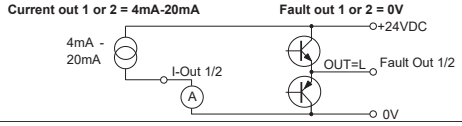
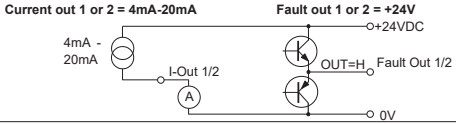
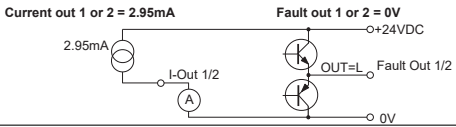
Operating manual: ORN-G-AO-LWL-S317
Data processing receiver for frequency to current converting with current outputs 4mA - 20mA, PNP type

- For data processing with optical inputs for fibre optics
- 2 independent receivers
- Simple connection of POF without special tools
- 2 x current outputs and 2 x fault indication outputs

Made for DÜRR

II 3G Ex nA IIB T4 Gc

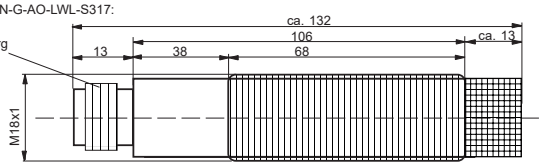
Technical Data \ Type	ORN-G-AO-LWL-S317 / E34010040
Gas Ex protection designation	II 3G Ex nA IIB T4 Gc
For use in Ex Zones	Zone 2
Number of receivers	2
Minimum pulse width at the inputs	>= 2us
Minimum optical input power	>=0.2uW (LWL, L:10m, D:1mm; pulse width >= 2us)
Pollution degree	4 in accordance to EN 60664-1
Device designation according to EN 60947-5-1/2	T3A18CS2
Supply voltage, Ue	24VDC +-10%
Absolute maximum supply voltage, Um	30VDC
Current consumption	50mA + 44mA load current maximum
Maximum power dissipation	1.4W
Maximum current consumption	50mA
Analog current outputs, operating range	2 x PNP-current outputs, 4mA to 20mA (P/T,PNP)
Analog current output, resolution	2.2Hz / 22uA
Analog current output, supply voltage	over main supply voltage, terminal 1
Analog current output, tolerance	+-2.5% at 4mA, +-2% at 20mA
Analog current output, without optical input signal	2.95mA +-5%
Analog current output, ripple	<2%
Input type	2x optical for synthetic fibre optics, 2.2mm, core 1mm
External load resistance	RL: 0Ω - 200Ω
Housing	M18, yellow brass, nickel plated
Enclosure rating	IP67 (with fitted POF and fitted cable connector), according to EN 60529
Fault indication output	2 x Push-Pull, short circuit protected, maximum 10mA
Fault indication output, output impedance	Max. 150Ω, RL: 1500Ω - 10kΩ
Ambient working temperature range, T_{amb}	0°C up to +50°C
Storage temperature range	–20°C up to +70°C
Relative humidity	15% ... 90%, noncondensing
EMC, shock and vibration resistance	300m/s^2 , 10Hz to 55Hz, all directions, in accordance to EN 60947-5-2
Socket	Lumberg,M12 male receptacle, type RSF 8, 8 contacts
Fibre optics fitting	Screwed connection, without additional parts or special tools
Tightening torque for the fibre optics fixing screw	0.8Nm - 1.5Nm
Length of fibre optics	(Dia. 2.2/1mm) Dependent on type and fitting of the POF (Max. 10m)
Accessories	**Included** / **Optional**: • Single ended cordset, straight type: RKTS 8-299/..M or right angle type: RKWTH 8-299/..M, Lumberg M12/8P • 2x nuts M18 • 1x Safety interlock device for the connector, to be mounted at the cable connection. (black synthetic) • 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.
ATEX related markings	CE / Type: ORN-G-AO-LWL-S317 / II 3G Ex nA IIB T4 Gc / Date of construction: — Manufacturer with address / Electrical data according to the chart / Declaration by manufacturer according directive 2014/34/EU / Numeral 5 to 8 of the serial number (yr/cw)
Function: Pressure: 0 to 25 Bar Battery OK: - Current out: 4mA to 20mA - Fault out: Low	
Pressure: 0 to 25 Bar Battery discharged: - Current out: 4mA to 20mA - Fault out: High	
No optical input signal or no fibre optic connected: - Current out: 2.95mA - Fault out: Low	

Connection diagram ORN-G-AO-LWL-S317:
(wire colors at DIN 47100, Connection layout at EN 50044)

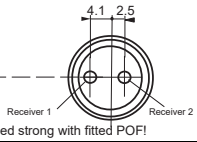
1:	+24VDC	5:	+24VDC
2:	0V	6:	Current out 2
3:	+24VDC	7:	Fault out 1
4:	Current out 1	8:	Fault out 2

⏚ protection earth PE at cable shield

Dimensions ORN-G-AO-LWL-S317:
Male receptacle
M12 x 1 Lumberg
Series RSF8, 8
terminals



Coupling ring for fibre optics fitting



The knurled nut for the POF fixation must only be screwed strong with fitted POF!

Operating Manual / EC-/EU-declaration of conformity

Intended Use
The data processing receiver model ORN-G-AO-LWL-S317 is designed to convert optical signals, to an electrical output current. It must be installed and operated in accordance to this operating manual.

INSTALLATION INSTRUCTIONS FOR HAZARDOUS LOCATIONS:
A. "WARNING - EXPLOSION HAZARD - WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES."
B. "WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS."

Provides nonincendive field circuits when installed per the installation instructions. The local equipotential bonding have to be done. The PE/PA connection (terminal 5 of the cordset) and the cable shield must be connected reliable and noncorrosive to PE. The PE terminal and the socket are solid connected to the housing. ONLY Lumberg cordsets RKTS 5-298/..M (Straight type) or RKWTH 5-298/..M (Right angle type) are allowed. 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. Other then original manufacturer, additional optical components are not allowed in hazardous locations. When installing the sensor, the safety interlock device must be fitted at the cable connector. The additional adhesive warning label "WARNING - Explosion Hazard - Do Not Disconnect While Circuit Is Live Unless Area Is Known To Be Non-Hazardous" must be fixed to the connector housing at the connection cable. In dusty locations, the protection cap for the optical connection and for the socket must be fitted, when the connection cable or the POF's are NOT connected.

Additional installation instruction for ATEX applications:
The data processing receiver type ORN-G-AO-LWL-S317 is only for use in Ex zone 2. It is necessary to take into consideration the valid international and national rules and regulations (EN 60079-14). The maximum rated input voltage Um = 30VDC must not be exceeded.

Safety lock / plug
The safety lock accessory is not included by default. In order to comply with standard 60079-0, a safety lock must be used after installing the sensor. It must also be ensured that the safety lock can only be released using a tool such as a key, screwdriver, etc.
It is Dürr's responsibility to ensure that the plug can not be released while powered and not without the use of a tool. Matrix Elektronik AG cannot be held liable for damages caused by improper operation of the sensor or failure to observe the information described here.

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 must be connected to the protection earth, large-surfaced. Connection cables must not be installed parallel to high voltage cables. For the upward compatibility with future types, the additional supply voltage +24VDC must be connected at terminals 3 (green) and 5 (grey).

Function
The device has 2 independent data receivers inside. Each receiver has an analog current and a fault indication output.

Input frequency	Battery	Current Out	Fault Out
400Hz - 2000Hz	OK	4-20mA	LOW
400Hz - 2000Hz	LOW	4-20mA	HIGH
350Hz - 399Hz	OK	3.5-3.99mA	LOW
350Hz - 399Hz	LOW	3.5-3-99mA	HIGH
2000Hz - 2210Hz		20-22.1mA	
>2210Hz		22.1mA	
150Hz - 349Hz		3.5mA	
<150Hz / No input signal	-	2.95mA	LOW

Using the fibre optics
WARNING: The knurled nut for the fibre optics fixation must only be screwed strong with fitted fibre optics! The fibre optics must be handled carefully. For cutting the fibre optics, the special cutter or a professional tool is to use. The face of optical fibers must be completely even and free from scratches. After cutting the fibres, push them well set into the adaptor and fasten the screws. The maximum length of fibre optics is dependent its type and fitting. Do not use optical fibres longer then 10m. The functional safety of the data receiver is given by the working up of the optical fibres. Specially near the sensor, 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 informations about the housing surface
At an ambient temperature of +50°C, the self-heating ΔT of the sensor can reach 25K. Disconnect the sensor from power supply and let it cool before touching.

General Safety Informations
The dismounting of the connector safety interlock device while the supply voltage is connected is hazardous! The data receiver ORN-G-AO-LWL-S317 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. The sensor and the fibre optic are conform to the following standards:
EN 60079-0:2018, EN 60079-15:2010, EN 61000-6-1/-2, EN 61000-6-3/4, EN 60529:2014, ATEX directive: 2014/34/EU, Machine directive: 2006/42/EC, RoHS directive: 2011/65/EU, EMC directive: 2014/30/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 Declaration of conformity 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 1258, Eurofins. Certification No: SEV 21 ATEX 4580.
The conformity of the devices with all used standards and directives and the EC-type examination certificate and the observation of the Quality Management System ISO 9001:2015 with the ATEX module „Production", declares:

Ehrendingen, 4.9.2025

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