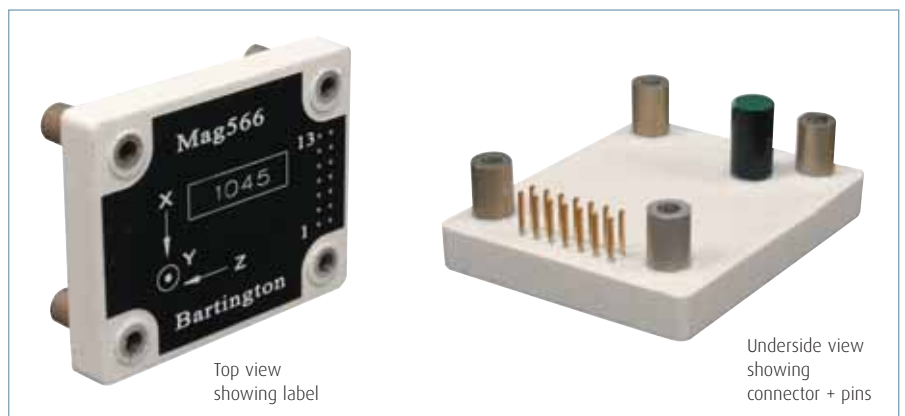


Mag566

Low power three-axis magnetometer

For innovation in magnetic measuring instruments



This low cost miniature magnetometer comprises a single board assembly with fluxgate sensors and electronic circuitry. The unit is optimised for low power operation whilst providing low noise and superior temperature stability.

Typical applications include vehicle surveillance and orientation control.

The **Mag566** magnetometer has a full-scale range of $\pm 100\mu\text{T}$. It operates from a $\pm 5\text{V}$ supply and provides three analog outputs of 0 to $\pm 4.5\text{V}$ with a bandwidth of 0 to 35Hz. The 20mW power consumption and low self-noise make this magnetometer an excellent choice for battery powered applications. A digital input can be activated to apply a known magnetic field to each axis to test for correct functioning. No latch-up or phase reversal occurs outside the normal range.

A current boost circuit ensures rapid settling of the sensor outputs when power is applied.

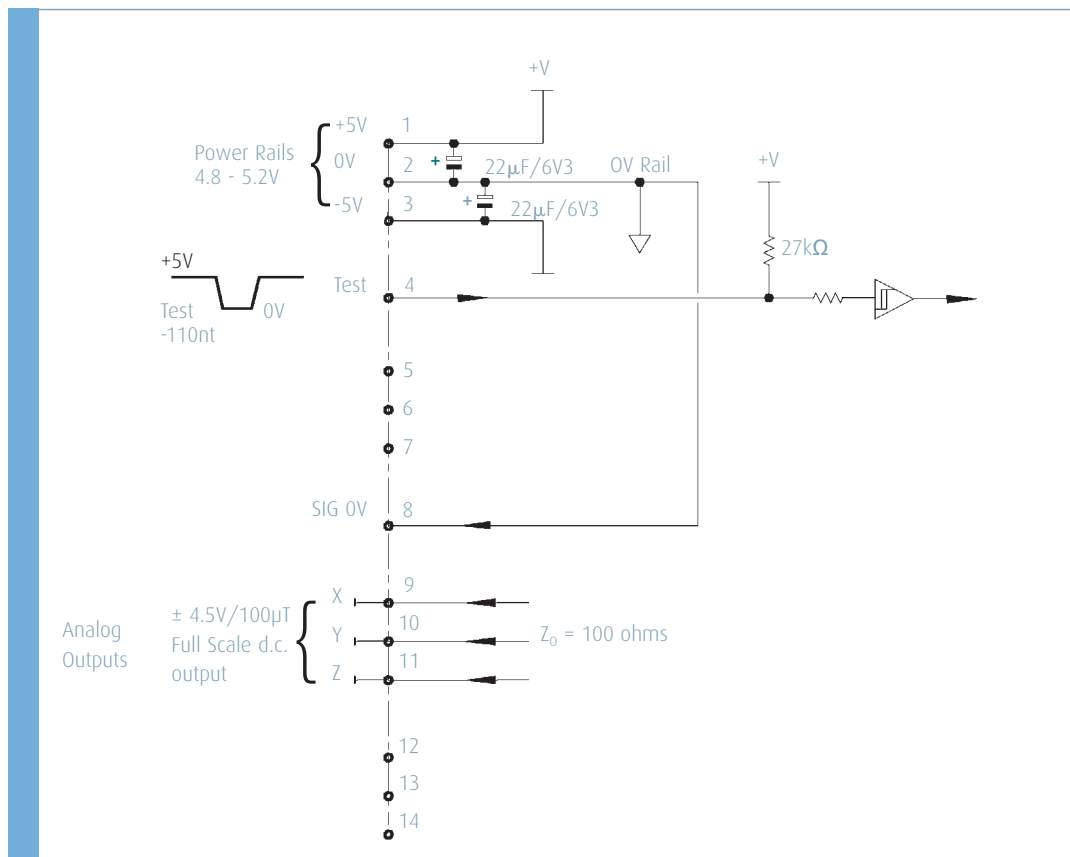
The electronics is encapsulated in epoxy resin to provide a high level of environmental protection. It is recommended that any mating printed circuit board has a minimum diameter clearance hole of 9mm with a 12mm diameter area clear of magnetic noise sources.

The lightweight construction allows the magnetometer to be used in applications where it may be subjected to high levels of shock and vibration. Storing this product within 100mm of strong magnets may cause small permanent offsets in the output, but will not affect any other parameter.

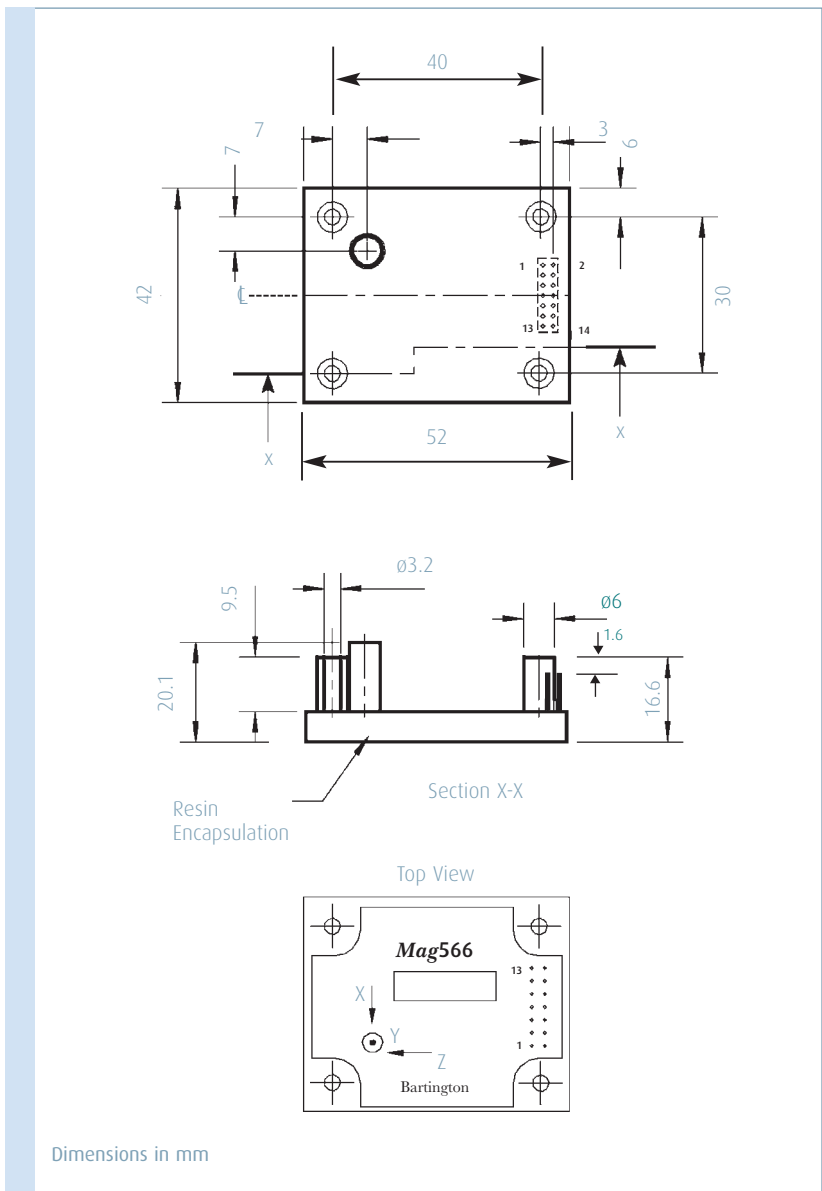
Specification-

Performance	
Range	$\pm 100\mu\text{T}$
Calibration accuracy	$\pm 3\%$
Orthogonality error	$\pm 2^\circ$ maximum
Linearity error	$\leq 50\text{ppm}$
Hysteresis at full scale	$\leq 50\text{ppm}$
Internal noise	Standard deviation of 1.5nT maximum, 0.75nT typical over a 30 second time period in the bandwidth 0.1 to 30Hz
Output scale factor	$\pm 4.5\text{V}/\pm 100\mu\text{T}$ [45 $\mu\text{V}/\text{nT}$]
Temperature coefficient of scale factor	+50ppm/ $^\circ\text{C}$ ($\pm 10\%$)
Zero field offset error	$\pm 500\text{nT}$ max
Temperature coefficient of offset error	$\pm 0.2\text{nT}/^\circ\text{C}$
Bandwidth (-3dB)	30 - 40Hz
Output impedance	100 Ω , short circuit protected, drives capacitive loads up to 1 μF
Test response, 0V on Test input	-110nT ($\pm 10\%$)
Internal clock frequency	5-6kHz
Breakthrough of internal clock at output	<10mV p-p max (1.5mV p-p typical)
Perming	<10nT max/mT external field
Mechanical	
Dimensions (mm)	20H x 42W x 52D (± 0.5)
Weight (g)	27
Mounting	4 x 3.2 internal diameter chromated aluminium pillars on 40mm x 30mm fixing centres
Environmental	
Protection	Resin encapsulation
Operating temperature	-32 $^\circ\text{C}$ to +50 $^\circ\text{C}$ tested in accordance with MIL-STD-202G
Storage temperature	-40 $^\circ\text{C}$ to +70 $^\circ\text{C}$ tested in accordance with MIL-STD-202G
Transit Drop Test (In suitable enclosure)	Completed in accordance with MIL-STD-810F method 516.5
Electrical	
Supply voltage	$\pm 4.8\text{V}$ to $\pm 5.2\text{V}$ ($\pm 5.5\text{V}$ absolute maximum)
Supply current	± 2 (± 0.4)mA quiescent, plus a maximum of 1.5mA/100 μT external field
Automatic boost at switch-on	± 7 -9mA (Allow 20 seconds for full stability)
Power supply rejection ratio	1nT/50mV
Test input	active low, 27k Ω pull-up resistor, over-voltage protection
Connector	14 way, Samtec MTSW-107-08-S-D-340
Mating connector (not supplied)	14 way, Samtec SSM-107-S-DV-LC-P-TR

Mag 566 Electrical Interface



Mag 566 Outline Drawing



The specification of the product described in this brochure is subject to change without prior notice.
 Bartington® is a registered trademark of Bartington Instruments Ltd

Bartington Instruments Ltd.
 5 & 10 Thorney Leys Business Park
 Witney, Oxford, OX28 4GE, England
 T +44 1993 706565
 F +44 1993 774813
 E sales@bartington.com
 www.bartington.com