ATEX RELATED MARKINGS ON THE SENSOR:</b> CE 0158 Device type: ISD-NS-15-B-GD: Device type: ISN-NS-15-B-GD: Tamb: -10°C < Tamb < +60°C		Manufacturer with address II 2G Ex d IIC T5, II 1/2D Ex tD A20/A21 IP67 T100°C II 3G Ex nA IIB T4, II 3D Ex tD A22 IP67 T135°C ISN-NS-15-B-G S198: Tamb: -40°C < Tamb < +60°C		Production date: Numbers 4 to 7 of the serial number Certification number: BVS 07 ATEX E 044 X Declaration by manufacturer at 94/9/EC Electrical data according to the chart
Note 1: At ambient temperatures less than -5°C, the cable must not be agitated.				

Dimensions ISS/ISN-NS-15-B(-GD)-NS-10-B-GD:



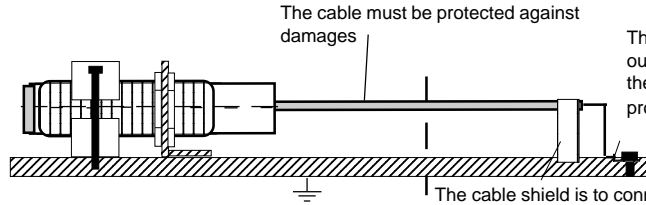
	ISS-NS-15-B	ISN-NS-15-B-GD
1/brown	+24VDC	+24VDC
2/white	NC	NC
3/blue	0V	0V
4/black	Output	Output
5/grey	PE/PA	PE/PA

Dimensions ISD-NS-15-B-GD, ISN-NS-15-B-GD S198:



Wire No:	ISD-NS-15-B-GD
1	+24VDC
2	0V
3	Output
yel.-green	PA/PE
white	Cable shield

Equipotential bonding prescription:



The end of the cable must be connected outside the hazardous location. Check the reliable, noncorrosive holding of the protection earth connection.

Operating manual / EC Declaration of Conformity:

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.

**Type ISD-NS-15-B-GD:** Only applicable in Ex zones 1, 2, 20/21, 22. For the zones 20/21 only the front part (sensitive area) can be mounted inside the zone 20. The rear part with the cable must be in the zone 21.

**Type ISN-NS-15-B-GD:** Only applicable in Ex zones 2 and 22. The maximum input voltage  $U_m=30VDC$  must not be exceeded. The local equipotential bonding have to be done reliable and noncorrosive over the terminal pin 5 and cable shielding. The protective earth (PE/PA) of the socket is solid connected with the housing. 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 RKT5 5-298/xx (Straight type) RKTW/RKWT5 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 socket protection cap must be fitted, when the connection cable is NOT connected.

Additional safety information related Ex protection

BVS 07 ATEX E 044 X: X = The plastic part of the housing (sensitive area) must be protected against direct sunlight and UV irradiation.

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. The electrical connections must be exactly as shown in the connection diagram. The cable shield must be connected short. The cable shield must be connected to the protection earth, large-surfaced. Connection cables must not be installed parallel to high voltage cables.

Function

When a metallic object is entering the detection field, the output becomes active (switching to +24VDC). Is no object detected the output becomes inactive (switching to 0V).

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.

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 (30mmx30mmx1mm) 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 than 3 x nominal distance  $s_n$ .

General safety instructions

The dismantling of the connector safety lock device while the supply voltage is connected is hazardous! The mounting of the sensor in dusty locations without fixed cordset or protection cap results in a high ignition risk. The sensors must not be used for Accident-Prevention! In worst case the output can change to any state! 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, ATEX118a, Directive 1999/92/EC.

Standards met:

EN 60947-5-1:2007, EN 60947-5-2:2007; EN 60079-0:2006, EN 60079-1:2004, EN 60079-15:2010, IEC 60241-0:2006, EN 61241-1:2004; EN 60529:2000, EN 61326-3-1:2008, EMC: 2004/108/EC, RoHS: 2002/95/EC, Machine directive: 2006/42/EC

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 Declaration of Conformity

ATEX ISD-NS-15-B-GD: EC-Certification BVS 07 ATEX E 044 X. ATEX ISN-NS-15-B-GD: Declaration by manufacturer at 94/9/EC. ATEX certification of quality type production of Ex devices at the directive 94/9/EC Certification No: BVS 03 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:

*[Signature]*

Hans Bracher, Matrix Elektronik AG:

ISX-NS-15B-GD\_e7/2013-01-08/HB

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