Tippkemper®

ISO 9001:2000 / ATEX

MATRIX elektronik ag

O/E-Converter type KWN-10-LWL

- Applicable for reciprocating pump position sensoring
- Simple connection of synthetic fibre optics without special tools
- Laser emitter visible red
- Applicable in ATEX Ex zones 2 and 22
- Applicable in UL CL. I, Division 2, Groups C and D, forward planned
- Switching frequency 10kHz
- High reliability and EMC immunity

CE

Ex **II 3G EEx nA IIB T4**
II 3D IP67 T140°C

c UL us

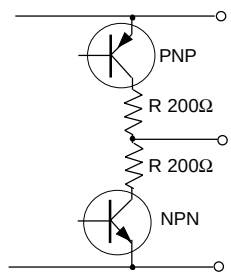
RECOGNIZED BY UNDERWRITER'S LABORATORIES INC. ONLY AS TO NON-SPARKING SAFETY FOR USE IN CL I, DIVISION 2, GR CD, T4A
File No.E.....

"UL Recognized" certification only as preliminary information!

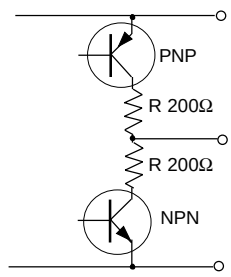
Technical Data / Type	KWN-10-LWL
ATEX type of ex protection Gas, at 94/9/EG	II 3G EEx nA IIB T4
ATEX type of ex protection Dust, at 94/9/EG	II 3D IP67 T140°C
Applicable in ATEX Ex zones	Zones 2 & 22
Applicable in UL Hazardous Locations	CL I, Division 2, GRP CD, forward planned
Laser class	Class 2, 650nm red, Po <= 1mW
Switching frequency	10kHz
Output rise and fall time	<= 4us
Supply voltage	24 VDC (20 to 28VDC) / Um=30VDC
Current consumption	80mA
Maximum power dissipation	appr. 2.4W
Outputs channel A	1 x Push-Pull + 1 x Push-Pull short circuit protected, max. 10mA
Outputs channel B	1 x Push-Pull + 1 x Push-Pull short circuit protected, max. 10mA
Output impedance	maximum 200Ω, RL: 2000Ω to 10kΩ
Housing	M30, brass, nickel plated
Enclosure rating at EN 60529	IP 67
Ambient working temperature TA	0°C < TA < +50°C
POF connection	POF connection for PHOENIX type Q-FSMA (Phoenix article-No.: 18 85 99 4)
Applicable for POF types	Outside diameter: 2.2mm / Core diameter: 1mm
Length of the plastic fibre optics (POF)	1m to 5m
Electrical connection	Socket M12, Lumberg type: RSF 8, 8 terminals
Accessories included	- 2x nuts M30 - 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 sensor connector.
Accessories optional	- Single ended cordset, straight type: RKTS 8-186/xx, 8-299/..M or right angle type: RKWTH 8-186/xx, 8-299/..M, Lumberg M12/8P - Q-FSMA-KT POF quick connector (Phoenix) - POF, Multi- or single-faser; D2.2mm/1mm

Outputs A and B / Function:
LED display: RED if supply voltage connected.

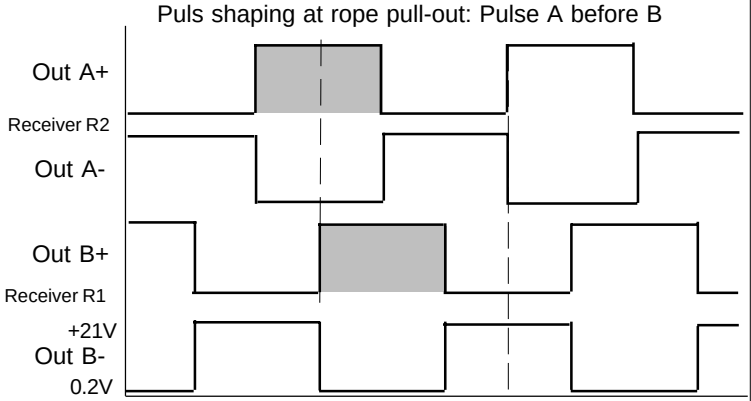
Outputs A+ and A-:



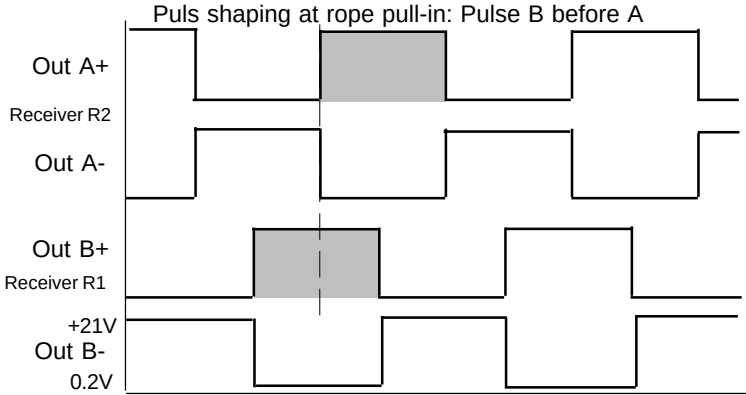
Outputs B+ and B-:



Puls shaping at rope pull-out: Pulse A before B



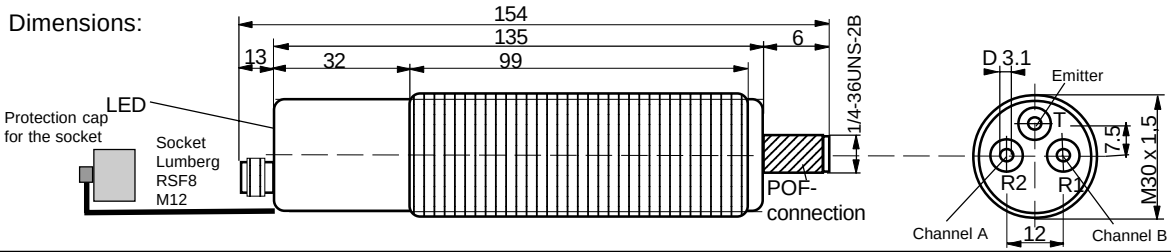
Puls shaping at rope pull-in: Pulse B before A



Connection configuration: Socket M12 Lumberg RSF 8

1:	+24VDC	5:	R1/Out B+
2:	0V	6:	R1/Out B-
3:	R2/Out A+	7:	Protection earth PE/PA
4:	R2/Out A-	8:	NC

Dimensions:



CE related designations for the type KWN:

CE
Date of construction: Numeral 4 to 7 of the serial number
Device type: KWN-10-LWL
Tech. File: AN-MAT-06-EX-KWN

Manufacturer with address
TA: 0°C < TA < +50°C
Electrical data according to the chart

Control Drawing for Hazardous Areas:

HAZARDOUS (CLASSIFIED) LOCATIONS
CLASS I, DIVISION 2, GROUPS C, D, T4A

NON-HAZARDOUS AREA

Notes:

1. Nonincendive Circuit Parameters; 2. Selected Associated Nonincendive Field Wiring Apparatus shall satisfy the following: Class 2 power supply

Model KWN-10-LWL					Associated Nonincendive Field Wiring Apparatus		Model KWN-10-LWL
Vmax	=	30VDC	Voc	= 30VDC	Voc	<=	Vmax
Imax	=	80mA	Isc	= 80mA	Isc	<=	Imax
Ci	=	0	Ca	= 0	Ca	>=	Ci + Ccable
Li	=	0	La	= 0	La	>=	Li + Lcable
Pi	=	2240mW			Vmax	>=	Voc
					Imax	>=	Isc
					Ci + Ccable	<=	Ca
					Li + Lcable	<=	La

3. If the electrical parameters of the cable are unknown, the following values shall be used:
   Capacitance: 60pF / ft, Inductive: 0.70uH / ft

4. Nonincendive Field Wiring must be wise in accordance with 510.4B of the NEC/NFPA70or as specified in Section 18-152 for installation within Canada and in accordance with the authority having jurisdiction.

Operating Manual / EC - Declaration of Conformity:

Mounting prescriptions
INSTALLATION INSTRUCTIONS FOR HAZARDOUS LOCATIONS:
A. "WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2"
B: "WARNING - EXPLOSION HAZARD - WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES."
C. "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 7 of the cordset) and the cable shield must be connected reliable and noncorrosive to PE/PA. ONLY Lumberg cordsets, EMC types, RKTS 8-186/xx, RKTS 8-299/..M (Straight type) RKTW 8-186/xx, RKWTH 8-299/..M (Right angle type) are allowed. 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 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. 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.

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.

Safety regulations for Laser devices class 2
The O/E converter type KWN-10-LWL must not go into operation without mounted fibre optics. By the installation, the going into operation and the application, it is necessary to take into consideration the valid rule EN 60825 (Parts 12.5.1/12.6.1). 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.

Function
The O/E converter generates 2 different conditioned signals, dependent of the moving direction and the speed of the reciprocating pump. The 2 signals A+/A- and B+/B- with a 90° phase quadrature from A to B, gives the possibility to detect the throw of piston, the moving direction and the speed.

Type of outputs
The 2 channels A and B have 2 differential Outputs A+ with A- and B+ with B-. The differential outputs + and - outputs must not be short circuited. All of the 4 outputs are push-pull types with a voltage output range from 0.2VDC to supply voltage minus 3VDC. (Nominal range 0.2VDC to 21VDC at a supply voltage of +24VDC at a load of 10kΩ).

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.

Mounting of the plastic fibre optics (POF)
The device KWN-10-LWL can only be driven with connected POF.
The O/E converter type KWN-10-LWL has 3 POF connections.

T	=	Emitter (Laser)
R2/A	=	Receiver A
R1/B	=	Receiver B

Connect the POF of the incremental position transducer to the corresponding POF input at the O/E converter. The fibre optics must be handled careful. Do not use optical fibres longer then 5m. 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 fasten the knuckled nut. 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.

Safety Informations
The dismounting of the connector safety lock device while the supply voltage is connected is hazardous! The mounting of the O/E converter in dusty locations without fixed cordset or protection cap results in a high ignition risk.
The O/E converter must not be used for Accident-Prevention! In worst case the output can change to any state!
When installing and operating with the O/E converter, it is necessary to take into consideration the relevant international and other national regulations. (EN 60079-14, ATEX118a, EX-RL, ElexV, TrbF, TRD, UVV, BetrSichV, Single directive 1999/92/EC)
Standards met:
UL 508, UL1604, UL2279 Non-Sparking Safe Apparatus for use in CL I, Division 2, GRP CD, Hazardous (Classified) Locations.
Standards met:
UL 2279, UL 1604, UL 508, EN 50014, EN 50021, EN 50282-1-1,
EN 61241-0, EN 60529; EN 60825-1, EN 60825-2, EN 61000-4--2,
EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 60950-1
Machine directive: 98/37EC / Low voltage directive: 73/23/EWG, 93/68/EWG
EMC: 89/336/EWG, 92/31/EWG, 93/68/EWG / RoHS directive 2002/95/EC
-Tech. File: AN-MAT-06-EX-KWN

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.

Declarations of Conformity:
Approvals: UL-Recognized, File No. .....
ATEX Declaration of conformity by manufacturer at 94/9/EC.
Tech File No: AN-MAT-06-EX-KWN
ATEX certification of quality type production of Ex devices at the directive 94/9/EC Certification No: BVS 03 ATEX ZQS / E118The conformity of the devices with the EC/UL standards and directives, the examination certificate and the observation of the Quality Safety System ISO 9001:2000 with the ATEX module "Production", declares:

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