

Operating Manual:

O/E-Converter IRN-U-TD-GD/IRN-U-TD-GD-S099



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

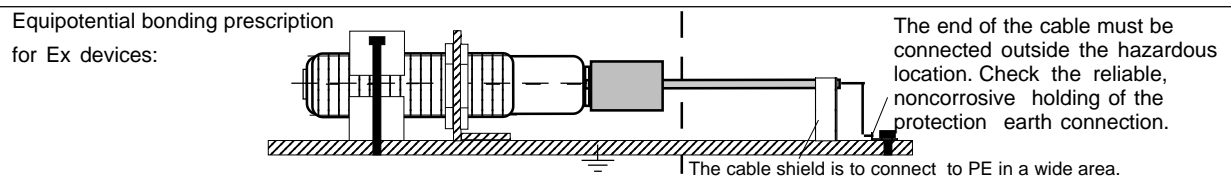
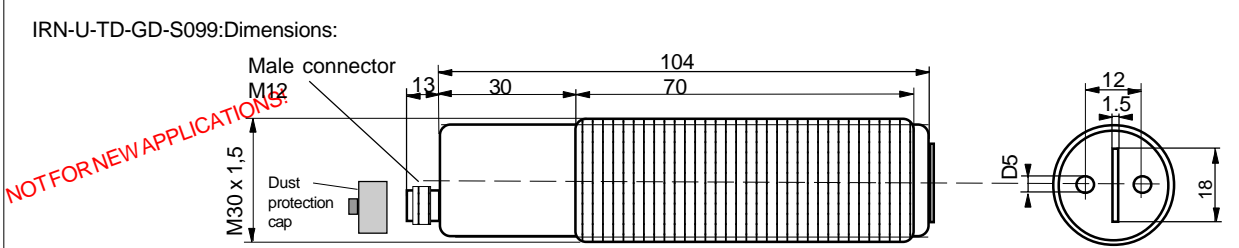
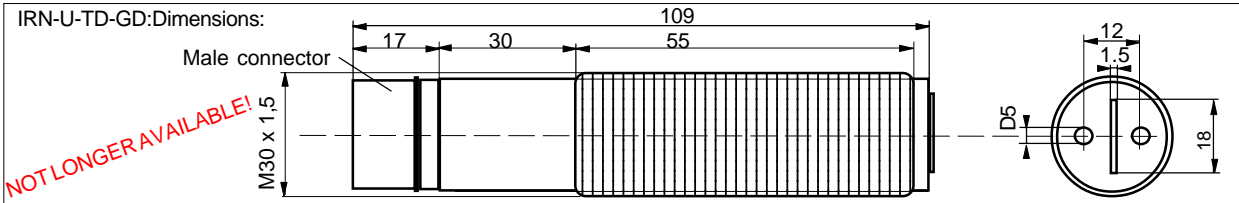
Housing M30

- For speed control of sprayers
- Well applicable with glass fibre optics
- For use in Ex zones 2, 22
- Robust sensor for industrial applications

Technical Data	Type	IRN-U-TD-GD not longer available	IRN-U-TD-GD-S099 not for new applications
Type of Ex protection Gas, according to 2014/34/EU		II 3G Ex nA IIB T4 Gc	
Type of Ex protection Dust, according to 2014/34/EU		II 3D Ex tc IIIA T135°C Dc IP67	
For use in Ex Zones		2, 22	
Light source		infrared, 870nm	
Switching frequency		0.5kHz - 5kHz ^{Note 1}	
Rise time		<=4us	
Supply voltage		24 VDC +-10%	
Absolute maximum voltage U _m		30VDC	
Current consumption		60mA	
Max. power dissipation		appr. 1.56W	
Output		1 x Push-Pull, short circuit protected, max. 10mA	
Output impedance		max.100Ω	
Housing		M30, brass, nickel plated	
Enclosure rating, according to EN 60529		IP 65 (with connected cable)	
Max. ambient working temperature T _{amb}		-20°C < T _{amb} < +50°C	
Connection, male connectors		Binder series 717, 5 pins	M12, Lumberg RSF 5, 5 pins
Fibre optic connection		System Matrix	
Max. length of the fibre optic		10m	
Accessories, all types, included		- 2x nuts M30 - 1x Warning plate "Do not open/close when supply voltage connected" - 1x Protection cap for the sensor socket	
Accessories, type IRN-U-TD-GD, included		- 1x Safety lock screw for connectors 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-U-TD-GD-S099, included		- 1x Safety lock device, mount at the cable connection, for locking the connection	
Accessories, not included		- Cable box Binder type 717, no. 09-0534-00-05 or - Single ended cordset M12, types RKTS 5-298/xx or RKWTH 5-298/xx, Lumberg - Glass fibre optics, types Matrix	
Options		- Type IRN-U-TD-GD-NPN(-S099): With NPN output - Type IRN-U-TD-GD-PNP(-S099): With PNP output - Type IRN-U-TD-GD-PP(-S099): With strong push-pull output	
ATEX related designations of the devices:		CE Manufacturer with address. T _{amb} : -20°C < T _{amb} < +50°C Device type Ex II 3G Ex nA IIB T4 Gc, II 3D Ex tc IIIA Dc T135°C IP67 ATEX declaration of conformity by manufacturer according to the ATEX directive 2014/34/EU. Electrical data according tot the chart Date of production: Numerals 5 to 8 of the serial number (year/week)	
Output / Function		<p>Sprayer is not running: LED off</p> <p>Rotary indicator is turning: LED is flashing equal to the rotation speed.</p> <p>Rotary indicator is static: Output holds +12VDC</p> <p>Rotary indicator is turning: Output generates pulses equal to the rotation speed.</p>	
IRN-U-TD-GD: Wiring: NOT LONGER AVAILABLE!		View on the sensor connector: 	1 +24VDC 2 NC 3 0V 4 Output PE
IRN-U-TD-GD-S099: Wiring: NOT FOR NEW APPLICATIONS!			1/brown +24VDC 2/white NC 3/blue 0V 4/black Output 5/grey PE

IRN-U-TD-GD_e14/2017-11-27/HB

Note 1: The real reachable switching/rotary frequency is dependent on the condition of the marking disc, for 2x4 sections, the type and the careful working up of the optical fibres.



Operating Manual, EC- Declaration of Conformity:

Mounting prescriptions

Ex Protection:

The O/E-Converters are only for use in Ex Zones 2 and 22. 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.

Do not separate the connector when the supply voltage is connected to the cable. In dusty locations, the protection cap for the sensor socket must be fitted, when no connection cable is connected.

Type IRN-U-TD-GD: 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. Only connectors, Binder series 717 or Amphenol series C164, are allowed. It is necessary to take into consideration the mounting prescription of the connector manufacturer.

Type IRN-U-TD-GD-S099: 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 RKTW 5-298/xx (Right angle type), are allowed ONLY. It is necessary to take into consideration the mounting prescription of the connector manufacturer.

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. Do not exceed the maximum ratings.

Function rotation speed detection

Light reflection alterations, generated by the turning marking disc of the spraying apparatus, will be amplified and formed.

Using the fibre optics

The sensor must not go into operation without mounted fibre optics. The fibre optics must be handled careful. 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. Equipment must only be repaired or serviced by the manufacturer.

General safety instructions

"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. 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, single directive 1999/92/EC.

The sensor and the fibre optic meets the requirements of: EN 60079-0:2012 + A11:2013, EN 60079-15:2010, EN 60079-31:2010, EN 60529:2014, EN 60825-1:2006, EN 60825-2:2004, EN 61000-6-1/-2, EN 61000-6-3/4, ATEX directive: 2014/34/EU, Machine directive: 2006/42/EC, 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 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.

EU-Declaration of conformity

ATEX: II 3G Ex nA IIB T4 Gc, II 3D Extc IIIA T135°C Dc IP67. ATEX declaration by manufacturer in accordance to 2014/34/EU. ATEX certification of quality type production of Ex devices in accordance to the directive 2014/34/EU, CE 0158. Certification No: BVS 15 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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