HORN

Sensors · Monitoring · Systems

Speed sensor - RPM sensor

FGL 01620

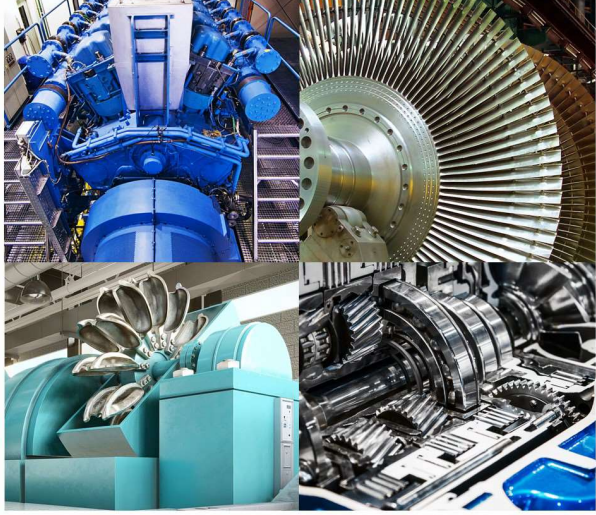
Application fields

- Wind power generation
- Marine engines
- Large gear units
- Water turbines
- Safety systems

Benefits

- Wide speed sensing range
- Robust design
- Contactless, wear-free
- Large air gap feasible
- Multifunctional sensing options

Working principle



The speed sensor series FGL01620 has been developed for very flexible use: Extremely low speed -near full stop- can be detected as well as highspeed rotations up to 20kHz frequency.

This wide range allows the FGL01620 type to be applied in multiple applications: industrial turbines, heavy industry gearbox units, windpower generators and large-scale engines. The robust stainless steel design makes the FGL01620 a preferred sensor in offshore and marine purposes.

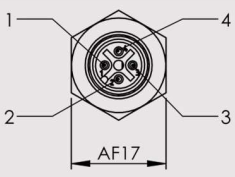
The sensor detects ferromagnetic materials such as gear wheels and can handle modules of 1 to 6.

Our development competence is shown by the specifications for the air gap: The permitted system distance between the sensor and the gearwheel is shown in table below, it is larger than average and therefore -combined with a fine thread pitch of 1mm- simple installation is ensured.

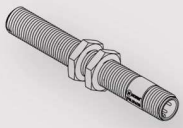
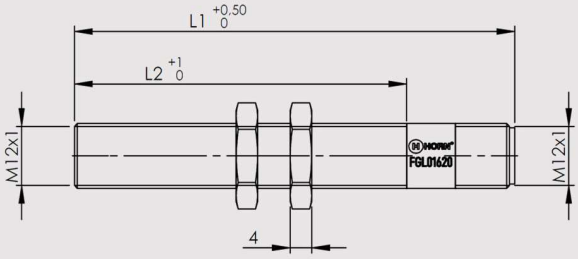
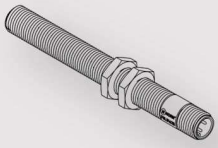
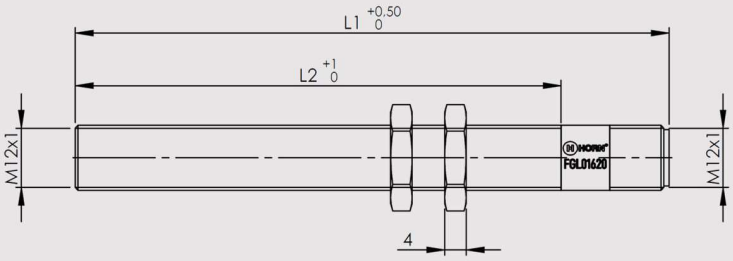
The square-wave signal voltage is available via a push-pull output stage. Sensor signal is extremely stable due to differential measurement principle.

Smart Sensor option: The FGL01620 speed sensor has been designed as a basic measuring unit. On request it offers optional functions to be integrated such as temperature and/or vibration sensing.

Technical data sensor FGL 01620

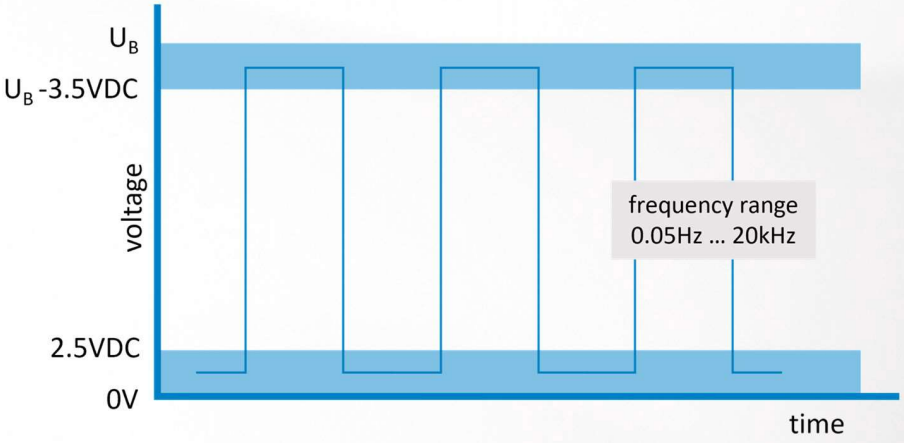
Characteristics	Technical data
Power supply U_B	18...32VDC accord. DNV CG-0339 (min. voltage 10VDC)
Current consumption	8...20mA (accord. Load)
Signal output characteristics	I_{max} = ±20mA ; U_{low} < 2.5VDC ; U_{high} > U_B - 3.5VDC
Frequency range	0.05Hz...20kHz
Operating temperature	-40°C ... +125°C
Electrical insulation	500V each wire against housing
Short circuit proof / inverse polarity	Yes
EMC / ESD	accord. DNV CG-0339
Pole wheel	Ferromagnetic tooth width >10mm (gearwheel module M = 1...6)
Housing	Non-magnetic, stainless steel
Protection degree acc. to DIN 40050	Sensor head IP68 Connector side IP67
Vibration	4G accord. DNV CG-0339
Connection terminals (M12x1)	1 = 24VDC 2 = signal OUT 3 = GND 4 = NC (sensor) 
Certificates	Class approval DNV

Sensor drawings

Version	Drawing
FGL 01620-1 Shaft length L1 = 90mm Thread length L2 = 70mm 	
FGL 01620-2 Shaft length L1 = 109mm Thread length L2 = 90mm 	

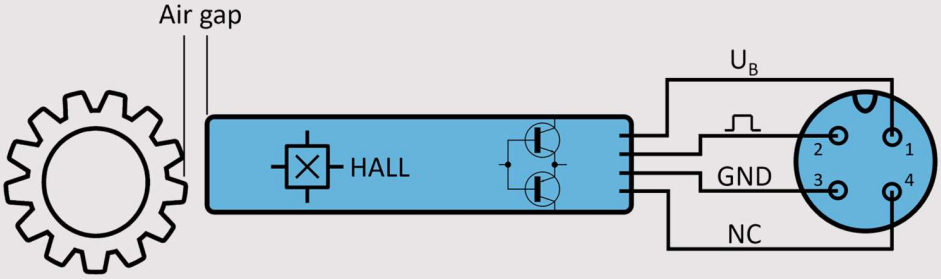
Optional LED status indication on request.

Output signal characteristics



Single channel sensor, the output displays the rotational speed as a single track frequency signal.

Air gap definition

Schematics	Module / Air gap
	M1 ➲ approx. 0.2 ... 1.0mm M2 ➲ approx. 0.2 ... 2.5mm M3 ➲ approx. 0.2 ... 3.5mm M4 ➲ approx. 0.2 ... 4.5mm M5 ➲ approx. 0.2 ... 4.5mm M6 ➲ approx. 0.2 ... 4.5mm

Cable type KSG03252-xx

Flexible, silicone- and halogen-free control cable with high mechanical strength. Resistant against chemicals, hydrolysis, oil, diesel oil and microbes. The cable meets UL and CSA (UL10493/20549; cULus) requirements. Offers very good EMC-properties because of shielded version.

Length xx: 5, 10, 15, 20m

Characteristics	Technical data connector
Connector type	M12, female, straight
Number of pins	4
Pin assignment	1 BN, 2 WH, 3 BU, 4 BK
Coding of	A
Rated voltage/current	250V / 4A
Resistance	≤ 5mΩ
Insulation resistance	>=10^8Ω
Ambient temperature	-40°C...+90°C (fixed mounting)
Shielding	with shielding
Degree of protection	IP 67 (mounted)
Standards	IEC 61076-2-101

Characteristics	Technical data cable
Cable outer diameter	5.1mm
Cable-jacket material	PUR
Cable-jacket colour	BK, similar RAL9005
Wire cross-section	4 x 0.34mm²
Bending radius (fixed)	5x cable diameter
Wire colours	BN, WH, BU, BK
Shielding	Yes
Halogen-free	yes
Special features	flame retardant, seawater resistant, recyclable, LABS free, RoHs compliant, acid- and alkali resistant, ozone resistant, UV resistant, hydrolysis proof, drag chain-adapted, torsion resistant, welding sparks resistant, halogen free, silicone free, oil resistant

Ordering structures

FGL01620 - X - Y - Z

- Z: Cable length [m]
- Y: Connector and cable version
- X: Sensor length [1=90mm; 2=109mm]
- FGL01620: Basic type information

Product marking

Dr. E. Horn GmbH & Co. KG

Type: FGL01620-X

Made in Germany

Options and related products

The present sensor is preferably used in combination with engine control systems. Dr. E. Horn develops and produces control systems and the corresponding indicating instruments according to customer specifications.

In case of using FGL01620 in safety-level environment (SIL-level required), please do not hesitate to contact us.

Dr. E. Horn offers portable tachometers, speed indicators and programmable converters for limit and alert settings.

Dr. E. Horn GmbH & Co KG

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