Variable Reluctance Speed Sensor
E58HAM

GREEN LINE
INDUSTRIAL SPEED SENSORS

Product ID

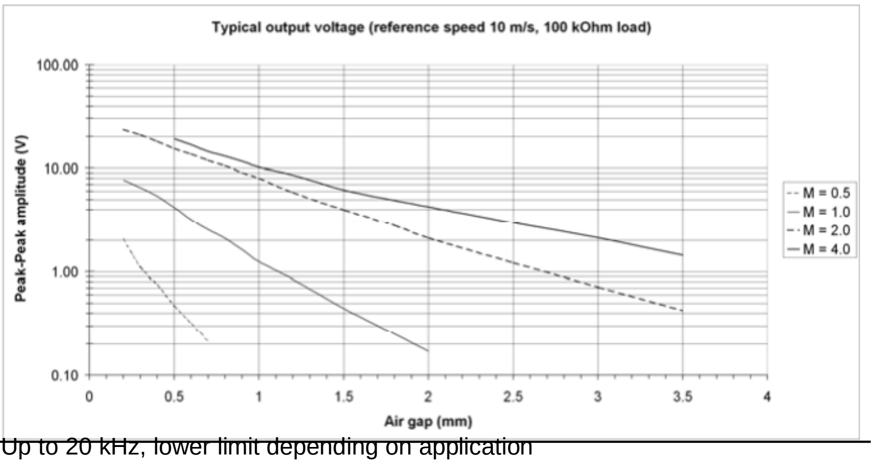
Type #	Product #	Drawing #
E58HAM	385Z-05903	115876 Rev.01

General

Function	The E58HAM series variable reluctance (VR) speed sensors consist of an iron core, an inductive coil, and a permanent magnet. A ferrous pole wheel passing the sensor face changes the magnetic field strength, resulting in an AC voltage being induced in the coil. The frequency of the output signal is proportional to the speed of the moving target. The amplitude of the signal depends on speed, air gap, geometry of target, magnetic properties of target material, and the electrical load. VR sensors, also known as passive or electromagnetic sensors, do not require an external supply. These sensors are developed for high temperature applications up to 200°C.

Technical data

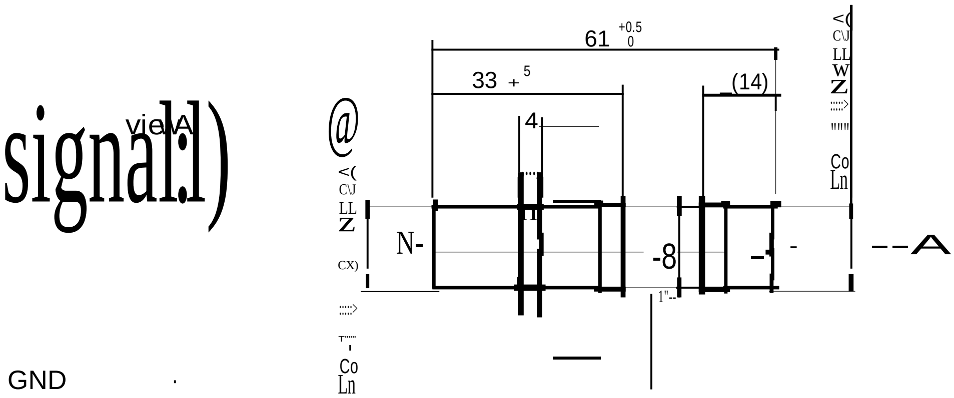
Coil properties	• Inductance @ 1 kHz: 170 mH ± 10% • Resistance: 850 Ohm ± 10% • Magnet polarity: north pole towards front face • Pole piece: diameter 2.7 mm
Polarity	Upon approach of ferrous metal, the signal pin is positive with respect to GND.
Signal output	The signal frequency is proportional to the target speed. The signal amplitude shown in the figure is valid for a load of 100 kOhm, and is affected by air gap, target geometry and material. It is also proportional to the linear speed of the teeth.



Frequency range	Up to 20 kHz, lower limit depending on application
Housing	5/8"-18 UNF-2A, tightening torque: max. 35 Nm
Connection	Connector mates with straight plug MS3106A-10SL-4S, 2 pins
Requirements for pole wheel	Toothed wheel of a magnetically permeable material (e.g. Steel 1.0036) Optimal performance with • Involute gear • Tooth width > 10 mm • Side offset < 0.2 mm • Eccentricity < 0.2 mm
Air gap between sensor and pole wheel	Depending on lowest circumferential speed which has to be detected and on trigger level. See figure.
Insulation	Housing and electronics galvanically separated (500 V/50 Hz/ 1 min)
Protection class	Sensor head: IP68 Connector: IP67
Temperature	Operating temperature of entire sensor: -40°...+200°C

Further Information

Safety	All mechanical installations must be carried out by an expert. General safety requirements have to be met.
Connection	The sensors must be connected according to sensor drawing. Sensor wires are susceptible to radiated noise. Therefore, the following points have to be considered when connecting a sensor: 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. 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.
Installation	The sensor has to be aligned to the pole wheel according to the sensor drawing. 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. 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. A solid and vibration free mounting of the sensor is important. Eventual sensor vibration relative to the pole wheel can induce additional output pulses. The sensors are insensitive to oil, grease etc. and can be installed in arduous conditions.
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.

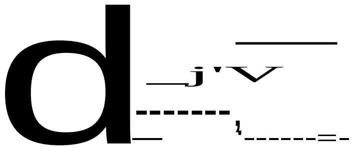


22 hex across flats

marking:
CE fab. code
E58HAM

connecting diagram:

airgap



contact configuration:

signal (-)

GND

mates with straight plug MS3106A-1OSL-4S

Upon approach of ferrous metal pin signal is positive with respect to pin GND.

FOR TECHNICAL SPECIFICATIONS SEE OPERATING INSTRUGTIONS

@Q) Critical characteristic

Major characteristic

385Z-05903
part no
material / surface treatment / remarks
POS 125
project no

date sign change description

part name

dimension unit mm
CAD System SolidEdge V20
Copyright reserved according DIN 34
general tolerances according DIN ISO 2768-m
nominal size range >6 >30 >120 >400 >1000
allowed tolerance ± 0.1 0.2 0.3 0.5 0.8 1.2
first angle projection
drawn 23.09.09
drawn by PW
approved
scale 1:1
workflow user

TECHNOLOGY GROUP
Thannerstrasse 15
CH - 4009 Basel
www.jaquet.com

Greenline
Speed Sensor
ESSHAM

Mass build

format A4
drawing no 115876

COMPANY PROFILE

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TECHNOLOGY GROUP

JAQUET 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, e.g. 300,000 rpm, temperature up to 320 °C / 600°F, high vibration, shock to 200 g, etc.
- GreenLine speed 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 16-101102, ABS, EMC
- Systems: IEC 61508 SIL 2 and SIL 3, API670, GL, TÜV, KWU, EX
- Environmental: RoHS - EU directive 2002 95 EC

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- Reduction of total costs by intelligent and cost-effective solutions
- Fast turn around time

IN CHARGE OF SPEED

JAQUET 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