

# Hall Effect Zero Speed Sensor F12A

**GREEN LINE**  
INDUSTRIAL SPEED SENSORS

## Product ID

Type #	Product #	Drawing #
F12A	385Z-05322	113590 Rev.02

## General

Function	The F12A series Hall effect speed sensors are suitable, in conjunction with a ferrous pole wheel, for generating square wave signals proportional to rotary speeds. They exhibit a static function, whereby pulse generation down to 0 Hz is guaranteed. The sensor function is independent of rotational mounting angle.
----------	---

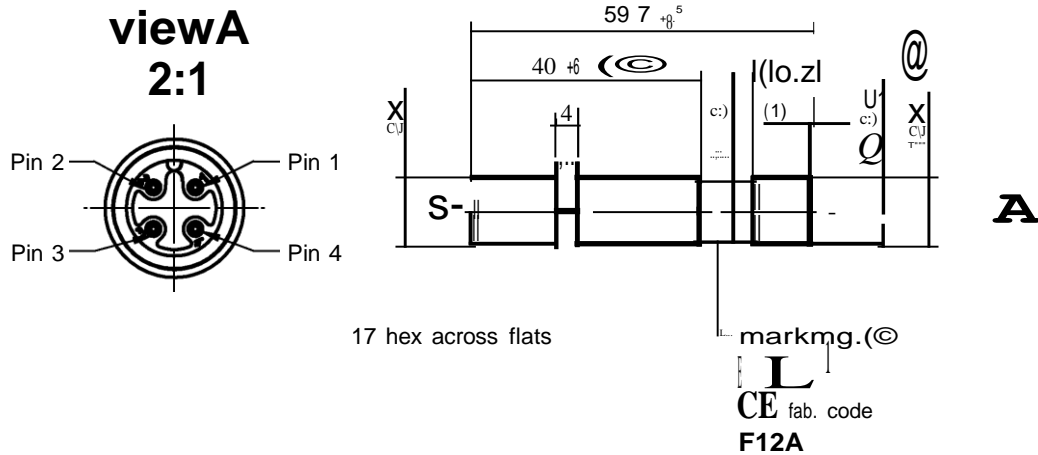
## Technical data

Supply voltage	8...25 VDC
Current consumption	Max. 12 mA (without load)
Signal output	Square wave signal from NPN output transistor with internal 2.7 kOhm pull-up resistor, DC-coupled to supply (negative pole = reference Voltage). <ul style="list-style-type: none"> <li>Sink current: max. 25 mA</li> <li>Output voltage: <ul style="list-style-type: none"> <li><math>U_{high} \sim</math> supply voltage</li> <li><math>U_{low} &lt; 0.5</math> V at <math>I = 25</math> mA</li> </ul> </li> </ul>
Frequency range	0 Hz...15 kHz
Housing	M12x1, tightening torque: max. 12 Nm
Connection	Connector: M12x1 thread, 4 pins, black
Protection	Sensor head: IP68 Cable outlet: IP67
Insulation	Housing and electronics galvanically separated (500 V/50 Hz/ 1 min)
Pole wheel	Prerequisite: Toothed wheel of a ferrous material (e.g. Steel 1.0036) Optimal performance with <ul style="list-style-type: none"> <li>Involute gear</li> <li>Tooth width &gt; 10 mm</li> <li>Side offset &lt; 0.2 mm</li> <li>Eccentricity &lt; 0.2 mm</li> </ul>
Air gap between sensor and pole wheel	<ul style="list-style-type: none"> <li>Module 1.0 (DP 25.4): 0.3...0.5 mm</li> <li>Module 2.0 (DP 12.7): 0.3...1.5 mm</li> </ul>
Operating temperature	-40°...+125°C

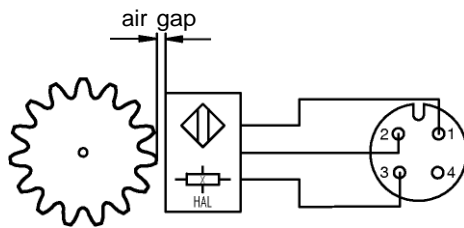
## Further Information

Safety	All mechanical installations must be carried out by an expert. General safety requirements have to be met.
Connection	<p>Sensor wires are susceptible to radiated noise. Therefore, the following points have to be considered when connecting a sensor:</p> <p>The sensor wires must be laid as far as possible from large electrical machines. They must not run parallel in the vicinity of power cables.</p> <p>The maximum permissible cable length is dependent upon the sensor voltage, the cable routing, along with cable capacitance and inductance. However, it is advantageous to keep the distance between sensor and instrument as short as possible. The sensor cable may be lengthened via a terminal box located in an IP20 connection area in accordance with EN 60529.</p>
Installation	<p>The sensor has to be aligned to the pole wheel according to the sensor drawing independent of its rotational orientation. Deviations in positioning may affect the performance and decrease the noise immunity of the sensor. During installation, the smallest possible pole wheel to sensor gap should be set. The gap should however be set to prevent the face of the sensor ever touching the pole wheel. Within the air gap specified the amplitude of the output signal is not influenced by the air gap.</p> <p>A sensor should be mounted with the middle of the face side over the middle of the pole wheel. Dependent upon the wheel width, a certain degree of axial movement is permissible. However, the middle of the sensor must be at minimum in a distance of 3 mm from the edge of the pole wheel under all operating conditions.</p> <p>A solid and vibration free mounting of the sensor is important. Eventual sensor vibration relative to the pole wheel can induce additional output pulses.</p> <p>The sensors are insensitive to oil, grease etc. and can be installed in arduous conditions. Within the air gap specified the amplitude of the output signals is not influenced by the air gap.</p>
Maintenance	Product cannot be repaired.
Transport	Product must be handled with care to prevent damage of the front face.
Storage	Product must be stored in dry conditions. The storage temperature corresponds to the operation temperature.
Disposal	Product must be disposed of properly, it must not be disposed as domestic waste.

approved



schematic diagram:



contact configuration:

- 1 +V
- 2 signal (JL)
- 3 GND
- 4 not connected

mates with straight plug M12x1, 4 pins

FOR TECHNICAL SPECIFICATIONS SEE OPERATING INSTRUCTIONS

@ Critical characteristic

⊖ Major characteristic

385Z-05322		dimension unit mm	CAD System SolidEdge V20	Copyright reserved according DIN 34
part no	material / surface treatment / remarks	project no		
		general tolerances according DIN ISO 2768-M		
		nominal size range	>0.5 -6	>6 -30
		allowed tolerance	± 0.1	0.2 0.3 0.5 0.8 1.2
0_2+---+1_7_1_1_0_9+-P- t_itl_e_b_lo_c_k_ch_a_n_g_e_d		first angle projection	drawn 16.11.09	drawn by p
date sign. change description		scale approved		
- - LJ-E:lr---+pa-rt-n am-e- - - - - _l_:l_w:_ - - ;w_:_ - - _A_oK_kf-low-us-er-				
TECHNoLoGy Group		drawing type Massbild		
Thannerstrasse 15 CH - 4009 Basel www.jaquet.com		format drawing no		
Green1ne Speed Sensor F12A		A4 113590 02		

# COMPANY PROFILE

**AUET**  
TECHNOLOGY GROUP

JAUQUET TECHNOLOGY GROUP offers the world's most versatile and advanced range of solutions for the detection, measurement, diagnosis and management of rotational speed. Our industry and application specific expertise ensures that you will achieve an optimum solution. Completely matched to your individual requirements, meeting key industrial standards and certifications, our products help boost the performance of your machinery while reducing cost of ownership.

## TYPICAL INDUSTRIES SERVED

- Automotive and truck
- Diesel / Gas engines
- Hydraulics
- Railway
- Turbines
- Turbochargers
- Industrial machinery

## PRODUCTS – SPEED SENSORS

- Various technologies
- Standard, custom and OEM models
- For demanding applications, eg. 300,000 rpm, temperature up to 320 °C / 600 °F, high vibration, shock to 200 g, etc.
- Green Unespeed sensors for general applications
- Ex models for hazardous areas
- Pole bands and target wheels available where needed

## PRODUCTS – SYSTEMS

- Multi-channel overspeed protection systems
- 1–2 channel measurement, protection and control modules
- Engine diagnostic systems
- Redundant speed measurement and indication

## SPECIAL PROJECT EXAMPLES

- An automotive linear movement sensor
- Integrated power and torque measurement for display and gearbox control
- Naval spec. turbine protection for nuclear submarines
- Speed measurement in turreted, tracked vehicles

## QUALITY MANAGEMENT AND STANDARDS

- Quality management: TS 16949 and ISO 9001, ZELM ATEX 1020, KWU
- Sensors: GL, KWU, TÜV, ATEX, EN 50155, NF F 16-101 102, ABS, EMC
- Systems: IEC 61508 SIL 2 and SIL 3, API 670, GIL, TÜV, KWU, EX
- Environmental: RoHS - EU directive 2002/95/EC

## JAUQUET – YOUR PARTNER

- Efficient and professional service - JAUQUET TECHNOLOGY GROUP is headquartered in Basel, Switzerland and has subsidiaries in Belgium, China, Germany, the Netherlands, United Kingdom and United States along with a worldwide distributor and end-user service network.
- Flexible production quantities; from 1 to millions per project
- Reduction of total costs by intelligent and cost-effective solutions
- Fast turn around time

IN CHARGE OF SPEED

JAUQUET North America, Inc. • 1601 East Bay Drive, Suite 3 • Largo • Florida 33771  
Tel + 1 800 655 1424 • Fax + 1 800 663 8706 • salesna@jaquet.com • [www.jaquet.com](http://www.jaquet.com)