

Speed Control Sensors IRS/IRN/IRD-LTD

IRD-LTD-GD

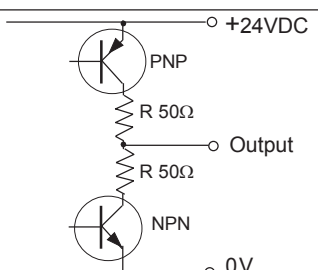
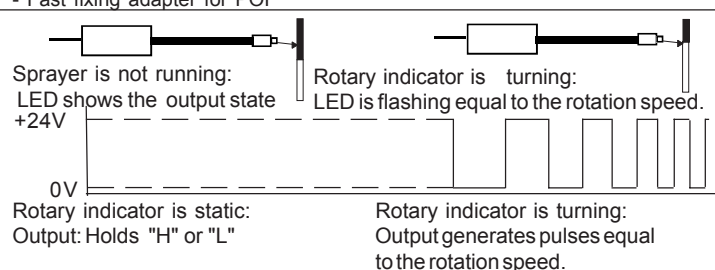


Housing M30

IRN-LTD-GD

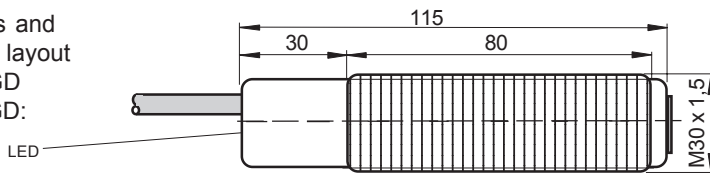

 II 2G Ex d IIC T6 Gb
 II 2D Ex tb IIIB T90°C Db IP67

- Well applicable with plastic and glass fibre optics
- Laser-emitter, red light 650nm
- Type IRD: For use in Ex Zones 1, 2, 21, 22
- Type IRN: For use in Ex Zones 2, 22
- Speed control up to 100'000 RPM
- Very high reliability (EMC)


 II 3G Ex nA IIB T4 Gc
 II 3D Ex tc IIIA T135°C Dc IP67

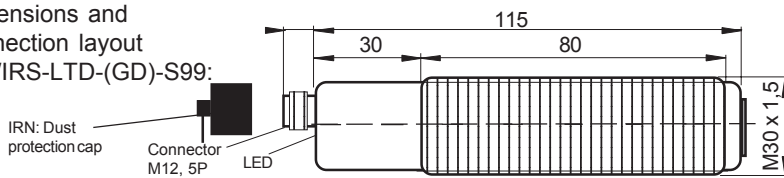
Technical Data	Type	IRS-LTD	IRN-LTD-GD	IRD-LTD-GD
Type of Ex protection, Gas, 94/9/EC		None	II 3G Ex nA IIB T4 Gc	II 2G Ex d IIC T6 Gb
Type of Ex protection, Dust, 94/9/EC		None	II 3D Ex tc IIIA T135°C Dc IP67	II 2D Ex tb IIIB T90°C Db IP67
For use in Ex Zones		-	Zones 2, 22	Zones 1, 2, 21, 22
Laser class			Class II, 650nm rot, Po <= 1mW	
Switching frequency			0,1kHz - 10kHz ^{Note1}	
Output rise time			<= 2us	
Power up delay time			2sec	
Supply voltage			24VDC +/-15%	
Absolute maximum input voltage Um			30VDC	
Current consumption			60mA	
Power dissipation			maximum 1.7W	
Output			1 x Push-Pull, short circuit protected, maximum 10mA	
Output impedance			max.50Ω	
Housing			M30, brass, nickel plated	
Enclosure rating, in accordance with EN 60529		IP 65	IP 67	IP 67
Working temperature range Tamb			0°C < Tamb < +50°C	
Storage temperature range			-30°C ... +80°C	
Vibration shock resistance			Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms	
Ambient illumination			only for using in enclosed ambients	
Status indication			Types with cable connection and ***S99: With LED	
Connection, Cable, IRN/IRD-LTD-GD		-	3+PEX0,5mm ² , TPU, shielded, wires numbering market, Length: 10m	
Socket, IRN/IRS-U-LTD-(GD)			Binder series 717, No. 09-0541-00-05 Not for new applications	-
Socket, IRN/IRS-LTD-(GD)-S99			Lumberg, M12, 5-pins, type RSF 5	-
Optical fibre connection			Matrix connection, applicable with the series PA and PV fibre optics	
Options			-IRN-U-LTD-GD: Socket type Binder 717. NOT FOR NEW APPLICATIONS. -IRD-LTD-GD-S98: Cable type Ölflex 810CP, L=20m -IRS/IRN-LTD-S99: Socket M12: Lumberg RSF 5 -IRD-LTD-GD-S136: Cable type Ölflex 810CP, L=15m -IRD-LTD-GD-S165: Cable type Ölflex 810CP, Length on request -IRN/IRD-LTD-OP(-S99): With limited optical output power in accordance with EN60079-28, *[op is Ga] IIC*, *[op is Da] IIIB *. - IRD-LTD-GFO-OP: IECEx certificated	
Accessories, included all types			- 2x Nuts M30	
Accessories, type IRN-U-LTD-GD, included			- 1x Safety lock screw for connector types Binder series 717, for fixing the connector housing at the sensor. The original screw must be exchanged by the new safety screw.	
Accessories, type IRN-LTD-GD S99, included			- 1x Safety lock device, mount at the cable connection, for locking the connection. (black synthetic device)	
Accessories, types IRN-U-LTD-GD and IRN-LTD-GD S99, included			- 1x Warning plate "Do not separate when supply voltage connected", self-sealing, for gluing on the cable connector. - 1x Protection cap for the sensor connector.	
Accessories, IRN-U-LTD-GD, not included			- Cable connector: Binder series 717 No: 09-0534-00-05	
Accessories, IRN-LTD-GD-S99 not included			- Single ended cordset, straight type: RKTS 5-298/xx or right angle type: RKWT/RKWTH 5-298/xx, Lumberg M12/5P - Self mounting connector: Binder series 713, M12, 5 terminals - Single ended cordset: Binder series 763, M12, 5 terminals	
Accessories, all types, not included			- Different types of optical fibres, on demand - Fast fixing adapter for POF	
Output Function:				
				
ATEX RELATED MARKINGS: CE 1258 Manufacturer with address Production date: Numbers 5 to 8 of the serial number (year/calendar week) Device type: IRD-LTD-GD(-S***);  II 2G Ex d IIC T6 Gb, II 2D Ex tb IIIB T90°C Db IP67 Certification number: BVS 10 ATEX E 130 X Device type: IRN-LTD-GD(-S***);  II 3G Ex nA IIB T4 Gc, II 3D Ex tc IIIA T135°C Dc IP67 Declaration by manufacturer, in accordance with the ATEX directive 94/9/EC				
Tamb: 0°C < Tamb < +50°C Electrical data according to the chart				
Note 1: The real reachable switching/rotary frequency is dependent on the condition and the partition of the marking disc and the type, the working condition and the length of the optical fibres. At normal conditions approximative 100'000 RPM.				

Dimensions and connection layout
IRD-LTD-GD
IRN-LTD-GD:



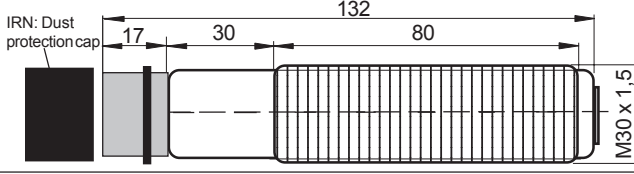
Connection: IRD-LTD-GD
1 +24VDC
2 0V
3 Output
white Cable shield
yellow-green PE

Dimensions and connection layout
IRN/IRS-LTD-(GD)-S99:



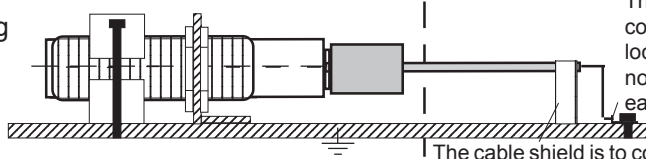
Connection: IRN/IRS-LTD-(GD)-S99:
1/brown +24VDC
2/white NC
3/blue 0V
4/black Output
5/grey PE

Dimensions and connection layout
IRN-U-LTD-GD,
IRS-LTD-GD:
(Not for new applications)



Connection: IRN/IRS-LTD-GD:
1 +24VDC
2 NC
3 0V
4 Output
PE

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.

The cable shield is to connect to PE in a wide area.

Operating Manual / EC - Declaration of Conformity:

Ex Protection:

It is necessary to take into consideration the valid international and national rules and regulations (EN 60079-14). The maximum input voltage $U_m=30VDC$ must not be exceeded. The local equipotential bonding have to be done. The protective earth (PE) 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. Additional optical lenses are not allowed in hazardous locations.

Type IRD-LTD-GD: Allowed to be installed and operated within Ex zones 1, 2 and 21, 22.

Type IRN-LTD-GD: Only allowed to be installed and operated within Ex zones 2 and 22.

Type IRN-LTD-GD-S99: Only allowed to be installed and operated within Ex zones 2 and 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) RKWT/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.

Type IRN-U-LTD-GD: Only allowed to be installed and operated within Ex zones 2 and 22. Do not separate the connector while the supply voltage is connected to the cable. When installing the sensor, the safety lock screw must be used for fitting the cable connection. The additional adhesive warning label must be fixed to the connector housing at the connection cable. Binder series 717 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.

General mounting prescriptions:

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.

Function:

The sensor can only be used with connected fibre optics. Laser light reflection alterations, generated by the marking disc of the spraying apparatus, will be amplified and formed.

Using the fibre optics

The sensor I..LTD must not go into operation without mounted fibre optics. The fibre optics must be handled careful. For cutting the fibre optics the special cutter or a professional tool is to use. Do not use optical fibres longer then 15m. The functional safety of the sensor is given by the condition of the marking disc and the careful working up of the optical fibres. The fibre optics must not be buckled or laid with a small radius. Buckled or bad laid fibre optics results to a strong decrease of performance. Avoid performance decreasing and failures caused by wear, by a functional mounting of the fibre optics.

Maintenance:

Protect the fibre optic adaptor of the sensor and the optical fibres against pollution. If the fibre optic adapter is contaminated, clean with alcohol. Do not use aggressive solvents. Plastic optical fibres can be destroyed by strong solvents. Equipment must only be repaired or serviced by the manufacturer.

Safety regulations for Laser devices:

The sensors types I..LTD must not go into operation without mounted fibre optics. Without mounted fibre optics the laser power can increase class 2. By the installation, the going into operation and the application, it is necessary to take into consideration the valid rule EN 60825 (Parts 12.5.1/12.6.2). Warning! Without mounted fibre optics the optical power reach Laser Class 2. Do not stare into the beam! With mounted fibre optics no safety measures are needed.

General safety instructions:

"WARNING - EXPLOSION HAZARD - WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES." "WARNING - EXPLOSION HAZARD - 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. 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 60079-14, ATEX118a, EX-RL, ElexV, TrbF, TRD, UVV, BetrSichV, single directive 1999/92/EC

The sensors are conform to the following standards: IEC/EN 60079-0:2009, IEC/EN 60079-1:2007, EN 60079-15:2010, IEC/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, Machine 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:

ATEX certification, types IRD: II 2G Ex d IIC T6 Gb, II 2D Ex tb IIIB T90°C Db IP67. Certification No. BVS 10 ATEX E 130 X, DEKRA EXAM GmbH, Zertifizierungsstelle, Carl-Beyling-Haus, Dinendahlstrasse 9, D-44809 Bochum, Ident number: 0158.

ATEX certification, types IRN:II 3G Ex nA IIB T4 Gc, II 3D Ex tc IIIA T135°C Dc IP67. ATEX declaration by manufacturer in accordance to 94/9/EC. IECEx/ATEX certification of quality type production of Ex devices in accordance to the directive 94/9/EC, CE 1258, Eurofins. Certification No: SEV 21 ATEX 4580, QAR No. CH/SEV/QAR21.0009/00. 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 9001:2015 with the ATEX module "Production", declares:

Pablo Ledergerber, Matrix Elektronik AG

IRD-LTD-GD_e17/2022-01-11/MP

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