TM4830B Fluxgate Magnetometer

1 Summary

The **TM4830B** is a portable, multi-functional weak field measuring instrument, which can be matched with fluxgate sensors of various specifications and measurement ranges, including single-axis and three-axis fluxgate sensors, which can measure the weak magnetic field.

2. Features

- Range: 0~ 2000 μT, various of probes are optional.
- Measure XYZ component value, vector value and angle.
- Mainframe voltage measurement up to class 0.005.
- 0.0015 % for the ultra-high precision version.
- The noise of the low noise version is typically < 6 pTrms /√Hz.
- Unit switch: μT, mG .
- Switch 6 / 7 / 8-digits, display.
- AC or DC mode, and AC frequency display.
- Relative measurement mode, offset value (Offset) input.
- Alarm function of exceeding the upper / lower limit.
- Max. / min. hold function.
- Data statistical analysis and trend chart display.
- The integration period (refresh rate): 0.5s to 100s.
- (ultra-) High-accuracy probes support temperature compensation.
- USB, LAN, RS 232 interface.
- LCD touch screen.

3. Application

- Measuring low magnetic field.
- Geological prospecting.
- Fragmentation processing, security check.
- Fault location, research experiment.
- Magnetic shielding evaluation.
- Calibrating low magnetic field sources.
- Detecting magnetic resonance meter.
- Detecting electron microscope.
- Detecting Magnetic field drift.

4. Specifications

4.1 Main Unit (Voltage Measurement)

Range	0 ~ ± 10V	
Accuracy ±(ppm of reading + ppm of range) [1]	DC	0.003 % + 0.002 %
	20 Hz~ 45Hz _	0.06 % + 0.04 %
	45 Hz~1k Hz _	0.012 % + 0.008 %
DC Linearity	0.002 %	
Display Digits	8 digits display	
Probe Supply Voltage	± 15V	
Data Refresh Time	0.5 s ~ 100 s adjustable	
Remark	Note [1] : (ppm = parts per million) (e.g., 10ppm = 0.001%).	

4.2 Fluxgate Probe

☆ Miniature Fluxgate Probe					
Probe Model	Number of Axes	Range	Noise /√Hz @ 1Hz	Linearity	Frequency Response (-3dB)
TM1200-100μT	single-axis	100 μT	1.5nTrms	≤ 0.5 %	DC to 400 Hz
TM1200-500μT	single-axis	500 μT	1.5nTrms	≤ 0.5 %	DC to 400 Hz
TM1200-1000μT	single-axis	1000 μT	1.5nTrms	≤ 0.5 %	DC to 400 Hz
TM1200-2000μT	single-axis	2000 μT	1.5nTrms	≤ 0.5 %	DC to 400 Hz
TM1230-100μT	three-axis	100 μT	1.5nTrms	≤ 0.5 %	DC to 400 Hz
TM1230-500μT	three-axis	500 μT	1.5nTrms	≤ 0.5 %	DC to 400 Hz
TM1230-1000μT	three-axis	1000 μT	1.5nTrms	≤ 0.5 %	DC to 400 Hz
TM1230-2000μT	three-axis	2000 μT	1.5nTrms	≤ 0.5 %	DC to 400 Hz

☆ High Precision Fluxgate Probe						
Probe Model	Number of Axes	Range	Noise /√Hz @ 1Hz	Linearity	Frequency Response (-3dB)	Orthogonality
TM1200- H -100μT	single-axis	100 μT	≤ 10pT $_{rms}$	≤ 0.01 %	DC to 1kHz	——
TM1200- HL -100μT	single-axis	100 μT	≤ 6pT $_{rms}$	≤ 0.01 %	DC to 1kHz	——
TM1200- HL -500μT	single-axis	500 μT	≤ 30pT $_{rms}$	≤ 0.02 %	DC to 1kHz	——
TM1200- HL -1000μT	single-axis	1000 μT	≤ 50pT $_{rms}$	≤ 0.02 %	DC to 1kHz	——
TM1230- H -100μT	three-axis	100 μT	≤ 10pT $_{rms}$	≤ 0.01 %	DC to 1kHz	≤ ±0.2°
TM1230- HL -100μT	three-axis	100 μT	≤ 6pT $_{rms}$	≤ 0.01 %	DC to 1kHz	≤ ±0.2°
TM1230- HL -500μT	three-axis	500 μT	≤ 30pT $_{rms}$	≤ 0.02 %	DC to 1kHz	≤ ±0.2°
TM1230- HL -1000μT	three-axis	1000 μT	≤ 50pT $_{rms}$	≤ 0.02 %	DC to 1kHz	≤ ±0.2°

☆ Ultra-high Precision Fluxgate Probe						
Probe Model	Number of Axes	Range	Noise /√Hz @ 1Hz	Linearity	Frequency Response (-3dB)	Orthogonality
TM1200-S-100μT	single-axis	100 μT	10 ~ 20pT $_{rms}$	≤ 0.01 %	DC to 3kHz	——
TM1200-S-500μT	single-axis	500 μT	10 ~ 20pT $_{rms}$	≤ 0.01 %	DC to 3kHz	——
TM1200-S-1000μT	single-axis	1000 μT	10 ~ 20pT $_{rms}$	≤ 0.01 %	DC to 3kHz	——
TM1230-S-100μT	three-axis	100 μT	6 ~ 10pT $_{rms}$	< 0.0015 %	DC to 3kHz	≤ ±0.1°
TM1230-S-500μT	three-axis	500 μT	6 ~ 10pT $_{rms}$	< 0.0015 %	DC to 3kHz	≤ ±0.1°
TM1230-S-1000μT	three-axis	1000 μT	6 ~ 10pT $_{rms}$	< 0.0015 %	DC to 3kHz	≤ ±0.1°
TM1230-SL-100μT	three-axis	100 μT	≤6pT $_{rms}$	< 0.0015 %	DC to 3kHz	≤ ±0.1°

Note: [1] The user should indicate it in the order contract or technical agreement.

[2] The corresponding probe is selected according to the measurement of range.

4.3 Magnetic Field Measurement

Range		±100 μT	±500 μT	±1000 μT	±2000 μT
Resolution		0.01 nT	0.01 nT	0.1 nT	0.1 nT
Accuracy ±(ppm of reading + ppm of range) [1]	Ultra High Precision Version	0.12 % + 0.08 %			——
	High Precision Version	0.3 % + 0.2 %			——
	Micro Version	0.6% + 0.4			
Remark		The accuracy is the combination of the host and probe.			

5. General Specifications

Power Supply	AC (220 ± 22) V , (50 ± 2) Hz
Temperature Performance	Working temperature: 0°C～40°C; Storage temperature: -20°C ～ 70°C
Humidity Performance	Working humidity: 40% ~ 85% R·H without condensation Storage humidity: < 90% R H, no condensation
Weight	About. 5 kg
Interface	Fluxgate probe, USB, RS232, analog output, network port
Dimensions	190mm (W) × 300 mm (D) × 200 mm (H)

6. Ordering Information

TM12X0 – □ □

Number of Probe Axes	
Code	**Note**
0	*Uniaxial*
3	*Triaxial*

Type of Probe	
Code	**Note**
—	*Micro Probe*
H	*High Precision, Standard Edition*
HL	*High Precision, Low Noise Edition*
S	*Ultra-high Precision, Standard Edition*
SL	*Ultra-high Precision, Low Noise Edition*

Range	
Code	**Note**
100μT	*100 μT*
500μT	*500 μT*
1000μT	*1000 μT*
2000μT	*2000 μT*

e.g. : ***TM1230-S-1000μT*** represents the triaxial probe is ultra-high precision and standard edition, and range is 1000 μT.