True Multimeter
User Manual

Please read this manual before switching the unit on.
Important safety information inside.

Contents Page

1-Introduction

Congratulations on your purchase of the AutorangingTrue RMS Multimeter. The series consists of the following models:

The Autoranging True RMS Multimeter with Flashlight & Bluetooth function.

1-1.All models measure

- AC/DC Voltage
- AC/DC Current
- Resistance
- Capacitance
- Frequency/Duty Cycle
- Continuity
- Diode

1-2.The Autoranging True RMS Multimeter features

- Auto Power OFF
- Data Hold
- Max/Min
- Flashlight/Bluetooth wireless transmit
- Backlit LCD display

2-Safety

2-1.International Safety Symbols

This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information.

This symbol, adjacent to a terminal, indicates that, under normal use, hazardous voltages may be present

Double insulation

2-2.SAFETY NOTES

- Do not exceed the maximum allowable input range of any function.
- Do not apply voltage to meter when resistance function is selected.
- Set the function switch OFF when the meter is not in use.
- Remove the battery if meter is to be stored for longer than 60 days.

2-3.WARNINGS

- Set function switch to the appropriate position before measuring.
- When measuring volts do not switch to current/resistance modes.
- Do not measure current on a circuit whose voltage exceeds 600V.
- When changing ranges always disconnect the test leads from the circuit under test.

2-4.CAUTIONS

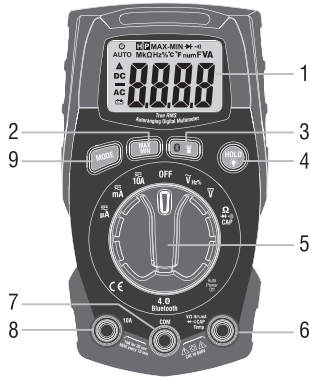
- Improper use of this meter can cause damage, shock, injury or death. Read and understand this user manual before operating the meter.
- Always remove the test leads before replacing the battery or fuses.
- Inspect the condition of the test leads and the meter itself for any damage before operating the meter. Repair or replace any damage before use.
- Use great care when making measurements if the voltages are greater than 25VAC rms or 35VDC. These voltages are considered a shock hazard.
- Always discharge capacitors and remove power from the device under test before performing Diode, Resistance or Continuity tests.
- Voltage checks on electrical outlets can be difficult and misleading because of the uncertainty of connection to the recessed electrical contacts. Other means should be used to ensure that the terminals are not “live”.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Function	Maximum Input
A AC, A DC	10A DC/AC
V DC, V AC, Frequency, Duty cycle	600V DC/AC
Resistance, Capacitance, Diode Test	250V DC/AC

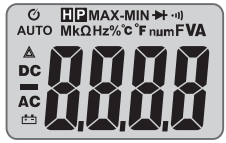
3-Description

3-1.Meter Description

1-LCD display
2-MAX/MIN button
3-Flashlight/BT wireless transmit button
4-Data Hold/Backlight button
5-Rotary Function swith
6-**V Ω CAP TEMP Hz mA** jack
7-COM input jac
8-10A input jack
9-MODE select button



3-2.Display icons Description



H	Data Hold
Minus sign	Negative reading display
0 to 3999	Measurement display digits
△	Relative
AUTO	Auto Range mode
DC/AC	Direct Current/Alternating Current
	Low battery
mV or V	Milli-volts or Volts(Voltage)
Ω	Ohms(Resistance)
A	Amperes(Current)
F	Farad(Capacitance)
Hz	Hertz(Frequency)
°C °F	Fahrenheit and Celsius units(Temperature)
n, m, µ , M, k	Unit of measure prefixes: nano, milli, micro, mega, and kilo.
•ıl)	Continuity test
▶|	Diode test
	Bluetooth wireless transmit

4-Specifications

Function	Range & Resolution	Accuracy(% of reading + digits)
AC Current 50/60Hz True RMS	400.0uA AC	±(2.0% + 5d)
	4000uA AC	±(2.5% + 5d)
	40.00mA AC	
	400.0mA AC	
	10A AC	±(3.0% + 7d)
DC Current	400.0uA DC	±(1.0% + 3d)
	4000uA DC	±(1.5% + 3d)
	40.00mA DC	
	400.0mA DC	
	10A DC	±(2.5% + 5d)
AC Voltage 50/60Hz True RMS	4.000V AC	±(1.0% + 5d)
	40.00V AC	
	400.0V AC	
	600V AC	±(1.2% + 5d)
DC Voltage	400.0mV DC	±(1.0% + 8d)
	4.000V DC	±(1.0% + 3d)
	40.00V DC	
	400.0V DC	
	600V DC	±(1.2% + 3d)
Resistance	400.0Ω	±(1.0% + 4d)
	4.000kΩ	±(1.5% + 5d)
	40.00kΩ	
	400.0kΩ	
	4.000MΩ	
	40.00MΩ	±(3.5% + 5d)

Capacitance	40.00nF	±(5.0% + 35d)
	400.0nF	±(3.0% + 5d)
	4.000μF	
	40.00μF	
	400.0μF	±(4.0% + 5d)
	4000μF	±(5.0% + 5d)
Frequency	9.999Hz	±(1.0% + 5d)
	99.99Hz	
	999.9Hz	
	9.999kHz	
	99.99kHz	
	500.00kHz	
	Sensitivity: 100V(<50Hz); 50V(50 to 400Hz); 5V(401 to 4000Hz)	

4-1.General Specifications

Display 3-3/4 digits(4000 counts)backlit LCD
Continuity check Threshold 50Ω; Test current <0.5mA
Diode test Test current of 0.3mA typical;
Open circuit voltage <3.3VDC typical
Low Battery indication " ⊟ " is displayed
Over-range indication " OL " display
Measurement rate 2 readings per second, nominal
Input Impedance 10MΩ(VDC and VAC)
AC response True rms(AAC and VAC)
Operating Temperature 41°F to 104°F(5°C to 40°C)
Storage Temperature -4°F to 140°F(-20°C to 60°C)
Operating Humidity Max 80% up to 87°F(31°C)decreasing linearly to 50% at 104°F(40°C)
Storage Humidity <80%
Operating Altitude 7000ft. (2000meters)maximum.

Battery	Two “AAA” 1.5V Alkaline Battery
Auto power OFF	After approx. 15 minutes
Dimensions & Weight	121*67*35mm; 140g
Safety	For indoor use and in accordance with the requirements for double insulation to IEC1010-1(2001): EN61010-1(2001) Overvoltage Category III 600V, Pollution Degree 2.

5-Operation

NOTES: Read and understand all Warning and Caution statements in this operation manual prior to using this meter. Set the function select switch to the OFF position when the meter is not in use.

5-1.AC/DC Voltage Measurements

- Insert the black test lead into the negative **COM** terminal and the red test lead into the positive **V•Ω•CAP•Hz•⏩ •mA** terminal.
- Set the function switch to the **VAC Hz/%** or **VDC** position.
- Use the **MODE** button to select **VAC** or **Hz%**.
- Connect the test leads in parallel to the circuit under test.
- Read the voltage measurement on the LCD display.

5-2.Resistance Measurements

- Insert the black test lead into the negative **COM** terminal and the red test lead into the **V•Ω•CAP•TEMP•Hz•⏩ •mA** positive terminal.
- Set the function switch to the **Ω •⏩ •))) • CAP** position.
- Touch the test probe tips across the circuit or component under test.
- Read the resistance on the LCD display.

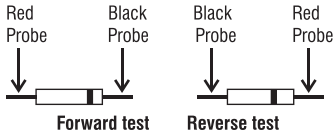
5-3.Capacitance Measurements

WARNING: To avoid electric shock, discharge the capacitor under test before measuring.

- Set the function switch to the **CAP** position.
- Insert the black test lead banana plug into the negative **COM** jack and the red test lead banana plug into the **V•Ω•CAP•TEMP•Hz•⏩ •mA** positive jack.
- Press the MODE button until “Capacitance Measurement” appears on the display.
- Read the capacitance value in the display.

5-4.Diode and Continuity Measurements

- Insert the black test lead banana plug into the negative **COM** jack and the red test lead banana plug into the positive diode jack.
- Turn the rotary switch to the **Ω • ▶| • •ıl) • CAP** position.
- Press the MODE button until " ▶| " appears on the display.
- Touch the test probes to the diode under test. Forward voltage will indicate 0.4V to 0.7V. Reverse voltage will indicate "OL". Shorted devices will indicate near 0mV and an open device will indicate "OL" in both polarities.



For Continuity tests, if the resistance is <50Ω, a tone will sound.

5-5.Frequency Measurements

- Insert the black test lead banana plug into the negative **COM** jack and the red test lead banana plug into the **V • Ω • CAP • TEMP • Hz • ▶| • mA** positive jack.
- Set the function switch to the **VAC Hz /%** Position.
- Touch the test probe tips across the part under test.
- Read the Frequency value on the display.
- The display will indicate the proper decimal point and value.
- Press **MODE** button again to return to the voltage mode.

6-Data Hold/backlight button

- Momentarily pressing the hold button will cause the meter to toggle in or out of hold mode
- Pressing the hold button for longer than 1 second toggles the backlight on or off.

7-MAX/MIN button

- Press the **MAX/MIN** button to activate the **MAX/MIN** recording mode. The display icon "**MAX**" will appear. The meter will display and hold the maximum reading and will update only when a new "**MAX**" occurs.

- Press the **MAX/MIN** button again and the display icon "**MIN**" will appear. The meter will display and hold the minimum reading and will update only when a new "**MIN**" occurs.
- To exit **MAX/MIN** mode press and hold the **MAX/MIN** button for 1 seconds.

8-Bluetooth/Flashlight button

- Short press the flashlight button, will turn on the flashlight, and then press the flashlight button, turn off the flashlight.
- Long press the Bluetooth key, will open the Bluetooth data transmission function, and then long press the Bluetooth key, will turn off the Bluetooth function.

9-Automatic Power OFF

In order to conserve battery life, the meter will automatically turn off after approximately 15 minutes. To turn the meter on again, turn the function switch to the OFF position and then to the desired function position.

10-Maintenance

WARNING: To avoid electrical shock, disconnect the meter from any circuit, remove the test leads from the input terminals, and turn OFF the meter before opening the case. Do not operate the meter with an open case.

10-1.Cleaning and Storage

Periodically wipe the case with a damp cloth and mild detergent; do not use abrasives or solvents. If the meter is not to be used for 60 days or more, remove the battery and store it separately.

10-2.Battery Replacement

- Remove the Phillips head screw that secures the rear battery door.
- Open the battery compartment.
- Replace Two "AAA" 1.5V Alkaline Battery.
- Secure the battery compartment.

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