

Mag628/629 & Mag669

Aerospace Qualified
Three-Axis Magnetometers



 **Bartington**[®]
Instruments



Mag628/Mag629/ Mag669 Aerospace Qualified Three-Axis Magnetometers

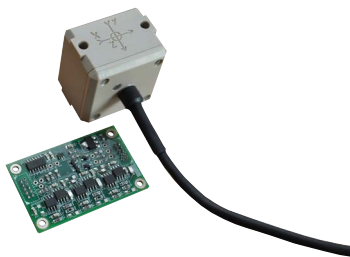
These low noise fluxgate magnetometers are designed specifically to meet the exacting environmental requirements of aerospace applications.

These magnetometers have two-part construction, consisting of a sensor head assembly and an electronics board. The Mag629 has packaged electronics; the Mag628 and Mag669 have unpackaged electronics, which can be integrated into existing systems to save space and weight. The Mag669 also offers a lower noise level.

With a full-scale range of $\pm 75\mu\text{T}$ and very low noise characteristics, these sensors are 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.

Mag628/669



Mag629



Features

- Designed to MIL-STD-810 (vibration and shock) and MIL-STD-202 (thermal shock) for integration into airborne platforms
- $\pm 75\mu\text{T}$ full-scale range
- -55°C to $+55^{\circ}\text{C}$ continuous operating temperature range
- Low noise: $< 8\text{pTrms}/\sqrt{\text{Hz}}$ at 1Hz (Mag628/629), $< 4\text{pTrms}/\sqrt{\text{Hz}}$ at 1Hz (Mag669)
- Concurrent sensing axes

Typical Applications

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



Mag628/629 and Mag669 Specifications

Performance			
	Mag628	Mag629	Mag669
Number of axes	Three		
Range	±75µT full scale		
Bandwidth at-3dB	1.1 to 1.3kHz		
Measurement noise floor	<8pTrms/ √Hz at 1Hz		<4pTrms/ √Hz at 1Hz
Temperature coefficient of scale factor	<0.007% of full scale/°C		
Offset error	±45nT in zero field	±40nT in zero field	
Temperature coefficient of offset error	<0.6nT/°C		
Scaling error	±0.75% of measured value		
Alignment error	<1° between axes		
Linearity error	<0.015% of full scale at any point		
Frequency response	±0.75% DC to 100Hz	±1% DC to 100Hz	±0.75% DC to 100Hz
Sensor head magnetic signature	<4nT at a distance of 25mm from the centre of the component		
Excitation breakthrough	<20mV pk-pk at 16kHz		
MTBF (MIL-HDBK-217F)	115,000 hours minimum		

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	
Environmental qualification (electronics must be protected by customer's own enclosure)	High temperature storage	Tested at +85°C
	Low temperature storage	Tested at -62°C
	Temperature shock	Tested in accordance with MIL-STD-202G Method 107, Test Condition A-1
	Functional vibration	Tested In accordance with MIL-STD-810F Method 514.5
	Endurance vibration	Five-hour duration on each axis
	Functional shock	Tested in accordance with MIL-STD-810C Method 516.2
	Altitude and air pressure	Tested from sea level to 50,000 ft
	Fungus mould growth	Tested in accordance with MIL-STD-810F Method 508.5
	Dust	Tested in accordance with MIL-STD-810C Method 510.1
	Humidity	Tested in accordance with MIL-STD-810F Method 507.4 Procedure I (Aggravated)
	Salt fog atmosphere	Tested in accordance with MIL-STD-810F Method 509.4
	Acoustic noise	Tested in accordance with MIL-STD-810F Method 515.5
	EMC/EMI	Tested in accordance with MIL-STD-416E
Environmental sealing rating Sensor head Mag628 and Mag669 electronics	Sealed - IP68 Conformal coating	



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Mechanical			
	Mag628	Mag629	Mag669
Dimensions (L x W x H): Sensor head Electronics	31 x 40 x 40 mm 55 x 35 x 10 mm	31 x 40 x 40 mm 165 x 42 x 43.4 mm (module and connector)	31 x 40 x 40 mm 55 x 35 x 10 mm
Integral cable length	3050 mm		
Weight: Sensor head & cable Electronics	35g plus cable; 175g with 3m cable <15g	171g 202g	35g plus cable; 175g with 3m cable <15g
Connectors: Sensor head Electronics	Unterminated wires 2 x Harwin M80	Amphenol D3899926WC98PN (connects to J2) Amphenol D3899924WC98SN (J2) Amphenol D3899924WC98PA (J1)	Unterminated wires 2 x Harwin M80
Mating connector		Amphenol D3899926WC98PN	
Enclosure material: Sensor head Electronics	PEEK 450G with internal shield None	PEEK 450G with internal shield. Aluminium alloy enclosure with protective paint finish	PEEK 450G with internal shield None

Electrical			
	Mag628	Mag629	Mag669
Supply voltage	±15V (±5%)	+28V (±10%)	±15V (±5%)
Supply current	+ve 32.5mA (± 2.5mA) -ve 11mA (± 2.5mA)	51mA (±3mA)	+ve 32.5mA (± 2.5mA) -ve 11mA (± 2.5mA)
Analogue output	±10V = ±75µT (unbalanced, single ended ref. 0V)		
Monitor test signal (output)	Open-drain output with 10mA sink capacity if magnetometer internal fault or unpowered; open circuit when operating correctly.		

Sensor outline drawings are available on the product page of the Bartington Instruments website.



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