TENMARS

TRIAXIAL ELF Magnetic Field Meter

TM-192 / TM-192D

HB2TM1920006

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1. Introduction

Safety precautions should be taken against electric appliances in places including medical institutions, schools and residential districts, where people usually stay for a long time, to prevent patients, babies and senior citizens from exposure to high electromagnetic waves.

An electromagnetic wave simply means the wave motion of the electromagnetic field **(EMF)**.

The change in electric fields produces magnetic fields, and the change in magnetic fields can also generate electric fields. The fluctuation of correlation between each other is known as “electromagnetic waves", which is a form of energy similar to light and heat that can be transmitted either by radiation in the air or by an electric conductor.

It is suggested that rearrangements should be made in homes and work locations where the strongest electromagnetic fields are detected in order to avoid prolonged exposure to excessive electromagnetic fields.

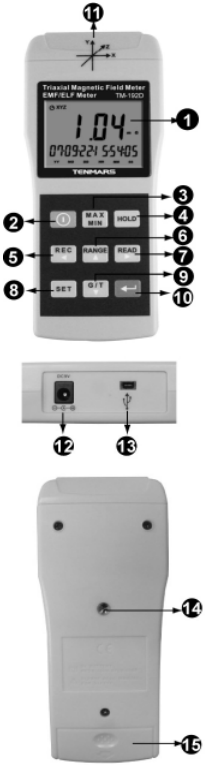
2. Application

- This meter is applied to measuring magnetic fields of extremely low frequency **(ELF)** of 30 to 2000Hz.
- It is capable of measuring the magnetic field radiation intensity that is produced from electric transmission equipment, power lines, microwave ovens, air conditioners, refrigerators, computer monitors, video/audio devices and so forth.
- The magnetic field unit is Tesla (T), Gauss (G), milli-Gauss (mG) or micro-Tesla (μ T).
  1 T＝10,000 G　　1 G＝1,000 mG
  1 μ T＝10 mG

3. Features

- Uses three internal orthogonal sensors to test a wide range of ELF magnetic fields, independent of measurement angle.
- The tester is designed to provide a quick, reliable and easy way to measure magnetic field radiation levels around power lines, home appliances and industrial devices.
- The tester is a cost-effective hand-held instrument that was designed and calibrated to measure magnetic field radiation at different bandwidths from 30Hz to 2000Hz.
- Display micro-Tesla (μT) or milli Gauss (mG) units.
- Data hold (HOLD), maximum Hold (MAX), and minimum Hold (MIN) function.
- Auto range or manual range select mode.
- Datalogging capacity with Memory Size：500 data sets (Model 192) or 9999 data sets (Model 192D).
- USB PC interface (192D).
- Time and calendar function.
- Low battery indication " ".
- Over load display "OL".
- Auto power OFF function.

4. Identifying Parts



1. LCD display.
2. Power key.
3. maximum Hold and minimum Hold key.
4. Data Hold key.
5. Record data and Setup function **left** key.
6. Range and Setup function **up** key.
7. Reading and Setup function **right** key.
8. Setup function key.
9. Units and Setup function **down** key.
10. Enter key.
11. Calibration points for Triple axis.
12. External power DC 9V.
13. USB interface (TM-192D).
14. Tripod mounting screw.
15. Battery cover.

5. Measurement Procedures

- Press “ ⏻ ” key turn on the meter, press “ ⏻ ” key again to turn OFF the meter.
- Press “ G/T ” key to select milli-gauss (mG) or micro-tesla (μT) unit.
- Position the front of the meter to measure the magnetic waves.
- Read the measured value. When manual range mode is selected, LCD will show the Ⓡ mark, The display of “OL” on the highest position indicates there is an overload on the reading. Press “ Range ” to select a higher range for measurement again.
- The default value displays triaxial total magnetic field reading. Press “ ↵ ” key to toggle between independent three single-axis magnetic field readings and triaxial total magnetic field reading.
- To lock and keep the reading displayed on the LCD, press “ HOLD ” or press “ HOLD ” again to unlock.
- To retain the maximum and minimum value, press “ MAX MIN ” key and the reading value displayed on the

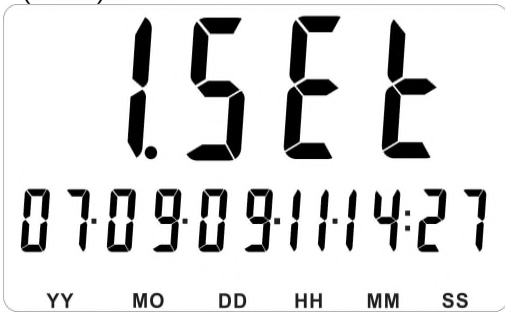
LCD will keep

- updating to the maximum value. Press again to select minimum value, press and hold down "

" key 2 seconds to exit the maximum and minimum mode.
- Due to the magnetic interference of the environment field factors, this magnetic field meter could display a reading value that is greater than 0.5 mG prior to measuring. This is not a malfunction of the tester.
- With the tester in hand, move slowly towards to the object under measurement until it is physically touched.
- Notice how the field intensity increases as you move closer to the object.
- If the power of object was turned off during the measurement, the reading of tester should return to zero, unless an electromagnetic field from other sources is detected.

6. Clock setup

- This meter clock uses 24-hour time.
- Press “SET” key to enter clock setting mode (1.SET).



- Press “REC ◄” or “READ ►” key to select option to adjust.
- Press “RANGE ▲” or “G/T ▼” key to change the digit.
- Press “↵” key to store the setup, exit the mode.

7. Auto power off setup

- Press “SET” key again to auto power off time setting mode (2.SET).

- Press “RANGE ▲” or “G/T ▼” key to change the auto power off time.
- Press “↵” key to store the setup, exit the mode.
- The auto power off time default value is 5 minutes. Range is 0 to 99 minutes. To cancel auto power off, please set time to 0 minutes.

8. Continuity data logging setup

The data logging interval is the time between data records. To begin data logging, set the logging interval as per instructions below.
Interval time range can be set by user, from 2 seconds to 24 hours, 59 minutes and 59 seconds.

- Press “SET” key again to enter continuous data logging interval setting mode (3.SET).

- Press “REC” or “READ” key to select option to adjust.
- Press “RANGE” or “G/T” key to change the value.
- Press “↵” key to store the setup, exit the mode.
- To disable the function of continuity data logging, set the interval time to 00HH-00MM:00SS.
- Press “↵” key to store the setup and exit the mode.

9. Clear data logger memory (last data entry)

- Press “ SET ” key again to clear data logger memory for last record setting mode (4.CLA)

- Press “ REC ◄ ” key to clear data logger memory for last record and exit the mode.

10. Clear ALL data logger memory

- Press “ SET ” key again to clear data logger memory for all record setting mode. (5.CLA)

- Press “ REC ◄ ” key to clear data logger memory for all record.
- Press “ ↵ ” key to store the setup, exit the mode.

11. Single data memory record

- Press “ REC ” key each time to store the display reading and time stamp in memory.

12. Viewing logged reading control key

- Press “ READ ” key to view logged readings.

  Press ▲ or ▼ key to scroll through the readings, Press “ SET ” key to exit this mode.

13. Specifications

- **Display:** 4 digits Triple LCD display.
- **Range:** 20/200/2000 mG, 2/20/200μT.
- **Resolution:** 0.01/0.1/1 mG or 0.001/0.01/0.1 μT.
- **Frequency response:** 30Hz to 2000Hz.
- **Sensor:** Triple Axis (X, Y, Z).
- **Accuracy:** 20mG/2μT ±(3.0%+30dgt) at 50Hz/60Hz. 200mG/20μT and 2000mG/200μT ±(2.5%+5dgt) at 50Hz/60Hz. or ±(5%+5dgt) at (30Hz~2000Hz)
- **Over load:** LCD display "OL".
- **Sample rate:** 2.5 times per second.
- **Battery:** 9-volt battery.
- **Battery life:** Approximate 100 hours.
- **Operating temperature & humidity:** 5°Cto 40°C, below 80% RH.
- **Storage temperature & humidity:** -10°C to 60°C, below 70%.
- **Weight:** About 230g.
- **Dimensions:** 173(L) X80(W) X32(H) mm.
- **Accessories:** User's manual, 9V battery, Carrying case, USB cable.

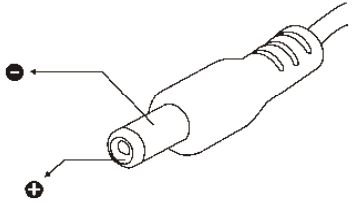
14. Battery replacement

	WARNING
⚠	If the symbol " ▭+ " appears on the LCD, please replace the battery immediately

- Turn off the instrument.
- Open the battery cover and remove the battery.
- Replace the 9-volt battery
- Install the battery cover.

15. External DC Power

- External AC to DC adapter:
- Voltage 9VDC (8~14VDCMax).
- Supply current：＞300Madc.
- Socket：pin Positive, Ground Casing External.
- Diameter 5.5mm; internal Diameter 2.1 mm.



16. Safety Precaution

- For cleaning the instrument use a soft dry cloth. Never use a wet cloth, solvents or water, etc.
- Operation Altitude: Up to 2000M.
- Operating Environment: Indoors use.
- This instrument has been designed for being used in an environment of pollution degree 2.

17. Software Installation (192D)

1. Link website https://www.tenmars.com/ or scan below QR code:

2. Search TM-192D.
3. Click on the TM-192D photo.
4. Click **File Download**, then select **Software Download**.
5. Download and unzip the software.
6. For the latest software information and installation procedures, please download the **software instructions**.

18. End of Life Disposal

Caution

This symbol indicates that equipment and its accessories shall be subject to a separate collection and correct disposal

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