Pocket Multimeter M320

USER'S MANUAL

SAFETY INFORMATION

Measurement category II is for the measurements performed on circuits directly connected to the low voltage installation. This meter has been designed according to IEC-1010 concerning electronic measuring instruments with an overvoltage category (CAT II) and pollution degree 2.

Follow all safety and operating instructions to ensure the meter is used safely and is kept in good condition.

With proper use and care, your digital multimeter will give you years of satisfactory service.

DURING USE

- Never exceed the protection limit indicated in the specifications for each range of measurement.
- Never use the meter to measure voltages that might exceed 600V above earth ground in category II installations.
- Always be careful when working with voltages above 60V dc or 30V ac rms. Keep fingers behind the probe barriers while measuring.
- Do not perform resistance measurements on live circuits.
- Inspect test leads and probes for cracks, breaks or crazes in the insulation before using the meter.

SAFETY SYMBOL

⚠	***Caution*:** refer to the instruction manual. Incorrect use may result in damage to the device or its components.
~	AC (Alternating Current)
⎓	DC (Direct Current)
≂	AC or DC
⏚	Earth ground
⧈	Double insulated
⏛	Fuse
CE	Conforms to European Union directives

MAINTENACE

- Before opening case, always disconnect test leads from all energized circuits.
- For continuous protection against fire, replace fuse only with ratings: F 500mA /250V ∅5×20 (Quick Acting).
- Never use the meter unless the back cover is in place and fastened completely.
- Do not use abrasives or solvents on the meter. To clean it use only a damp cloth and mild detergent.

GENERAL DESCRIPTION

This compact digital multimeter is designed to measure AC and DC voltage, AC and DC current, Resistance, Capacitance, Diode and to perform audible continuity checks with accuracy and ease.

Small and light weight, with a carrying case and test leads wound on its body, this instrument will provide you years of satisfactory service.

SPECIFICATION

Accuracy is specified for one year after calibration, at operating temperatures of 18℃ to 28℃, with relative humidity at 0% to 75%.

Accuracy specifications take the form of: ±(% of Reading + Number of Least Significant Digits)

Voltage

Function	Range	Resolution	Accuracy
DC Millivolt. **mV⎓**	400mV	0.1mV	±(1.0% of rdg +10 digits)
DC Voltage **V⎓**	4V	1mV	±(0.5% of rdg +3 digits)
	40V	10mV	
	400V	100mV	
	600V	1V	
AC Voltage[1,2] **V~**	4V	1mV	±(1.0% of rdg + 3 digits)
	40V	10mV	
	400V	100mV	
	600V	1V	

1. Frequency Range: 40Hz~500Hz
2. Response: Average, calibrated in rms of sine wave
3. Overload Protection: 600V dc or 600V ac rms.

Current

Function	Range	Resolution	Accuracy
DC Current mA ⎓	40mA	0.01mA	±(1.5% of rdg+3 digits)
	400mA	0.1mA	
AC Current mA ~	40mA	0.01mA	±(1.5% of rdg+3 digits)
	400mA	0.1mA	
Overload protection: F 500mA/250V fuse for mA range. Maximum input current: 400mA dc or 400mA ac rms for mA range.			

Resistance

Function	Range	Resolution	Accuracy
Resistance Ω	400.0Ω	0.1Ω	±(0.5% of rdg+3 digits)
	4.000kΩ	1Ω	±(0.5% of rdg+2 digits)
	40.00kΩ	10Ω	
	400.0kΩ	100Ω	
	4.000MΩ	1kΩ	
	40.00MΩ	10kΩ	±(1.5% of rdg+3 digits)
Overload protection: 600V dc or 600V ac rms.			

Capacitance

Function	Range	Resolution	Accuracy
Capacitance ⊣⊢	50nF	10pF	<10nF:±[5.0% of (rdg-50 digits)+10 digits] ±(3.0% of rdg+10 digits)
	500nF	100pF	±(3.0% of rdg+5 digits)
	5μF	1nF	
	50μF	10nF	
	100μF	100nF	

Overload protection: 600V dc or 600V ac rms.

Diode Test

Function	Range	Resolution	Accuracy
Diode Test	1 V	0.001V	1.0% uncertainty
Overload protection: 600V dc or 600V ac rms.			

Test Condition: Forward DC current approximately 1mA. Reversed DC voltage approximately 1.5V.

Continuity Check

Function	Range	Resolution	Description
Continuntiy Test	400Ω	0.1Ω	Continuity beeper≤ 50Ω
Overload protection: 600V dc or 600V ac rms.			

Test Condition: Open circuit voltage: approx. 0.5V

WITH AUTO POWER OFF FUNCTION

GENERAL SPECIFICATIONS

Environment conditions:
600V CAT. II
Pollution degree: 2
Altitude < 2000m
Operating temperature: 0~40℃ (32℉~122℉)
Storage temperature: -10~60 ℃ (14℉~140℉)
MAX. Voltage between terminals and earth ground: 600V AC rms or 600V DC.
Fuse Protection: F 500mA/250V ∅5×20.
Sample Rate: 3 times/sec for digital data.
Display: 3999 LCD display. Automatic indication of functions and symbols.
Range selection: automatic.
Over Range indication: LCD will display "OL".
Low battery indication: The "BATT" is displayed when the battery is under the proper operation range.
¥ Polarity indication: "–" displayed automatically.
¥ Power source: 3V ⎓
¥ Battery type: SR44.
¥ Dimensions: 120(L)×70(W)×18(H) mm.
¥ Weight: 110g. Approx. (battery included).

OPERATING INSTRUCTION

Voltage Measurement

1. Set rotary switch to the V range.
2. Press the **SELECT** key to select DCV or ACV measuring mode.
3. Connect the black and red test leads to the circuit being measured
4. Read the displayed value. The polarity of red test lead connection will be indicated when making a DCV measurement.

Current Measurement

1. Turn off power to the circuit. Discharge all high voltage capacitors.
2. Set the rotary switch to the mA range.
3. Press the **SELECT** key to select DCA or ACA measuring mode.
4. Break the circuit path to be tested.
Touch the black probe to the more negative side of the break; touch the red probe to the more positive side of the break. (Reversing the leads will give a negative reading, but will not damage the Meter.)
6. Turn on power to the circuit; then read the display.
7. Turn off power to the circuit and discharge all high voltage capacitors. Remove the Meter and restore the circuit to normal operation.

Capacitance Measurement

1. Set the rotary switch to ⊣⊢ range.
2. Connect the test leads to the capacitor being measured and read the displayed value.

Resistance Measurement

1. Set the rotary switch to Ω range.
2. Connect the test leads to the circuit or resistor being measured and read the displayed value.

Diode Test

1. Set the rotary switch to ⊣◀ range.
2. For forward-bias readings on any semiconductor component, place the red test lead on the component's anode and place the black test lead on the component's cathode.
3. The meter will show the approx. forward voltage of the diode

Audible Continuity Test

1. Set the rotary switch to 🔊 range.
2. Connect the test leads to the resistance in the circuit being measured.
3. When the test lead to the circuit is below 50Ω, a continuous beeping will indicate it.

KEY FUNCTION

Hold Key

Data Hold mode makes the meter stop updating the display. Enabling Data Hold function in auto range mode makes the meter switch to Manual ranging mode, but the full-scale range remains the same. Data Hold function can be cancelled by changing the measurement mode, pressing **RANGE** key, or push **HOLD** key again.

To enter and exit the Data Hold mode:

1. Press **HOLD** key (short press). Fixes the display on the current value, **DH** is displayed.
2. A second short press returns the meter to normal mode.

Select Key

1. Switches between dc and ac voltage or current.
2. *Disables automatic power-off feature.*

BATTERY SAVER

The Meter enters the "sleep mode" and blanks the display if the Meter is on but not used for 30 minutes.

Press the **HOLD** key or rotate the rotary switch to wake the meter up.

To disable the Sleep mode, hold down the **SELECT** function key while turning the meter on.

BEEPER INDICATION

When press the function key and if it is valid, a beep will be emitted. The buzzer will sound five times one minute before auto power off. And a long sound to show the auto power off. In the continuity measuring status, if the resistance is smaller than 50Ω,the buzzer will sound.

BATTERY & FUSE REPLACEMENT

To replace the Meter's battery:

If the sign "BATT" appears on the LCD display, it indicates that the battery should be replaced. Remove the screw on the back cover and open the battery case. Replace the exhausted batteries with two new 1.5V batteries of the same type (SR44).

To replace the Meter's fuse:

Fuse rarely need replacement and blow almost always as a result of operator's error. Open the case and replace the blown fuse with the same rating specified: F 500mA /250V ∅5×20.

WARNING!

Before attempting to open the case, always be sure that test leads have been disconnected from measurement circuits. Close case and tighten screws completely before using the meter to avoid electrical shock hazard.

ACCESSORIES

Battery	1.5V (SR44)	2
Carrying Case		1
Operating manual		1

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