

Variable Reluctance Speed Sensor E38S

GREEN LINE
INDUSTRIAL SPEED SENSORS

Product ID

Type #	Product #	Drawing #
E38S	385Z-05355	113.701 Rev.2

General

Function The E38S 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.

Technical data

Coil properties

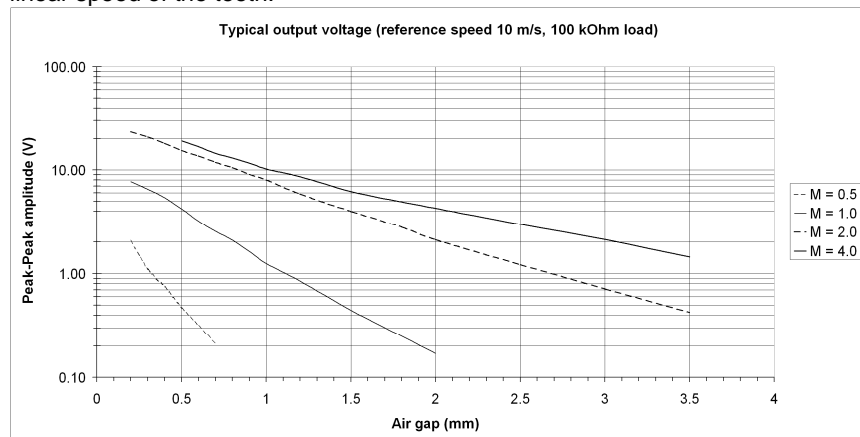
- Inductance @ 1 kHz: 170 mH ± 10%
- Resistance: 850 Ohm ± 10%
- Magnet polarity: north pole towards front face
- Pole piece: diameter 2.7 mm

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

3/8"-24 UNF-2A, tightening torque: max. 10 Nm

Connection

Cable with open leads:
3-wire, 3 x 0.34 mm² (AWG22), stranded wires, elastomer isolation, green casing, fire retardant, low smoke, RoHS conform and halogen free, max. outer Ø = 4.8 mm, min. bending radius = 25 mm (static) and 50 mm (dynamic), cable length according to dimensional drawing

Protection

Sensor head: IP68
Cable outlet: IP67

Insulation

Housing and electronics galvanically isolated (Test: 500 V, 50 Hz for 1 minute)

Pole wheel

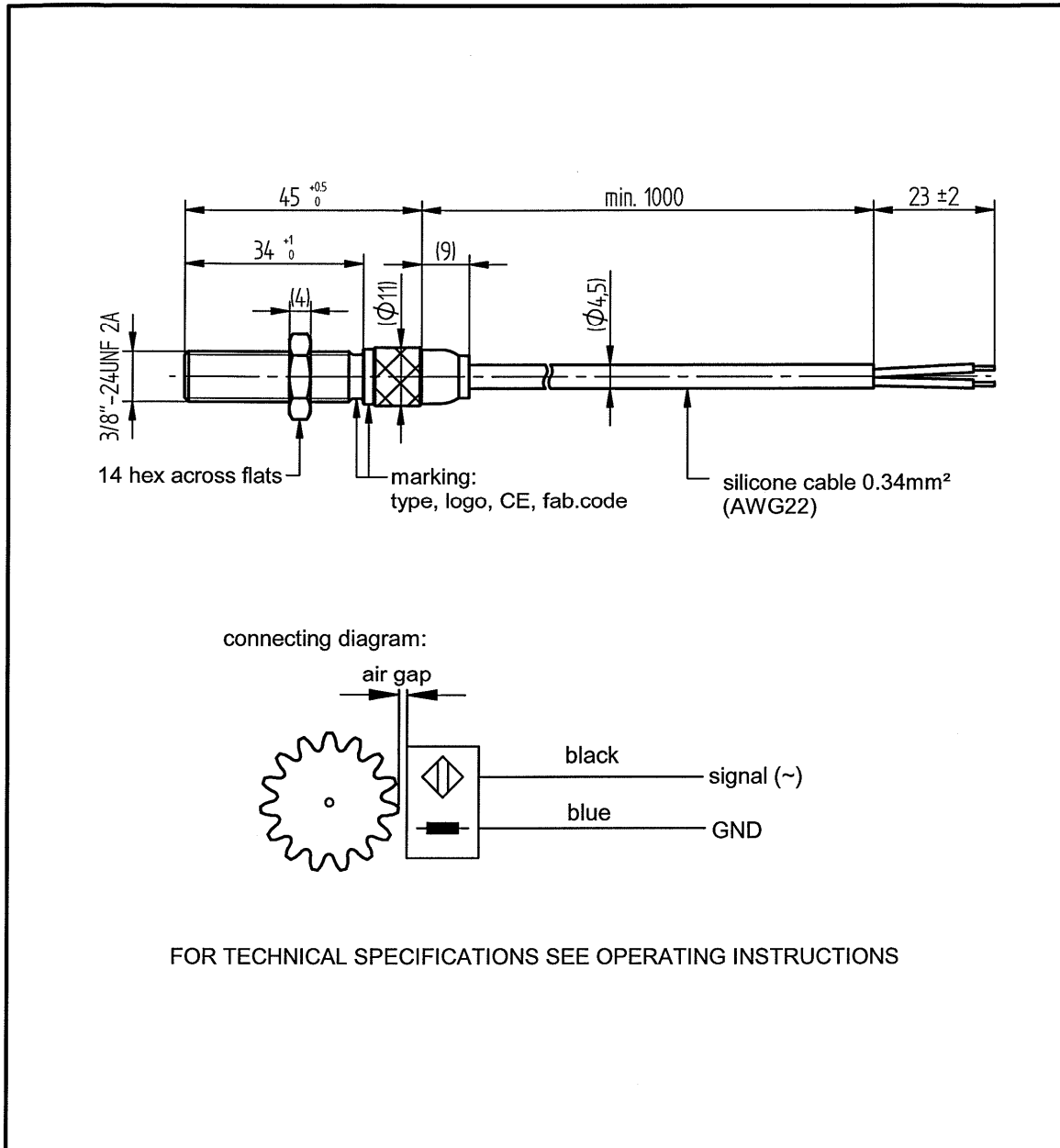
Prerequisite: Toothed wheel of a ferrous material (e.g. Steel 1.0036).
Optimal performance with

- Involute gear
- Tooth width > 10 mm

	<ul style="list-style-type: none"> • 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.
Electromagnetic compatibility (EMC)	Please contact Jaquet for further details.
Vibration & shock immunity	Jaquet Greenline sensors are approved for rough environments. Please contact Jaquet for further details.
Operating temperature	-40°C...125°C

Further Information

Safety	All mechanical installations must be carried out by an expert. General safety requirements have to be met.
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. 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. The sensors are insensitive to oil, grease etc. and can be installed in arduous conditions.</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.



385Z-05355		dimensions in mm				
part no.		material / remarks		application		
-	-	-/-	-	nominal size range		
-	-	-/-	-	allowed tolerance		
-	-	-/-	-	replacement for		
-	-	-/-	-	first angle projection	drawn	27.09.2006 ebi
2	6280	10.04.07/ebi	Kabel ausgetauscht von PUR auf Silikon		approved	29.05.07 <i>Mu</i>
rev.	ech.	date/signature	change description		scale 1:1	format
		part name		A4	113.701	rev. 2
Thannerstrasse 15 CH-4009 Basel www.jaquet.com		speed sensor Greenline E38S		file name		113701_rev1dff