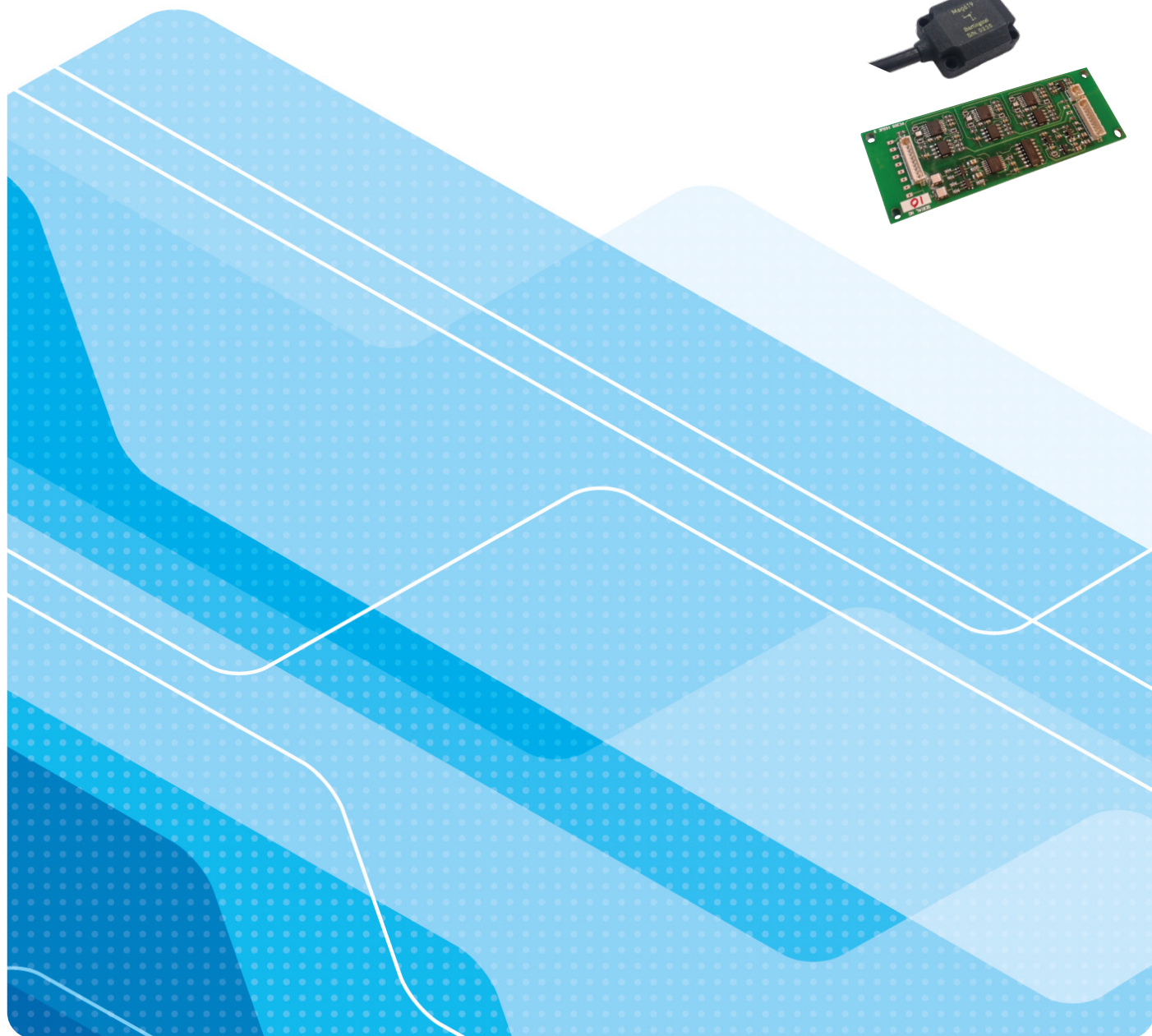


Mag619

Magnetic Field Sensor and Probe





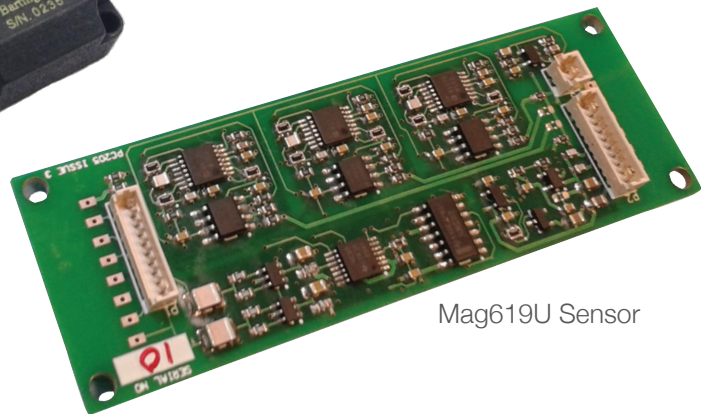
Mag619 Magnetic Field Sensor and Probe

This magnetic field sensor is designed for integration into systems requiring precision measurements where space is limited, such as mobile systems and wearable technologies.

The probe is available as probe only or with suitable drive electronics.

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

Mag619 Probe



Mag619U Sensor

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Product Identification

Product name	Code	Item	Noise	Range
Mag619	No code	Probe only	$>10\text{pT}$ to $\leq 50\text{pTrms}/\sqrt{\text{Hz}}$ at 1Hz	Electronics dependent
	U	Probe + unpackaged electronics	$>10\text{pT}$ to $\leq 50\text{pTrms}/\sqrt{\text{Hz}}$ at 1Hz	$\pm 60\mu\text{T}$, $\pm 100\mu\text{T}$, $\pm 500\mu\text{T}$ or $\pm 1000\mu\text{T}$

Features

- Small probe size: 29x20x11mm
- Noise level $>10\text{pT}$ to $\leq 50\text{pTrms}/\sqrt{\text{Hz}}$ at 1Hz

Typical Applications

- Mobile systems
- Wearable technology
- Confined space applications

Mag619U Sensor Specifications

Performance		
Number of axes	Three (right hand XYZ co-ordinate system)	
Polarity	+ve non-inverting output when pointing North	
Scaling	$\pm 60\mu\text{T}$, $\pm 100\mu\text{T}$, $\pm 500\mu\text{T}$ or $\pm 1000\mu\text{T}$	
Scaling Calibration Error	$\pm 0.5\%$	
Scaling temperature coefficient	$\pm 60\mu\text{T}$, $\pm 100\mu\text{T}$, $\pm 500\mu\text{T}$ ranges	$\pm 1000\mu\text{T}$ range
	$< \pm 0.015\% \text{ FS Range}/^\circ\text{C}$	$< \pm 0.030\% \text{ FS Range}/^\circ\text{C}$
Linearity error	$< 0.01\%$ full-scale range (least squares fit)	
Frequency response	$< 5\%$ amplitude error DC to 1kHz	
Frequency Range	DC – 3kHz minimum within -3dB level	
Noise	$> 10\text{pTrms}/\sqrt{\text{Hz}}$ to $\leq 50\text{pTrms}/\sqrt{\text{Hz}}$ at 1Hz within 20 minutes of power applied	
Zero Field Offset	$\pm 150\text{nT}$	
Offset Temperature Coefficient	$\pm 60\mu\text{T}$, $\pm 100\mu\text{T}$, $\pm 500\mu\text{T}$ ranges	$\pm 1000\mu\text{T}$ range
	$< \pm 1\text{nT}/^\circ\text{C}$	$< \pm 2\text{nT}/^\circ\text{C}$
Perming (Magnetisation Hysteresis)	$< 2\text{nT}$ (at 1 x Full-scale, when powered)	
Orthogonality error between axes	$< 0.5^\circ$	
Alignment to datum face/s	$< 1^\circ$	
Warm-up time	15min	

Environmental	
Operating temperature range (Probe & Electronics)	-40°C to $+70^\circ\text{C}$
Storage temperature range (Probe & Electronics)	-40°C to $+70^\circ\text{C}$
Compliance (CE, etc.)	EMC BS EN 61326:2013 & RoHS

Mechanical

Enclosure Material	Nylon PA2200
Harness	3 metre LG, Pro Power PP000301 Multicore Cable 30AWG PVC Jacket Screened
Dimensions – Probe/Sensor	29 x 20 x 11mm
Dimensions – Electronics	90 x 85 x 30mm
Weight – Probe/Sensor	10g
Weight – Probe/Sensor (Including harness)	115g
Weight – Electronics	12.5g

Electrical

Positive supply voltage (range)	+11.0 to 15.5V
Current drawn (max. mA)	75.5mA max (74.5mA at zero field)
Over-voltage protection	none
Reverse polarity protection	none
Current limit	externally limited
Power Supply Noise Rejection Ratio	ripple up to 50mV without any degradation of performance
Negative supply voltage (range)	-11.0 to -15.5V
Current drawn (max. mA)	16.0mA max (15.0mA at zero field)
Over-voltage protection	none
Reverse polarity protection	none
Current limit	externally limited
Power Supply Noise Rejection Ratio	ripple up to 50mV without any degradation of performance
Output Signals X, Y and Z axes	(Magnetic field strength outputs)
Output type	Unbalanced single output
Output Range	±10V at full scale
Output Impedance	10Ω nominal
Over-voltage protection	none
Reverse polarity protection	none
Breakthrough	<50mVpk-pk at 32kHz

Mag619 Probe Specifications

Performance	
Number of axes	Three (right hand XYZ co-ordinate system)
Polarity	+ve non-inverting when pointing North
Scaling	105µT/mA typical
Scaling Calibration Error	<±5%
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
Noise	>10pTrms/√Hz to ≤50pTrms/√Hz at 1Hz within 20 minutes of power applied
Zero Field Offset	±150nT
Perming (Magnetisation Hysteresis)	<0.1% range for exposure to 10 x range unpowered
Orthogonality error between axes	<2°
Alignment to datum face/s	<3°

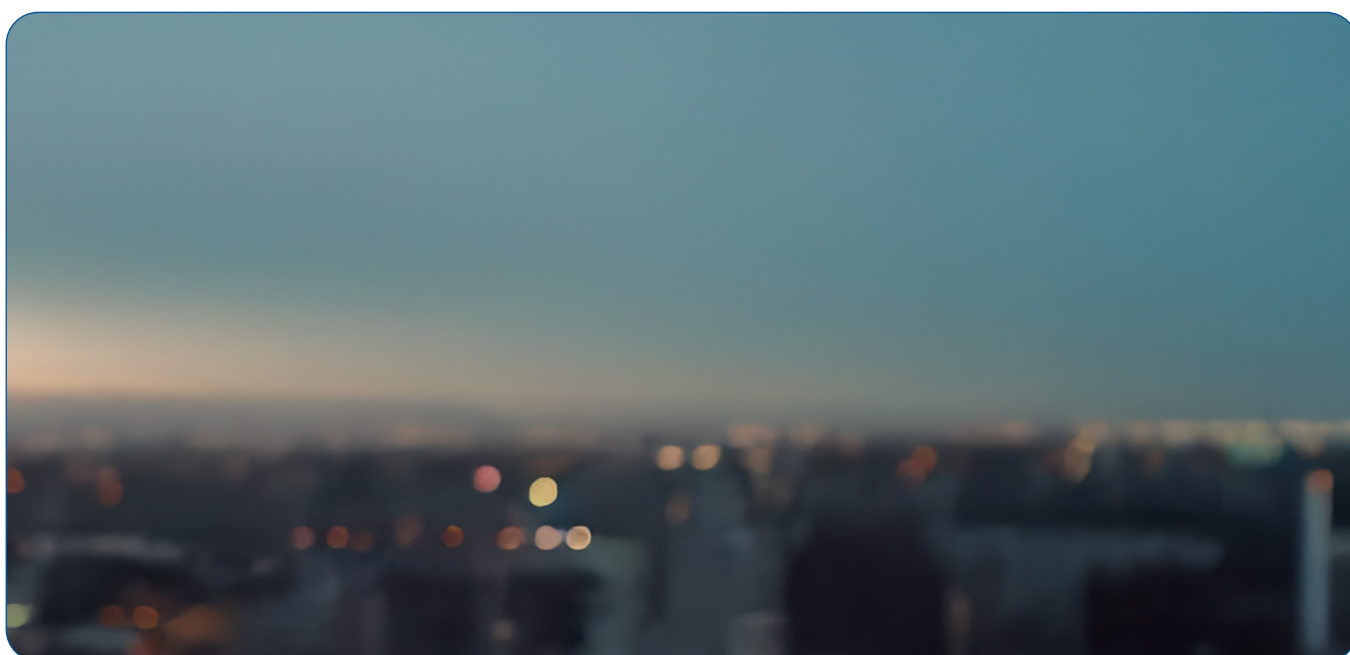


Environmental

Operating temperature range	-40°C to +65°C
Storage temperature range	-40°C to +70°C
Compliance	EMC BS EN 61326 & RoHS

Mechanical

Enclosure Material	Nylon PA2200
Harness Length	3 metres
Dimensions (Not including harness)	29 x 20 x 11mm
Weight - Not including harness	10g
Weight – Including harness	115g



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

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