

- (1) Test Lead Connection
- (2) LCD Display
- (3) TEST ON/OFF switch
- (4) DATA HOLD button
- (5) Rotary switch for range selection

---

# 1. INTRODUCTION

---

**WARNING !**

READ "SAFETY NOTES"( PAGE 2 ) BEFORE USING THE METER.

---

## 2. Safety Notes

---

- Read the following safety information carefully before attempting to operate or service the meter.
- Use the meter only as specified in this manual: otherwise the protection provided by the meter may be impaired.
- Rated environmental conditions :
  - (1). Indoor use.
  - (2). Installation CAT. III 100V.
  - (3). Pollution Degree 2.
  - (4). Altitude up to 2000 Meter.
  - (5). Relative Humidity 80% Max.
  - (6). Ambient Temperature 0°C~40°C.
- Observe the International Electrical Symbols listed below.



Meter is protected throughout by double insulation or reinforced insulation.



Warning ! Risk of electric shock.



Caution ! Refer to this manual before using the meter.

Note  Do not use on Live system.

---

## 3. Features



---

- True measurement of speaker systems actual impedance at 1kHz.
- Three test ranges (20 /200 /2000 ) allow testing of home theater and commercial sound systems.
- Convenient portable battery operation.
- Low battery indication.
- Data hold function.
- Timer function provides continuous hands free operation. The timer will last 3-5 minutes after pressing TEST ON/OFF button.

---

## 4. Specifications

---

- Measurement Range:  
20 /200 /2000
- Test frequency:  
1kHz
- Accuracy:  
20 :  $\pm 2\%rdg \pm 2dgt$  or  $\pm 0.1$  , which is greater.  
200 /2000 :  $\pm 2\%rdg \pm 2dgt$
- Protection:  
Meets IEC-1010(EN61010),Installation CAT. III 100V
- Power Requirements:  
9VDC(6 x1.5V "AA" UM-3 batteries)
- Dimensions  
8" (H) x 3 $\frac{1}{2}$ " (W) x 2 $\frac{3}{16}$ " (D)
- Included Accessories:  
Test leads, instruction manual, carry case
- Low battery indication  
“” symbol appears on the display
- Data hold indication :  
“” symbol appears on the display
- Display :  
LCD 3 1/2 digit (2000 counts)
- Weight :  
Approx. 1.2 lbs. (battery included)

---

## 5. Measuring Methods

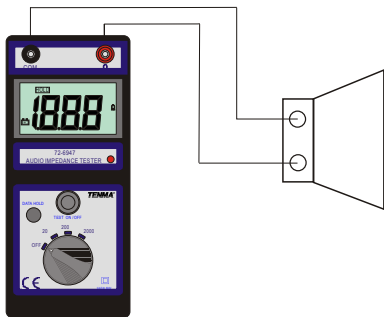
---

PRIOR TO USE, READ SAFETY NOTES ON PAGE 2.

1. Ensure the system under test is not live.
2. If prior to use, the " $\frac{\square}{-+}$ " symbol appears on the display, batteries should be replaced.
3. Set the function switch to suitable range then press the pushbutton to test and take the reading.

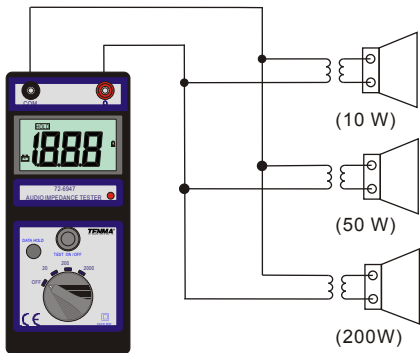
### Measuring an Individual Speaker

4. Individual speakers are typically between 2  $\Omega$  and 16  $\Omega$ . For these types, the 20  $\Omega$  setting should be used. Some special application speakers may be of much higher impedance. Speakers of up to 2K (2000  $\Omega$ ) may be measured using the 200  $\Omega$  or 2000  $\Omega$  setting. These higher settings also allow measurement of speakers when connected to impedance matching transformers or volume controls. In these cases, the speaker should be connected to the meter as shown.



## Measuring 25V/70V Distributed Speaker Systems

5. Large distributed systems typically utilize 25.2V or 70.7V transformers (50V and 100V in Europe), to greatly ease the connection of multiple speakers and facilitate long cable runs. These speakers are connected in parallel, as shown, with total wattage ratings added to calculate the overall rating of the system. Connecting this meter to a speaker arrangement such as this will provide the overall impedance of the system.



Using the formula shown below you can calculate the wattage.

$$\frac{E^2}{Z} = P$$

E = Voltage Z = Impedance P = Wattage


Simply put, when connected to a distributed system, take the voltage of the system (normally 70.7V or 25.2V), squared, divided by the impedance displayed on the meter. Your answer will be the total system wattage. This total wattage must not exceed the wattage output rating of the amplifier, or damage may occur.


---

## 6. Maintenance

---

- Battery Replacement :

When the symbol " " appears on the display, replace with new batteries. as follows :

- (1) Disconnect the test leads from the instrument and turn off the power.
- (2) Remove the two screws, located at the bottom of the rear panel.
- (3) Slide the battery door straight down.
- (4) Replace with six "AA" type alkaline batteries. Do not mix with  other battery types or mix old and new batteries.
- (5) Replace battery door and screws.

- Cleaning and storage :

**WARNING**

To avoid electrical shock or damage to the meter, do not allow water or excessive moisture inside the case.

Periodically wipe the case with a damp cloth and detergent : do not use abrasives or solvents.

If the meter is not to be used for periods of longer than 60 days, remove the batteries and store them separately.

**TENMA TEST EQUIPMENT**

**900 SOUTH POINEER BLVD.  
SPRINGBORO, OHIO 45066  
www.tenma.com**