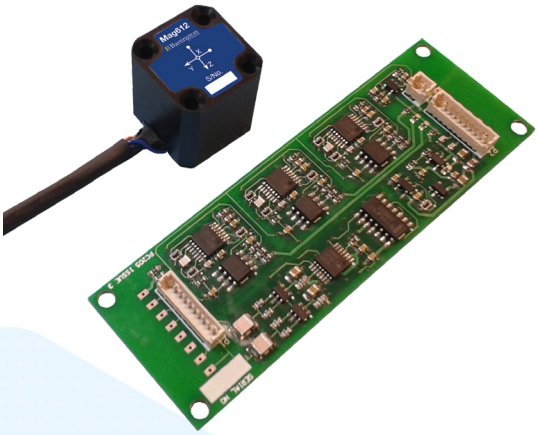
Mag612

Miniature Three-Axis Fluxgate Probe



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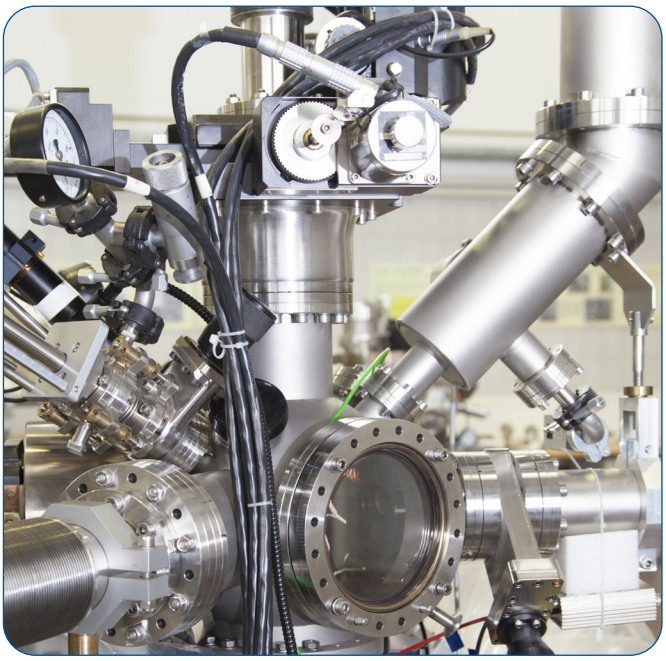

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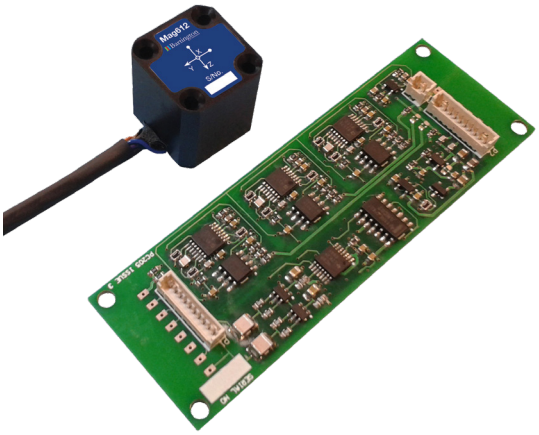
This miniature fluxgate probe is designed for integration into systems requiring precision measurements where space is limited, such as mobile systems and wearable technologies.

Suitable drive electronics can be provided with this probe. Alternatively, a suitable fluxgate electronics design document is available for customers wishing to design their own electronics.



Mag612 Product Identification

Product name	Code	Item	Noise	Range
Mag612	No code	Probe only	Standard noise	N/A, determined by electronics
	U	Probe + unpackaged electronics	Standard noise (range dependant)	-90 = ±90µT -500 = ±500µT

Mag612 Probe Features

- Small probe size: 20 x 20 x 20mm
- Narrow noise specification: 0 – 20pTrms/√Hz at 1Hz

Typical Applications

- Mobile systems
- Wearable technology
- Confined space applications

Mag612U Specifications

Performance		
Number of axes	3 (right-hand XYZ co-ordinate system)	
Polarity	+ve = North	
Calibration error	<±0.5%	
Measuring Range	±90µT	±500µT
Scaling Temperature Coefficient	<100ppm/°C	<250ppm/°C
Frequency Response	<5% amplitude error DC to 1kHz	
DC Frequency Range Minimum within 3dB level	DC - 3kHz	DC - 2.5kHz
Noise*	0 – 20pTrms/√Hz @ 1Hz	0 – 50pTrms/√Hz @ 1Hz
Zero Field Offset	<±300nT	
Offset Temperature Coefficient	<±1nT/°C	<±5nT/°C
Perming (Magnetization hysteresis)	<2nT for exposure to 2x range	
Orthogonality error between axes	<0.5°	
Alignment to datum face/s	<0.5°	
Start-up time	<1 second	

*For customs/export purposes may achieve a noise level less than 10pTrms/√Hz @ 1Hz

Environmental	
Operating temperature range	-40ºC to +65ºC
Storage temperature range	-40ºC to +70ºC
Compliance (CE, etc.)	EMC BS EN 61326:2013 & RoHS

Mechanical (probe)	
Enclosure Material	Acetal (Black)
Dimensions (Probe head only)	20 x 20 x 20mm
Weight	72g ±7.5g
Connectors	Molex Picoblade 51021-1000
Cable	3 metres long, 8 x 28AWG PVC wires
Mounting Arrangements	4 off mounting holes Ø2.7 Thru' CSK to Ø5

Mechanical (electronics)	
Humidity	Not Protected
Output Connector (P2)	Molex 53047-1210 (plus 8 solder pads for direct wiring)
Probe Input Connector (P1)	Molex 53047-1010 (plus 8 solder pads for direct wiring)
Dimensions	90 x 30 x 10mm
Weight	12g ±1.5g

Electrical Performance (Drive Electronics – PC218)	
Positive supply voltage (range) Current drawn (max. mA) Over-voltage protection Reverse polarity protection Current limit Power Supply Noise Rejection Ratio	+11.0 to 15.5V 47.0mA max (46.0mA at zero field) none none externally limited ripple up to 50mV without any degradation of performance
Negative supply voltage (range) Current drawn (max. mA) Over-voltage protection Reverse polarity protection Current limit Power Supply Noise Rejection Ratio	-11.0 to -15.5V 11.0mA max (10.0mA at zero field) none none externally limited ripple up to 50mV without any degradation of performance
Output Signals X, Y and Z axes Output type Output Range Output Impedance Maximum load capacitance (C_{LOAD}) Over-voltage protection Reverse polarity protection Breakthrough	(Magnetic field strength outputs) Unbalanced single output ±8V at full scale 10Ω nominal >1000pF without oscillation none none <50mVpk-pk at 16kHz

Mag612 Probe Specifications

Performance	The following performance specifications are dependant on the drive electronics used. Where information has been provided, it has been tested and validated using Bartington's own drive electronics, and so is deemed "achievable".
Number of axes	3 (right-hand XYZ co-ordinate system)
Polarity	+ve = North
Measuring range	<±1000µT
Output scaling (feedback)	104µT/mA typical
Scaling temperature coefficient	<100ppm/°C
Frequency Response	<5% amplitude error DC to 1kHz
Frequency Range	DC – 3kHz minimum within 3dB level
Primary resistance (per axis)	7.5Ω ±20%
Primary Inductance (per axis)	650µH ±20%
Secondary Resistance (per axis)	44.5Ω ±20%
Secondary Inductance (per axis)	5.1mH ±20%
Recommended Excitation Frequency	16kHz nominal
Recommended Excitation Drive Current	75mA Peak AC-coupled
Noise*	0 – 20pTrms/√Hz @ 1Hz
Zero Field Offset	<±300nT
Offset Temperature Coefficient	<±1nT/°C
Orthogonality error between axes	<3°
Alignment to datum face/s	<3°

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Environmental	
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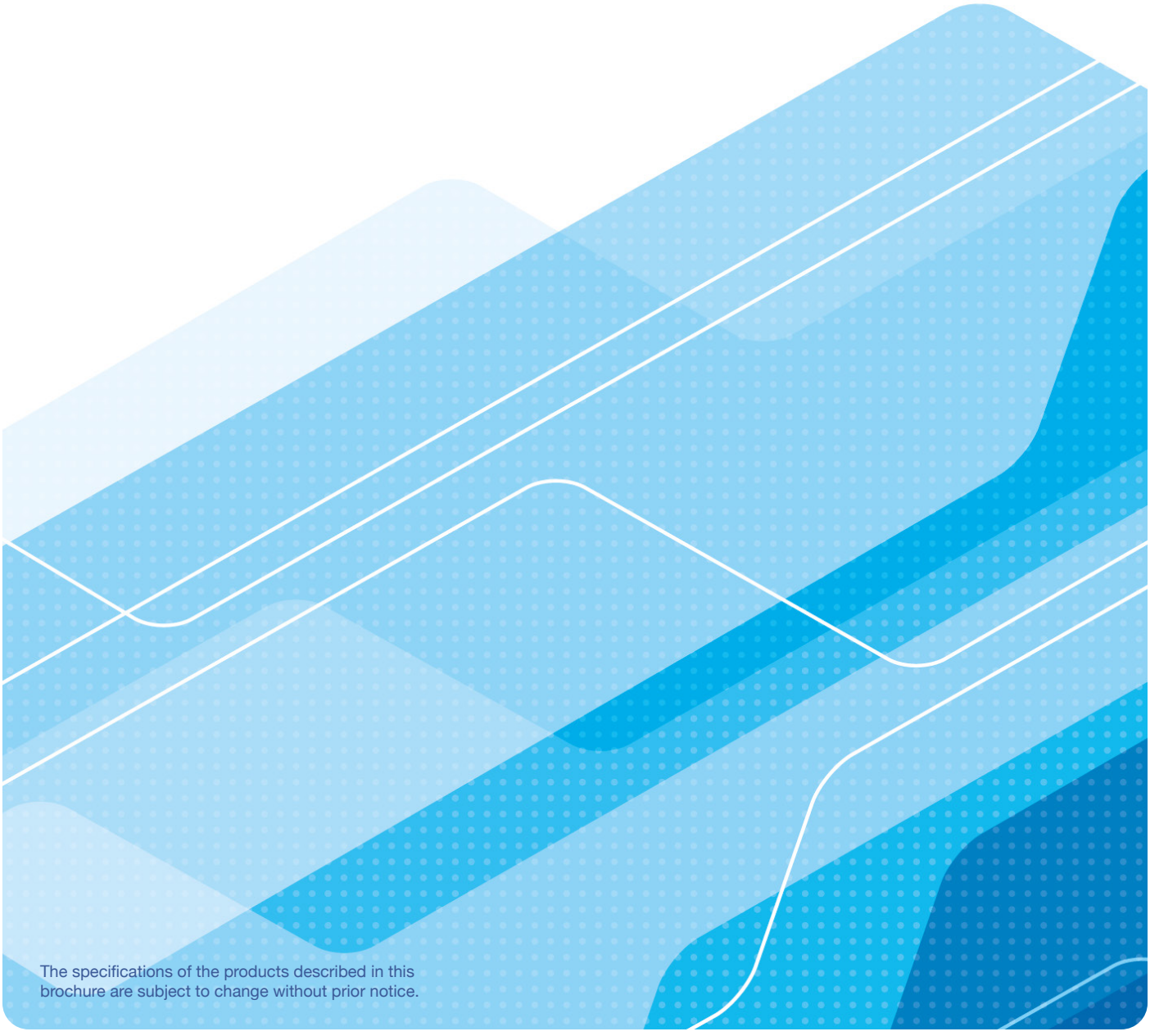

The specifications of the products described in this brochure are subject to change without prior notice.

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