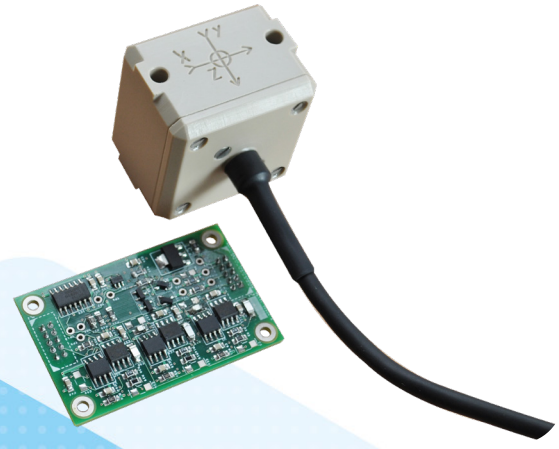
Mag669

Aerospace Three-Axis Magnetometer



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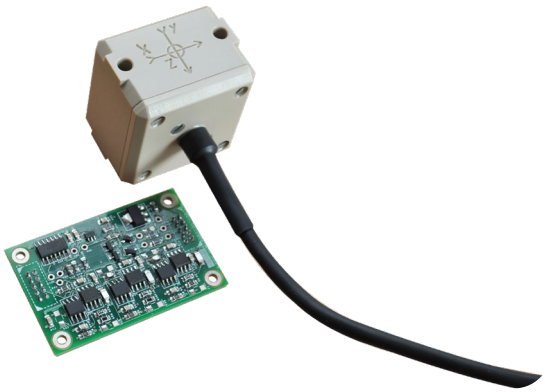


Mag669
Aerospace Three-Axis Magnetometer

This low noise fluxgate magnetometer is designed specifically to meet the exacting environmental requirements of aerospace applications.

It has two-part construction, consisting of a sensor head assembly and unpackaged electronics, which can be integrated into existing systems to save space and weight.

With a full-scale range of ±75µT and low noise characteristics, this sensor is ideally suited to applications such as vector compensation in airborne magnetometry.

The three sensor axes are arranged to have a common point of intersection (concurrent), clearly defining the centre of measurement of the magnetic field being examined. The sensing head has an integral cable.

Features

- ±75µT full-scale range
- -55ºC to +55ºC continuous operating temperature range
- Low noise: <5pTrms/√Hz at 1Hz
- Concurrent sensing axes

Typical Applications

- Magnetic Anomaly Detection
- Navigation
- Vector compensation in airborne magnetometry

Product Identification

The Mag669 can be specified as follows:

Product Name	Package	Noise	Range in µT
Mag669	No code = Standard	No code = Standard noise	No code = ±75µT

Mag669 Specifications

Performance	
Number of axes	Three
Polarity	Polarity +ve when pointing North
Full Scale Measuring Range ±75µT	1.1 to 1.3kHz
Scale factor	7.5nT/mV
Scaling Calibration Error	±0.75%
Scaling Temperature Coefficient	<0.007% of full scale/°C
Linearity Error	<0.0015% of full scale at any point
Frequency Response	±0.75% DC to 100Hz
Bandwidth at -3dB	1.1 to 1.3kHz
Noise	<5pTrms/ √Hz at 1Hz
Zero Field Offset	±40nT
Offset Temperature Coefficient	<0.6nT/°C
Orthogonality error between axes	<1°
Excitation Breakthrough	<20mV pk-pk at 15.625kHz typ.
Sensor head magnetic signature	<4nT at 25mm
MTBF (MIL-HDBK-217F)*	115,000 hours

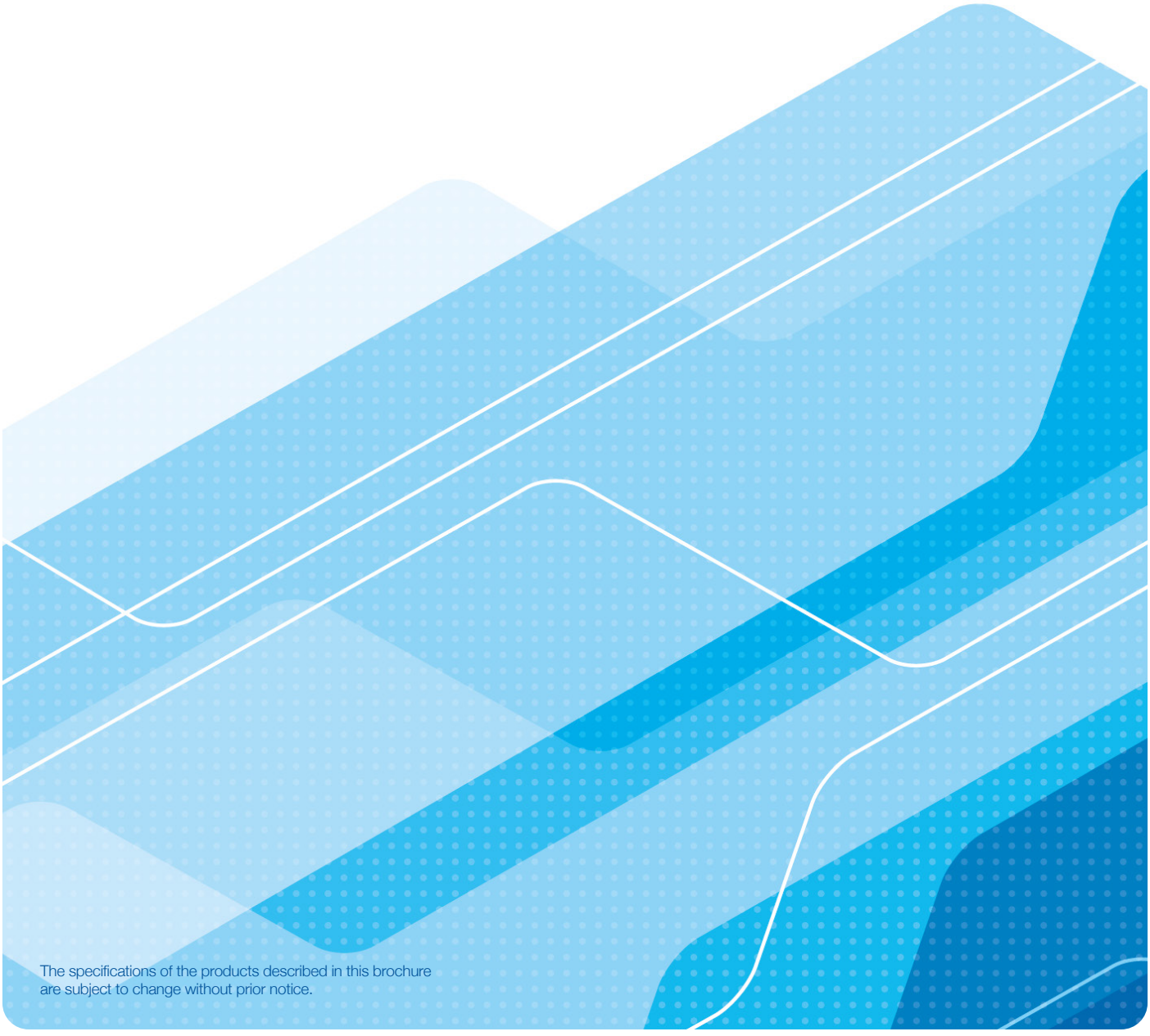
*Reliability study performed on Mag629 PCB. Value read-across to Mag669.

Environmental	
Operating temperature range	-55°C to +55°C continuous, up to +71°C intermittent (5 mins ON, 15 mins OFF)
Storage temperature range	-62°C to +85°C
IP Rating Sensor head Electronics assembly	 IP68 N/A (Conformal coating)
High temperature storage**	Tested at +85ºC
Low temperature storage**	Tested at -62ºC
Temperature shock**	MIL-STD-202G Method 107, Test Condition A-1
Functional vibration**	MIL-STD-810F Method 514.5
Endurance vibration**	Five-hour duration on each axis
Functional shock**	MIL-STD-810C Method 516.2
Altitude and air pressure**	Tested from sea level to 50,000 ft
Fungus mould growth**	MIL-STD-810F Method 508.5
Dust**	MIL-STD-810C Method 510.1
Humidity**	MIL-STD-810F Method 507.4 Procedure I (Aggravated)
Salt fog atmosphere**	MIL-STD-810F Method 509.4
Acoustic noise**	MIL-STD-810F Method 515.5
EMC/EMI**	MIL-STD-461E

**Tested as part of Mag629 development within original Mag629 enclosure. Mag669 PCB must be protected to an equivalent degree by the customer's enclosure to yield equivalent results.

Mechanical	
Construction	2-part assembly with separate sensor head and electronics
Enclosure Material – Sensor Head	PEEK
Enclosure Material - Electronics	PCB only
Dimensions – Sensor Head	31 x 40 x 40mm
Dimensions – Electronics	55 x 35 x 10mm
Cable length	3.2m
Weight – Sensor Head	<200g
Weight – Electronics	<15g
Connectors – Sensor Head	Unterminated XL-ETFE wires
Connectors - Electronics	2 off Harwin M80-854-10-42
Mounting Arrangements	See Interface Control Drawing

Electrical	
Supply voltage	±15V (±5%)
Current Consumption – Positive	+32.5mA (±2.5mA)
Current Consumption – Negative	-11mA (±2.5mA)
Analogue Output	±10V = ±75μT (unbalanced, single ended ref. 0V)
Monitor test signal (BIT)	Open-drain output with 10mA sink capacity if magnetometer internal fault or unpowered; open circuit when operating correctly



The specifications of the products described in this brochure are subject to change without prior notice.

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