

O/E-Converter IRN-U / IRD-TD
IRD-TD


EEx d IIC T6



II 1/2 D IP67 T90°C

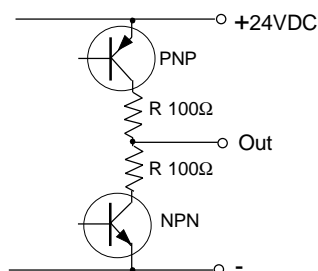
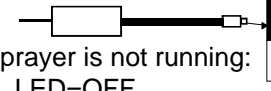
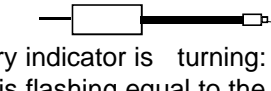

- switching frequency up to 60'000RPM
- well applicable with glass fibre optics
- Type IRD in flameproof enclosure, applicable in Hazardous Locations Zone 1 + 20/21
- Type IRN in EEx nA type of protection, applicable in Hazardous Locations Zone 2 + 22
- for rotation speed detection of spraying apparatus
- very high reliability (EMC)

IRN-U-TD-GD

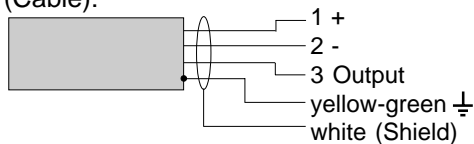

EEx nA IIB T5



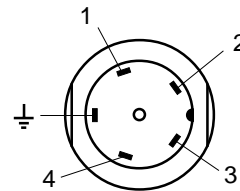
II 3 D IP65 T100°C

Type	IRN-U-TD-GD	IRD-TD
Technical Data		
Type of protection	EEx nA IIB T5	EEx d IIC T6
Applicable for Ex zones	Zones 2 and 22	Zones 1 and 20/21
Category / Groupings	II 3 G, II 3 D IP65 T100°C	II 2 G, II 1/2 D IP67 T90°C
Light source	880nm (infrared)	
Maximum optical radiant power	1.1mW/mm ²	0.4mW/mm ²
Switching frequency	0,5kHz - 10kHz ^{Note1}	
Rise time	<= 4us	
Supply voltage	24 VDC +- 10%	
Current consumption	60mA	
Power dissipation	appr. 1.56W	
Output	1 x Push-Pull, short circuit protected, maximum 10mA	
Output impedance	100Ω	
Housing	M30, yellow brass, nickel plated	
Enclosure rating at EN 60529	IP 65	IP 67
Ambient operating temperature	TA -20°C < TA < +50°C	
Connection, type IRD, cable	--	3+PE x 0,5mm ² /L=10m
Connection, type IRN, connector	Amphenol-Tuchel C164 10D005 306 1 IRN-U-TD(GD) S54:Cable 3+PEx0.5mm ²	--
Fibre optics fitting	system: Tippkemper-Matrix	
Maximum length of fibre optics (Dia=1mm)	10m	
Accessories, included, all types	- 2x nuts M30	
Accessories, included, only type IRN	- 1x Safety lock screw for connector Amphenol Tuchel series C164, for fixing the connector housing at the sensor. The original screw must be exchanged by the new safety screw. - 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, not included	- Cable connector : Amphenol-Tuchel (2 LED's, yellow/green, 10V - 30V), No.:C 164 10E005 913 1	
Options:	- Type:IR.-TD-(/GD)-NPN, with NPN open collector output - Type:IR.-TD-(/GD)-PNP, with PNP open collector output - Type:IR.-TD-(GD)-PP, with MOSFET push-pull type output	
ATEX related designations	CE 0158 Device type Certification number: Type IRD: DMT 99 ATEX E 056/N1 TA: -20° < TA < 50° Date of construction: Numeral 4 and 5 of the serial number	Manufacturer with address IRD: II 2 G, II 1/2 D IP67 T90°C IRN: II 3 G, II 3 D IP65 T100°C Electrical data according to the chart
Output / Function	 <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Sprayer is not running: LED=OFF</p> </div> <div style="text-align: center;">  <p>Rotary indicator is turning: LED is flashing equal to the rotation speed.</p> </div> </div> <div style="text-align: center; margin-top: 10px;">  </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <p>Rotary indicator is static: Output: Holds +12VDC</p> </div> <div style="text-align: center;"> <p>Rotary indicator is turning: Output generates pulses equal to the rotation speed.</p> </div> </div>	
Note 1: The real reachable switching/rotary frequency is dependent on the condition of the marking disc and the condition of the optical fibres. At normal conditions approximative 60'000 RPM.		

Connection diagram for Ex d devices (Cable):

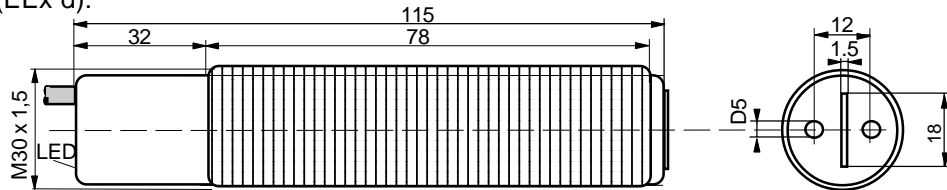


Connection diagram for standard devices (Connector):

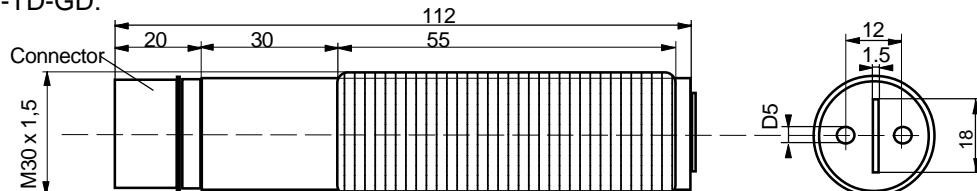


1 +
2 not connected
3 -
4 Output
PE Protection Earth PE

Dimensions IRD-TD (EEx d):

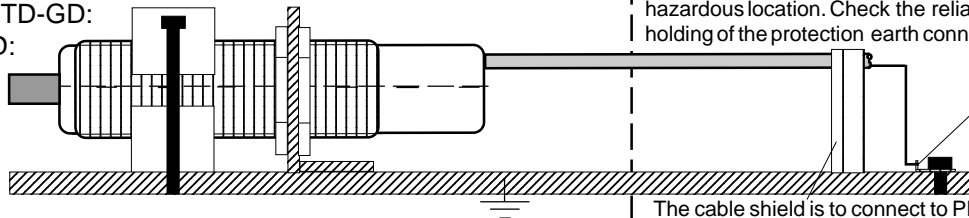


Dimensions IRN-U-TD-GD:



Equipotential Bonding prescription for Ex Devices

IRN-U-TD-GD:
IRD-TD:



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. 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. 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 is 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-U-TD-GD is only applicable for the 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. Only connectors, Amphenol series C164, are allowed. It is necessary to take into consideration the mounting prescription of the connector manufacturer. In dusty locations, the protection caps for the optical connections must be fitted, when no fibres are 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 O/E-Converter can only be used with connected fibre optics. Light reflection alterations, generated by the marking disc of the spraying apparatus, will be amplified and formed.

Using the fibre optics:

The fibre optics must be handled and mounted careful. The face of optical fibers must be completely even and free of scratches. Do not use optical fibres longer than 10m.

The functional safety of the sensor is given by the condition of the marking disc and the careful mounting of the optical fibres. The fibre optics must not be buckled.

Maintenance

Protect the fibre optic adaptor of the sensor and the optical fibres against pollution. Please set up the protection caps if no optical fibres are connected. 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.

Safety Informations

The O/E-Converter IRN-U/IRD-TD must not be used for Accident-Prevention! When installing and operating with the sensor, it is necessary to take into consideration the relevant international and other national regulations. ATEX 118a, ElexV, TRbF, TRD, UVV, EX-RL(BGR104), BetrSichV(ATEX137), Single_GL 1999/92/EG

Standards met:

- EN 50014, EN 50018, EN 50021, EN 50281-1-1; EN 60529; EN 61000-6-1/-2, EN 61000-6-3/-4,
- Ex-Protection: 94/9/EG (ATEX 100a)
- Machine Directive: 98/37/EG
- Low Voltage Directive: 73/23/EWG, 93/68/EWG
- EMC: 89/336/EWG, 91/263/EWG, 92/31/EWG, 93/68/EWG

General Notes

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.

Approvals / Declaration of Conformity:

DMT 99 ATEX E 056/N1

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 with the ATEX module "Production", declares:

Hans Bracher, Matrix Elektronik AG