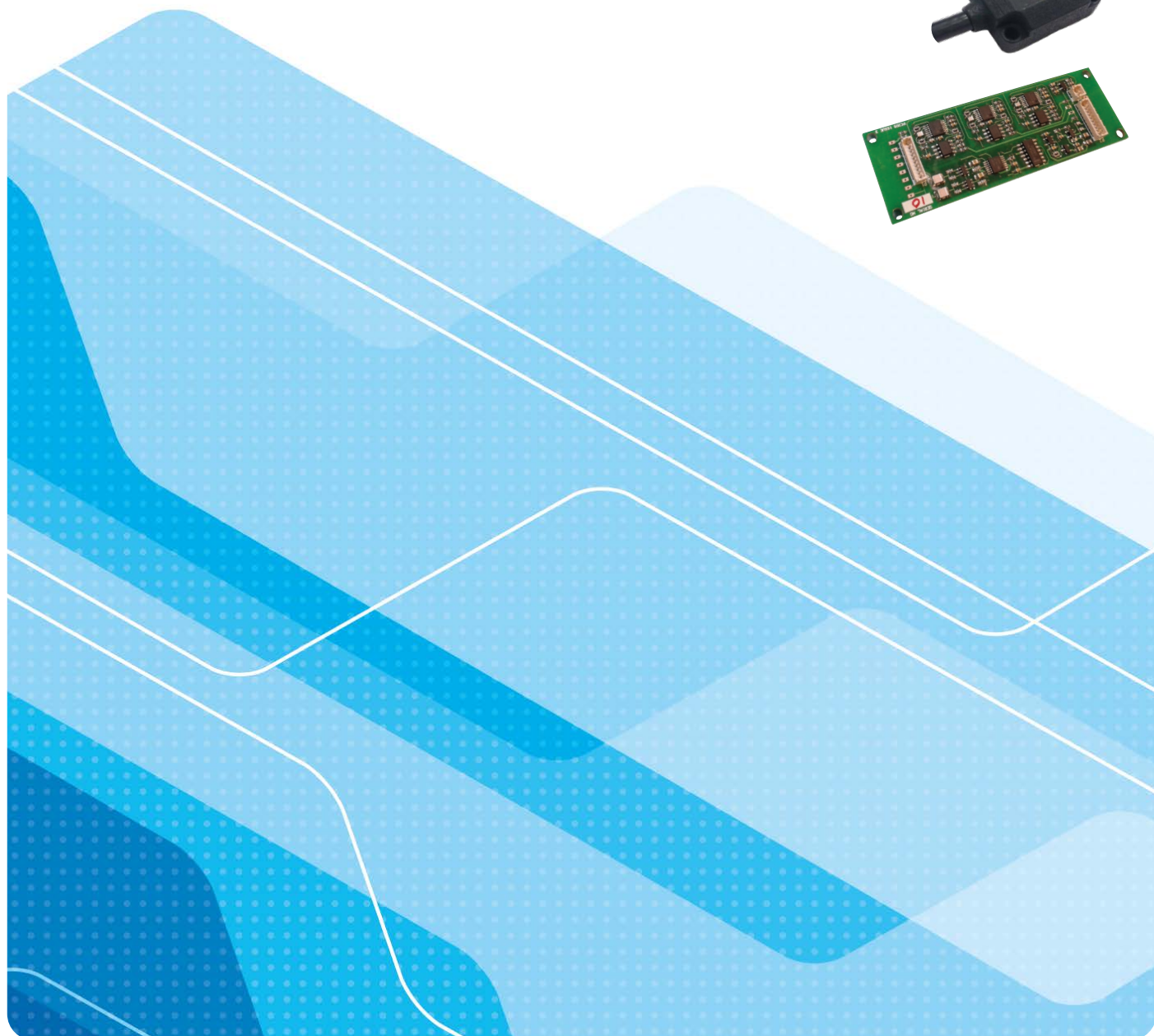
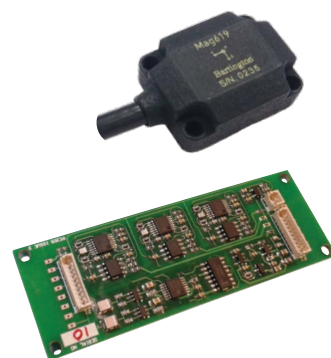


# Mag619

Miniature Three-Axis Fluxgate Probe





## Mag619 Miniature Three-Axis Fluxgate Probe

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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.

This probe is available as sensor only or together with suitable drive electronics.

Alternatively, a suitable fluxgate electronics design document is available for customers wishing to design their own electronics.



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## Mag619 Product Identification

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Product name	Code	Item	Noise	Range
Mag619	No code	Probe only	$>10\text{pT}$ to $\leq 50\text{pT}_{\text{rms}}/\sqrt{\text{Hz}}$ at 1Hz	Electronics dependent
	U	Probe + unpackaged electronics	$>10\text{pT}$ to $\leq 50\text{pT}_{\text{rms}}/\sqrt{\text{Hz}}$ at 1Hz	$\pm 60\mu\text{T}$ or $\pm 100\mu\text{T}$

## Mag619 Features

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- Small probe size: 29x20x11mm
- Measuring range  $\pm 60\mu\text{T}$  (or  $\pm 100\mu\text{T}$  probe with electronics)
- Noise level  $>10\text{pT}$  to  $\leq 50\text{pT}_{\text{rms}}/\sqrt{\text{Hz}}$  at 1Hz
- Linearity error 0.005%

## Typical Applications

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- Mobile systems
- Wearable technology
- Confined space applications

## Mag619U Specifications

Performance	
Number of axes	Three (right hand XYZ co-ordinate system)
Polarity	+ve non-inverting output when pointing North
Measuring range	$\pm 60\mu\text{T}$ or $\pm 100\mu\text{T}$
Bandwidth (-3dB)	DC - 3kHz minimum
Measurement noise floor	$>10\text{pT}$ to $\leq 50\text{pT}_{\text{rms}}/\sqrt{\text{Hz}}$ at 1Hz
Scaling	$166\text{mV}/\mu\text{T}$ or $100\text{mV}/\mu\text{T}$
Scaling temperature coefficient	$<\pm 0.015\%$ full-scale/ $^{\circ}\text{C}$
Start-up / settling time	99% of final value in 0.5s
Offset (in zero field)	$\pm 150\text{nT}$
Offset temperature coefficient	$<\pm 1\text{nT}/^{\circ}\text{C}$
Scaling error	$\pm 0.5\%$
Orthogonality error	$<0.5^{\circ}$
Alignment error	$<1^{\circ}$
Linearity error	0.005% (least squares fit)
Frequency response	$<5\%$ amplitude error DC to 1kHz
Hysteresis	$<0.1\%$ range for exposure to 10 x range unpowered
Excitation breakthrough	$<50\text{mV}$ pk-pk at $\sim 32\text{kHz}$ typical

Environmental	
Operating temperature range	$-40^{\circ}\text{C}$ to $+65^{\circ}\text{C}$
Storage temperature range	$-40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$
Humidity (electronics)	Not protected: PCB assembly (conformal coating)

## Mechanical

Dimensions - probe	29 x 20 x 11mm
Dimensions - electronics	90 x 85 x 30mm
Weight - probe	10g
Weight - probe + harness	115g
Weight - electronics	12.5g
Enclosure material	Nylon PA2200
Harness	3 metre LG, Pro Power PP000301 Multicore Cable 30AWG PVC Jacket Screened

## Electrical

Supply voltage	+11V to 15.5V DC
Current consumption	+75.5mA, -16mA
Analogue output	±10V (unbalanced, single ended)
Output impedance	10Ω nominal
Maximum load capacitance (CLOAD)	>1000pF without oscillation

## Mag619 Probe Specifications

Performance	Mag619
Number of axes	Three (right hand XYZ co-ordinate system)
Polarity	+ve non-inverting when pointing North
Noise*	>10pT to $\leq 50\text{pT}_{\text{rms}}/\sqrt{\text{Hz}}$ at 1Hz within 20 minutes of power applied
Bandwidth (-3dB)*	DC - 3kHz minimum
Scaling*	105 $\mu\text{T}/\text{mA}$ typical
Scaling temperature coefficient	< $\pm 0.015\%$ Full-scale range/ $^{\circ}\text{C}$
Start-up / settling time	99% of final value in 0.5s
Zero field offset*	$\pm 150\text{nT}$
Offset temperature coefficient	< $\pm 1\text{nT}/^{\circ}\text{C}$
Scaling error	$\pm 5\%$
Orthogonality error between axes	< $2^{\circ}$
Alignment error	< $3^{\circ}$
Linearity error	0.005% (Least Squares Fit)
Frequency response	<5% amplitude error DC to 1kHz
Hysteresis	<0.1% range for exposure to 10 x range unpowered

\*Value will depend on electronic drive and sense circuit.

## Environmental

Operating temperature range	-40°C to +65°C
Storage temperature range	-40°C to +70°C

## Mechanical

Dimensions - probe	25x20x11mm
Dimensions - electronics	90x85x30mm
Weight - probe	10g
Weight - probe & harness	115g
Weight - electronics	12.5g
Enclosure material	Nylon PA2200
Harness	3 metre LG, Pro Power PP000301 Multicore Cable 30AWG PVC Jacket Screened

## Electrical

Primary resistance	5.2Ω ±20%
Primary inductance	140μH ±20%
Secondary resistance	27.4Ω ±20%
Secondary inductance	1.2mH ±20%
Recommended primary coil drive current	130mA peak AC coupled
Recommended excitation frequency	32kHz

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

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