

**OPERATING INSTRUCTIONS** 

# Variable Reluctance Speed Sensor E58AM



	Type #	Product #	Drawing #				
	E58AM	385Z-05360	113718 Rev.3				
General							
Function	The E58AM 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	<ul> <li>Inductance @ 1 kHz: 140 mH ± 10%</li> <li>Resistance: 870 Ohm ± 10%</li> <li>Magnet polarity: north pole towards front face</li> <li>Pole piece: diameter 2.7 mm</li> </ul>						
Polarity	Upon approach of ferrous metal, the signal pin is positive with respect to GND.						
	affected by air gap, target geometry and material. It is also proportional to the linear speed of the teeth. Typical output voltage (reference speed 10 m/s, 100 kOhm load)						
	100.00 100.00 Looge a mblitude (X) 1.00 0.10		M = 0.5 M = 1.0 M = 2.0 M = 4.0				
	0 0.5 1 1.5 2 2.5 3 3.5 4 Air gap (mm) 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						
Connection	Connector mates with straight plug MS3106A-10SL-4S_2 pins						
Protection	Sensor head: IP68 Connector: IP67						
Insulation	Housing and electronics galvanically isolated (Test: 500 V, 50 Hz for 1 minute)						

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Pole wheel	Prerequisite: Toothed wheel of a ferrous material (e.g. Steel 1.0036). Optimal performance with Involute gear Tooth width > 10 mm Side affact < 0.2 mm			
	<ul> <li>Eccentricity &lt; 0.2 mm</li> </ul>			
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°C125°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. 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.			

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## IN CHARGE OF SPEED

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# COMPANY PROFILE



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#### TYPICAL INDUSTRIES SERVED

- Automotive and truck
- Diesel / Gas engines
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- 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.
- GreenUnespeed sensors for generat applications
- Exmodels for hazardous areas
- · Polebands and target wheels available where needed

#### PRODUCTS - SYSTEMS

- Multi-channeloverspeed protection systems
- 1-2 channelmeasurement, protection and controlmodules
- Engine diagnostic systems
- Redundantspeed measurement and indication

#### SPECIAL PRO)ECT EXAMPLES

- An automotivelinear movement sensor
- Integrated power and torque measurement for display and gearbox control
- Navalspec. 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 F16-101102,ABS,EMC
- Systems: IEC 61508 SI L 2 and SI L 3, API670, GI., TÜV, KWU, EX
- Environmental: RoHS EU directive 2002 95 EC

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