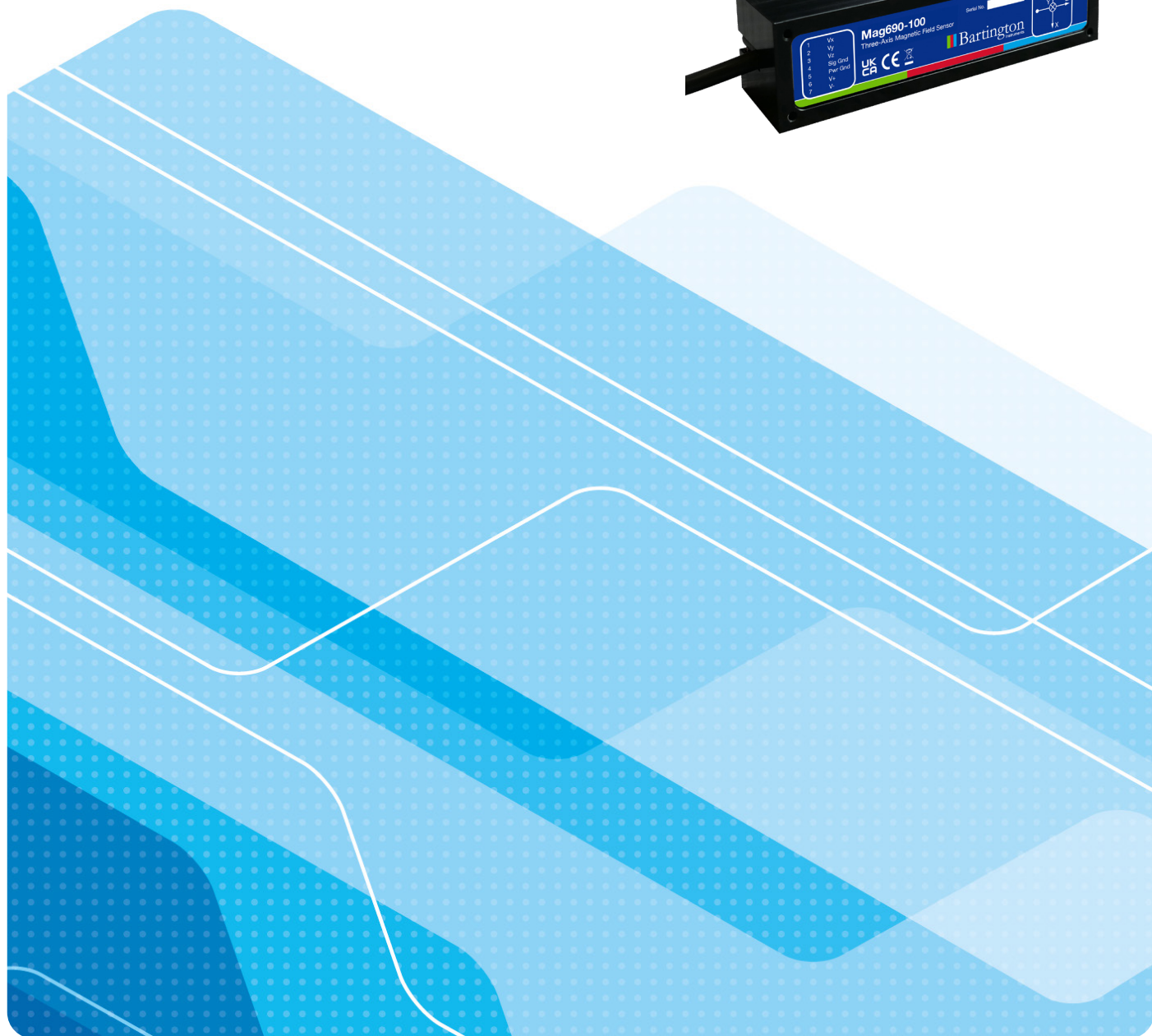


Mag690[®]

Three-Axis Magnetic Field Sensors





Mag690® Three-Axis Magnetic Field Sensors

These compact and versatile analogue fluxgate sensors provide measurements of static and alternating fields up to 1mT.



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 Africa, Switzerland, Taiwan, Turkey, United Kingdom, United States of America, and Vietnam.

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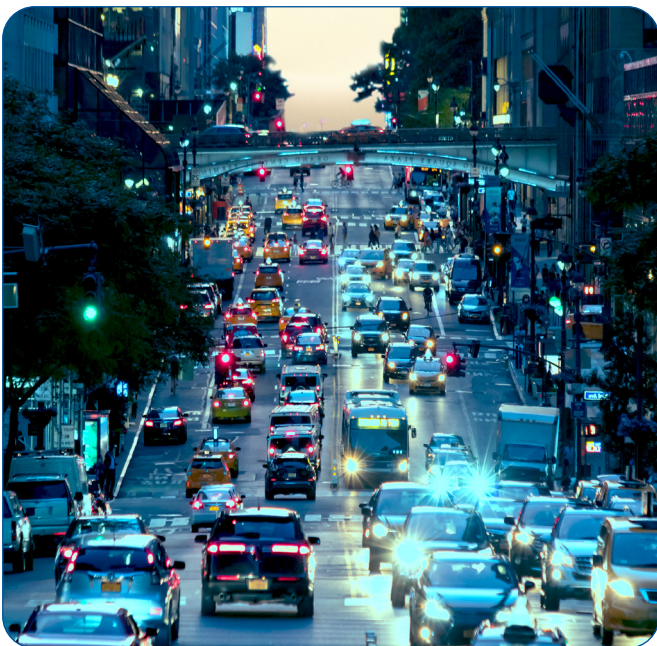
Mag690 is a registered trade mark of Bartington Holdings Limited in the following territories: Japan, United Kingdom, and United States of America.

Features

- Noise $\leq 25 \text{ pT}_{\text{rms}}/\sqrt{\text{Hz}}$ at 1Hz (range dependent)
- Frequency response from DC to 100Hz
- Measuring ranges from $\pm 100 \mu\text{T}$ to $\pm 1000 \mu\text{T}$

Typical Applications

- Detection of magnetic materials
- Traffic monitoring
- MRI site surveying
- Background field measurement



Product Identification

Product name	Connector	Range in μT
Mag690®	No code = Standard FL = Flying Lead U = Unpackaged	± 100 ± 300 ± 500 ± 1000

Example: Mag690U-300 is an unpackaged Mag690 $\pm 300\mu\text{T}$ sensor.

Mag690® Specifications

Performance				
Number of axes	Three (right hand XYZ coordinate system)			
Polarity	+ve non-inverting output when pointing North			
Measuring range	$\pm 100\mu\text{T}$	$\pm 300\mu\text{T}$	$\pm 500\mu\text{T}$	$\pm 1000\mu\text{T}$
Scaling	100mV/ μT	33mV/ μT	20mV/ μT	10mV/ μT
Linearity error	0.01% (least squares fit)			
Frequency response	DC to 100Hz, maximum flat response ($\pm 5\%$)			
Bandwidth (-3dB)	>1.5kHz			
Noise	>10 - $\leq 25\text{pTrms}/\sqrt{\text{Hz}}$ at 1Hz		>10 - $\leq 35\text{pTrms}/\sqrt{\text{Hz}}$ at 1Hz	>10 - $\leq 40\text{pTrms}/\sqrt{\text{Hz}}$ at 1Hz
Zero field offset	$\pm 100\text{nT}$	$\pm 250\text{nT}$	$\pm 250\text{nT}$	$\pm 500\text{nT}$
Offset temperature coefficient	$\pm 2\text{nT}/^\circ\text{C}$	$\pm 5\text{nT}/^\circ\text{C}$	$\pm 5\text{nT}/^\circ\text{C}$	$\pm 10\text{nT}/^\circ\text{C}$
Perming (Magnetisation Hysteresis)	<2nT for exposure to up to 2 x full scale			
Orthogonality error between axes	<1°			
Alignment to datum face/s	<2°			
Excitation Breakthrough	<10mV pk-pk at 15.625kHz typical			
Start-up/Settling time	150ms			
Warm-up drift time	15mins			

Environmental	Mag690®	Mag690FL	Mag690U
Operating temperature range	-20°C to +70°C		
Storage temperature range	-20°C to +70°C		
IP Rating	IP67	IP67 (excluding connector)	N/A
Compliance	EMC BS EN 61326 & RoHS		

Mechanical	Mag690®	Mag690-FL	Mag690U
Enclosure material	Black acetal and polyurethane potting compound		FR4 PCB Material
Dimensions	32 x 32 x 122mm	32 x 32 x 122mm	26 x 22 x 94mm
Weight	220g	200g	20g
Connectors	Binder 99 9125 60 08 on 500mm lead	Flying leads 7x0.22mm ²	AMP 3-640456-7
Mating connectors	Binder 99 9126 60 08	N/A	AMP 3-640441-7
Cable bending radius	41mm	41mm	N/A
Mounting arrangement	4 x M2.5 tapped holes	4 x M2.5 tapped holes	2 x M2.5 on coil block

Electrical	
Supply voltage	±12V to ±17V DC
Current consumption	+44mA, -20mA (+1.5mA/100µT on each axis)
Power-on surge	+200mA at +12V, -40mA at -12V
Analogue output	±10V (unbalanced, single ended ref. 0V)
Output impedance	10Ω
Maximum load capacitance	<1µF
Maximum cable length	1.5km (±12V at the pins)

Power Supplies

The Mag690® range is compatible with the following data acquisition and power supply units from Bartington Instruments:

- PSU1 Power Supply Unit
- DecaPSU Power Supply Unit (adaptor cable required)
- Magmeter-2 Power Supply and Display Unit
- Spectramag-6 Data Acquisition Unit
- SCU1 Signal Conditioning Unit

Accessories

	Mag690®	Mag690-FL	Mag690U
Cables	Optional extra	N/A	Optional extra
Mating connectors	Not supplied	N/A	Not supplied

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

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