

BILLINGSLEY AEROSPACE & DEFENSE

DFMG24

24 Bit Resolution Digital Triaxial Fluxgate Magnetometer

Low Noise / High Resolution, Very low power consumption. Ideal for Magnetic surveys, general laboratory use and Underwater degaussing range applications.

Description:	Ultra reliable, all functions both digital and analog on a single miniature printed circuit board mounted in a lightweight housing with remote triaxial sensor head or in an integral underwater housing as required by user. Designed for the highest reliability for long term unattended use in applications, such as underwater ranges where retrieval and or repair would be cost prohibitive.
Data interface:	Serial interface 38.4K or 19.2K Baud, 8 Data, No Parity, 1 Stop Bit RS232C or RS485 serial interface. Can drive cable lengths >1000 meter.
Axial Alignment:	Orthogonality better than $\pm 0.1^\circ$ (0.02 $^\circ$ special)
Input Voltage:	16 to 34 VDC @ 750 milliWatts constant power ideal for battery powered operation. A.C. mains operation as an option.
Field Measurement Range:	$\pm 65 \mu\text{Tesla}$ standard (other ranges on request)
Scaling accuracy:	$\pm .03 \%$ of Full Scale
Digital Output Resolution:	24 bits at 4096 sample averaging, 22 $\frac{1}{2}$ bits with 128 samples averaged. 22 $\frac{1}{2}$ bits = 20 picoTesla resolution
Conversion speed:	25 microseconds per sample.
Digital Linearity:	$\pm .007 \%$ of Full Scale
Scale Factor Temperature Shift:	$\leq .002 \%$ / $^\circ$ Celsius typical.
Noise:	≤ 10 picoTesla Rms/ $\sqrt{\text{Hz}}$ @ 1Hz (special), < 20 picoTesla standard
Zero offset:	≤ 5 nanoTesla
Susceptibility To Perming:	$< \pm 5$ nanoTesla Shift with ± 5 Gauss applied
Digital sample rate :	≈ 100 conversions second / all 3 axes/ in binary mode ≈ 55 conversions second/ all 3 axes / second in ASCII mode, these data rates are with the A/D set to 128 samples/averaged. Faster data rates available if fewer averages are required. Software control allows the instrument to take averages from as little as two samples up to 4096 samples depending on the data acquisition speed requirement versus resolution requirement. The user can select the proper averaging/sample rate tradeoff for his particular application.
Special features	Pressure sensor (option) for measuring depth of the instrument in the underwater housing <u>option</u> . Greater than 70dB rejection of 60 Hz stray background fields in synchronous mode.
Simple calibration:	The instrument is calibrated referred to our Proton magnetometer reference standard using software constants which are entered from the computer keyboard without opening the instrument housing.
Size of electronic card	Single card 15.24 Cm x 4.13 Cm, can be packaged in many user defined housings. All Analog and digital functions contained on a single miniature electronics card.
Support software:	BA&D's " <u>VIRTUAL STRIPCHART</u> " software included. This software gives a graphic display of all magnetic field data in either a relative or absolute mode. Variable time base and sensitivity display and also writes data to a file on computer disk for permanent storage of magnetic data. Graphic display as well as the data written to a delimited text file. This graphic display is ideal for test laboratory use in screening the magnetic fields of components to be used in magnetically sensitive environments. The display sensitivity can be changed "on the fly" to display either new or already acquired data with finer or coarser resolution.

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