MM39 MULTIMETER

INSTRUCTION MANUAL

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SAFETY INFORMATION

The following safety information must be observed to ensure maximum personal safety during the operation of this meter:

Use the meter only as specified in this manual or the protection provided by the meter might be impaired.Test the meter on a known voltage before using it to determine if hazardous voltages are present.

Do not use the meter if the meter or test leads look damaged, or if you suspect that the meter is not operating properly. Never ground yourself when taking electrical measurements.

Do not touch exposed metal pipes,outlets, fixtures, etc., which might be at ground potential. Keep your body isolated from ground by using dry clothing, rubber shoes, rubber mats, or any approved insulating material. Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit. Small amounts of current can be dangerous. Use caution when working above 60V DC or 30V AC rms. Such voltages pose a shock hazard.

When using the probes, keep your fingers behind the finger guards.

Measuring voltage which exceeds the limits of the multimeter may damage the meter and expose the operator to a shock hazard. Always observe the meter voltage limits as stated on the front of the meter.

SPECIFICATIONS

Display: 3½ digit liquid crystal display (LCD) with a maximum reading of 1999

Polarity: Automatic, positive implied, negative polarity indication

Overrange: (OL) or (-OL) is displayed

Zero: Automatic

Low battery indication: The "[-+]" is displayed when the battery voltage drops below the operating level

Measurement rate: 2 times per second, nominal

Auto power off: Approx. 10 minutes

Operating environment:
0°C to 50°C at < 70% relative humidity

Storage temperature:
-20°C to 60°C at < 80% relative humidity

Accuracy:
Stated accuracy at 23°C ± 5°C, <75% relative humidity

Temperature Coefficient: 0.1 × (specified accuracy) per °C. (0°C to 18°C, 28°C to 50°C)

Altitude: 6561.7 Feet (2000m)

Power: 1.5V batteries x2, R03/SIZE AAA

Battery life: 200 hours typical with carbon-zinc

Dimensions: 145mm (H) × 70mm (W) × 34mm (D)

Weight: Approx. 11.1 oz. (315g) including holster

Accessories: One pair test leads, 1.5V battery x2 (installed) and Operating Instructions

DC VOLTS

Ranges: 200mV, 2V, 20V, 200V, 600V

Resolution: 0.1mV

Accuracy: ±(1.0% rdg + 2 dgts)

Input impedance: 200mV: >100MΩ: 2V:10MΩ
20V ~ 600V:9.1MΩ

Overload protection: 600VDC or AC rms

AC VOLTS (50Hz - 500Hz)

Ranges: 200mV, 2V, 20V, 200V, 600V

Resolution: 0.1mV

Accuracy:

±(2.0% rdg + 5 dgts) 50Hz ~ 100Hz on 200mV range

±(2.0% rdg + 5 dgts)

Input impedance: 200mV:>100MΩ: 2V:10MΩ
20V ~ 600V:9.1MΩ

Overload protection: 600V DC or AC rms

CURRENT

Ranges: 10A

Resolution: 0.01A

DC accuracy: ± (3.0% rdg + 3 dgts)

AC accuracy: (50Hz ~ 500Hz) ± (3.5% rdg + 5 dgts)

Voltage burden: 0.2V

Input protection:10A/500V fast blow ceramic fuse

RESISTANCE

Ranges: 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ, 20MΩ

Resolution: 0.1Ω

Accuracy:

±(1.5% rdg + 4 dgts) on 200Ω to 200kΩ ranges

±(2.5% rdg +4 dgts) on 2MΩ range

±(5.0% rdg + 5 dgts) on 20MΩ range

Open circuit volts: -0.45Vdc (-1.2Vdc on 200Ω range)

Overload protection: 500V DC or AC rms

DIODE TEST

Test current: 1.0mA (approximate)

Accuracy: ±(3.0% rdg + 3 dgts)

Resolution: 10mV

Audible indication: <0.25V

Open circuit volts: 3.0Vdc typical

Overload protection: 500VDC or AC rms

CONTINUITY

Audible indication: Less than 25Ω

Response time: 500ms

Overload protection: 500VDC or AC rms

OPERATION

Before taking any measurements, read the Safety Information Section. Always examine the instrument for damage, contamination (excessive dirt, grease, etc.) and defects. Examine the test leads for cracked or frayed insulation. If any abnormal conditions exist do not attempt to make any measurements.

Data Hold
Press [HOLD] button to lock the reading on display, and release it by pressing the button again.

Manually Selecting Range
The meter also has a manual range mode. In manual range, you select and lock the meter in a range. To manually select a range:
Press [RANGE] button to hold the selected range. Subsequently pressing the [RANGE] button will select each range in sequence from the lowest to highest range. Hold the button for 2 seconds to return to the Autorange Mode.

Voltage Measurements
1. Connect the red test lead to the "VΩ" jack and the black test lead to the "COM" jack.
2. Set the Function/Range switch to the desired Voltage type (AC or DC) and range. If magnitude of voltage is not known, set switch to the highest range and reduce until a satisfactory reading is obtained.
3. Connect the test leads to the device or circuit being measured.
4. For DC, a (-) sign is displayed for negative polarity, positive polarity is implied.

Current Measurements
1. Connect the red test lead to the (10A) jack and the black test lead to the "COM" jack.
2. Set the Function/Range switch to the DC or AC ranges.
3. Remove power from the circuit under test and open the circuit path where the measurement is to be taken. Connect the meter in series with the circuit.
4. Apply power and read the value from the display.

Resistance Measurements
1. Set the Function/Range switch to the desired resistance range.
2. Remove power from the equipment under test.
3. Connect the red test lead to the "VΩ" jack and the black test lead to the "COM" jack.
4. Connect the test leads to the points of measurements and read the value from the display.

Diode Tests
1. Connect the red test lead to the "V" jack and the black test lead to the "COM" jack.
2. Set the Function/Range switch to the "⊣◁" position.
3. Turn off power to the circuit under test. External voltage across the components causes invalid readings.
4. Touch probes to the diode. The forward-voltage drop is about 0.6V (typical for a silicon diode).
5. Reverse probes. If the diode is good, "OL" is displayed. If the diode is shorted, "0.00" or another number is displayed.
6. If the diode is open, "OL" is displayed in both directions.
7. Audible Indication: Less than 0.25V.

Continuity Measurements
1. Set the Funtion switch to the "•)))" position.
2. Turn off power to the circuit under test. External voltage across the components causes invalid reading.
3. Connect the test leads to the two points at which continuity is to be tested. The buzzer will sound if the resistance is less than approximately 25Ω.

Auto Power off
1. Auto power off: approx. 10 minutes.
2. After auto power off, press any button to restart the meter, and the reading will be maintained in the display.

Cancellation of Auto Power Off Feature:

Press and hold the (RANGE) button while rotating function switch from off to any position. The auto power off feature is disabled. Note “APO” annunciator is missing from the LCD.

MAINTENANCE

> WARNING
>
> Remove test leads before changing battery, fuse or performing any servicing.

Battery Replacement
Power is supplied by a 1.5 volt battery x2 (R03/SIZE AAA). The "⊟" appears on the LCD display when replacement is needed. To replace the battery, remove the 2 screws from the back of the meter and lift off the battery cover. Insert new batteries, observing correct polarity.

Fuse Replacement
If no current measurements are possible, check for a blown overload protection fuse. For access to fuses, remove the four screws from the back of the meter and lift off the front case. Replace F1 only with the original type 10A/500V, fast acting ceramic fuse.

Cleaning
Wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents. Dirt or moisture in the terminals can affect readings.

Safety: Conforms to IEC61010-1 (EN61010-1),CATIII 600V, Class II, Pollution degree 2 Indoor use.CAT III: is for measurements performed in the building installation.

EMC: Conforms to EN61326.

The symbols used on this instrument are:

CE	**Equipment complies with relevant EU Directives**
~	**AC (Alternating Current)**
⏚	**Ground**
⎓	**Direct Current**
⧈	**Equipment protected by Double Insulation (Class II)**
⚠	**Caution - refer to accompanying documents**
⚠	**Caution - risk of electric shock**
🗑	**End of life disposal of this equipment should be in accordance with relevant EU Directives**