E16Sxx

Variable Reluctance Speed Sensor

Product ID

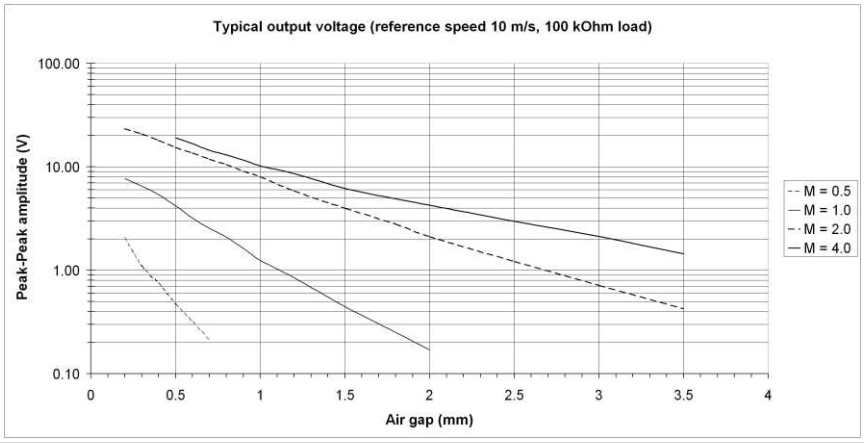
Type #	Product #	Drawing #
E16S	385Z-05581	114460
E16S25	385Z-05582	114460
E16S40	385Z-05583	114460

General

Function	The E16Sxx 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

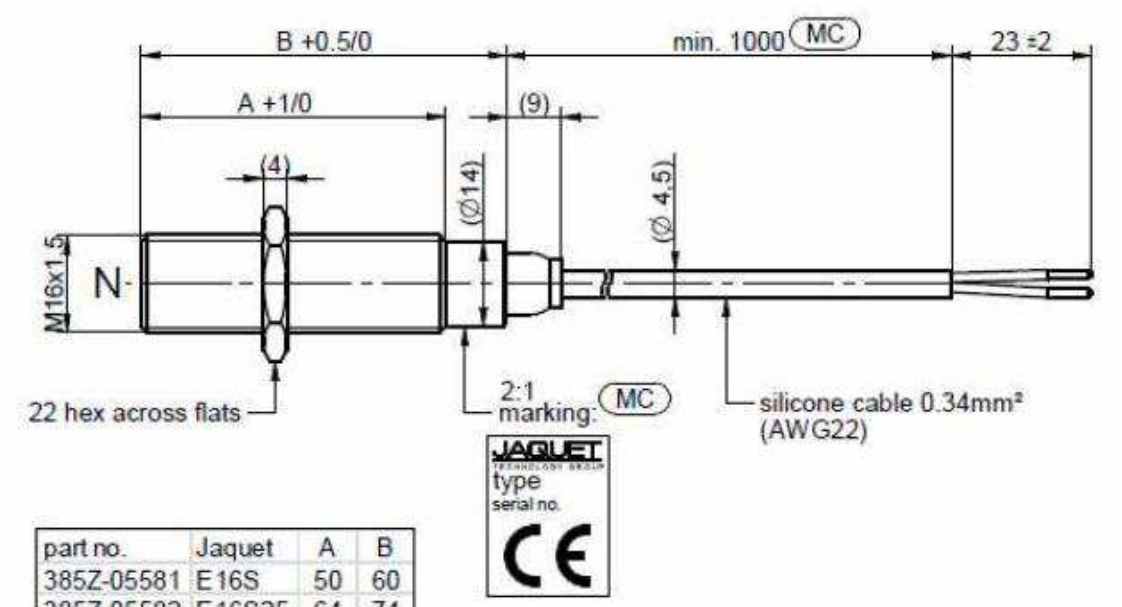
Coil properties	Inductance @ 1 kHz: 140 mH ± 15% Resistance: 850 Ohm ± 15% Magnet polarity: north pole towards front face Pole piece: diameter 2.7 mm
Polarity	Upon approach of ferrous metal, the signal pin is positive with respect to GND.
Signal output	The signal frequency is proportional to the target 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. Minimal voltage for 5 m/s circumferential speed, module 2 gear, 1 mm air gap and 10 kOhm load resistance: 1.8 Vpp



Frequency range	Up to 20 kHz, lower limit depending on application
Housing	M16x1.5, tightening torque: max. 35 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 Connector: 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 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
Operating temperature	-40°C…125°C

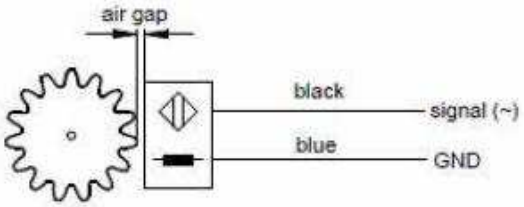
Further Information

Safety	All mechanical installations must be carried out by an expert. General safety requirements have to be met.
Installation	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. The amplitude of the output signal is not influenced by the air gap. 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.



part no.	Jaquet	A	B
385Z-05581	E16S	50	60
385Z-05582	E16S25	64	74
385Z-05583	E16S40	102	112

connecting diagram:



Upon approach of ferrous metal black wire is positive with respect to blue wire.

FOR TECHNICAL SPECIFICATIONS SEE OPERATING INSTRUCTIONS

(CC) Critical characteristic
(MC) Major characteristic

Dimensions in mm

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