

Operating Manual: O/E-Converter type IRD-TD

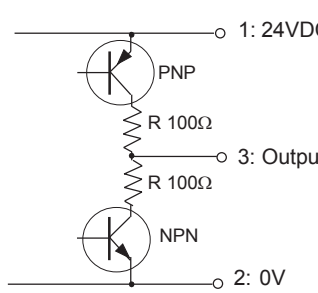
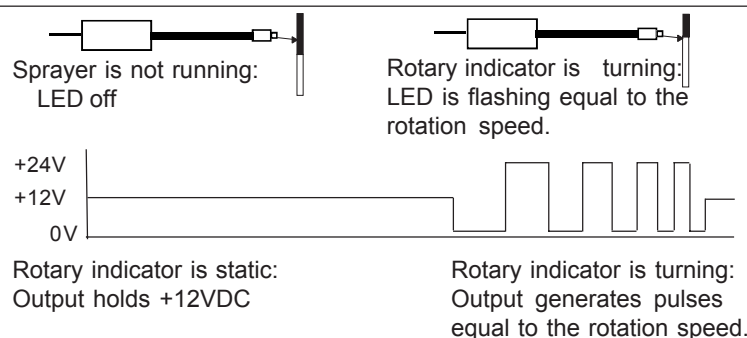
IRD-TD

Housing M30



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

- For speed control at sprayers
- Well applicable with glass fibre optics
- For use in Ex zones 1, 2, 21, 22
- Robust sensor for industrial applications

Technical Data	Type	IRD-TD
Type of Ex protection Gas, according to 2014/34/EU		II 2G Ex d IIC T6 Gb
Type of Ex protection Dust, according to 2014/34/EU		II 2D Ex tb IIIB T90°C Db IP67
For use in Ex zones		Zones 1, 2, 21, 22
Light source		870nm (Infrared)
Switching frequency		0,5kHz - 5kHz ^{Note1}
Rise time		≤ 4µs
Supply voltage		24VDC ±10%
Current consumption		60mA
Max. power dissipation		appr. 1.56W
Output		1 x Push-Pull, short circuit protected, max. 10mA
Output impedance		100Ω
Housing		M30, brass, nickel plated
Enclosure rating, according to EN 60529		IP 67
Vibration and shock resistance		Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms
Ambient working temperature range T _{amb}		-20°C < T _{amb} < +50°C
Storage temperature range		-20°C ... +70°C
Relative humidity		15% to 90%, noncondensing
Pollution degree, EN 60664-1		4
Device designation, EN 60947-5-2		R3A30CS1
Connection cable		3+PE x 0.5mm ² , TPU, shielded, length: 10m
Fibre optic connection		System Matrix
Max. length of the fibre optic		10m
Accessories, included		- 2x nuts M30
Options:		- Type IRD-TD-NPN: With NPN output - Type IRD-TD-PNP: With PNP output - Type IRD-TD-PP: With strong push-pull output
Output / Function		

ATEX related designation of the devices:

CE 1258

Type IRD-TD:



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

Date of production: Numerals 5 to 8 of the serial number (year/calendar week)

ATEX Certification: BVS 10 ATEXE 130 X, DEKRA

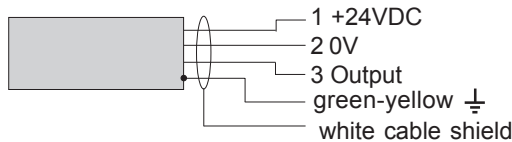
T_{amb}: 20°C < T_{amb} < +50°C

Electrical data according to the chart

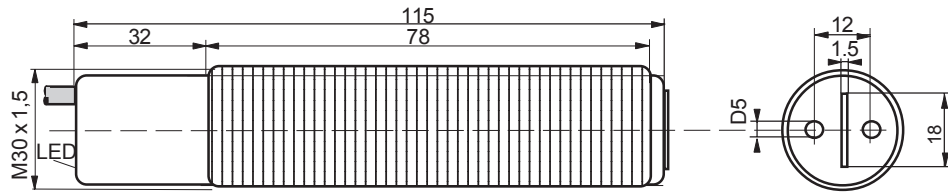
(X designation of the certification number: Fibre optics must only be applied with sensors with certificated limited optical power)

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.

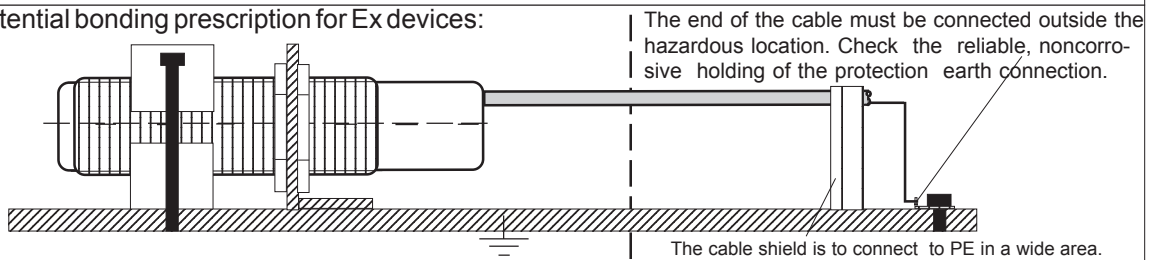
Wiring:



Dimensions:



Equipotential bonding prescription for Ex devices:



Operating Manual, EC- Declaration of Conformity:

Mounting prescriptions

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-TD: Only for use in Ex zones 1, 2, 21, 22.

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

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 60079-1:2007, EN 60079-31:2010, EN 60529:2014, EN 61000-4-2 to EN 61000-4-6, EN 61000-6-1/-2, EN 61000-6-4, 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.

EC-Declaration of conformity

ATEX: II 2G Ex d IIC T6 Gb, II 2D Ex tb IIIB T90°C Db IP67. Certification number: BVS 10 ATEX E 130 X, DEKRA EXAM GmbH, Zertifizierungsstelle, Carl-Beyling-Haus, Dinendahlstrasse 9, D-44809 Bochum, Kennnummer: 0158.

ATEX certification of quality type production of Ex devices in accordance to the ATEX directive 2014/34/EU, CE 1258, Eurofins. Certification No: SEV 21 ATEX 4580. 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