DFMG28
28 Bit Resolution Serial Digital Triaxial Fluxgate Magnetometer

Ultra Low-Noise / Very High-Resolution, very low power consumption. Ideal for geomagnetic observatories, underwater degaussing ranges or harbor protection applications.

Description:	Designed for long term unattended operation in applications such as underwater degaussing ranges where retrieval and repair cannot be readily achieved. This instrument offers the highest digital resolution of any fluxgate magnetometer in existence. It features automatic cancellation of Earth's magnetic field under software control. Nulling parameters are stored in flash memory so that power outages do not upset the instrument magnetic baseline. The instrument has a built in 16 bit accuracy calibrator to insure full confidence in instrument performance at all times.
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 ± 0.1° (0.02 ° special)
Input Voltage:	16 to 34 VDC @ 750 milliWatts constant power ideal for battery powered operation.
Field Measurement Range:	± 65 µTesla standard (other ranges on request)
Accuracy:	± .02 % of Full Scale
Digital Output Resolution:	28 bits at 4096 sample averaging. 26 ½ bits at 128 samples averaged.
Conversion speed:	25 microseconds per sample
Digital Linearity:	± .001% of Full Scale
Scale Factor Temperature Shift: ≤ .002 % / ° Celsius typical.	
Noise:	≤ 3.0 picoTesla Rms/vHz @ 1Hz (special), < 8 picoTesla standard
Zero offset:	≤ +/- 5 nanoTesla
Susceptibility To Perming:	< ± 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 instrument has an internal 5th order inverted Chebyshev anti-aliasing filter built in. This filter is factory set at 20 Hz (other cutoffs on request to factory).
Special features	Triaxial accelerometers for determining the sensor orientation relative to gravity. This enables arrays of the instruments to be used as a "virtual" gradiometer. Temperature and operating voltage also reported by software command.
Simple calibration:	The instrument is calibrated using our Proton magnetometer standard using software constants which are entered from the computer keyboard without need to open the instrument housing.
Size of electronic card	All analog and digital functions are contained on a single card 15.24 x 4.13 cm electronics card.
Support software:	Billingsley Magnetics "***VIRTUAL STRIPCHART"*** software included in instrument price. 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 delimited text file. The stripchart is automatically calibrated using the DFMG28's internal 16 bit calibrator function. A single software command calibrates all three axes of the stripchart graphic display as well as the data written to the hard drive. This graphic display is ideal for test laboratory use in screening the magnetic fields of components to be used in magnetically sensitive environments. This same display is very useful in Geomagnetic Observatories for monitoring changes in Earth's Field. The display sensitivity can be changed "on the fly" to display either new or already acquired data with finer or coarser resolution. This feature completely obsoletes paper strip chart recorders as the final product can be printed out for hard copy or routed to another software package, such as a spreadsheet for further data analysis.
Weight	≈ 909 grams PVC housing
Size w/Underwater Housing	7.8cm Diameter x 30.5 cm Length (PVC) Specification with optional PVC underwater housing. Rated to > 200 meters. User can specify enclosure type.
Output Connector:	Brantner XSEE-12-BCR type

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