

# TENMA

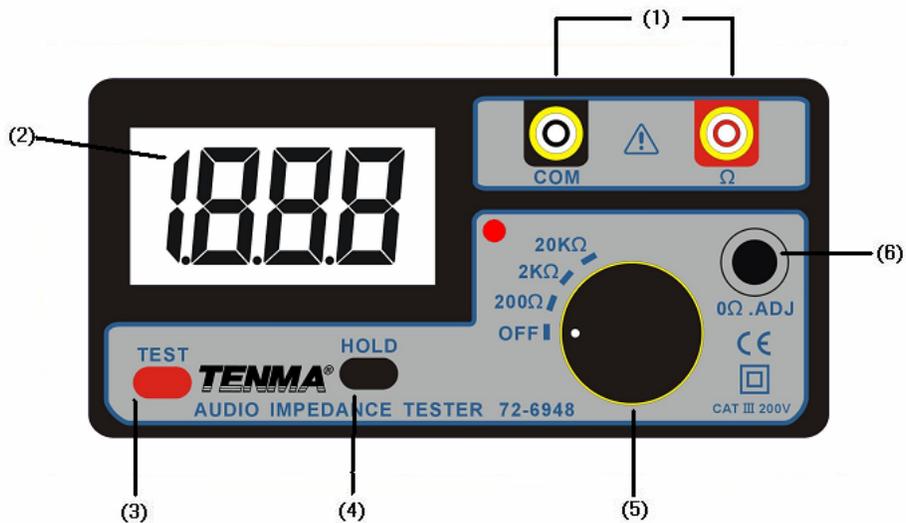
## AUDIO IMPEDANCE TESTER INSTRUCTION MANUAL



MODEL 72-6948

Tenma Test Equipment  
405 S. Pioneer Blvd.  
Springboro, Ohio 45066  
[www.tenma.com](http://www.tenma.com)

## FRONT PANEL LAYOUT



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

## SAFETY NOTES

- **WARNING!** 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 (32°F ~ 100°F)

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

## FEATURES

- True measurement of speaker systems actual impedance at 1KHz
- Three test ranges (200Ω /2KΩ/ 20KΩ) 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.

## SPECIFICATIONS

- Measurement Range: 200Ω /2KΩ/ 20KΩ
- Test frequency: 1kHz
- Accuracy:  $\pm 2\%$  rdg  $\pm 2$ dgt
- Protection: Meets IEC-1010(EN61010), Installation CAT. III 100V
- Power Requirements: 9VDC (6 x 1.5V "AA" UM-3 batteries)
- Dimensions: 3" (H) x 7" (W) x 3 1/2" (D)
- Included Accessories: Test leads, instruction manual, carry case
- Low battery indication  symbol appears on the display
- Data hold indication : "HOLD" symbol appears on the display
- Display : LCD 3 1/2 digit (2000 count)
- Weight : Approx. 1.2 lbs. (battery included)

## MEASURING METHOD

### PRIOR TO USE, READ SAFETY NOTES ON PAGE 2.

- Ensure the system under test is not live.
- If prior to use, the  symbol appears on the display, batteries should be replaced.
- Set the function switch to suitable range then press the pushbutton to test and take the reading.

## CALIBRATION

Prior to each use, it is recommended that the meter be calibrated to the test leads and installed batteries. This is accomplished by the following steps:

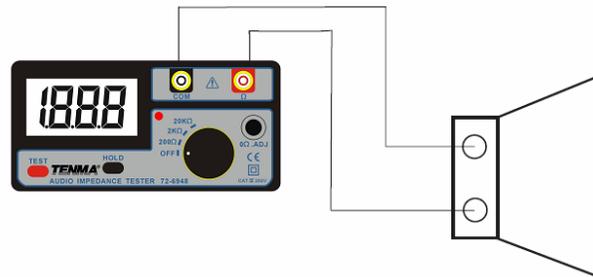
- Insert the red/black test leads into their proper location on the meter
- Touch the red/black tips of the two test leads together
- Rotate the 0Ω ADJ knob until the display reads zero

The meter is now calibrated, ensuring optimum accuracy when measuring the speaker load.

## PERFORMING MEASUREMENTS

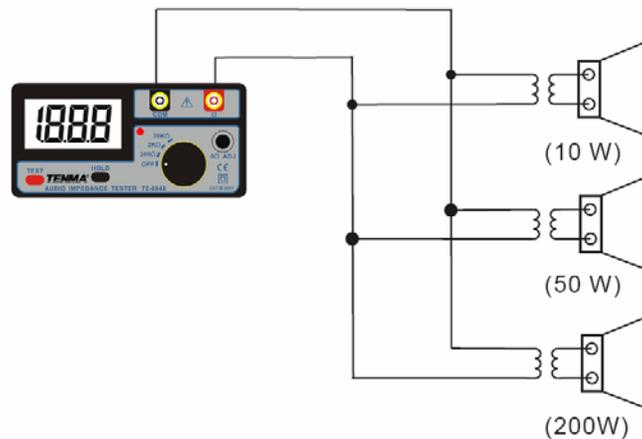
### Measuring an Individual Speaker

Individual speakers are typically between 2Ω and 16Ω. For these types, the 200Ω setting should be used. Some special application speakers may be of much higher impedance. Speakers of up to 2KΩ (20,000Ω) may be measured using the 2KΩ or 20KΩ. 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

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.

## MAINTENANCE

### Battery Replacement

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

Disconnect the test leads from the instrument and turn off the power

Remove the two screws, located at the bottom of the rear panel

Slide the battery door straight down

### 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 mild detergent
- **Note:** 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 separately

This Tenma Measurement Product is warranted against manufacturer defects for a period of one year from the original date of purchase. This warranty is limited to manufacturer defects, in either materials or workmanship. Tenma Test Equipment, MCM Electronics, or any other worldwide divisions of Premier Farnell PLC, are not responsible for any consequential or inconsequential damage to any other component, structure or the cost of installation or removal of said items.

For questions or specific information regarding warranty replacement or repair, contact:

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