Tippkemper®

ISO 9001:2008 / ATEX MATRIX elektronik ag

Rotation Speed Control Sensors, series RSS/RSN/RSD-LTD-100

RSD-LTD-100-GD

CE 0158

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

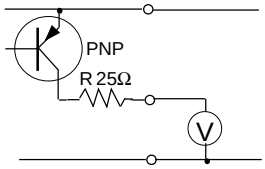
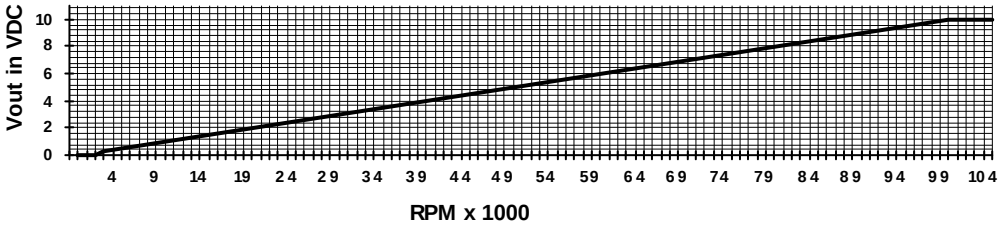
Housing M30

- With analog voltage output 0V to 10V
- Well applicable with plastic fibre optics (POF)
- Laser-emitter, red light 650nm
- Type RSD: applicable in Ex Zones 1 + 20/21
- Type RSN: applicable in Ex Zones 2 + 22
- Speed control from 3'000RPM to 100'000 RPM
- Very high reliability (EMC)

RSN-LTD-100-GD

CE

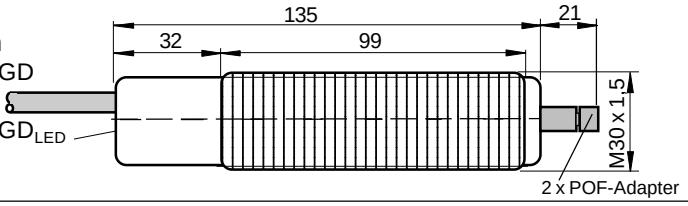
Ex II 3G Ex nA IIB T4
II 3D Ex tD A22 IP67 T140°C

Technical data / Type	RSS-LTD-100	RSN-LTD-100-GD	RSD-LTD-100-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 T140°C	II 1/2D Ex tD A20/21 IP67 T90°C
Applicable in Ex Zones	--	Zones 2 and 22	Zones 1, 2, 20/21, 22
Laser class	Class II, 650nm visible red, Po <= 1mW		
Frequency range	100Hz - 3333Hz[Note1]		
Supply voltage	24VDC (20 to 28VDC)		
Absolute maximum input voltage Um	30VDC		
Current consumption	80mA		
Power dissipation	maximum 2.5W		
Analog voltage output range, output type	0.3V to 10VDC +- 1%, PNP type		
Output load range	2kΩ to 1MΩ		
Output impedance	max.25Ω		
Ripple	<1%		
Output signal tracing	2.44mV / 24.45RPM		
Power up delay time	2sec.		
Resolution	9700RPM/V		
Housing	M30, brass, nickel plated		
Enclosure rating at EN 60529	IP 65	IP 67	IP 67
Working temperature TA	0°C < TA < +50°C		
Shock and vibrating resistance	Vibration: 30g over 20Hz to 2kHz. Shock:50g for each direction (X, Y, Z)		
Electrical connection, RSN/RSD-LTD-100-GD	Cable: 3/4 + PE x 0,5mm², TPE, oil resistent, shielded, leads numbering marked, L=10m		
Electrical connection, RSS-LTD-100	Cable: 3/4 +PE x 0,5mm², PVC, shielded, leads numbering marked, L=3m		
Socket, RSS/RSN-LTD-100(-G) S99	Socket, M12, 5 terminals, Lumberg RSF 5		
POF connection	Matched for POF, Cover: 2.2mm / Core: 1.0mm, without special tools		
Accessories included, all types	- 2x Nuts M30 - 2x Protection caps for the POF connections		
Accessories included, only RSN-LTD-100-G S99	- 1x Safety lock device, mount at the cable connection, for locking the connection. (black synthetic device) - 1x Warning plate "WARNING - Explosion Hazard - Do Not Disconnect While Circuit Is Live Unless Area Is Known To Be Non-Hazardous", self-sealing, for gluing on the cable connector		
Accessories, only RSS/RSN-LTD-100(-G) S99 not included	- Cord Set Lumberg RKTS 5-298/xx (straight type), or RKTW/RKWTH 5-298/xx (right angle type)		
Accessories for all types, not included	- Different types of POF, on request		
Options	- RSx-LTD-100-GD **S158:** Current loop output, 4mA to 20mA - RSS/N-LTD-100(-G) **S99**: Socket M12: Lumberg RSF 5, 5 terminals (S99 only II 3G, without dust protection) - RSx-LTD-100(-GD) **S165:** Cable type Ölflex 810CP, length on request		
ATEX related designations	CE 0158 Manufacturer with address Ex RSD: II 2G Ex d IIC T6, II 1/2D Ex tD A20/21 IP67 T90°C RSD: Type test certificate: DEKRA EXAM. Number: DMT 99 ATEX E 056 RSN: II 3G Ex nA IIB T4, II 3D Ex tD A22 IP67 T140°C RSN S99: II 3G Ex nA IIB T4 RSN: Declaration by manufacturer: Tech. file no. AN-MAT-08-EX-E056 TA: 0°C < TA < +50°C Electrical data according to the chart Date of construction: Numeral 4 to 7 of the serial number		
Output: Voltage output 0.3VDC to 10VDC 3'000 RPM to 100'000RPM			
Output diagram:			

Note 1: Equal to 3'000 RPM to 100'000RPM, at a marking disc with 4 sections.

Dimensions
Wiring diagram
RSD-LTD-100-GD

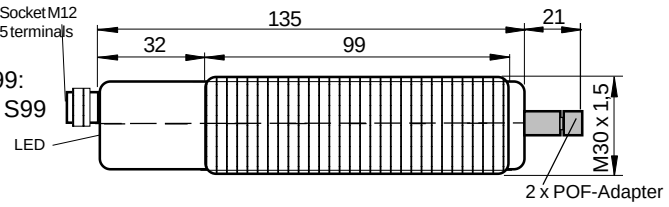
RSN-LTD-100-GD$_{LED}$
RSS-LTD-100:



Connection layout: RS.-LTD-100(-GD)

1	+24VDC
2	0V
3	Output
(4	NC, connect to 0V)
white	Cable shield
yellow-green	PE

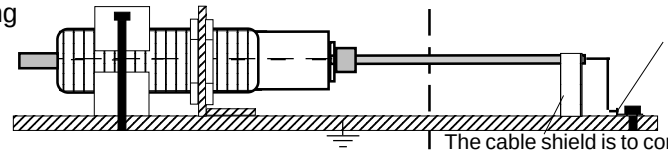
Dimensions
Wiring diagram
RSS-LTD-100 S99:
RSN-LTD-100-G S99



Connection layout:
RSS/RSN-LTD-100(-G) S99:

1/brown	+24VDC
2/white	NC, connect to 0V
3/blue	0V
4/black	Output
5/grey	PE

Equipotential Bonding prescription for Ex devices:



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:

Operating Manual:

Ex protection:

General prescriptions for all Ex devices:

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. The protective earth (PE) terminal is solid connected with the housing. The cable have to be protected against damages. To connect cables inside hazardous locations only use certificated Ex e housings. All cable terminals must be connected outside hazardous locations. Use only original manufactured fibre optics and additional optical lenses, other additional optical lenses are not allowed in hazardous locations.

Type: RSD-LTD-100-GD: Applicable in Ex zones 1, 2 and 20/21, 22. For the zones 20/21 only the front part (optical lens) can be mounted inside the zone 20. The rear part with the cable must be in the zone 21.

Type: RSN-LTD-100-GD: Only applicable in Ex zones 2 and 22.

Type: RSN-LTD-100-G S99: Only applicable in Ex zone 2. 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.

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, with 4 sections, will be converted to an analog voltage signal. The operating range is 3'000RPM tom 100'000RPM. Lower speed then 3'000 RPM results to 0VDC output signal. Higher speed then 100'000RPM results to 10VDC output signal.

Using the fibre optics

The sensor RSx-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 5m. 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 RSx-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

The dismounting of the connector safety lock device while the supply voltage is connected is hazardous! 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. ATEX 118a, ElexV, TRbF, TRD, UVV, EX-RL(BGR104), BetrSichV(ATEX137), Single directive 1999/92/EG

Standards met:

- EN 60079-0:2004, EN 60079-1:2004, EN 60079-28:2007, EN 60241-0:2004, EN 61241-1:2004; EN 60529:2000, EN 60950-1:2006; EN 60825-1, EN 60825-2; EN 61000-4-2 to EN 61000-4-6, EN 61000-6-1/-2, EN 61000-6-4;
- Ex-Protection: 94/9/EC (ATEX 100a)
- Machine Directive: 98/37/EC
- RoHS: 2002/95/EC
- Low Voltage Directive: 73/23/EWG, 93/68/EWG
- EMC: 89/336/EWG, 91/263/EWG, 92/31/EWG, 93/68/EWG
- Tech File No: AN-MAT-08-EX-E056

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.

Declaration of CE Conformity

Certification, series RSD-..: DMT 99 ATEX E 056

Certification, series RSN-..: Declaration of conformity by manufacturer at 94/9/EC. Tech File No: AN-MAT-08-EX-E056.

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

Matrix Elektronik AG (Manufacturer)
Kirchweg 24 CH-5420 Ehrendingen
Tel.:+41 56 20400-20 Fax -29
info@matrix-elektronik.com

Tippkemper - Matrix GmbH
Meegener Str. 43 D-51491 Overath
Tel.:+49 2206 9566-0 Fax -19
info@tippkemper-matrix.com