ISO 9001:2008 / ATEX

Speed Control Sensors IRS/IRN/IRD-LTD-CAN

IRD-LTD-CAN-GD

CE 0158

Ex II 2G Ex d IIC T6
II 1/2D Ex tD A20/21 IP67 T90°C

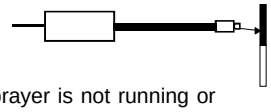
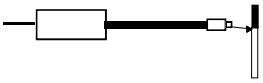
Housing M30

- Well applicable with plastic and glass fibre optics
- Laser-emitter, red light 650nm
- Type IRD: applicable in Ex Zones 1 + 20/21
- Type IRN: applicable in Ex Zones 2 + 22
- Speed control 3'000RPM to 80'000 RPM
- CAN interface

IRN-LTD-CAN-GD

CE

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

Technical Data / Type	IRS-LTD-CAN	IRN-LTD-CAN-GD	IRD-LTD-CAN-GD
Type of Ex protection, Gas, at 94/9/EC	None	II 3G Ex nA IIB T4	II 2G Ex d IIC T6
Type of Ex protection, Dust, at 94/9/EC	None	II 3D Ex tD A22 IP67 T135°C	II 1/2D Ex tD A20/A21 IP67 T90°C
Applicable in Ex Zones	--	Zones 2 and 22	Zones 1, 2, 20/21, 22
Laser class	Class II, 650nm rot, Po <= 1mW		
Internal switching frequency	0,1kHz - 10kHz[Note1]		
Power up delay time	2sec		
Supply voltage	24VDC (20 to 28VDC)		
Absolute maximum input voltage Um	30VDC		
Current consumption	80mA		
Power dissipation	maximum 2.24W		
Interface	CAN		
Data field	Rounds/second 50 RPS to 1'334 RPS (2partitions on marking disc) 2 Bytes (MSB first) transmitted all 10ms		
Housing	M30, brass, nickel plated		
Enclosure rating at EN 60529	IP 65	IP 67	IP 67
Vibration and shock resistance	Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms		
Working temperature range TA	0°C < TA < +50°C		
Ambient illumination	only for using in enclosed ambients		
Electrical connection	Cable, 3+PE x 0,5mm², shielded, jacket PUR, L=10m		
Connection, IRS-LTD-CAN S99	Socket, M12, 5 terminals	--	
Connection, IRN-LTD-CAN-GD S99		Socket, M12, 5 terminals	--
Optical fibre connection	Matrix connection, applicable with different types of glass optical fibres		
Options	-IRS/IRN-LTD-CAN **S99**: Socket M12: Lumberg RSF 5		
Accessories, included all types	- 2x Nuts M30		
Accessories, type IRN-LTD-GD-CAN S99, included	- 1x Safety lock device, mount at the cable connection, for locking the connection. (black synthetic device) connected", self-sealing, for gluing on the cable connector. - 1x Protection cap for the sensor connector.		
Accessories, IRS/IRN-LTD-CAN-GD-S99 not included	- Single ended cordset, straight type: RKTS 5-298/xx or right angle type: RKTW/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 - Adaption cable M12 to D-Sub 9		
Basic function:	 Sprayer is not running or lower then 50RPS: 50 RPS will be transmitted		 Rotary indicator is turning from 50 RPS TO 1'334 RPS (3'000 to 80'000 RPM) will be transmitted

ATEX RELATED MARKINGS ON THE SENSOR:

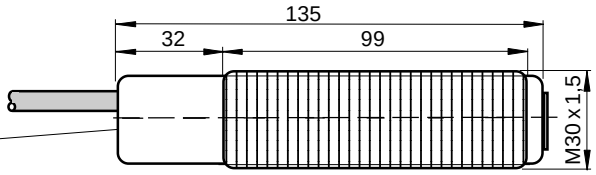
CE 0158
Device type: IRD-LTD-CAN-GD:
Device type: IRN-LTD-CAN-GD:
TA: 0°C < TA < +50°C

Manufacturer with address
Ex II 2G Ex d IIC T6, II 1/2D Ex tD A20/21 IP67 T90°C
II 3G Ex nA IIB T4, II 3D Ex tD A22 IP67 T135°C
Electrical data according to the chart

Production date: Numbers 4 to 7 of the serial number
Certification number: DMT 99 ATEX E056
Certification by manufacturer at 94/9/EC
Tech File No: AN-MAT-09-EX-TD-LTD-CAN

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 3'000 RPM to 80'000 RPM, with a 2 partition marking disc.

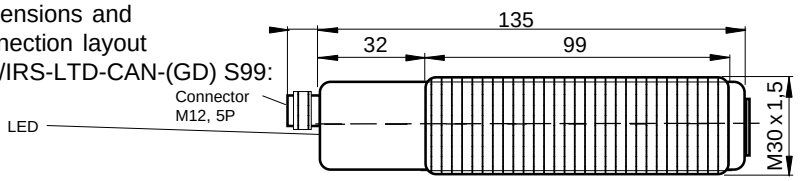
Dimensions and connection layout IRD-LTD-CAN-GD IRN-LTD-CAN-GD:



Connection: IRD-LTD-CAN-GD

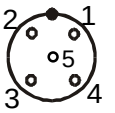
1	+24VDC
2	CAN_H
3	0V
4	CAN_L
white	Cable shield
yellow-green	PE

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



Connection: IRN/IRS-LTD-CAN-GD S99:

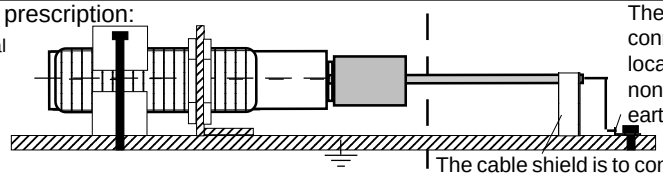
1/brown	Cable shield
2/white	+24VDC
3/blue	0V
4/black	CAN_H
5/grey	CAN_L
Housing	PE



View on the sensor socket

Equipotential Bonding prescription:

On devices without PE terminal (S99), the local equipotential bonding have to be done with conductive corrosion-resistant clamps or nuts M30



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 / CE 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 Um=30VDC must not be exceeded. The local equipotential bonding have to be done. On the types IRN/IRD-LTD-CAN-GD, the protective earth (PE) wire is solid connected with the housing. On the type IRN-LTD-CAN-GD S99, the local equipotential bonding have to be done with conductive corrosion-resistant clamps or nuts M30 over 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-CAN-GD: Only applicable in Ex Zones 1, 2 and 20/ 21, 22. For the zones 20/21 only the front part (fibre optics connection) can be mounted inside the zone 20. The rear part with the cable must be in the zone 21.

Type IRN-LTD-CAN-GD: Only applicable for the Ex zones 2 and 22.

Type IRN-LTD-CAN-GD-S99: Only applicable for the 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) RKTW/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.

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 / CAN:
The sensor can only be used with connected fibre optics. Laser light reflection alterations, generated by the marking disc of the spraying apparatus (2 partition on marking disc), will be amplified, formed and the resulting rotation speed will be transmitted as Rounds per Second over the CAN bus. The value of RPS will be transmitted all 10ms. Rounds/second 50 RPS to 1'334 RPS (2partitions on marking disc), 2 Bytes (MSB first), transmitted all 10ms

Using the fibre optics:
The sensor I..-LTD-CAN 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 10m. 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-CAN 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

Standards met:
EN 60079-0:2004, EN 60079-1:2004, EN 60079-15:2005,
EN 60241-0:2004, EN 61241-1:2004; EN 60529:2000;
EN 60825-1:2007; EN 60950-1:2006; EN 50081-1:1993,
EN 50081-2:1994, EN 50082-1:1997.
- Ex protection: 94/9/EC (ATEX 100a)
- Machine directive: 2006/46/EC
- EMC: 89/336/EWG, 91/263/EWG, 92/31/EWG, 93/68/EWG
- RoHS directive: 2002/95/EC

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.

CE Declaration of Conformity:
Model IRD: CE certification No. DMT 99 ATEX E056, DEKRA.
Model IRN: Declaration by manufacturer at 94/9/EC
Tech File No. AN-MAT-10-EX-TD-LTD-CAN.
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:

Hans Bracher, Matrix Elektronik AG

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