

Mag629

Aerospace Three-Axis Magnetometer





Mag629 Aerospace Three-Axis Magnetometer

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

The magnetometer has two-part construction, consisting of a sensor head assembly and packaged electronics.

With a full-scale range of $\pm 75\mu\text{T}$ 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.



Bartington is a registered trade mark of Bartington Holdings Limited in the following territories: Argentina, Australia, Brazil, Canada, Chile, China, European Union, Hong Kong, Iceland, India, Israel, Japan, Malaysia, Mexico, New Zealand, Norway, Russia, Singapore, South Korea, Switzerland, Taiwan, Turkey, United Kingdom, United States of America, and Vietnam.

Bartington is used under licence by Bartington Instruments Limited.

Features

- Designed to MIL-STD-810 (environmental) and MIL-STD-461E (EMC/EMI) for integration into airborne platforms
- $\pm 75\mu\text{T}$ full-scale range
- Concurrent sensing axes

Typical Applications

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



Product Identification

The Mag629 can be specified as follows:

Product Name	Package	Noise	Range in μT
Mag629	No code = Standard	No code = Standard noise	No code = $\pm 75\mu\text{T}$

Mag629 Specifications

Performance	
Number of axes	Three
Polarity	+ve when pointing North
Full Scale Measuring Range	$\pm 75\mu\text{T}$
Bandwidth at -3dB	1.1 to 1.3kHz
Scale factor	7.5nT/mV
Scaling Calibration Error	$\pm 0.75\%$
Scaling Temperature Coefficient	$< 0.007\%$ of full scale/ $^{\circ}\text{C}$
Linearity Error	$< 0.0015\%$ of full scale at any point
Frequency Response	$\pm 1\%$ DC to 100Hz
Bandwidth at -3dB	1.1 to 1.3kHz
Noise	$< 8\text{pTrms}/\sqrt{\text{Hz}}$ at 1Hz
Zero Field Offset	$\pm 40\text{nT}$
Offset Temperature Coefficient	$< 0.6\text{nT}/^{\circ}\text{C}$
Orthogonality error between axes	$< 1^{\circ}$
Excitation Breakthrough	$< 20\text{mV}$ pk-pk at 15.625kHz typ.
Sensor head magnetic signature	$< 4\text{nT}$ at 25mm
MTBF (MIL-HDBK-217F)	110,000 hours

Environmental	
Operating temperature range	-40°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 IP68
High temperature storage	Tested at +85°C
Low temperature storage	Tested at -62°C
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



Mechanical	
Construction	2-part assembly with separate sensor head and electronics
Enclosure Material – Sensor Head	PEEK
Enclosure Material - Electronics	Aluminium Alloy
Dimensions – Sensor Head	31 x 40 x 40mm
Dimensions – Electronics	165 x 42 x 43.4mm
Cable length	1.0m
Weight – Sensor Head	171g
Weight – Electronics	202g
Connectors – Sensor Head	Amphenol D3899926WC98PN
Connectors - Electronics	Amphenol D3899924WC98SN & Amphenol D3899924WC98PA
Mounting Arrangements	See Interface Control Drawing



Electrical

Supply voltage	+28V ($\pm 10\%$)
Current Consumption – Positive	+51mA (± 3 mA)
Current Consumption – Negative	N/A
Analogue Output	$\pm 10V = \pm 75\mu T$ (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.

Bartington Instruments Ltd
5, 8, 10, 11 & 12 Thorney Leys Business Park
Witney, Oxford OX28 4GE. England

Telephone: +44 (0)1993 706565
Email: sales@bartington.com

 **Bartington**[®]
Instruments