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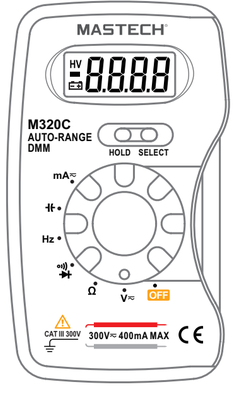
M320C

AUTO RANGING POCKET-SIZED DIGITAL MULTIMETER OPERATOR'S INSTRUCTION MANUAL



CAT III 300V

Intertek

CE

Safety information

This meter has been designed according to EN61010-1, EN61010-2-030,EN61010-2-033, 300V CAT III and pollution2.
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 300V above earth ground in category III 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
- If the equipment is used in a manner not specified by manufacturer, the protection provided by equipment may be impaired.

Safety Symbols

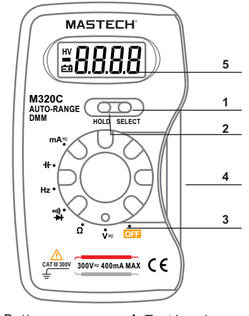
⚠	Important safety information ,refer to the instruction manual.
⏚	Earth(ground) TERMINAL
⧈	Equipment protected throughout by double insulation.
⎓	Fuse must be replaced with ratings specified in the manual.
~	AC (Alternating Current)
⎓	DC (Direct Current)
CE	European union directives
ETL	CONFORMS TO UL STD. 61010-1, 61010-2-030, 61010-2-033, 61010-031; CERTIFIED TO CSA STD. C22.2 No.61010-1,61010-2-030, 61010-2-033,61010-031.

CAT III: Applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.Example:fixed equipment switchboards,circuit breakers,wiring,including cables,bus bars,junction boxes, switches,sockets,utput terminals on devices for industrial use and other equipment.

Maintenance

- Before opening case, always disconnect test beads from all energized circuits.
- For continuous protection against fire, replace fuse only with ratings; F 400mA/300V (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 uses only a damp cloth and mild detergent.

FRONT PANEL



1. Select Button
   Momentary-type push switch for measuring functions select.
2. HOLD Button
   Momentary-type push switch for data hold.
3. Function Switch
   Rotary switch for selecting functions.
4. Test Leads
   Red test lead for positive (+) and black test lead for negative (-)
5. LCD Display
   3 ¾ digits, 7 segment, maximum 3999 counts.

General Description

This compact digital multimeter is designed to measure AC and DC Voltages, AC and DC current, Resistance, Diode and to perform audible Continuity checks with accuracy and ease.
Small and lightweight, with a carrying case and test leads wound on its Body, this instrument will provide you years of satisfactory service.
Auto power-off function extends the battery life. If no key-inputs happen around 30 minutes, this meter will be turned off automatically.

Specifcation

Accuracy is guaranteed for 1 year, 23°C±5°C,less than 75% RH.

AC Voltage

Range	Resolution	Accuracy
4V	1mV	±0.8% of rdg±4dgts
40V	10mV	±0.8% of rdg±4dgts
300V	1V	±0.8% of rdg±4dgts

Overload protection: 300V DC or rms AC for all ranges
Input Impedance:10MΩ
Frequency range: 50Hz to 400Hz, 50 to 60Hz for 300V range.
Response: Average responding, calibrated in rms of a sine wave

DC Voltage

Range	Resolution	Accuracy
400mV	0.1mV	±0.5% of rdg ±3dgt
4V	1mV	±0.5% of rdg ±3dgt
40V	10mV	±0.8% of rdg ±3dgt
300V	1V	±0.8% of rdg ±3dgt

Overload protection: 300V DC or rms AC for all ranges
Input Impedance: 10MΩ

AC Current

Range	Resolution	Accuracy
40mA	0.01mA	±3.0% of rdg ±4dgts
400mA	0.1mA	±3.0% of rdg ±4dgts

Overload Protection: F 400mA/300V fuse.

DC Current

Range	Resolution	Accuracy
40mA	0.01mA	±2.0% of rdg ±3dgts
400mA	0.1mA	±2.0% of rdg ±3dgts

Overload Protection: F 400mA/300V fuse

Audible Continuity Test

Range	Description
•))	Built-in buzzer sounds when resistance is less than 50±20Ω.

Overload Protection:250V rms ac

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Resistance

Range	Resolution	Accuracy
400Ω	0.1Ω	±1.0% of rdg ±3dgts
4kΩ	1Ω	±1.0% of rdg ±3dgts
40kΩ	10Ω	±1.0% of rdg ±3dgts
400kΩ	0.1kΩ	±1.0% of rdg ±3dgts
4MΩ	1kΩ	±1.0% of rdg ±3dgts
40MΩ	10kΩ	±2.0% of rdg ±4dgts

Maximum Open Circuit Voltage:0.65V
Overload Protection: 250V rms ac for all ranges

Frequency

Range	Resolution	Accuracy
10Hz	0.001Hz	±0.5% of rdg ±3dgts
100Hz	0.01Hz	±0.5% of rdg ±3dgts
1kHz	0.001kHz	±0.5% of rdg ±3dgts
10kHz	0.01kHz	±0.5% of rdg ±3dgts
100kHz	0.1kHz	±0.5% of rdg ±3dgts

Overload Protection: 300V DC or rms AC for all ranges
Sensitive: 500mV RMS

Capacitance

Range	Resolution	Accuracy
4nF	0.001nF	±5% of rdg ±10dgts
40nF	0.01nF	±4% of rdg ±5dgts
400nF	0.1nF	±3% of rdg ±3dgts
4uF	0.001uF	±3% of rdg ±3dgts
40uF	0.01uF	±3% of rdg ±3dgts
100uF	0.1uF	±3% of rdg ±3dgts

Overload protection: 250Vp

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Diode test

Range	Description
→|←	Show the approx. forward voltage drop of the diode.

Overload Protection: 250V rms ac

General Characteristics

Environment conditions:
Pollution degree: 2.
Altitude < 2000 m.
Operating temperature:
0~40°C (32°F to 104°F), (<80% RH, non-condensing)
Storage temperature:
-10~50°C(14°F to 122°F), (<70% RH, battery removed)
Maximum voltage between terminals and earth ground:CAT III 300V

Fuse Protection	F 400mA/300V
Power supply	3V battery, SR44 or LR44 X 2
Display	LCD, 3999 counts, updates 2-3/sec.
Measuring method	Dual-slope integration A/D converter
Over range indication	Figure"OL" on the display
Polarity indication	"-"displayed for negative polarity
Operating temperature	0°Cto 40°C (32°F to 104°F)
Storage temperature	-10°C to 50°C (10°F to 122°F)
Low battery indication	" 🔋 "appears on the display
Size	120X70X18mm
Weight	Approx.110g including batteries

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Operating Instruction

DC Voltage Measurement

1. Set the function switch at V position. And push SELECT button for DC.
2. Connect test leads across the source or load under measurement. The Polarity of red lead connection will be indicated at the same time as the Voltage value.

AC Voltage Measurement

1. Set the function switch at V position. And push SELECT button for AC.
2. Connect test leads across the source or load being measured and read the voltage value on the LCD display.

DC Current Measurement

1. Set the function switch at mA position. And push SELECT button for DC.
2. Open the circuit in which the current is to be measured, and connect Test leads in series with the circuit.
3. Read current value on the LCD display along with the polarity of red lead connection.

AC Current Measurement

1. Set the function switch at mA position. And push SELECT button for AC.
2. Open the circuit in which the current is to be measured, and connect Test leads in series with the circuit and read LCD display.

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Resistance Measurement

1. Set the function switch at Ω position. (Note: The polarity of red lead is positive"+")
2. Connect test leads across the resistor to be measured and read LCD display.
3. If the resistor being measured is connected to a circuit, turn off power of the circuit and discharge all capacitors before applying test leads.
4. When measuring resistance above 1MΩ, the meter will take a few seconds to get stable reading .It is normal for high resistance measurement.

Frequency Measurement

1. Set the function switch at Hz position.
2. Connect test leads across the source or load being measured and read the frequency value on the LCD display.

Capacitance Measurement

1. Set the function switch at Capacitance position.
2. Connect test leads across the source or load being measured and read the capacitance value on the LCD display.

Diode Test

1. Set the function switch at →|← position.(Note: The polarity of red lead is Positive"+")
2. Connect the red test lead to the anode of the diode to be tested and the Black lead to the cathode of the diode.
3. The approx. forward voltage drop of the diode will be displayed .If the Connection is reversed; only figure "OL"will appear on the LCD display.

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Audible Continuity test

1. Set the function switch at •)) position. And push SELECT button for continuity
2. Connect test leads to two points of the circuit to be tested.
   If the Resistance is less than 50±20Ω, buzzer will sound.

Data Hold Application

HOLD button is used to hold a measuring result. When this button is Pushed, LCD will keep the last reading until pushing this button again or rotating the function switch.

Battery&Fuse Replacement

If the sign 🔋 appears on the LCD display, it indicates that the battery should be replaced. Remove the screw on the back cover and open the Case. Replace the exhausted batteries (SR44 or LR44) with same types.
Fuse rarely need replacement and blow almost always as a result of Operator's error .Open the case and replace blown fuse with same ratings(F400mA/300V)

⚠WARNING

To avoid electric shock, make sure the probes are disconnected from the measured circuit before removing the rear cover. Make sure the rear cover is tightly screwed before using the instrument.

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Warning

Before attempting to open the case, always be sure that test leads have been disconnected from measurement circuit. Close case and tighten Screws completely before using the meter to avoid electrical shock hazard.
For protection against fire, replace fuse only with the specified ratings: F 400mA/300V.

Replacing test leads

Replace test leads if leads become damaged or worn.

⚠WARNING

If the test leads need to be replaced, you must use a new one which should meet EN 61010-031 standard, rated CAT III 300V, 0.4A or better.

Accessories

Battery	4pcs (Sr44 or Lr44)
Carrying Case	1pcs
Operating manual	1pcs

Caution:

Using this appliance in an environment with a strong radiated radio-frequency electromagnetic field (approximately 3V/m), may influence its measuring accuracy. The measuring result can be strongly deviating from the actual value.