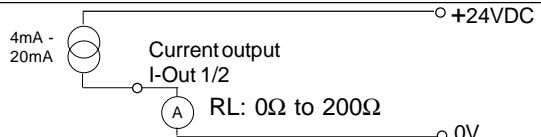
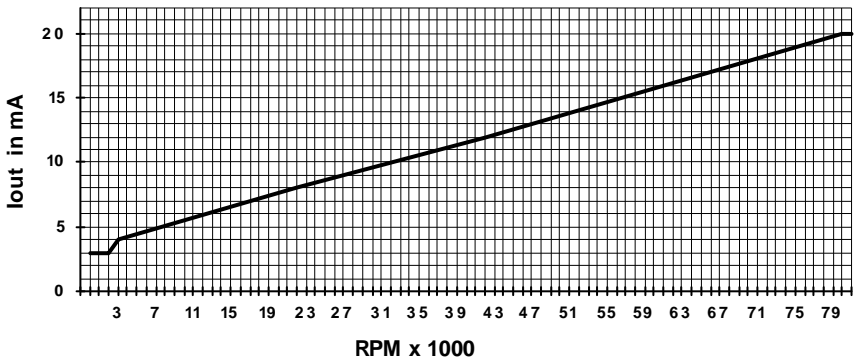


Original operating manual:
Rotation Speed Control Sensors series RSS-80 / RSN-80-G
RSS-80
Housing M30
RSN-80-G


- Signal converting RPM to 4mA to 20mA current loop for 2 sprayers type 78101
- 2 independent current loop outputs 4mA to 20mA
- Model RSN: For use in Ex Zone 2
- Range from 3'000RPM to 80'000RPM
- Very high reliability (EMC)

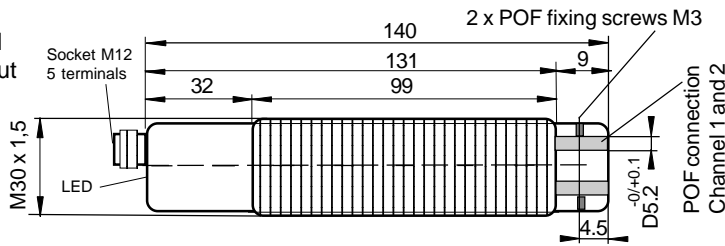

II 3G Ex nA IIB T4

Technical Data	Type	RSS-80	RSN-80-G
Type of Ex protection Gas, 94/9/EC		none	II 3G Ex nA IIB T4
Type of Ex protection Dust, 94/9/EC		none	--
Applicable in Ex zone		--	Zone 2
Frequency range		100Hz - 2666Hz ^{Note1}	
Supply voltage		24VDC +-10%	
Absolute maximum input voltage Um		30VDC	
Current consumption		55mA	
Maximum power dissipation		ca. 2.51W	
Outputs		2 x PNP current loops, 4mA to 20mA	
Tolerance current outputs		+-2.5% at 4mA / +-2% at 20mA	
Maximum ripple		<2%	
Step size current outputs		19.52uA / 94.31RPM	
Resolution		4812.5RPM/mA	
Load range at the current outputs		RL: 0Ω to 200Ω	
Inputs		2 x optical for POF 2.2mm/1mm, holder diameter 5mm	
Housing		M30, brass, nickel plated	
Enclosure rating at EN 60529		IP65	IP67
Working ambient temperature range T _{amb}		-10°C < T _{amb} < +50°C	
Electrical connection		Male connector, M12, 5 pins, type Lumberg RSF 5	
POF connection		Screw connection, holder diameter: 5.2mm, core: 1.0mm	
Options		- RSx-60: Version RPM range: 3'000 to 60'000RPM - RSx-80-HR: High resolution type, step size: 23.5RPM	
Accessories, included for all types		- 2 x Nuts M30	
Accessories, only RSN-80-G, included		- 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 - 1x Protection cap for the POF connection	
Accessories, not included		- Cord Set Lumberg RKTS 5-298/xx (straight type), or RKWTH 5-298/xx (right angle type)	
ATEX related designations for model RSN		CE Device type Declaration by manufacturer according to the ATEX directive 94/9/EC T _{amb} : -10°C < T _{amb} < +50°C Date of construction: Numerals 5 to 8 of the serial number (year/calendar week)	
Outputs: 2 x current loop 4mA to 20mA 3'000 RPM to 80'000RPM			
Output diagram:			

RSx_80_e3/2015-07-06/HB

Note 1: Equal to 3'000RPM to 80'000 RPM at sprayers model 78101 (Absolute maximum range: 2'100RPM to 80'100RPM)

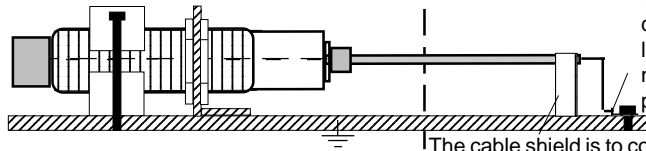
Dimensions and connection layout



Connection diagram:

1/brown	+24VDC
2/white	Output 2
3/blue	0V
4/black	Output 1
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:

Type RSN-80-G: Must only be used in Ex Zone 2. 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) 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 or Ex d housings. All cable terminals must be connected outside hazardous locations. 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) 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

By the rotation of the sprayer generated optical pulses will be converted to analog output current 4mA to 20mA equal to the rotation speed of the sprayer. The sensor can convert a range from 2'100RPM to 80'000RPM. The output current is 4mA at 3'000RPM and 20mA at 80'000RPM. If the output current is less then 3.5mA the rotation speed is less then 2'100RPM or the POF is not connected.

Handling the fibre optics

The fibre optics must be handled careful. For cutting the fibre optics the special cutter or a professional tool is to use. After cutting the fibres, push them well set into the adaptor and immobilize them with the fixing screw. Do not use optical fibres longer then 25m. The functional safety of the sensor is given by the condition 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. 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. Plastic optical fibres can be destroyed by strong solvents. Equipment must only be repaired or serviced by the manufacturer.

General Safety Informations

"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 sensors series RSx-80 must not be used for Accident-Prevention! In worst case of disturbance, the outputs can show 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/EG)

Standards met:

EN 60079-0:2012 + A1:2013, EN 60079-15:2010, EN 60529:2014, EN 61000-4-2 to EN 61000-4-6, EN 61000-6-1/-2, EN 61000-6-4;

- ATEX directive: 94/9/EC

- Machine directive: 2006/42/EC

- EMC directive: 2014/108/EC

- RoHS directive: 2011/65/EU

Environment, general descriptions

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 certification, types RSN: II 3G Ex nA op is IIB T4 Gc. ATEX declaration by manufacturer in accordance to 94/9/EC. ATEX certification of quality type production of Ex devices in accordance to the directive 94/9/EC, CE 0158. Certification No: BVS 12 ATEX ZQS / E118, QAR No. DE/ BVS/QAR13.0004/01. 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

RSx_80_e3/2015-07-06/HB

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