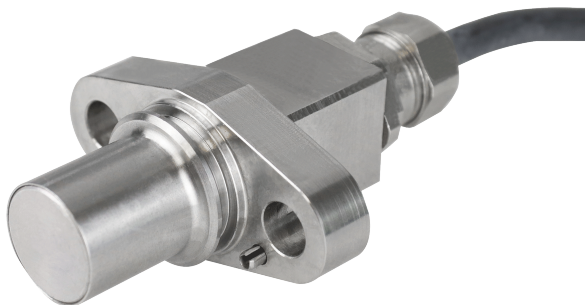


Two-channel magnetoresistive speed sensor in 2-hole flange design



Product Features

- Output signals with especially high resolution:
up to 4x frequency multiplication for gear wheels possible
up to 8x frequency multiplication possible when scanning pole wheels
- When used with a magnetic pole wheel, very accurate measurement results are achieved; quotients can also be used as multipliers
- Two square wave signals, phase-shifted by 90°, optionally with inverted signals
- Very high immunity to electromagnetic interference (EMI)

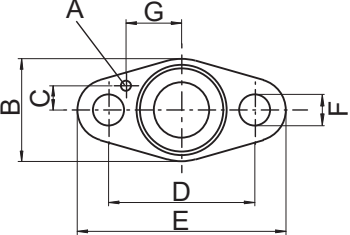
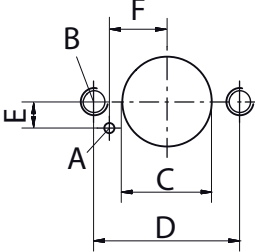
Technical Specifications

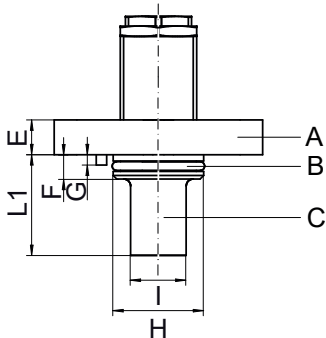
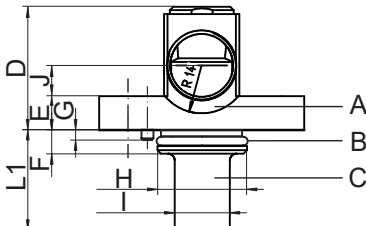
Frequency range	0 ... 30 000 Hz
Supply voltage	9 ... 32 VDC
Degree of protection	Housing: IP66/IP68/IP69 Connection: IP66/IP68; only -XGT: IP69
Material	Flange: Stainless steel
Measuring channels	2 measuring channels
Output signals	2 square wave signals or 2 square wave signals + 2 inverted square wave signals



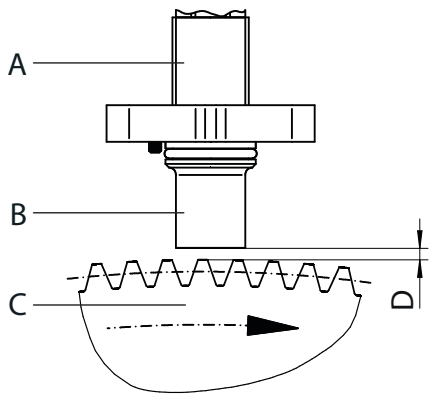
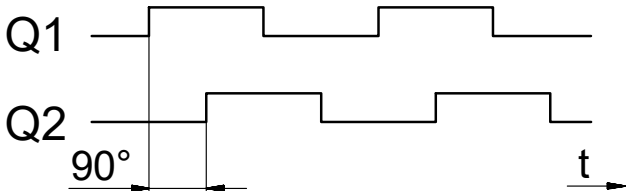
Dimensions, connections and drawings

Dimensions and mounting diagram

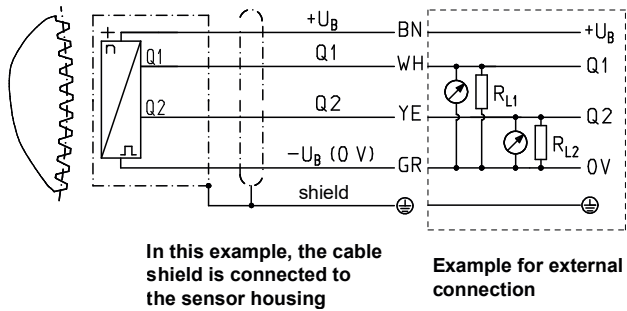
 <p>Fig.: Front view</p>	<p>A) Fixing pin 3 mm (defines installation position) in accordance with ISO 8752-3 B) Length 29 mm C) Length 7 mm D) Length 42 mm E) Length 60 mm F) $\varnothing 9^{-0.5}$ mm G) Length 16 mm</p>
 <p>Fig.: Bore hole</p>	<p>A) Fixing pin 3 mm (defines installation position) in accordance with ISO 8752-3, bore: $\varnothing 4$ mm, bore depth 5 mm B) Threaded bore M8 C) $\varnothing 26^{+0.10}$ mm D) Length $42^{\pm 0.2}$ mm E) Length 7 mm F) Length 16 mm</p> <p>Recommended fastener: Hexagon socket head cap screw ISO 4762 M8x20 with spring washer.</p>

	<ul style="list-style-type: none"> A) Flange: Stainless steel B) O-ring 21 x 2.5 mm C) Sensor tube: Stainless steel D) Length 53...78 mm (depending on connection) L1) Nominal length L1 (see type code) E) Length 10 mm F) Length 7 mm G) Length 3 mm H) $\varnothing 26^{d10}$ mm I) $\varnothing 20$ mm
	<ul style="list-style-type: none"> A) Flange: Stainless steel B) O-ring 21 x 2.5 mm C) Sensor tube: Stainless steel D) Length 36 ± 1 mm (for $L1 \geq 38$ mm) Length 46 ± 1 mm (for $L1 < 38$ mm) L1) Nominal length L1 (see type code) E) Length 10 mm F) Length 7 mm G) Length 3 mm H) $\varnothing 26^{d10}$ mm I) $\varnothing 20$ mm J) Length 9 mm

Mounting position and scan object distance

	<ul style="list-style-type: none"> A) Sensor housing (flange) B) Sensor tube C) Scan object D) For recommended scan distance see technical data <p>Standard: Q1 precedes Q2 by 90°. Customer-specific adjustment possible (e.g., Q1 precedes Q2 for left-turning scan object).</p> 
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Voltage signal output



1: Connection example: FAHZ with voltage signal

The voltage signal output is designed to be a push-pull output stage. At a high level, the signal output is internally switched to the positive power supply in a low-resistance manner; at a low level, the signal output is internally switched to the negative power supply in a low-resistance manner.

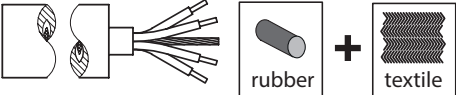
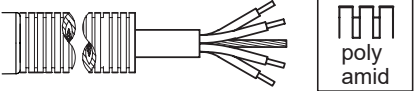

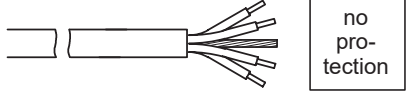
The sensor can therefore be operated as both a source and a sink. This allows a high interference immunity to be achieved under any operating conditions.

Custom configurations

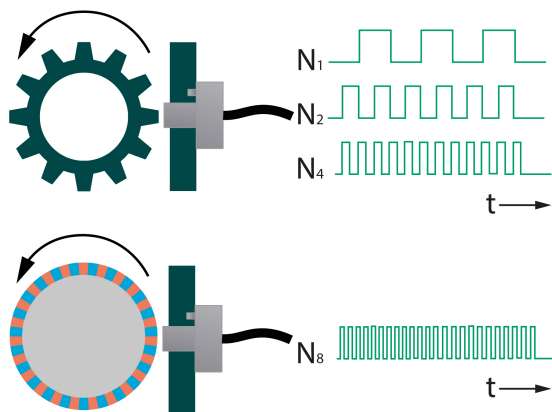
To find the best solution for your use case and achieve optimal installation conditions, we offer a wide range of tailored adjustments:

- Custom flange geometry, e.g. sensor tube length
- Customer-specific connector cable design (cross-section, ready-to-use cable length)
- Freely selectable connector plug
- Custom adjustment of status output: detection of outage or direction of rotation (clockwise or anticlockwise)
- Signal output: Voltage signal or current signal
- Detected frequency range
- Effectiveness of the conductor protection

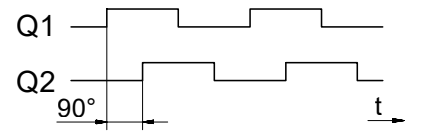
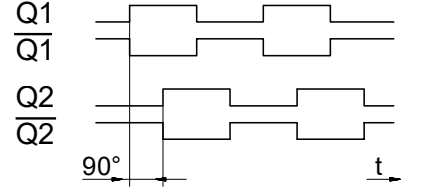
Conductor protection types

	<p>Rubber protective tube with textile fibre reinforcement – flexible under mechanical impact, resistant to stone impact</p>	<p>XGT</p>
	<p>Corrugated polyamide pipe – protects against moderate mechanical force, e.g., occasional stone impact</p>	<p>XP</p>
	<p>Reinforced conductor cable jacket – additional FRNC (Flame Retardant, Non-Corrosive) outer sheath for resistance to mechanical impacts or climatic conditions (e.g., temperature fluctuations)</p>	<p>XV</p>
	<p>No conductor protection – applications without stone impact or other mechanical force</p>	<p>X</p>

Overview signal output FAM52



Due to the measuring principle, high-precise measurement results can be achieved. The sensor can detect any number of threshold points. In use with a toothed wheel, the output frequency can be multiplied by factor 2 or 4. If required, even ratios are possible. In use with a magnetic pole wheel, higher multipliers are possible (factors 6 or 8).

Type	Measuring principle	Signal output	Signal form
FAMZ52	Magneto-resistive	Two square wave signals, Q2 to Q1 is 90° phase shifted	
FAMQ52	Magneto-resistive	Two + Two inverted square wave signals, Q1 to Q2 and Q1 to Q2 are 90° phase shifted	

General technical data

Electrical connection	
Supply voltage	9 ... 32 VDC
Nominal voltage	15 VDC
Current consumption	< 20 mA (without output current)
Reverse voltage protection	Yes
Overvoltage protection	Yes
Recommended conductor length	< 100 m
Conductor cross-section	0.33 mm ² , shielded

Elektrischer Ausgang	
Measuring channels	2 measuring channels
Output signals	2 Square wave signals or 2 Square wave signals + 2 inverted square wave signals Option: Frequency multiplication
Output driver	Push-pull output stage
Duration - short-circuit resistance	Yes
Galvanic isolation	No
Output level Low	Per output: $\leq 0.8 \text{ V @ 15 VDC, 10 mA, 24}^\circ\text{C}$
Output level High	Per output: $\geq U_{B+} - 1.6 \text{ V @ 15 VDC, 10 mA, 24}^\circ\text{C}$
Output current (sink)	Per output: max. -50 mA
Output current (load)	Per output: max. 50 mA
Internal resistance Ri	60 Ω
Rise time	$\geq 10 \text{ V}/\mu\text{s}$

Signal detection	
Measuring principle	Magnetoresistive measurement principle
Frequency range	0 ... 30 000 Hz
Application	Ferromagnetic scan object Frequency multiplication for high signal resolution Individual scaling of signal resolution for pole wheels and impulse bands Various control options for refit projects
Scan objects	Toothed wheels, magnetic pole wheels, impulse bands
Distance scan object	Module m1: 0,5 mm +/- 0,2 mm; module m1,5: 0,6 mm +/- 0,2 mm; module m2: 0,7 mm +/- 0,2 mm other sizes on request
Duty cycle	50 % \pm 10 %
Phase shift	90° +/- 10 %

Environmental influence	
Operating temperature	-40 ... +110 °C
Storage temperature	Recommended: -25 ... +70 °C; max.: -40 ... +105 °C (max. peak values within 30 days/year at relative humidity from 5...95 %)
Degree of protection	Housing: IP66/IP68/IP69 Connection: IP66/IP68; only -XGT: IP69
Vibration resistance	IEC 60068-2-6, 40 g @ 100...2000 Hz (Sinus) IEC 61373, 30 g @ 10...500 Hz (Random)
Shock resistance	IEC 60068-2-27, 100g @ 6 ms
Climatic test	IEC 60068-2-1/-2/-30
ESD	IEC 61000-4-2, Lev. 3
Burst	IEC 61000-4-4, Lev. 3
Surge	IEC 61000-4-5, Lev. 2
Interference immunity	IEC 61000-4-3, 10 V/m IEC 61000-4-6 (HF - conducted), 10 Veff IEC 60553 (LF - conducted), 10 Veff
Interference emission	CISPR 16-1, CISPR 16-2 EMC2
Insulation voltage	500 VAC, 50 Hz @ 1 min
Other standards	EN 50155, EN 55016, EN 50121

Mechanical properties	
Material	Flange: Stainless steel Measuring surface: Aluminium
Mounting	Via flange housing
Length	See customer drawing
Installation position	Determined by rotational direction definition; defined by fixing pin
Weight	≥ 190 g (depends on connection)
Pressure resistance	5 bar (measuring surface)

Type code

Type code structure										
FA	M	Z	52-	11-	S	X	07-	M30	S0	Example: FAMZ52-11-SX07-M30S0
Measuring principle										
Measuring principle supplement										
Construction type and material										
Nominal length L1 of the sensor tube										
Connection outlet										
Electrical connection										
Sheath length										
Module										
Output signal multiplier										
Shield / Addition										

Type code FAM[.].52										
Measuring principle	M	Magneto-resistive								
Measuring principle supplement	Z	2 output signals (voltage), galvanically connected								
	Q	4 output signals (voltage), galvanically connected								
Construction type and material		52-	Flange, stainless steel sensor tube							
Nominal length			11-	L1 = 29 mm						
Connection outlet				Without code: straight cable outlet						
			S	Lateral cable outlet						
Electrical connection				X	Cable end standard (without protective tubing)					
				XGS	Cable end, protective tubing, steel reinforced					
				XGT	Cable end, protective tubing, textile reinforced					
				XP	Cable end, protective tubing, polyamide					
Sheath length				05-	Sheath length 2 m, halogen-free					
				07-	Sheath length 5 m, halogen-free					
				08-	Sheath length 7.5 m, halogen-free					
				09-	Sheath length 10 m, halogen-free					
Module (toothed wheel)				M10-	Module m1					
				M15-	Module m1.5					
					Without code: Module m2					
Pitch (magn. Pole wheel)				P20	Pitch 2.0					
				P25	Pitch 2.5					
				P50	Pitch 5.0					
Multiplier					Without code: no multiplier					
				N02	Multiplier factor 2					
				N03	Multiplier factor 4					
				N##	Other factors on request					
Shield					Without code: Shield attached to the sensor housing					
				S0	Shield not attached to the sensor housing					
FA	--	--	--	--	--	--	--	--	--	Example: FAMZ52-11-X07-N03

If you don't find anything suitable among our standard types, we'll be happy to develop a tailored solution with you to meet your requirements (-P types). They also meet the above mentioned standards thanks to our type-approved modular kits.

Imprint/Disclaimer

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