MM39 MULTIMETER

Instruction Manual

MARTINDALE ELECTRIC

Keeping You Safe

GENERAL SAFETY INFORMATION: Always read before proceeding.

Warning

These instructions contain both information and warnings that are necessary for the safe operation and maintenance of this product. It is recommended that you read the instructions carefully and ensure that the contents are fully understood. Failure to understand and to comply with the warnings and instructions can result in serious injury, damage or even death.

In order to avoid the danger of electrical shock, it is important that proper safety measures are taken when working with voltages exceeding the extra low voltage (ELV) limit of 50V (25V) RMS AC or 120V (60V) DC. The values in brackets apply to restricted voltage ranges (for example in the medical or agricultural sector).

This product must only be used by a competent person capable of interpreting the results under the conditions and for the purposes for which it has been constructed. Particular attention should be paid to the Warnings, Precautions and Technical Specifications. Always check the unit is in good working order before use and that there are no signs of damage to it. Do not use if damaged.

Where applicable other safety measures such as use of protective gloves, goggles etc. should be employed.

Please keep these instructions for future reference. Updated instructions and product information are available at: www.martindale-electric.co.uk

REMEMBER: SAFETY IS NO ACCIDENT

MEANING OF SYMBOLS:

	Caution - risk of danger & refer to instructions
	Caution - risk of electric shock
	Equipment protected by double or reinforced insulation (Class II)
ELV	**Extra low voltage. Voltage below 50V (25V) RMS AC or 120V (60V) DC**
CE	**Equipment complies with relevant Directives**
UK CA	**Equipment complies with relevant UK conformity**
⎓	**Direct current (DC)**
~	**Alternating current (AC)**
⏚	**Earth (ground)**
	End of life disposal of this equipment should be in accordance with relevant directives

Thank you for using one of our products. For safety and full understanding of its benefits please read this manual before use. Technical support is available from +44 (0)1923 441717 and support@martindale-electric.co.uk.

CONTENTS

1. PRODUCT SPECIFIC 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.

Only accessories that meet Martindale Electric specifications should be used with the equipment. If the equipment is used in a manner not specified by Martindale Electric, the protection provided by the equipment many be impaired.

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 with working with voltages exceeding the extra low voltage (ELV) limit of 50V (25V) RMS AC or 120V (60V) DC. The values in brackets apply to restricted voltage ranges (for example in the medical or agricultural sector).

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

2. 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.

2.1 Data hold

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

2.2 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.

2.3 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.

2.4 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.

2.5 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.

2.6 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.

2.7 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.

2.8 Auto zZZower 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.

3. MAINTENANCE

⚠ WARNING

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

3.1 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.

3.2 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.

3.3 Cleaning

Warning

To reduce the risk of surface leakage, the instrument must be kept in a clean condition.

Prior to cleaning, ensure that the instrument is disconnected from any voltage source.

If contamination is found, clean with a damp soft cloth and if necessary a mild detergent. Do not use abrasives, abrasive solvents, or detergents which may cause damage to the unit.

If a mild detergent is used, the unit should subsequently be thoroughly cleaned with a water dampened soft cloth. After cleaning, dry and allow to remain is a dry environment for 2 hours before use.

3.4 Safety

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

4. WARRANTY AND LIMITATION OF LIABILITY

This Martindale product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is 2 years and begins on the date of receipt by the end user. This warranty extends only to the original buyer or end-user customer, and does not apply to fuses, disposable batteries, test leads or to any product which, in Martindale's reasonable opinion, has been misused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation, handling or storage.

Martindale authorised resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Martindale.

Martindale's warranty obligation is limited, at Martindale's option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to Martindale within the warranty period.

This warranty is the buyer's sole and exclusive remedy and is in lieu of all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. Martindale shall not be liable for any special, indirect, incidental or consequential damages or losses, including loss of data, arising from any cause or theory.

Since some jurisdictions do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any part of any provision of this warranty is held invalid or unenforceable by a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision or other part of that provision.

Nothing in this statement reduces your statutory rights.

MEASUREMENT CATEGORIES

CAT Ratings

BS EN61010-1 Installation Categories (CAT ratings) define the risks from hazardous transient impulses and potentially lethal short circuit currents on the mains supply system based on where you are working.

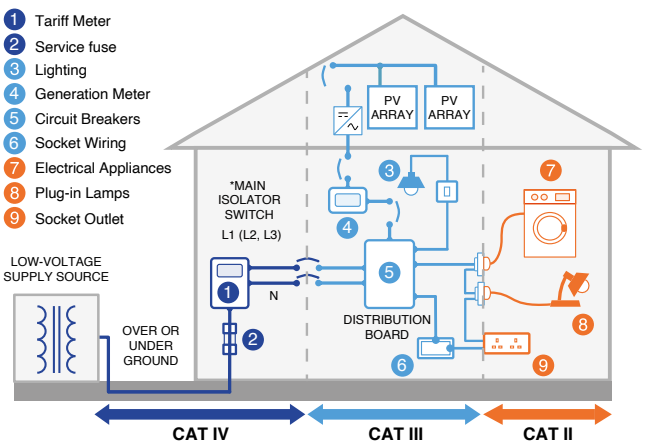
Voltage Ratings

Test equipment used for measuring mains circuits will have a CAT rating to show where it can be used. Each category also has a voltage rating to show the maximum safe phase to earth system voltage, normally 50V, 100V, 150V, 300V, 600V or 1000V.

Stay safe - Match your test equipment safety rating to the installation category.

CAT II: Socket outlets and similar points of the mains installation.
CAT III: The distribution part of the building's mains installation.
CAT IV: The supply side source of the building's mains installation.

Testers, leads and accessories all need safety ratings equivalent to, or higher than the installation category and voltage rating for the location to be safe.



MARTINDALE ELECTRIC

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Specification

MM39

Compact Digital Multimeter

ELECTRICAL

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)

GENERAL

Display: Display: 3½ digit liquid crystal display (LCD) with a maximum reading of 1999
Polarity: Polarity: Automatic, positive implied, negative polarity indication
Overrange: (OL) or (-OL) is displayedInput impedance:
200mV: >100MΩ: 2V:10MΩ
20V ~ 600V: 9.1MΩ
Zero: automatic
Low battery indication: " [+ −] "symbol 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
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

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Specification
M39
Compact Digital Multimeter

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

DC VOLTAGE

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 VOLTAGE: (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

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MM39
Compact Digital Multimeter

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: 500V DC or AC rms

CONTINUITY
Audible indication: Less than 25Ω
Response time: 500ms
Overload protection: 500VDC or AC rms

Notes

Notes

Check out what else you can get from Martindale:

- 18th Edition Testers
- Accessories
- Cable Locators
- Calibration Equipment
- Continuity Testers
- Digital Clamp Meters
- Digital Multimeters
- Electricians' Kits
- Environmental Products
- Full Calibration & Repair Service
- Fuse Finders
- Labels
- Microwave Leakage Detectors
- Multifunction Testers
- PAT Testers & Accessories
- Phase Rotation Testers
- Proving Units
- Safe Isolation Kits
- Socket Testers
- Specialist Drummond Testers
- Thermometers & Probes
- Test Leads
- Voltage Indicators

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