TENMARS

TRIAXIAL ELF Magnetic Field Meter

TM-192/TM-192D

CE

HB2TM1920000

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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 families and work locations where electromagnetic fields are detected the strongest in order to avoid prolonged exposure to excessive electromagnetic fields.

2 Application

- This meter is applied to measuring electromagnetic fields of extremely low frequency **(ELF)** of 30 to 2000Hz.
- It is capable of measuring the electromagnetic field radiation intensity that is produced from electric transmission equipment, power line, microwave oven, air conditioner, refrigerator, computer monitor, video/audio device and so forth.
- The magnetic field unit is Tesla (T), Gauss (G), milli-Gauss (mG) or micro-Tesla (μT).
    - 1 T＝10,000 G
    - 1 G＝1,000 mG
    - 1 μT＝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 user 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(u T) or milli Gauss(m G) 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 or 9999 data sets(192D).
- USB PC interface (192D).
- Time and calendar function.
- Low battery indication "▇▇▋".
- Over load display "OL".
- Auto power OFF function .

4 Identifying Parts
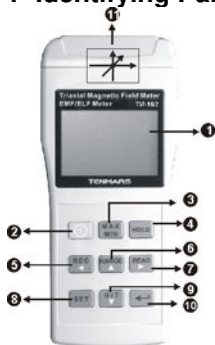
1. LCD display.
2. Power key.
3. maximum Hold and minimum Hold key.
4. Data Hold key.
5. Record dada and Setup function left key.
6. Range and Setup function up key.
7. Reading and Setup function right key.
8. Setup function key.
9. Units and Setup function down key.
10. Enter key.
11. Calibrate point 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 electromagnetic waves.

- Read the measured value. When manual range select mode, LCD will shown 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.

- This meter displays the default value is triaxial total magnetic field reading, press ⏎ key to independent three single-axis magnetic field readings and triaxial total magnetic field reading.

- To permanently 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 MAX MIN 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 lower than 0.5mG 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 there is the electromagnetic from other sources are detected.

6 Clock setup

- This meter clock to introduce 24 hour time.

- Press SET key to clock setting mode (1.SET).

```
      1.5 E t
  07:09:09 11:14:27
  YY   MO   DD   HH   MM   SS
```
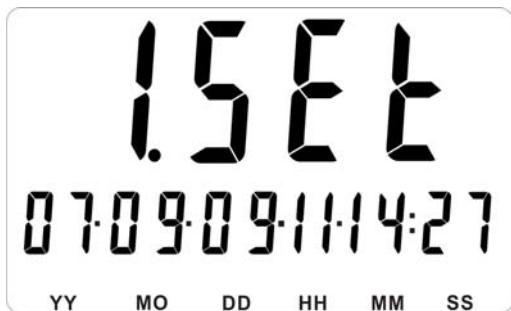
- Press REC◄ or READ► key to select option to adjust.

- 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.

- This meter the auto power off time default value is 5 minutes, for cancellation auto power off, please set time as 00MM.

8 Continuity data logging setup

- Press SET key again to continue 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.

9 Clear data logger memory

- Press [SET] key again to clear data logger memory for last record setting mode (4.SET).

- Press [←] key to clear data logger memory for last record. .

- 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.SET)

$$5.\mathsf{C}\mathsf{L}\mathsf{A}$$

$$\mathsf{ALL}$$

- Press REC key to clear data logger memory for all record.

- Press ← key to store the setup, exit the mode.

11 Single data memory

- . Press REC key each time to store the display reading and
  memory location in memory.

12 Viewing logged reading control key

- Press READ key to view logged readings mode. 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:** 20 mG /2μT±(3.0%+30dgt) at 50Hz/60Hz.

    ±(2.5%+5dgt) at 50Hz/60Hz.

    ±(5%+5dgt) at 30Hz/2000Hz.

- **Over load:** LCD display "OL".
- **Sample rate:** 2.5 times per second.
- **Battery:** 9V NEDA 1604, IEC 6F22 or JIS 006P.
- **Battery life:** Approximate 100 hours.
- **Operating temperature & humidity:** 5℃ to 40℃,below 80% RH.
- **Storage temperature & humidity:** -10℃ to 60℃, below 70%.
- **Weight:** About 230g.
- **Dimensions:** 173(L)*80(W)*32(H) mm.
- **Accessories:** User's manual, 9V battery, Carrying case.(MINI USB 4P(MALE) to USB A Type cable, CD disk 192D)

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 with four-9V NEDA 1604, IEC 6F22 or JIS 006P size battery.
- Install the battery cover.

15 External DC Power

- External AC to DC adapter: Voltage $9V_{DC}(8{\sim}14V_{DC}Max)$
- Supply current：$>300mA_{DC}$
- Socket：pin Positive, Ground Casing External

    Diameter 6.3mm internal Diameter 2.0 mm
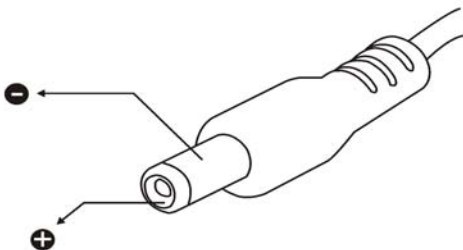
16 Safety Precaution
- For cleaning the instrument use a soft dry cloth. Never use a wet cloth, solvents or water, etc.
- Operation Altitude: Up to 2000M.
- Operating Environment: Indoors use. This instrument has been designed for being used in an environment of pollution degree 2.

17 Software installation (192D)
- Please put the CD in the PC that will be connected to this meter.
- Please select the USB driver that will be installed, such as E:\TM-192D\PL-2303 Driver Installer.exe (windows 2000 SP4/windows XP SP2), click twice on the left key of the mouse to install the USB driver.
- Select the SETUP.EXE i.e., E:\TM-192D\SETUP.EXE and installs the desktop icon
- Tack out the CD from PC after completed the installation of the desktop icon.
- Use the USB cable to connect the meter and computer according to the drawing.
- Select the desktop icon (TM-192) and click twice on left key of the mouse to run the procedure.

18 Note

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