Mag690®

Three-Axis Magnetic Field Sensors

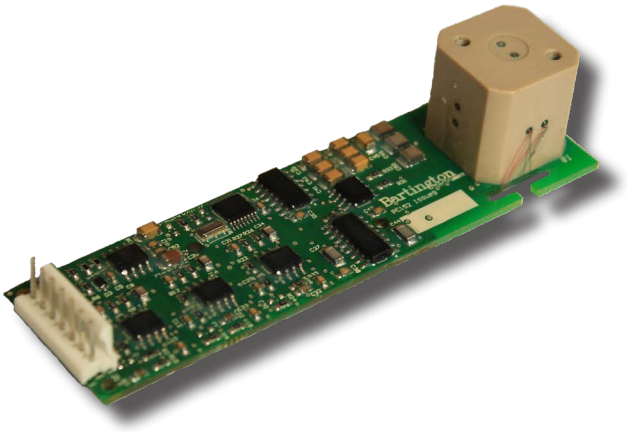
Bartington® Instruments

bartington.com

Mag690®
Three-Axis Magnetic Field Sensors

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

A flying lead version is available.



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Features

- Noise ≤25pTrms/√Hz at 1Hz (range dependent)
- Frequency response from DC to in excess of 1kHz
- Measuring ranges from ±100µT to ±1000 µT

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* = Circular connector FL = Flying Lead U = Unpackaged	±100 ±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	±500µT	±1000µT
Bandwidth (-3dB)	>1.5kHz		
Measurement noise floor	≤25pTrms/√Hz at 1Hz	≤35pTrms/√Hz at 1Hz	≤40pTrms/√Hz at 1Hz
Scaling	100mV/µT	20mV/µT	10mV/µT
Scaling temperature coefficient	±115ppm/°C		±200ppm/°C
Start-up time	150ms		
Warm-up time	15mins		
Offset	±100nT	±250nT	±500nT
Offset temperature coefficient	±2nT/°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	Mag690®	Mag690FL	Mag690U
Operating temperature range	-20°C to +70°C		
Storage temperature	-20°C to +70°C		
IP Rating	IP67	IP67 (excluding connector)	N/A
Humidity	Up to 90%, non-condensing (unpackaged version)		
Compliance	EMC BS EN 61326:2013 & RoHS		

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)	220g	200g	20g
Enclosure material	Black acetal and polyurethane potting compound		FR4 PCB Material
Connector	Binder 99 9125 60 08 on 500mm lead	Flying leads 7x0.22mm^2	AMP 3-640456-7
Mating connector	Binder 99 9126 60 08	N/A	AMP 3-640441-7
Cable bending radius	41mm		N/A
Mounting arrangement	4 x M2.5 tapped holes		2 x M2.5 on coil block

Electrical	
Supply voltage	±12V to ±17V DC
Current consumption (max)	+44mA, -16mA (+1.5mA/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)

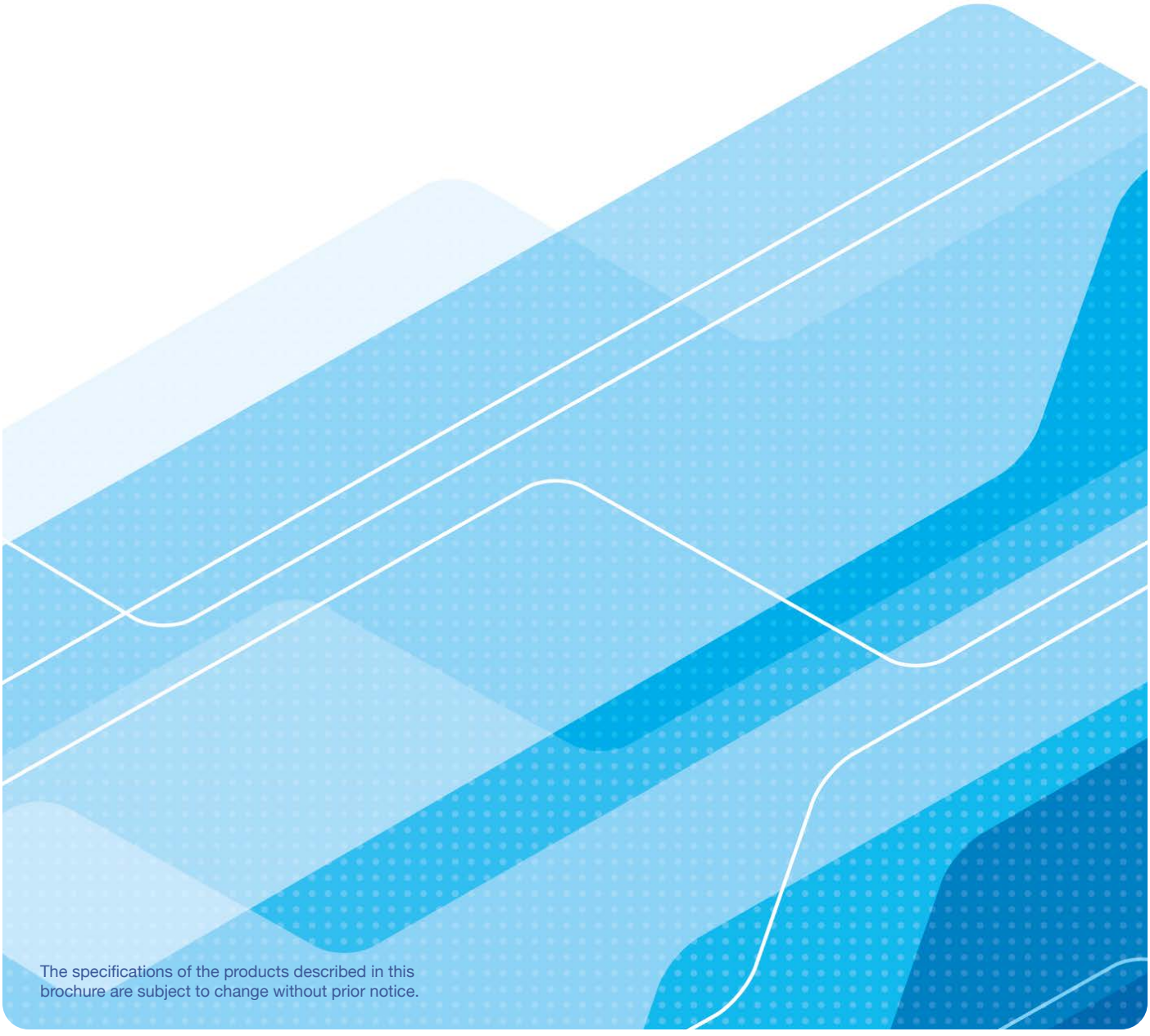
Power Supplies

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 Unit
- Spectramag-6 Data Acquisition Unit
- SCU1 Signal Conditioning Unit

Accessories

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



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

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