Innovation in Magnetic Field Measuring Instruments

Mag690

Low Cost Three-Axis Magnetic Field Sensor

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Bartington® Instruments

Mag690
Low Cost Three-Axis Magnetic Field Sensor

This compact, versatile, fluxgate sensor provides measurements of static and alternating fields up to 1mT. Its simplicity makes it ideal for integration into systems using large numbers of sensors in which unit cost is a critical concern.

Packaged and unpackaged versions are available.

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Features

- Noise <20pTrms/√Hz at 1Hz
- Frequency response from DC to in excess of 1kHz
- Measuring ranges from ±100µT to ±1000 µT
- Flying lead and unpackaged versions available

Typical Applications

- Detection of magnetic materials
- Surveillance
- Navigation
- Traffic monitoring

Product Identification

Product name	Package	Connector	Range in µT
Mag690	*No code* = Packaged U = Unpackaged	*No code* = Circular connector FL = Flying Lead	±100 ±300 ±500 ±1000

Example: Mag690-FL100 is a ±100µT sensor with flying lead.

Mag690 Specifications

Performance				
Number of axes	Three (right hand XYZ coordinate system)			
Polarity	+ve non-inverting output when pointing North			
Measuring range	±100µT	±300µT	±500µT	±1000µT
Bandwidth (-3dB)	>1.5kHz			
Measurement noise floor	>10 to ≤20pTrms/√Hz at 1Hz			
Scaling	100mV/µT	33mV/µT	20mV/µT	10mV/µT
Scaling temperature coefficient	±100ppm/°C	±100ppm/°C	±100ppm/°C	±200ppm/°C
Start-up time	150ms			
Warm-up time	15mins			
Offset	±100nT	±250nT	±250nT	±500nT
Offset temperature coefficient	±1nT/°C	±5nT/°C	±5nT/°C	±10nT/°C
Scaling error	±1%			
Orthogonality error	<1°			
Alignment error (to mounting face)	<2°			
Linearity error	0.01% (least squares fit)			
Frequency response	DC to 100Hz, maximum flat response (±5%)			
Hysteresis	<2nT for exposure to up to 2 x full scale			
Excitation Breakthrough	<10mV pk-pk at 15.625kHz typical			

Environmental	
Operating temperature range	-40°C to +70°C
Storage temperature	-40°C to +85°C
Environmental protection: Mag690 Mag690FL Mag690-U	 IP67 IP67 (excluding connector) Conformal coating

Mechanical	Mag690	Mag690-FL	Mag690U
Dimensions excl. cable (WxHxL)	32 x 32 x 122mm		26 x 22 x 94mm
Integral cable length	500mm (incl. connector)	550mm	N/A
Weight (approximate)	210g	175g	20g
Enclosure material	Black acetal and polyurethane potting compound		N/A
Connector	Deutsch QC24-2007X on 500mm lead	Flying leads 7x0.22mm^2	AMP 3-640456-7
Mating connector	Deutsch QC26-2007X with #20 crimp sockets	N/A	AMP 3-640441-7
Cable bending radius	41mm		N/A
Mounting arrangement	4 x M2.5 tapped holes in corners		2 x M2.5 on coil block

Electrical	
Supply voltage	±12V to ±17V DC
Current consumption (max)	+40mA, -17mA (+1.4mA/100 µT 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 Units
- Spectramag-6 Data Acquisition Unit
- SCU1 Signal Conditioning Unit
- Mag-03DAM Data Acquisition Module

Accessories

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

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

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