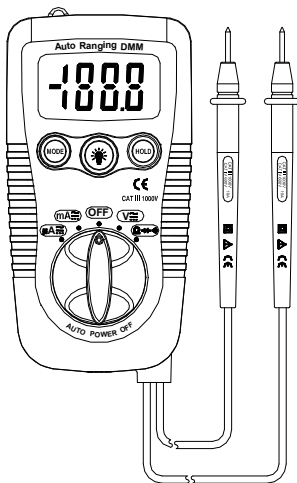


## Instruction Manual PAN 118

### 3in1 Pocket Autoranging DMM



## **Features**

- 3-1/2 digit (2000 count) LCD display
- Built-in non-contact AC voltage detector plus flashlight
- Double Molded housing
- CATIII 1000V
- 200mA/500V Resettable Fused current inputs and Overload protection on all ranges
- Autoranging with auto power off

## **Safety**

### **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

## Safety Precautions

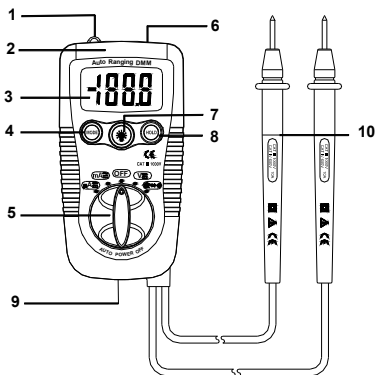
1. Improper use of this meter can cause damage, shock, injury or death. Read and understand this users manual before operating the meter.
2. Make sure any covers or battery doors are properly closed and secured.
3. Always disconnect the test leads from any voltage source before replacing the battery or fuses.
4. Do not exceed the maximum rated input limits.

Input Limits	
Function	Maximum Input
V DC or V AC	600V DC/AC
<b>uA , mA</b> AC/DC	200mA/500V fast acting Resettable Fuse
Resistance, Diode & Continuity Test	600V DC/AC

5. Use great care when making measurements if the voltages are greater than 25VAC rms or 35VDC. These voltages are considered a shock hazard.
6. Always discharge capacitors and remove power from the device under test before performing Diode, Resistance or Continuity tests.
7. Remove the battery from the meter if the meter is to be stored for long periods.

## Meter Description

1. Non-contact AC voltage detector probe tip
2. Non-contact AC voltage indicator light
3. 3 1/2 Digit (2000 count)
4. MODE button
5. Function switch
6. Flashlight
7. Flashlight button
8. Data Hold button
9. Battery Cover
10. Test leads



## Specifications

### Electrical Specifications

Function	Range	Accuracy
DC Voltage	200mV,	$\pm(0.5\% \text{ rdg} + 3\text{d})$
	2.000V, 20.00V, 200.0V, 600V	$\pm(1.2\% \text{ rdg} + 3\text{d})$
AC Voltage 40-400Hz	2.000V, 20.00V	$\pm(1.0\% \text{ rdg} + 8\text{d})$
	200.0V, 600V	$\pm(2.3\% \text{ rdg} + 10\text{d})$
DC Current	200.0 $\mu$ A, 2000 $\mu$ A	$\pm(2.0\% \text{ rdg} + 8\text{d})$
	20.00mA, 200.0mA	
AC Current	200.0 $\mu$ A, 2000 $\mu$ A	$\pm(2.5\% \text{ rdg} + 10\text{d})$
	20.00mA, 200.0mA	
Resistance	200.0 $\Omega$	$\pm(0.8\% \text{ rdg} + 5\text{d})$
	2.000k $\Omega$ , 20.00k $\Omega$ , 200.0k $\Omega$	$\pm(1.2\% \text{ rdg} + 5\text{d})$
	2.000M $\Omega$	$\pm(5.0\% \text{ rdg} + 5\text{d})$
	20.00M $\Omega$	$\pm(10.0\% \text{ rdg} + 5\text{d})$

<b>Max input voltage</b>	600V AC/DC
<b>Diode Test</b>	current 1mA max., open circuit voltage of 1.5V typical
<b>Continuity Check</b>	Audible signal if the resistance is $<150\Omega$
<b>Display</b>	2000 count 3 -1/2 digit LCD
<b>Over range indication</b>	LCD displays "OL"
<b>Polarity</b>	Minus (-) sign for negative polarity.
<b>Low Battery Indication</b>	"BAT" symbol indicates low battery condition.
Input Impedance	$>7.5M\Omega$ (VDC & VAC)
AC Response	Average responding
ACV Bandwidth	50Hz to 400Hz
Auto Power Off	15 minutes (approximately)
Fuse	mA, $\mu$ A ranges; 0.2A/500V fast acting Resettable Fuse
<b>Batteries</b>	Two 1.5V AAA
<b>Operating Temperature</b>	32°F to 104°F (0°C to 40°C)
<b>Storage Temperature</b>	14°F to 122°F (-10°C to 50°C)
<b>Weight</b>	145g
<b>Size</b>	104x55x32.5mm
<b>Standard</b>	IEC1010 CAT III 1000V Pollution degree II, CE Approved

## Operation

### AC/DC VOLTAGE MEASUREMENTS

**CAUTION:** Do not measure AC/ DC voltages if a motor

On the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the green V position.
2. Press the MODE button to indicate “DC” or “AC” on the display.
3. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
4. Read the voltage in the display



### DC/AC CURRENT MEASUREMENTS

1. Set the function switch to the  $\mu\text{A}/\text{mA}$  position.
2. For current measurements up to 2000 $\mu\text{A}$  DC/AC, set the function switch to the **mA** position
3. Press the MODE button to indicate “DC” / “AC” on the display.
4. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
5. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
6. Apply power to the circuit.
7. Read the current in the display

**NOTE:** 0.2A/500V fast acting Resettable Fuse current inputs and Overload protection on mA,  $\mu\text{A}$  ranges. No replacement required.




## RESISTANCE MEASUREMENT

**WARNING:** To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries and unplug the line cords.




1. Set the function switch to the  $\Omega$    position.
2. Press the MODE button to indicate  $\Omega$  on the display.
3. Touch the test probe tips across the circuit or part under test. It is best to disconnect one side of the part under test so the rest of the circuit will not interfere with the resistance reading.
4. Read the resistance in the display

## CONTINUITY CHECK

**WARNING:** To avoid electric shock, never measure continuity on circuits or wires that have voltage on them.

1. Set the function switch to the  $\Omega$    position.
2. Press the MODE button to indicate  on the display
3. Touch the test probe tips to the circuit or wire you wish to check.
4. If the resistance is less than approximately  $150\Omega$ , the audible signal will sound. If the circuit is open, the display will indicate "OL".

## DIODE TEST

1. Set the function switch to the  $\Omega$    position.
2. Press the MODE button to indicate  on the display.
3. Touch the test probes to the diode under test. Forward voltage will typically indicate 0.400 to 0.700V. Reverse voltage will indicate "OL". Shorted devices will indicate near 0V and an open device will indicate "OL" in both polarities



## Non-Contact AC Voltage Measurements

**WARNING:** Risk of Electrocution. Before use, always test the Voltage Detector on a known live circuit to verify proper operation

1. Touch the probe tip to the hot conductor or insert into the hot side of the electrical outlet.
2. If AC voltage is present, the detector light will illuminate.

**NOTE:** The conductors in electrical cord sets are often twisted. For best results, rub the probe tip along a length of the cord to assure placing the tip in close proximity to the live conductor.

**NOTE:** The detector is designed with high sensitivity. Static electricity or other sources of energy may randomly trip the sensor. This is normal operation

### Hold Button

The Data Hold function allows the meter to “freeze” a measurement for later reference

3. Press the “**DATA HOLD**” button to “freeze” the display, the “**HOLD**” indicator will appear.
4. Press the “**DATA HOLD**” button to return to normal operation.

### Flashlight

Press and hold the top button to turn the flashlight on. Release the button to turn the flashlight off.

### AUTO POWER OFF

The auto off feature will turn the meter off after 15 minutes.

## REPLACING THE BATTERY

1. Remove the bottom cover and secure the screw.
2. Replace old battery with fresh Two 1.5V AAA type battery.
3. Replace the bottom cover and secure the screw.

### ***REPLACING THE FUSE***

1. Disconnect the test leads from the meter.
2. Remove the test leads holder and top cover one screw.
3. pull the pcb
4. Lift the center circuit board straight up from the connectors to gain access to the fuse holders.
5. Gently remove the old fuse and install the new fuse into the holder.
6. Always use a fuse of the proper size and value (0.2A/250V fast blow for the 200mA range
7. Align the center board with the connectors and gently press into place.
8. Replace and secure the rear cover and screw.

**WARNING:** To avoid electric shock, do not operate your meter until the fuse cover is in place and fastened securely.