Mastech MS8264

Mastech MS8264 Digital Multimeter User Manual

Model: MS8264

1. Introduction

The Mastech MS8264 is a manually-operated, 30-range digital multimeter designed for a wide array of electrical measurements. This versatile instrument is suitable for both professional and hobbyist use, offering functions such as AC/DC voltage and current, resistance, capacitance, frequency, and temperature measurement. Key features include a backlit display, data hold function, and an internal resettable fuse for enhanced safety.

2. Safety Information

To ensure safe operation and prevent damage to the meter, please read and follow all safety instructions carefully. This device conforms to the IEC1010-1 standard, rated for CAT III 600V and CAT II 1000V.

- **Always inspect test leads** for damage before use. Do not use if insulation is cracked or damaged.
- **Never apply voltage to the current (A, mA) terminals** when the function switch is set to current measurement. This can damage the meter.
- **Ensure the function switch is set to the correct range** before making any measurement.
- **Do not exceed the maximum input values** specified for each range.
- **Exercise extreme caution when working with live circuits.** Always assume circuits are live until proven otherwise.
- **Disconnect power to the circuit** and discharge all high-voltage capacitors before measuring resistance, continuity, or capacitance.
- **Replace the battery when the low battery indicator appears** to ensure accurate readings.

3. Package Contents

Verify that all items listed below are present in your package:

- Mastech MS8264 Digital Multimeter
- Test Leads with shrouded plugs and capped tips (1 red, 1 black)
- Multi-functional Socket
- K-type Temperature Probe
- 9V Battery (installed)
- User Manual

Figure 3.1: Mastech MS8264 Multimeter and its accessories.

4. Product Overview

The Mastech MS8264 Digital Multimeter features a large LCD display with backlight for clear readings, a rotary switch for function selection, and various input jacks for test leads and probes.


Auto Power Off
hFE
000
DIGITAL MULTIMETER
HOLD
LIGHT
ON/OFF
MS8264
1000V CAT II
600V CAT III
CE
200
2k
20k
200k
2M
20M
200M
750
V~
200
20
2
200m
2
20
200
1000
V⎓
hFE
20kHz
20m
200m
10
10
A⎓
200m
2m
20µ
2µ
200n
20n
°C
F
A~
°C
mA
hFE
COM
10A
VΩHz
MAX
750V~
1000V⎓

Figure 4.1: Front view of the Mastech MS8264 Digital Multimeter.

Key Features:

- 30 measurement ranges for comprehensive testing.
- Backlit LCD display for visibility in various lighting conditions.
- Data Hold function to freeze the displayed reading.
- Automatic power-off to conserve battery life.
- Internal resettable fuse for overcurrent protection.
- Diode and Continuity test functions.
- Temperature measurement capability.

5. Setup

5.1 Battery Installation

The MS8264 multimeter comes with a 9V battery (6F22) pre-installed. If the battery needs replacement, refer to the Maintenance section.

5.2 Connecting Test Leads

The test leads are essential for making electrical measurements. Always ensure they are securely connected to the appropriate input jacks.

1. Insert the black test lead into the **COM** (Common) jack.
2. For most voltage, resistance, frequency, capacitance, diode, and continuity measurements, insert the red test lead into the **VΩHz** jack.
3. For current measurements (mA), insert the red test lead into the **mA-hFE** jack.
4. For high current measurements (up to 10A), insert the red test lead into the **10A** jack.

Figure 5.1: Standard test leads.

Figure 5.2: Test lead tips with protective caps.

6. Operating Instructions

6.1 Power On/Off and Basic Functions

- **ON/OFF Button:** Press to turn the multimeter on or off.
- **HOLD Button:** Press to freeze the current reading on the display. Press again to release.
- **LIGHT Button:** Press to activate the display backlight. Press again to turn off.
- **Auto Power Off:** The meter will automatically power off after approximately 15 minutes of inactivity to save battery.

6.2 DC Voltage Measurement (V–)

1. Insert the black lead into the **COM** jack and the red lead into the **VΩHz** jack.
2. Set the rotary switch to the desired DC Voltage (V–) range (e.g., 2V, 20V, 200V, 1000V). If the voltage is unknown, start with the highest range (1000V) and decrease as necessary.
3. Connect the test probes across the component or circuit to be measured.

4. Read the voltage value on the display.

6.3 AC Voltage Measurement (V~)

1. Insert the black lead into the **COM** jack and the red lead into the **VΩHz** jack.
2. Set the rotary switch to the desired AC Voltage (V~) range (e.g., 2V, 20V, 200V, 750V). If the voltage is unknown, start with the highest range (750V) and decrease as necessary.
3. Connect the test probes across the component or circuit to be measured.
4. Read the voltage value on the display.

6.4 DC Current Measurement (A–)

Caution: Never connect the meter in parallel with a voltage source when measuring current. Always connect in series with the load.

1. Insert the black lead into the **COM** jack.
2. For currents up to 200mA, insert the red lead into the **mA-hFE** jack. For currents up to 10A, insert the red lead into the **10A** jack.
3. Set the rotary switch to the desired DC Current (A–) range (e.g., 20mA, 200mA, 10A).
4. Open the circuit where current is to be measured and connect the test probes in series with the load.
5. Read the current value on the display.

6.5 AC Current Measurement (A~)

Caution: Never connect the meter in parallel with a voltage source when measuring current. Always connect in series with the load.

1. Insert the black lead into the **COM** jack.
2. For currents up to 200mA, insert the red lead into the **mA-hFE** jack. For currents up to 10A, insert the red lead into the **10A** jack.
3. Set the rotary switch to the desired AC Current (A~) range (e.g., 2mA, 200mA, 10A).
4. Open the circuit where current is to be measured and connect the test probes in series with the load.
5. Read the current value on the display.

6.6 Resistance Measurement (Ω)

Caution: Ensure the circuit is de-energized and all capacitors are discharged before measuring resistance.

1. Insert the black lead into the **COM** jack and the red lead into the **VΩHz** jack.
2. Set the rotary switch to the desired Resistance (Ω) range (e.g., 200Ω, 2KΩ, 20MΩ, 200MΩ).
3. Connect the test probes across the resistor or component.
4. Read the resistance value on the display.

6.7 Capacitance Measurement (F)

Caution: Ensure the capacitor is fully discharged before measurement to prevent damage to the meter.

1. Insert the black lead into the **COM** jack and the red lead into the **VΩHz** jack.
2. Set the rotary switch to the Capacitance (F) range (e.g., 20nF, 200nF, 2µF, 20µF).
3. Connect the test probes across the capacitor terminals.
4. Read the capacitance value on the display.

6.8 Frequency Measurement (Hz)

1. Insert the black lead into the **COM** jack and the red lead into the **VΩHz** jack.
2. Set the rotary switch to the Frequency (Hz) range (20kHz).
3. Connect the test probes across the signal source.
4. Read the frequency value on the display.

6.9 Temperature Measurement (°C)

1. Insert the K-type temperature probe into the **mA-hFE** and **COM** jacks, ensuring correct polarity.
2. Set the rotary switch to the Temperature (°C) range.
3. Place the tip of the temperature probe on or near the object whose temperature is to be measured.
4. Read the temperature value on the display.

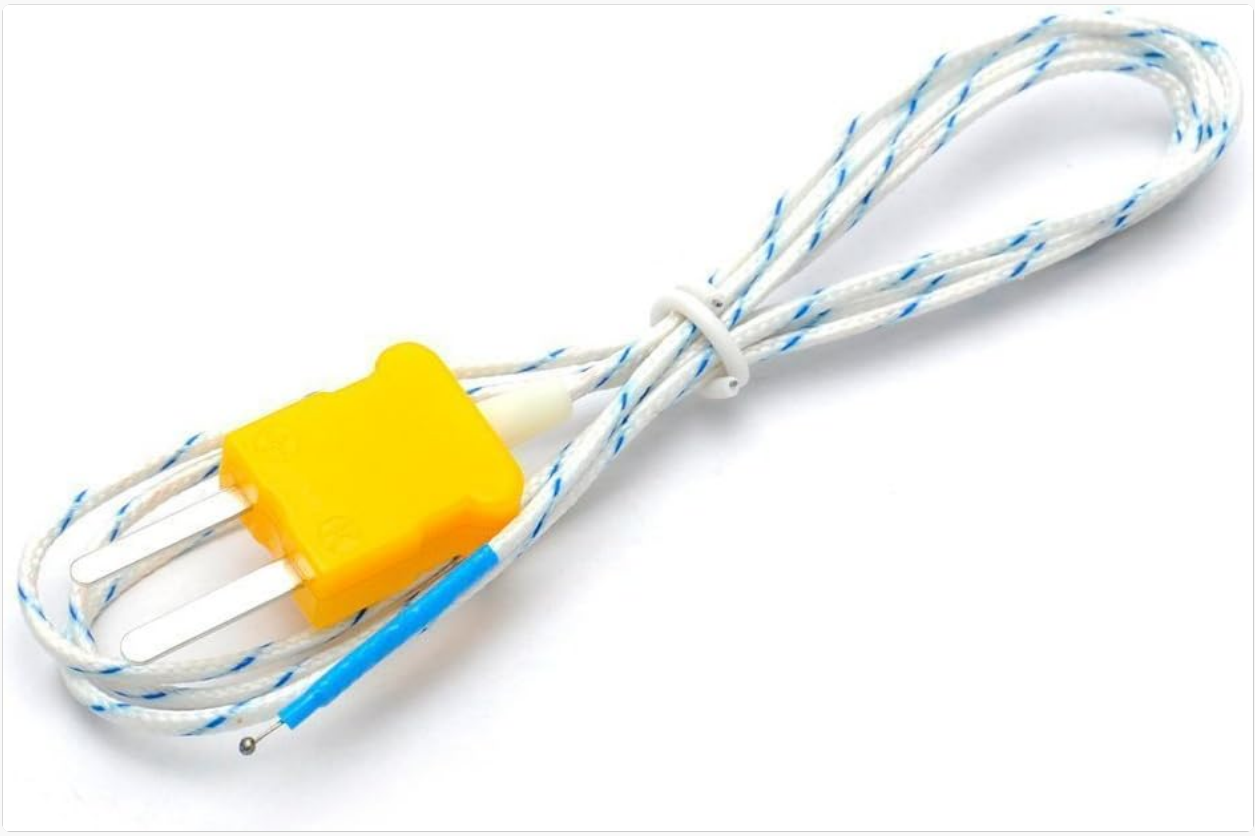

Figure 6.1: K-type Temperature Probe.

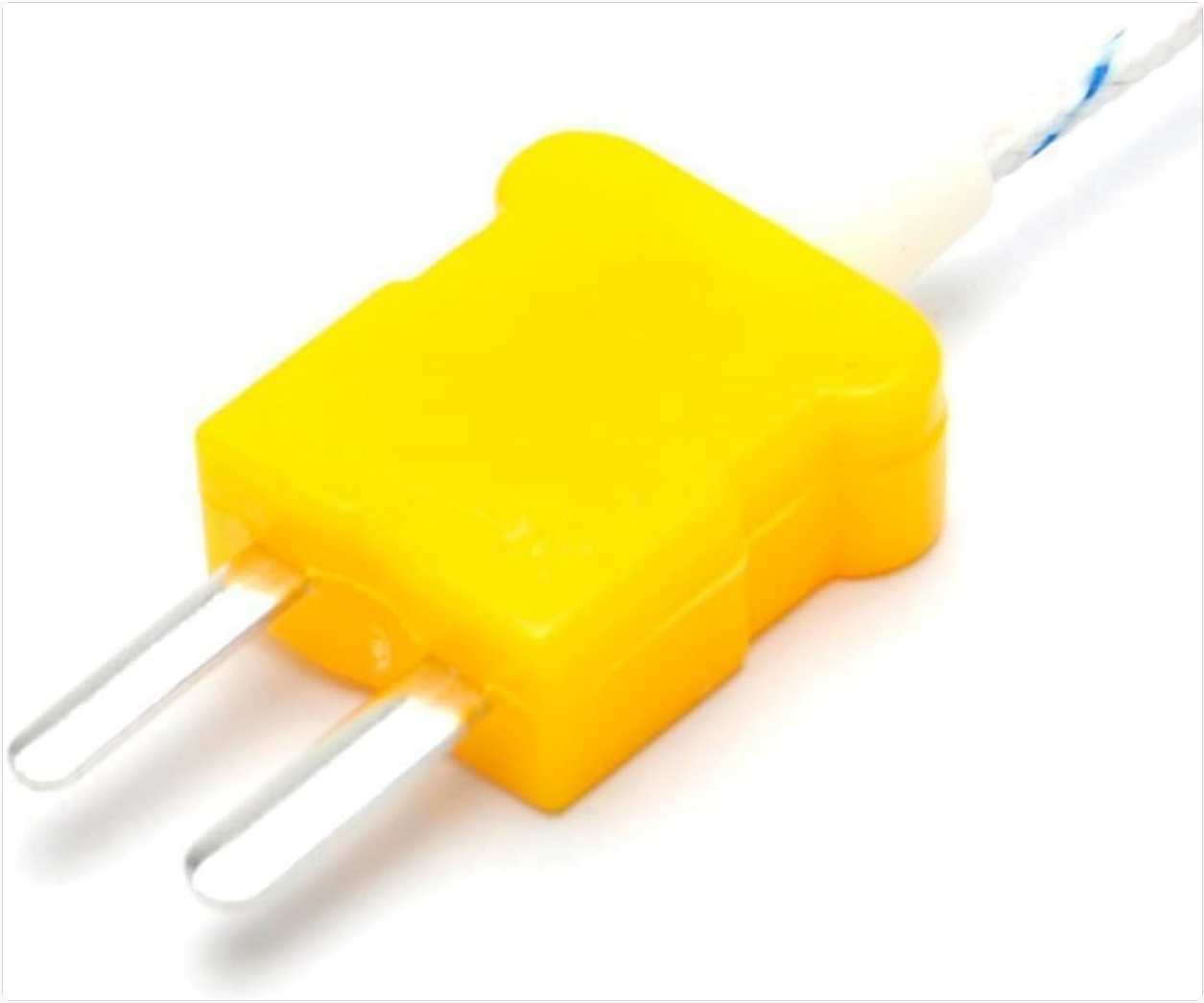

Figure 6.2: K-type Temperature Probe Connector.

6.10 Diode Test

1. Insert the black lead into the **COM** jack and the red lead into the **VΩHz** jack.
2. Set the rotary switch to the Diode Test position (symbol: →|–).
3. Connect the red probe to the anode and the black probe to the cathode of the diode. The display will show the forward voltage drop.
4. Reverse the probes. The display should show 'OL' (Open Loop) for a good diode.

6.11 Continuity Test

1. Insert the black lead into the **COM** jack and the red lead into the **VΩHz** jack.
2. Set the rotary switch to the Continuity Test position (symbol: ♫).
3. Connect the test probes across the circuit or component.
4. If the resistance is below approximately 50Ω, the buzzer will sound, indicating continuity.

6.12 hFE (Transistor Test)

1. Insert the multi-functional socket into the **COM** and **mA-hFE** jacks.
2. Set the rotary switch to the hFE position.
3. Insert the NPN or PNP transistor leads into the corresponding holes in the multi-functional socket.
4. Read the hFE value (DC current gain) on the display.

7. Maintenance

7.1 Battery Replacement

When the battery symbol appears on the display, the 9V battery (6F22) needs to be replaced.

1. Ensure the multimeter is turned off and all test leads are disconnected.
2. Locate the battery compartment cover on the back of the meter.
3. Unscrew the retaining screw(s) and remove the cover.
4. Carefully remove the old battery and replace it with a new 9V (6F22) battery, observing correct polarity.
5. Replace the battery compartment cover and secure it with the screw(s).

7.2 Fuse Information

The MS8264 features an internal resettable fuse. In case of an overcurrent event, the fuse will trip to protect the meter. After the fault is cleared, the fuse will reset automatically. If the meter does not function after an overcurrent event, allow a short period for the fuse to reset. If issues persist, contact support.

7.3 Cleaning

To clean the meter, wipe the case with a damp cloth and a mild detergent. Do not use abrasives or solvents. Ensure the meter is completely dry before use.

8. Troubleshooting

- **No Display or Faint Display:** Check battery level. Replace the 9V battery if necessary.
- **Erratic Readings:** Ensure test leads are securely connected to both the meter and the circuit. Check for damaged test leads. Verify the correct function and range are selected.
- **'OL' (Overload) Display:** This indicates the measured value exceeds the selected range. Switch to a higher range. For resistance, it may indicate an open circuit.
- **No Reading in Current Mode:** Ensure the meter is connected in series with the load. Check if the internal resettable fuse has tripped due to overcurrent.
- **Incorrect Temperature Readings:** Ensure the K-type probe is correctly inserted and making good contact with the object being measured.

If troubleshooting steps do not resolve the issue, refer to the Warranty and Support section.

9. Specifications

Measurement Type	Range	Accuracy
DC Voltage	200mV, 2V, 20V, 200V	±0.5%
	1000V	±0.8%

Measurement Type	Range	Accuracy
AC Voltage	2V, 20V, 200V	±0.8%
	750V	±1.2%
DC Current	20mA	±0.8%
	200mA	±1.5%
	10A	±2.0%
AC Current	2mA	±1.0%
	200mA	±1.8%
	10A	±3.0%
Resistance	200Ω, 2KΩ, 20KΩ, 200KΩ, 2MΩ	±0.8%
	20MΩ	±1.0%
	200MΩ	±5.0%
Capacitance	20nF, 200nF, 2µF, 20µF	±4.0%
Frequency	20kHz	±1.5%
Temperature	-20°C to 1000°C	
hFE	1 to 1000	
Display	1999 Counts	
Power Source	9V Battery (6F22) x 1	
Dimensions (L x W x H)	195mm x 92mm x 55mm (7.68 x 3.62 x 2.16 inches)	
Weight	Approx. 380g (13.3 ounces) (including battery)	
Safety Rating	IEC1010-1 CAT III 600V & CAT II 1000V	

10. Warranty and Support

The Mastech MS8264 Digital Multimeter comes with a **1-Year Tekpower USA Warranty**. For warranty claims or technical support, please refer to the contact information provided with your purchase documentation or visit the official Tekpower website.