

The speed sensors FGL 0016. Exi and FGL.0116.Exi are designed for sensing the speed on objects like gear wheels, punched disks of shafts with ferromagnetic steel material in grooves. The sensors consist of a magnet and a coil that is rolled on a iron bar, in the coil will be indicated a voltage by the change of the air gap between object and sensor tip, its frequency is proportional to the speed. The output voltage is highly dependent on the speed restively the peripheral speed of the ferromagnetic gearwheel, its form of teeth (module) and its distance to the sensor. The maximum voltage is limited.

Technical Data

Object of measurement:

ferromagnetic gear wheels, punched disks. shafts with channels or something similar.

Signal-electric Circuit:

enclosure glass intrinsically safety Eex ib IIC, PTB 03 ATEX 2245 only for the connection with a certified intrinsically safe circuit with the following maximum values:

$U_o = 7,8 \text{ V}$ $P = 156 \text{ mW}$ or

(at $U_o > 7,8 \text{ V}$) $I_k = 20 \text{ mA}$

The active internal inductivities and capacities are negligibly small. The signal-electric circuit is an electrical source too with the following maximum values:

$U_o = 8,6 \text{ V}$

$I_k = 10 \text{ mA}$

$P = 62 \text{ mW}$

For the connection with passive, intrinsically safe material the following maximum values are valid:

ceiling outer inductance: 28 mH

ceiling outer capacitance: 400 nF

For the connection with active, intrinsically safe material, please take note of the rules for the interconnection of intrinsically safe electric circuits.

Signal frequency:

$f = \frac{n \cdot z}{60}$ with $n = \text{speed in rpm}$
 $z = \text{number of marks respectively teeth}$

Signal form:

according to measured object, for gearwheels sinusoidal up to the voltage limit.

Signal voltage:

dependent on module, air gap, peripheral speed and load resistor; by Zener diodes limited to about 16.5 V pp. The no-load voltage U_o can be calculated with the following formula:

for FGL 0016. Exi

$$U_o = \frac{M \cdot z \cdot n}{2 \cdot s} \cdot 10^{-4} [\text{Vpp}]$$

for module $M = 1.5..4$

for air gap $s = 0,4..2 \text{ mm}$

for speed $n = 0..1000 \text{ min}^{-1}$

for number of teeth $z = 60$

for FGL 0116.Exi

$$U_o = \frac{M \cdot z \cdot n}{8 \cdot s} \cdot 10^{-4} [\text{Vpp}]$$

for module $M = 1,5..4$

for air gap $s = 0,3..1 \text{ mm}$

for speed $n = 0..1000 \text{ min}^{-1}$

for number of teeth $z = 60$

For the connection with the time base counter type DA 72-173... Ex without auxiliary voltage the following is valid for the peripheral speed V beginning from the minimum module 2:

	Airgap	V min
For FGL 0016.Exi	0,3	1,5
	0,5	3,0
	0,8	12,0
For FGL 0116. Exi	0,3	10,0

$$\text{with } V = \frac{M \cdot z \cdot n}{60} \cdot 10^{-3} \left[\frac{\text{m}}{\text{s}} \right]$$

max. cable length:

300 m (dependent on the maximum signal frequency; has to be taken into consideration for the observation of the outer capacity)

Connection cable:

2 m LiYCY 2 x 0,25 mm² shielded cable covering blue (for resistant cable tail)

Housing:

brass nickel-plated

Enclosure:

IP 67 DIN 40050

Working temperature:

-10 + 110°C

Storage temperature:

-20 ... +110°C

Weight:

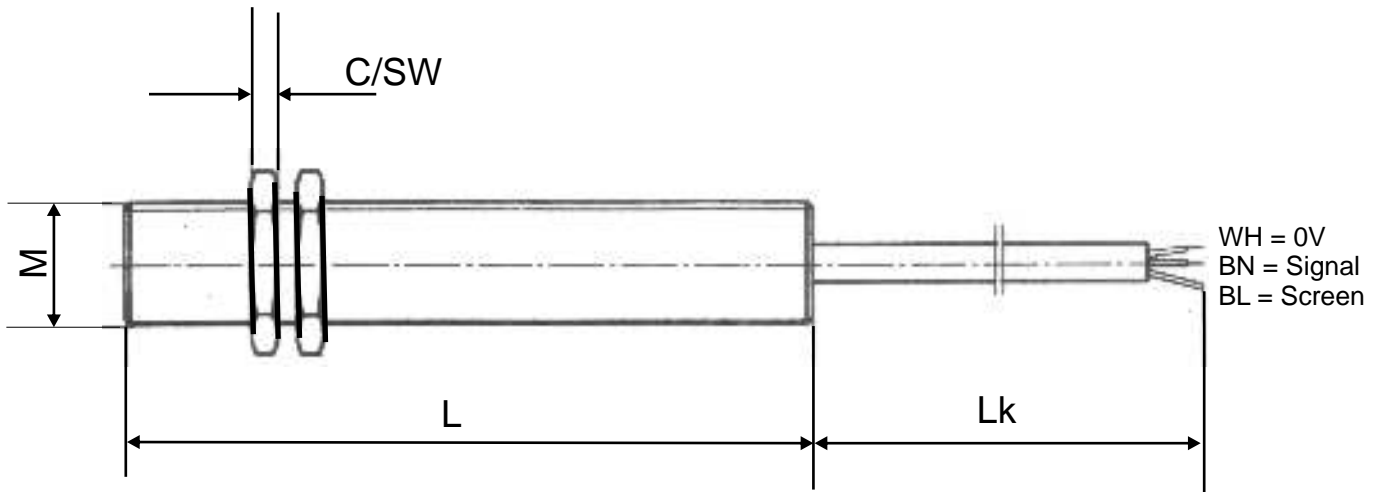
according to type 140..250 g

Mounting:

variable

Accessories (optional):

cable LiYCY 2 x 0,25 mm² blue, shielded; Zener barriers adapted to the evaluation unit.




Typ	M	L	C	SW	Lk
FGL00161 Exi	M16x1	90	3,5	19	2m
FGL00162 Exi	Zelchn.,. A4				
FGL00163 Exi	M16x1,5	90	5	24	2m
FGL00164 Exi	Zelchn. A4				
FGL00165 Exi	Zelchn. A4				
FGL00166 Exi	M22x1	90	9	27	2m
FGL00167 Exi	Zelchn. A4				
FGL00168 Exi	Zelchn. A4				
FGL00169 Exi	5/8 " ~18	90	5	19	5m

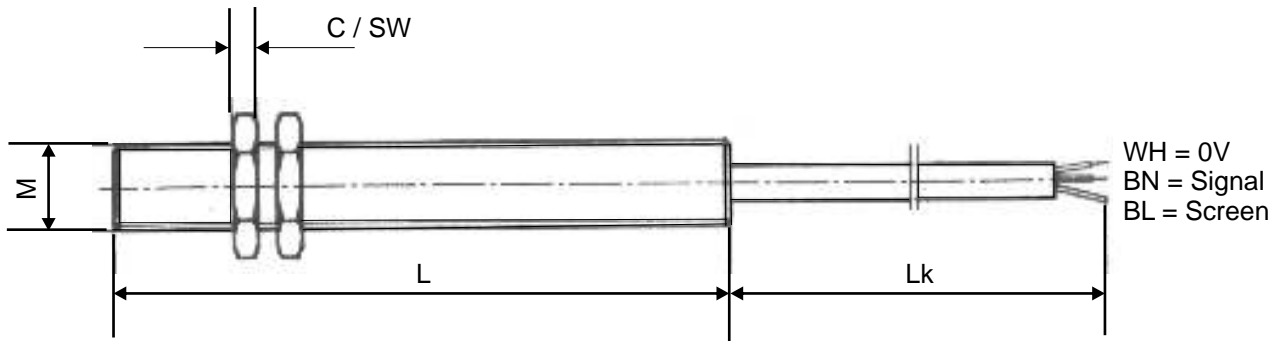
Technische Daten / Technical Data

Umgebungstemperatur max. 75°C (max. 110°C)

Schutzart / Enclosure IP 67 (DIN 40050)

Gewicht mit Anschlusskabel
Weight with Cable

CAD Nr. FGL00161			91	Tag	Name	Z.-Nr.	Maßstab
			Gez.	21.10.	HWL	FGL0016. Exi	1:1
			Gepr.			Benennung	
			Norm			Induktiver-Impulsaufnehmer Inductive Pulse Sensor	
e						Ersetzt für	
d		Ersetzt durch					
c							
b							
a							
Änderung		Tag	Name	Dr. E. Horn GmbH D-71101 Schönaich			



Typ	M	L	C	SW	Lk
FGL01161 Exi	M12x1	85	4	17	2m
FGL01162 Exi	Zelchn.A4				
FGL01163 Exi	Zelchn.A4				
FGL01164 Exi	Zelchn.A4				
FGL01165 Exi	5/8" ~ 18	85	4	19	2m

Technische Daten / Technical Data

Umgebungstemperatur max. 75°C (max. 110°C)
 Enviromental temperature

Schutzart / Enclosure IP 67 (DIN 40050)

Gewicht mit Anschlusskabel 140 g
 Weight with cable

CAD Nr. FGL01161			91	Tag	Name	Z.-Nr.	Maßstab 1:1
			Gez.	21.10.	HWD.	FGL0116, Exi	
			Gepr.			Benennung	
			Norm			Induktiver-Impulsaufnehmer Inductive Pulse Sensor	
e			 Dr. E. Horn GmbH D-71101 Schönaich			Ersatz für	
d						Ersetzt durch	
c							
b							
a							
	Änderung	Tag	Name				