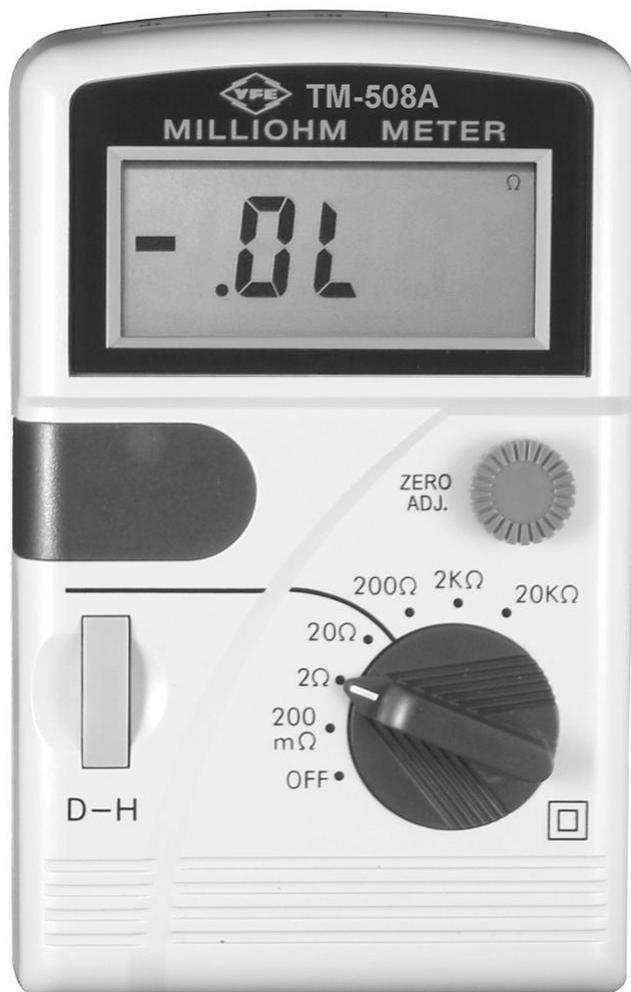


# TENMARS

## MILLIOHM METER

### TM-508A



**User's Manual**



HB2TM508A001

**TENMARS ELECTRONICS CO., LTD**

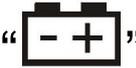
# CONTENTS

1	Features .....	3
2	General specifications .....	3
3	Instrument description .....	5
4	Notice in prior to the testing.....	6
5	Electrical specifications: .....	6
6	Measurement by the Four Wire type one pair of coated clip.....	7
7	Precise Impedance measurement.....	8
8	Battery Replacement.....	9
9	Replacement of fuse .....	10
10	Maintenance and Care .....	10
11	END OF LIFE .....	11

## 1 Features

1. Very low impedance measurement by Four Wire type one pair coated clip.
2. There is a fuse (0.5A/250V) to protect the input circuit.
3. Applicable measurement of Resistance, motor coil, transformer, Printed Circuit Board.
4. Accurate measurement of conductor, light electricity and welding point.
5. Wide measurement range, 0.1 mΩ to 20kΩ in 6 positions.
6. D – H Switch: Lockup readings for LCD display.

## 2 General specifications

1. Display: 3-1/2 digits, LCD display with max. reading of 1999 with decimal point and measurement unit.
2. Overload indication: “OL” indication.
3. Zero Adjust: External zero adjust knob.
4. Low battery indication: Replace battery as LCD display  “- +”
5. Reading speed: 2.5 times per second.
6. Operating attitude: Max. 2000 meters above level.
7. Operating: In-door use, under

- ambience: environmental pollution grades two.
8. Operating temperature and R.H. value: 5°C to 40°C, 80%RH or lower.
9. Storage temperature and R.H. value: -10°C to 60°C, 70%RH or lower.
10. Power supply: 1.5V × 6 NEDA 15F IEC R6 JIS SUM-3
11. AC adapter : AC input Voltage is 100Vac to 240Vac 0.3A with input frequency of 60 HZ or 50HZ, Free Voltage DC output is 9V<sub>DC</sub>(8~11V<sub>DC</sub>Max) Supply current : > 0.5A<sub>DC</sub>. Socket : pin Ground Casing Positive External Diameter 3.5mm internal Diameter 2.0mm
12. Dimension and weight: 160 x 100 x 52mm. approximate 500g.
13. Accessories: One set of testing clips and instruction manual.
14. Fuse specification: 0.5A/250V, 5Øx 20mm. FAST MIN INTERRUPTS RATINGS 1500A.

## 3 Instrument description

1. RX socket: For testing clips input.
2. LCD display: Indication of measured value and unit.
3. ZERO ADJ. Knob: For zero adjustment.
4. Power switch and Range selector switch: Selection in functional range of the meter.
5. D-H: Lock up the LCD reading.
6. DC Power socket: For AC adapter output DC Voltage is  $9V_{DC}(8\sim 11V_{DC}Max)$ .

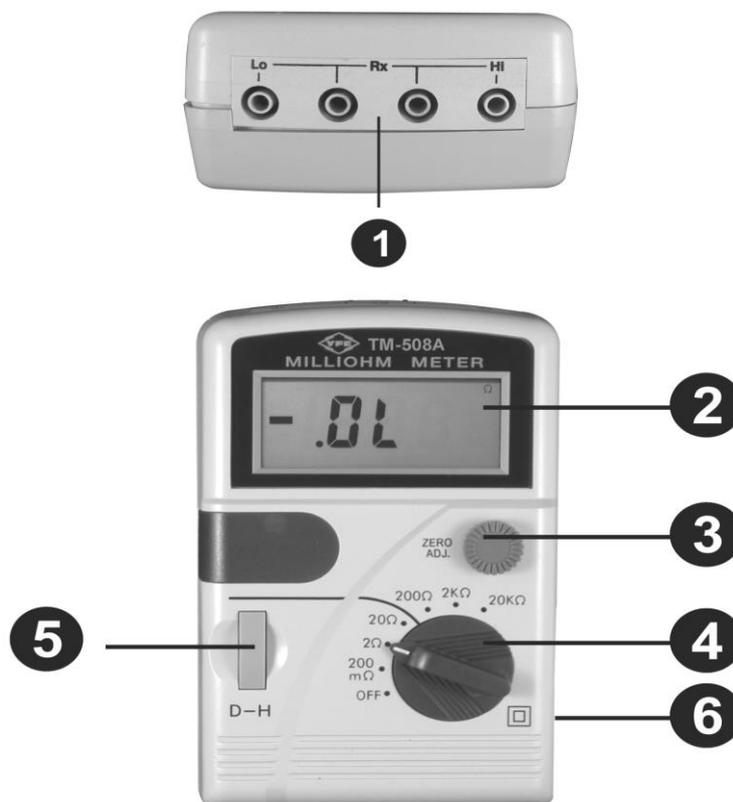


FIG (1)

## 4 Notice in prior to the testing

1. Don not connect the testing input terminals (LO, RX, HI,) any input voltage directly, so as to prevent any possible damage to the internal circuits of the meter.

## 5 Electrical specifications:

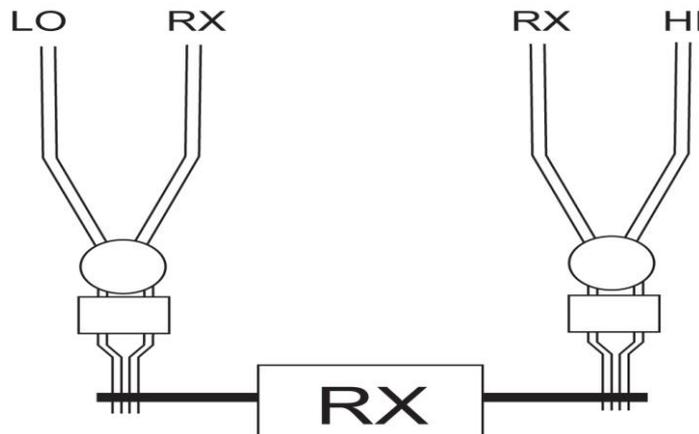
( 23°C±5°C, 80% RH or lower )

Accuracy :    ±( .....% reading + ..... digit):

Range	Accuracy	Resolution	Testing current	Open Voltage
200mΩ	±(0.3%+ 4dgt)	0.1mΩ	100mA	Approx. 4.8VDC
2Ω		1mΩ	10mA	
20Ω		10mΩ	10mA	
200Ω		0.1Ω	1mA	
2kΩ		1Ω	1mA	
20kΩ		10Ω	100uA	

## 6 Measurement by the Four Wire type one pair of coated clip

To guarantee an higher precise measurement of this digital Ohmmeter, an accurate wide range impedance testing equipment, and to eliminate any Improper Influence of measurement, especially in effect of the impedance of testing leads, the following procedures should be followed.



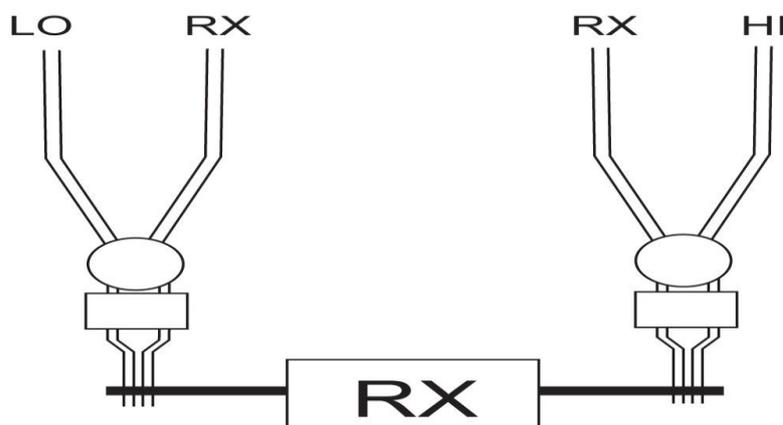
FIG(2)

1. Please refer to the table shown above, a testing current is passed in individual testing range (from HI end to the LO end).
2. The specific electric current flows through any unknown resistance RX.
3. The Voltage VX can be measured on RX1, RX2 terminals,  
$$VX = RX \times IS \text{ therefore } RX = VX / IS$$
4. The unknown resistance value can be given on LCD display from VX voltage value to be measured.
5. To obtain accurate impedance measured without any resistance value impedance

between terminals RX1 and RX2.

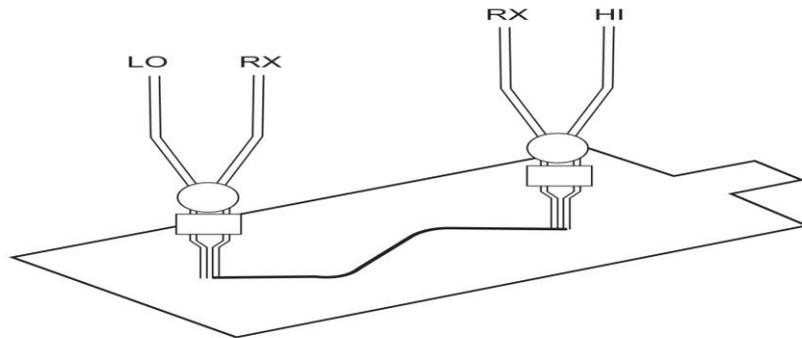
## 7 Precise Impedance measurement

1. Insert an RED testing lead into “HI” socket and another RED testing lead into the adjacent “RX” socket; insert a BLACK testing lead into “LO” socket and another BLACK testing lead into the adjacent “RX” socket,
2. Select the function switch to 200 mΩ position.
3. Short circuit the two testing clips, adjust “ZERO ADJUST KNOB” (3-5) to a” 000” reading value on the LCD.



FIG(3)

4. Measure the resistance on PCB by using the two-point type of measurement per shown in figure 4.



FIG(4)

5. The measured value is shown on LCD .

## 8 Battery Replacement

The meter is powered by 1.5V battery x6pcs (NEDA 15F IEC R6 JIS UM-3). Use the following procedure to replace the battery:

1. Replace battery immediately when LCD displays “”.
2. Turn the function switch to the "OFF" position.
3. Use a screwdriver to unfasten the screws on the battery cover and remove the cover.
4. Take out the old batteries and replace with new batteries, taking care to note the correct polarity.

5. Re-install the battery cover and tighten the holding screws.

## 9 Replacement of fuse

For a safety protection of the electrical circuit please replace new fuse complying the specification 0.5A/250V, 5Øx 20mm. FAST MIN INTERRUPT RATINGS 1500A.

1. Select the function range switch to “OFF” position. To unscrew the bottom case by using a screwdriver.
2. Pull out the burned fuse and replace a new one.
3. Close the bottom case and tighten screw.

## 10 Maintenance and Care

1. That all necessary requirements of inspection and maintenance are not mentioned in this manual, a qualified technician should perform it.
2. This meter is a precision digital instrument, whether in use or in storage, please do not exceed the specification requirements to avoid any possible damage or danger during use.

3. Do not use strong or abrasive detergents, water and wet cloth to clean the instrument. Do use a dry cloth to clean the instrument.
4. Do not place this meter in high temperature or humidity or expose to direct sunlight.
5. Once the measurement is completed, turn the rotary switch to OFF, Remove the batteries from battery holder if the instrument is not is used for a long period in order to avoid the liquid leakage from the battery.

## 11 END OF LIFE



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

# TENMARS



## **Professional Electrical and Environment Test & Measurement Instruments:**

LED light meter, Temperature & Humidity meter  
Infrared Thermometer, Sound level meter  
Light meter, EMF meter, UV Light meter, RF meter  
Hot wire Anemometer, Co meter  
Anemometer, Lan cable tester, Co2 meter  
Solar power meter, Radiation meter,  
Clamp meter, Multimeter  
Phase Rotation tester, Digital Insulation tester

**Our products of high quality are selling well  
all over the world**

**TENMARS ELECTRONICS CO., LTD  
6F, 586, RUI GUANG ROAD, NEIHU,  
TAIPEI 114, TAIWAN.**

**E-mail: [service@tenmars.com](mailto:service@tenmars.com)**

**<http://www.tenmars.com>**