



MAGNETOMETER COMPARISON

| | TFM65-VQS | TFM100G2 | TFM100S | TFM100G4-UWH | DFM24G | DFM28G | HFM500 | HFM500-MIL |
|------------------------------------|---|--------------------------------------|---------------------------|---|-----------------------------------|--|--|---|
| Output Type | | | Analog | Analog | Digital | Digital | Analog | Analog |
| Field Measurement Range | ± 60° T = ± 6.0 V (Other Options Available) | ± 100 μTesla = ± 10V | ± 100 μT | ± 100 μT = ± 10.0 V (TFM100G4-UWH) / > ± 200 μT = ± 10.0 V (TFM200G4-UWH) | ± 65 μT (Other Ranges on Request) | ± 65 μT standard (other ranges on request) | ± 500μT = ± 10V (Other Ranges Available) | ± 500 μT = ± 10V (other ranges available) |
| Accuracy | ± 0.5% of full scale | ± 0.75% of full scale (0.5% typical) | ± 0.5% of full scale | ± 0.5 % of Full Scale | ± 0.15% of Full Scale | ± 0.02% of Full Scale | ± 0.75% of full scale (0.5% Typical) | ± 0.75% of Full Fscale (0.5% Typical) |
| Linearity | ± 0.003% of full scale, typical < ± 0.001% | 0.007% of full scale | 0.015% of full scale | ± 0.0035% of full scale, Typical < ± 0.0015 | ± 0.0075% of Full Scale | ± 0.015% of Full Scale | ± 0.007% of Full Scale | ± 0.007% of Full Scale |
| Sensitivity | 100 μV/nT (TFM100G4-S) | 100μV/nT | 100 μV / nT | 100μV/nT (TFM100G4-UWH) / >200μV/nT (TFM200G4-UWH) | 21- 24 Bits | 28 Bit | 20μV/nT | 20 μV/nT |
| Analog Output At Zero Field | ± 0.005 V | ± 0.025 V | ± 0.025 V | ± 0.000 V | N/A | N/A | ± 0.025 V | ± 0.025 V |
| Zero Shift With Temp | ± .2 nT/° C / Available to < 0.05 nT/° C | ± 0.6 nT/°C | < 1.0 nTesla per °C<<<< | ± 1 nT / °C | ≤ 0.5 nT / °C | < ± 1.0 of Full Scale /°C | ± 1.0 nT/° C | ± 1.0 nT/°C |
| Scale Factor Temp Shift | 0.002% Full Scale/ ° C | 0.007% full scale per °C | 0.0075% full scale per °C | ± 0.002% full scale/°C | ≤ .01% / °C | ≤ 0.002% of Full Scale /°C | 0.007% Full Scale/ °C | 0.007% Full Scale/ °C |

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BILLINGSLEY

AEROSPACE & DEFENSE

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|----------------------------|--|---|--|---|--|---|---|---|
| Output Type | | Analog | Analog | Analog | Digital | Digital | Analog | Analog |
| Noise | <35 pT RMS/Hz @ 1 Hz, typical < 20 pT | 12pT RMS/√Hz @ 1Hz (≤ 10pT Special) | 100 pT | 20 pT RMS/Hz @ 1Hz | < 30 pT RMS/√Hz @ 1Hz | < 8 pT RMS/√Hz @ 1Hz / ≤ 3 pT RMS/√Hz @ 1Hz (Special) | ≤ 20 pT RMS/√Hz @ 1 Hz | ≤ 20 pT RMS/√Hz @ 1 Hz |
| Output Impedance | 332 Ω ± 5% (Can Drive > 3500' of Cable) | 332 Ω ± 5% | 332 Ω ± 5% | 322 Ω ± 5% (Can Drive > 3500 | N/A | N/A | 332 Ω ± 5% | 332 Ω ± 5% |
| Frequency Response | 3 dB @ ≥ 3.5 kHz, can be rolled off to any lower frequency | 3 dB @ > 500 Hz Bandwidth (to >4 kHz wideband) / 150 Hz (5 Volt option) | - 3 dB at > 150 Hz | 3dB @ ≥3.5 kHz | ≥ 50 Hz | ≥ 50 Hz | 3 dB @ > 500 Hz (to > 4 KHz wideband) | 3 dB @ > 500 Hz (to > 4 KHz wideband) |
| Power Voltage Range | 20 - 34 mA / Approximately 18 mA @ 24 V | Linear dissipative regulator (+15 to +34VDC) | Galvanically isolated power converter (+14 to +45, or +40 to +125 VDC) | 20-32 V DC (~ 25 milliamps at 28 VDC in) constant power | Low noise switching regulator(18 - 34V @ < 800mW) | Low Noise Switching Regulator (16 - 34V @ 750mW) | Galvanically Isolated Power Converter (18-34V @ <750mW) | Galvanically isolated power converter (18-34V @ <750mW) |
| Axial Alignment | Orthogonality better than ± 1° / Special to ± 0.1° | better than ± 1° ; ± 0.5° special; calibration data provided to ± 0.1° | better than ± 1° ± 0.5° special; calibration data provided to ± 0.1° | Orthogonality better than ±1° | Orthogonality better than ± 0.1° | Orthogonality Better Than ± 0.1° | Orthogonality Better Than ± 1° | Orthogonality better than ± 1° |
| Temp Range | - 40° to + 85°C operating | - 40° to + 70°C operating | - 40° to + 85°C | -55 to 85°C | -10 to 40 °C | -10 to 40°C | - 40 ° to + 85 °C | - 55 ° to + 85 °C |

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|----------------------------------|---|---|--|--|---------------------------------------|--------------------------------|--|--|
| Output Type | | | | | | | | |
| Radiation Hardness | > 50 kRADs | > 50 kRADs chassis and spacecraft shielding < 10 kRADs (low voltage unit) | > 300 kRADs TESTED WITHOUT CHASIS | N/A | N/A | N/A | > 100 kRADs | > 100 kRADs |
| Isolation | Galvanic > 10 MΩ / 500 V | N/A | BETWEEN POWER AND SIGNAL GROUND > 200 MΩ @ 500 VDC | Galvanic > 10 MΩ / 500 V | N/A | N/A | > 200MΩ @ 500VDC | > 200 MΩ @ 500VDC |
| Output Ripple | 3 mV Peak to Peak @ 2nd Harmonic | 3 mV peak to peak @ 2nd harmonic | 3 mV peak to peak @ 2nd harmonic | 3mV peak to peak @2nd harmonic | N/A | N/A | 3 mV Peak to Peak @ 2nd Harmonic | 3 mV Peak to Peak @ 2nd Harmonic |
| Susceptibility To Perming | ± 20 nT shift with ± 5 Gauss applied | ± 8 nanoTesla shift with ± 5 Gauss applied | ± 25 nT shift with ± 5 Gauss applied | ± 20 nT shift with ± 5 Gauss applied | < ± 5 nT Shift with ± 5 Gauss Applied | ≤ ± 5nT with ± 5 Gauss Applied | ± 8 nT shift with ± 5 Gauss Applied | ± 8 nT Shift with ± 5 Gauss Applied |
| Overload Recovery | ± 5 Gauss slew < 2 milliseconds | ± 5 Gauss slew < 2 milliseconds | | ±5 Gauss slew < 2 milliseconds | | | ± 5 Gauss slew < 2 milliseconds | ± 5 Gauss slew < 2 milliseconds |
| EMI | Designed to meet CEO1, CEO3, REO2, CS01, CSO2, CSO6, RSO1, RSO2, RSO3 | CEO1, CEO3, REO2, CS01, CSO2, CSO6, RSO1, RSO2, RSO3 | CEO1, CEO3, REO2, CS01, CSO2, CSO6, RSO1, RSO2, RSO3 | CEO1, CEO3, REO2, CS01, CSO2, CSO6, RSO1, RSO2, RSO3 | | | CEO1, CEO3, REO2, CS01, CSO2, CSO6, RSO1, RSO2, RSO3 | CEO1, CEO3, REO2, CS01, CSO2, CSO6, RSO1, RSO2, RSO3 |
| Random Vibration | > 23G RMS 20 Hz to 2 KHz | > 20G RMS (20 Hz to 2 KHz) | 20G RMS (20 Hz to 2 KHz) | > 20G RMS 20Hz to 2KHz | | | > 20G RMS 20 Hz to 2 KHz | > 20G RMS 20 Hz to 2 KHz |

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|--------------------|---|---|--|------------------------------|-----------------------------------|---------------------------|--|--|
| Output Type | | Analog | Analog | Analog | Digital | Digital | Analog | Analog |
| Shock | | >230G | >230G | > 60G | | | > 60G | > 60G |
| Weight | 105 g | 105 grams | 200 grams (shielded to 306 kRADs) | 1500 g | < 1076 g | 909 g | 182g | 182 g |
| Size | 3.51 cm x 3.23 cm x 8.26 cm | 3.51 cm x 3.23 cm x 8.26 cm | 3.66 cm x 3.58 cm x 15.44 cm | 22" x 1.9" / 53 cm x 4.8 cm | 7.8cm Dx 30.5 cm L | 30.5 cm L x 7.8 cm D | 3.51cm x 3.51cm x 15.37cm | 3.51cm x 3.51cm x 15.37cm |
| Connector | Chassis mounted 9 pin male "D" type, female mating connector supplied | Chassis mounted 9 pin male "D" type, female mating connector supplied | NON-MAGNETIC 9 PIN MALE "D" TYPE, FEMALE MATING CONNECTOR SUPPLIED | 8 PIN MALE HRS-405-08P/T-01M | BRANTNER XSEE-12-BCR, XSEE- XSEE- | BRANTNER XSEE-12-BCR TYPE | NON-MAGNETIC 9 PIN MALE "D" TYPE; FEMALE MATING CONNECTOR SUPPLIED | NON-MAGNETIC, MILITARY SPEC, 9 PIN MALE "D" TYPE; Female Mating Connector Supplied |

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