AD61

USER'S MANUAL
MULTI-TESTER

.TABLE OF CONTENTS

SOUND LEVEL

TITLE

1. INTRODUCTION

The 6 in 1 digital multi-tester has been designed to combine the functions of Sound Level Meter, Light Meter, Humidity Meter, Temperature Meter Non-contact AC Voltage Test Meter and Digital Multimeter.

It is an ideal multi-function Instrument with scores of practical applications for professional and home use.

The Sound Level function can be used to measure noise in factories, schools, offices, airports, home, etc., checking acoustics of studios, auditoriums and hi-fi installations.

The Light function is used to measure illuminance in the field. It is fully cosine corrected for the angular incidence of light. The light sensitive component used in the meter is a very Stable, long life silicon diode.

The Temperature uses a semiconductor sensor and K type thermocouple.

The digital Multimeter performs AC/DC Voltage, AC/DC Current, Resistance measurement and Audible Continuity, Diode, Temperature test.

2. SAFETY INSTRUCTIONS

This meter has been designed for safe use, but must be operated with caution. The rules listed below must be carefully followed for safe operation.

1. **NEVER** apply voltage or current to the meter that exceeds the specified maximum:

Input Protection Limits	
Function	Maximum Input
V DC or V AC	600VDC/AC rms
mA AC/DC	500mA 660V fast acting fuse(500mA/660V)
A AC/DC	10A 600V fast acting fuse (10A for 30 seconds max every 15 minutes)
Frequency, Resistance, Capacitance, Duty Cycle, Diode Test, Continuity	600VDC/AC rms
Temperature	600VDC/AC rms

Indicates operators must refer to the explanation in this manual.

Indicates terminals at which dangerous voltage maybe present.

3. FEATURES

- 14 functions measure Sound level, Light, Humidity, Temperature, DC Voltage, AC Voltage, DC Current, AC Current,Resistance, Diode and Continuity test.
- 3 4/5Digital large LCD display with units of Lux, °C, % and dB indication.
- Easy to use with single function switch operating, pocket size and light weight.
- Sound level measures from 35dB to 100dB for C weighting checking with 0.1dB resolution.
- Light measuring levers ranging from 1 lux to 40,000 lux.
- Humidity measurement from 30%RH to 90%RH with 1%RH resolution and fast time response.

4. SPECIFICATIONS

Display: 3 4/5Digital 4000 counts LCD display with function of Lux, °C, % and dB indication.

Polarity: Automatic, (-) negative polarity indication.

Over-range: “OL” mark indication.

Low battery indication: The “  ” is displayed when the battery voltage drops below the operating level.

Measurement rate: 3 times per second, nominal.

Operating environment: :0°C ~40°C (32°F~104°F)
at < 70 % relative humidity.

Storage temperature: -10 °C to 60 °C C (14 °F to 140 °F)
at < 80 % relative humidity.

Power: One standard 9V, NEDA1604 or 6F22 battery.

Dimensions: 170 (H)x78(W) x48(D) mm
Weight: Approx: 335g including holster.
Accuracy is given at 18 °C to 28 °C (65 °F to 83 °F), less than 70 % RH

Sound Level
Measurement range: 35-100dB
Resolution: 0.1dB
Typical instrument frequency range: 30Hz-10kHz
Frequency Weighting: C –weighting
Time Weighting: Fast
Accuracy: ± 5 dB at 94 dB sound level, 1kHZ sine wave.
Microphone: Electric condenser microphone.

Light

Measuring Range: 4000, 40,000lux (40,000lux range reading x10)
Over range Display: Highest digit of “OL” is displayed .
Accuracy: ± 5% rdg + 10 dgts (calibrated to standard incandescent lamp at color temperature 2856 k) .
Repeatability: ± 2%.
Temperature Characteristic: ± 0.1% / °C.
Photo detector: One silicon photo diode with filter.

Humidity/Temperature

K type temperatur Measurement Range:

Range	Resolution	Accuracy
-4°F~+2372°F	1°F	3% of rdg ± 9 dgts
-20°C~+1300°C	1°C	3% of rdg ± 5 dgts

Input Impedance: 10MΩ.

Overload Protection: 250Vdc or ac rms. for 400mV range and 250V dc or 250V ac rms. for other ranges.

Indoor Temperature Range:

Range	Resolution	Accuracy
0°C ~+50°C	0.1°C	3% of rdg ± 5 dgts

Indoor Humidity Range:

Range	Resolution	Accuracy
33%RH~99%RH	1%RH	3% of rdg ± 5 dgts

Input Impedance: 10MΩ.

Overload Protection: 250Vdc or ac rms. for 400mV range and 250V dc or 250V ac rms. for other ranges

Multimeter

DC Voltage (Auto-ranging)

Range	Resolution	Accuracy
400.0mV	0.1mV	± 1.0% of rdg ± 4 dgts
4.000V	1.0mV	
40.00V	10mV	
400.0V	100mV	± 1.5% of rdg ± 4dgts
600V	1V	

Input Impedance: 10MΩ.
Overload Protection: 600Vdc or ac rms. for 400mV range and 600V dc or 600V ac rms. for other ranges.

AC Voltage (Auto-ranging except 400mV)

Range	Resolution	Accuracy
400.0mV	0.1mV	± 1.5%of rdg ± 15dgts
4.000V	1.0mV	± 1.0% of rdg ± 4 dgts
40.00V	10mV	
400.0V	100mV	± 1.5%of rdg ± 4dgts
600V	1V	± 2%of rdg ± 4dgts

Input Impedance: 10MΩ
Frequency Range: 50 to 400Hz
Maximum Input: 600V dc or 600V ac rms.

DC Current (Auto-ranging for uA and mA)

Range	Resolution	Accuracy
400.0uA	0.1uA	± 1.0% of rdg ± 2 dgts
4000uA	1uA	± 1.0% of rdg ± 2 dgts
400.0mA	100uA	± 1.2% of rdg ± 2 dgts
10.00A	10mA	± 2.0% of rdg ± 5 dgts

Overload Protection: 500mA /660V and 10A / 600V fuse
Maximum Input: 400mA dc or 400mA ac rms on uA / mA ranges,
10A dc or ac rms on 10A range.

AC Current (Auto-ranging for uA and mA)

Range	Resolution	Accuracy
400.0uA	0.1uA	± 1.2% of rdg ± 2 dgts
4000uA	1uA	± 1.2% of rdg ± 2 dgts
400.0mA	100uA	± 1.5% of rdg ± 2 dgts
10.00A	10mA	± 2.0% of rdg ± 5 dgts

Overload Protection: 500mA /660V and 10A / 600V Fuse
AC Response: 50 Hz to 400 Hz
Maximum Input: 400mA dc or 400mA ac rms on uA / mA ranges, 10A dc or ac rms on 10A range.

Resistance (Auto-ranging)

Range	Resolution	Accuracy
400.0Ω	0.1Ω	± 1.5% of rdg ± 4 dgts
4.000kΩ	1Ω	± 1.5% of rdg ± 2 dgts
40.00kΩ	10Ω	
400.0kΩ	100Ω	
4.000MΩ	10kΩ	± 2.0% of rdg ± 2 dgts
40.00MΩ	1MΩ	± 2.5% of rdg ± 2 dgts

Overload Protection: 15 seconds maximum 250V dc or 250V ac rms. on all ranges.
Maximum open circuit voltage: 2.8V.

Capacitance (Auto-ranging)

Range	Resolution	Accuracy
50.00nF	10pF	± 5.0% of rdg ± 7 dgts
500.0nF	0.1nF	± 3.0% of rdg ± 5 dgts
5.000μF	1nF	± 4.0% of rdg ± 5 dgts
50.00μF	10nF	
100.0μF	0.1uF	

Input Protection: 600V dc or 600V ac rms

Frequency (Auto-ranging)

Range	Resolution	Accuracy
5.000Hz	0.001Hz	± 1.2% of rdg ± 3 dgts
50.00Hz	0.01Hz	
500.0Hz	0.1 Hz	
5.000kHz	1 Hz	
50.00kHz	10Hz	
500.0kHz	100Hz	
10.00MHz	1kHz	± 1.5% of rdg ± 4 dgts

Sensitivity: >0.5V RMS while ≤1MHz ;
Sensitivity: >3V RMS while >1MHz ;
Input Protection: 250V dc or 250V ac rms.

Diode and Continuity check

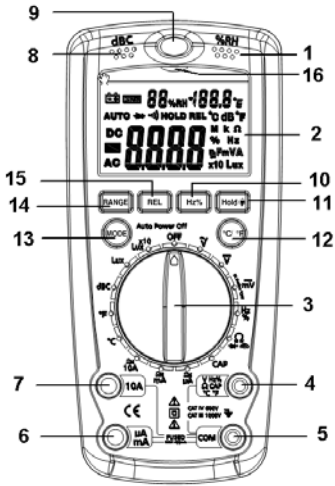
Diode: Test current 1.4mA dc and open circuit voltage 2.8V dc.

Continuity: Built in Buzzer will be sound if the circuit resistance is less than 50Ω.

Overload Protection: maximum 600V dc or 600V ac rms.

5. PANEL DESCRIPTION

1. **Humidity & Temperature**: Humidity Sensor and Semiconductor Sensor inside for Indoor.
2. **LCD display**: 3 4/5 digits LCD display
3. **Function** switch
4. **V/Hz%/Ω/Cap/ °C** input jack
5. **COM** input jack
6. **uA/mA** input jack
7. **10A** input jack
8. **Microphone**: Electric condenser microphone inside.
9. **Photo Detector**: Long life silicon photo diode inside.
10. **Hz/%** button



The button at AC/DC Votalge measurement and AC/DC Current measurement and Hz% measurement Function is availability

11. **Hold** button
    The HOLD function allows the meter to "freeze" a measurement for later reference.Press the HOLD button to “freeze” the reading on the indicator. The “HOLD” message will be appear in the display.
12. **Backlight** button
    Press the backlight button for LCD light , again Press the backligh button to exit light mode.
13. **MODE** button
    The button to select AC or DC measurement when in A, mA , uA ,and Ω, ⊣►⊢, •))) ranges.
14. **Range** button
    The button to select AC or DC measurement when in Voltage, Ω ranges.
15. **REL** button
    The relative measurement feature allows you to make measurements relative to a stored reference value. A reference voltage, current, Capacitor, etc. can be stored and measurements made in comparison to that value. The displayed value is the difference between the reference value and the measured value.
    Perform the measurement as described in the operating instructions.
    Press the **REL** button to store the reading in the display and the "**REL**" indicator will appear on the display.
    The display will now indicate the difference between the stored value and the measured value.
    Press the **REL** button to exit the relative mode.
16. **NCV** indicate lamp

6. OPERATING INSTRUCTION

Measuring Sound Level

1. Set the function switch to "dB" position.
2. Move the meter and face the microphone to sound source in a horizontal position.
3. The C-weighting curve is nearly uniform over the frequency range from 30 to 10,000Hz, thus giving an indication of overall Sound level.
4. The Fast response is suitable to measure short bursts and peak values from sound source.
5. The sound level will be displayed.
6. Note: Strong wind (over 10m/sec.) striking the microphone can cause misreading for measurement in windy locations, a windscreen should be used in front of microphone.

Measuring Humidity

1. Humidity Measurement for indoor:
2. Set the function switch to the ON position.
3. Place the meter in the required room to soak
4. Read the %RH in the display for about two hours.

Measuring Light

1. Set the function switch "lux" scale and set the range to desired ("lux" or "x10 lux") range.
2. Move the meter and face the photo detector to light source in a horizontal position.
3. Read the illuminance nominal from the LCD display.
4. Over-range: If the instrument only display one "1" in the M.S.D. the input signal is too strong, and a higher range should be selected.