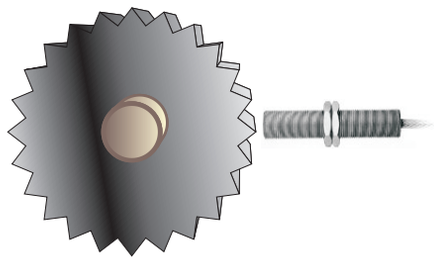
Hornel®
electronic measuring units

Oscillator pulse sensor

FGL 4/1
FGL 4/1,5-5
30100400

These sensors comply with the NEMUR standard respectively to DIN 19234 and they can be mounted as well in hazardous areas as far as they are connected to intrinsically safe circuits. The measuring principle of these sensors is based on the fact that the measured object which can consist of any type of metal, extracts more or less energy from a oscillating magnetic field, thus bringing about a variation in the electric current consumption.



PICKUP AND GEARWHEEL

The power supply is built-in the connecting instruments made by Dr. Horn. Where connection is to be made to instruments of other makers, the signal output must additionally be connected to a power supply with a no-load voltage U. = 8,2V +/- 0,5V and an internal resistance Ri = 1 kOhm. The output voltage is determined by the sensor to object distance, the form and size of the teeth to be sensed and by electrical conductivity of the material, but not by the peripheral speed. This permits sensing at low speeds almost down to zero. The upper frequency limit is dependent on the type of sensor and in addition determined by the tooth form (module).
The optimum distance 's' depends on the sensor type. For steel it is 1,4 respectively 0,8mm. Other metals require smaller distances.

Technical Data

Control circuit	according to DIN 19234 respectively NAMUR
Auxiliary power/ nominal value	8,2 V +/- 0,5V Ri = 1k +/- 5 Ohm
Signal voltage	> 1,2 V_{ss}
Frequency range	0 .. 1 kHz at module 4 (FGL 4/1) 0 .. 2,5 kHz at module 2 (FGL 4/1,5-5)
Sampling distance	approx. 1,4 mm at steel (FGL 4/1) approx. 0,8 mm at steel (FGL 4/1,5-5) reduction factors 0,85 for V2A 0,4 for Al 0,3 for Cu
Length of cable	max. 300 m connectable
Working and storage temperature	-25 .. +100°C
Enclosure	IP68 DIN 40050 (FGL 4/1) Ip67 DIN 40050 (FGL 4/1,5-5)
Connection	2,5m, PVC cable 2 X 01,4 mm^2 (FGL 4/1,5-5) (other lengths upon request)
Housing	special steel, stainless steel plastic parts: Polybutylenterephtalat
Weight with cable	approx 100g (FGL 4/1) approx 70 g (FGL 4/1,5-5)

For usage in hazardous areas:

Enclosure class intrinsically safe Eex ib IIC/EEx ib IIB for the connection with a certified intrinsically safe circuit with the following maximum values:

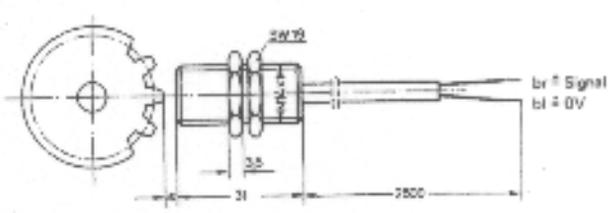
	Type 1			Type 2			Type 3			Type 4		
No load voltage	16V			16V			16V			16V		
Short-circuit current	25 mA			25 mA			52 mA			76 mA		
Max. power	34 mW			64 mW			169 mW			242 mW		
Highest tolerable ambient temperature												
	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
FGL 4/1	76	91	100	73	88	100	62	77	81	54	63	63
FGL 4/1,5-5	73	88	100	68	83	100	49	64	67	36	42	42

Internal Inductive 50uH (FGL 4/1 + FGL 4/1,5-5)
Internal capcity 30 uF (FGL 4/1 + FGL 4/1,5-5)

Special conditions:

- If the sensors are used within a temp from -60oC to -20oC, the housing has to be protected against shocks by a suitable construction
- The construction part of the sensor has to be mounted in that way that at least enclousre IP 20 acc to IEC 60529:1989 is ensured.
- The housing of the sensors should be grounded to avoid the danger of static electric charging.

FGL 4/



FGL 4/1,5-5