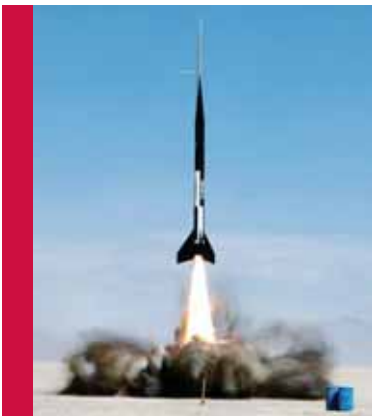


# Mag-03MRN

Three-axis fluxgate magnetometer

For innovation in magnetic measuring instruments



The **Mag-03MRN** is designed to meet the requirements of NASA for attitude control of upper atmosphere research vehicles. It contains three orthogonal sensors with integral electronics for the measurement of static and alternating magnetic fields in three axes.

The unit operates from a power source of 24 to 34V and provides three outputs of 0 to +5V proportional to the field in each axis. A 2.5V bias monitor output is provided.

The magnetometer is available as the **Mag-03MRN60** with a range of  $\pm 600$  milligauss ( $\pm 60\mu\text{T}$ ) or the **Mag-03MRN45** with a range of  $\pm 450$  milligauss ( $\pm 45\mu\text{T}$ ).

The magnetometer has a brass case with a grey painted finish. The fixing points are reinforced with internal brass bushes.

The use of screened connecting cables is recommended.

### Specification – Magnetic fields are specified in milligauss (mG) and microtesla ( $\mu\text{T}$ )

Magnetic field range:	$\pm 600\text{mG}$ ( $\pm 60\mu\text{T}$ ) for <i>Mag-03MRN60</i> $\pm 450\text{mG}$ ( $\pm 45\mu\text{T}$ ) for <i>Mag-03MRN45</i>
Zero field output:	2.5V ( $\pm 50\text{mV}$ ) from 0°C to 60°C
Sensitivity at 26°C	2.5V ( $\pm 50\text{mV}$ ) per 600mG (60 $\mu\text{T}$ ) for <i>Mag-03MRN60</i> 2.5V ( $\pm 50\text{mV}$ ) per 450mG (45 $\mu\text{T}$ ) for <i>Mag-03MRN45</i>
Orthogonality	$\pm 1^\circ$ maximum error per axis relative to the case reference surface.
Crosstalk	25mV maximum for full range orthogonal field
Linearity	$\pm 25\text{mV}$ maximum deviation over magnetic field range*
Temperature Stability zero field output sensitivity	$\pm 50\text{mV}$ maximum variation from 0°C to +60°C $\pm 3\%$ maximum variation from 0°C to 60°C
Phase response	2° maximum phase lag between input and output from 0 to 20Hz**
Frequency response	2% maximum variation in output from 0 to 20Hz
Output impedance	100 ohms
Output noise and ripple	25mV peak to peak maximum
Input voltage range	24 to 34Vd.c. (60V absolute maximum) Will withstand voltage surges up to 45V for 30 seconds Protected against reverse polarity of applied power
Output voltage range	+6Vd.c. to -1Vd.c. absolute maximum
Supply input current	25mA normal operation, 50mA with output short circuit.
Output convention	output is positive when axis arrow points to geomagnetic north
Case material	brass with two-part epoxy light grey RAL7035 painted finish
Dimensions	1.25 x 1.34 x 4.75 inches including connector
Markings (Label)	axis identification, product code, pin connections, serial number and additional information, as required
Mounting	two through holes for 4-40 screws drilled 0.120 inch (No.31) with 11/16 inch gap between centres
Weight	6.5 ounces
Connector	DEM 9P NMB (non-ferrous) A non-ferrous mating connector DEM 9S NMB is supplied
Calibration data	supplied for full field range at 27°C and 60°C on 8 1/2 x 11in. sheets.

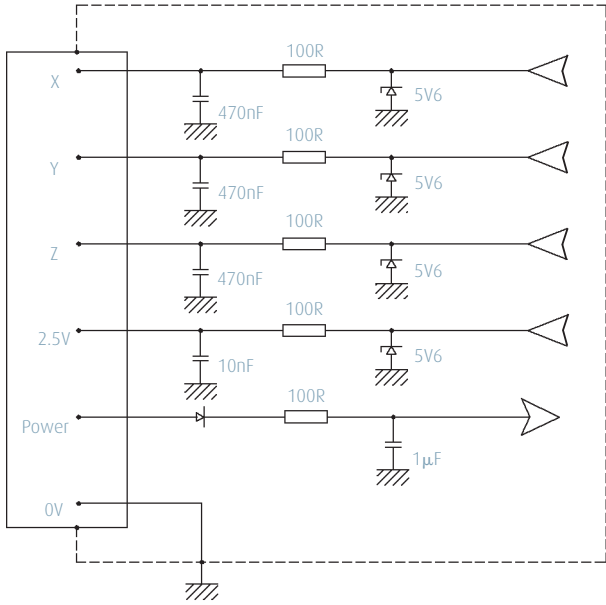
\* from the best straight line established by a least squares fit.

\*\* measured at a reference crossover.

### Environmental Specification

Random vibration	20 "G" RMS from 20Hz to 2000Hz for 20 seconds in three axes
Steady state acceleration	+ 60 "G" for 1 minute in three axes
Operating temperature range	-10°C to +70°C (within specifications from 27°C to 60°C)
Storage temperature range	-40°C to +85°C
Outgassing	all printed circuit boards are conformally coated with 1/16 inch Solithane 300/113 no foam or paraffin-based potting material employed F4 fibreglass used for PCB
EMI	except for the connector the entire unit is contained within a two-piece conductive envelope
Mounting torque	8 inch-pounds may be applied to mounting screws

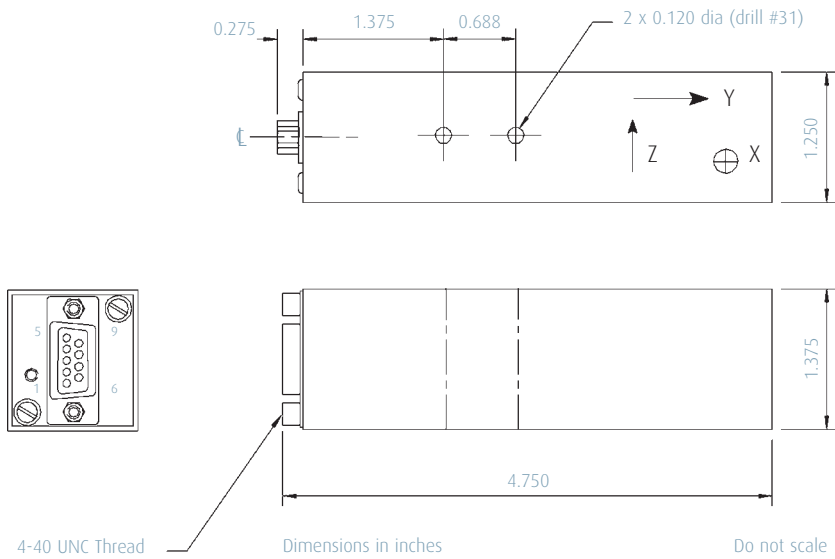
# Input / output protection circuitry and connections




Connector Pin Allocation

Pin	Function
1	Positive Power Input
2	2.5V Bias Monitor
3	No Connection
4	Power Signal & Case Ground
5	Z Axis Output
6	X Axis Output
7	No Connection
8	Y Axis Output
9	No Connection

# Outline drawing





**The specification of the product described in this brochure is subject to change without prior notice.  
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