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## Mastech MS8301D

# Mastech MS8301D Digital Multimeter User Manual

Model: MS8301D

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## 1. INTRODUCTION

The Mastech MS8301D is a compact, auto-ranging digital multimeter designed for accurate measurement of various electrical parameters. This manual provides essential information for safe and effective use, including setup, operation, maintenance, and troubleshooting.

## 2. SAFETY INFORMATION

Always observe safety precautions when using any electrical testing equipment. Failure to do so may result in electric shock, injury, or damage to the meter or equipment under test.

- Read and understand all instructions in this manual before use.
- Do not exceed the maximum input values specified for each function.
- Ensure test leads are in good condition, without cracks or damaged insulation.
- Do not use the meter if it appears damaged or if the case is open.
- Exercise extreme caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC. These voltages pose a shock hazard.
- Replace batteries immediately when the low battery indicator appears to ensure accurate readings.
- Always disconnect test leads from the circuit before changing functions.
- Do not operate the meter in explosive gas, vapor, or dusty environments.
- The meter complies with CE, UL, and RoHS standards.

## 3. KEY FEATURES

The Mastech MS8301D Digital Multimeter offers a range of features for versatile electrical testing:

- **6000 Counts Display:** Provides high-resolution measurements.

- **Auto Range:** Automatically selects the appropriate measurement range.
- **Auto Power Off:** Conserves battery life when not in use.
- **Dual Display:** Allows for simultaneous display of certain parameters.
- **Continuity Buzzer:** Audible indication for circuit continuity.
- **Data Hold:** Freezes the displayed reading for easy recording.
- **MAX/MIN Function:** Records maximum and minimum measured values.
- **Display Backlight:** Improves visibility in low-light conditions.
- **Low Battery Display:** Indicates when battery replacement is needed.
- **Non-Contact Voltage (NCV) Detector:** Detects AC voltage without direct contact.

### MS8301D Features

- Display 6000 Counts
- Auto range
- Auto Power Off
- Dual Display
- Continuity Buzzer
- Data Hold
- MAX/MIN
- Display Backlight
- Low Battery Display
- Non-Contact Voltage Detector

Specifications	Range	Resolution	Accuracy
DC Voltage	6V/60V/600V	0.01V/0.1V/1V	±(0.5%+3)
AC Voltage	6V/60V/600V	0.01V/0.1V/1V	±(0.8%+5)
Resistance	2kΩ/20kΩ/200kΩ/2MΩ	0.001kΩ/0.01kΩ/0.1kΩ/0.001MΩ	±(0.8%+3)
	10MΩ	0.01MΩ	±(1.0%+5)
Frequency	60Hz/600Hz/3kHz	0.1Hz/1Hz/10Hz	±(1.0%+5)
Duty Cycle	10% ~ 90%	1%	±(2.0%)

Image 1: Overview of MS8301D features and detailed specifications table.

## 4. PRODUCT OVERVIEW AND COMPONENTS

The Mastech MS8301D Digital Multimeter is designed for ease of use and durability. It features a clear LCD display, a rotary function switch, and input jacks for test leads.



Image 2: Front view of the Mastech MS8301D Digital Multimeter, showing the display, rotary switch, and input terminals.

## 4.1 Main Applications

The MS8301D is suitable for a variety of applications:

- **Domestic:** For household electrical checks and repairs.
- **Industrial:** For maintenance and troubleshooting in industrial settings.
- **Electronics:** For testing and development of electronic circuits.

## 4.2 Package Contents

Upon opening the package, ensure all items are present:

- Mastech MS8301D Digital Multimeter (approx. 150x74x48mm, 220g/0.48lb)
- Test Leads
- 2 x 1.5V AAA Batteries
- Calibration Certificate
- Quick Start Guide



## DIGSMART DIGITAL MULTIMETER MS8301D

SKU NO.: MS8301DCBGLO  
UPC CODE: 810053672273  
EAN CODE: 8435394777993

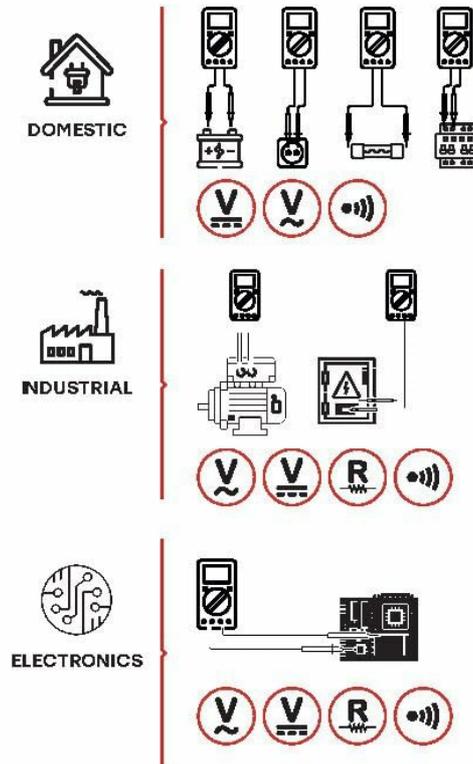
### FEATURE

- Auto Ranging.
- Auto Power Off.
- Dual Display.
- Continuity Buzzer.

### SPECIFICATIONS

AC Voltage <b>600V</b>	DC Voltage <b>600V</b>	Resistance <b>10MΩ</b>
Frequency <b>3kHz</b>	Continuity <b>&lt;40Ω</b>	Display Counts <b>6000</b>

### MAIN APPLICATIONS



### CONTENTS

150x74x48mm 5.9"x2.9"x1.7" 220g/0.48lb	2x1.5V AAA Batteries
Test Leads Battery	Calibration Certificate
	Quick Start Guide

### PACKAGING INFORMATION

<b>Color Box</b> L145xW60xH188mm	
<b>Carton Box</b> 40x32x31.5cm	X 20PCS

Image 3: Illustration of main applications and included accessories for the MS8301D.

## 5. SETUP

### 5.1 Battery Installation

1. Ensure the multimeter is turned off and 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. Insert two 1.5V AAA batteries, observing correct polarity (+ and -).
5. Replace the battery compartment cover and secure it with the screw(s).

## 5.2 Connecting Test Leads

1. Insert the black test lead into the "COM" (Common) input jack.
2. For most measurements (Voltage, Resistance, Continuity, Diode, Frequency, Duty Cycle), insert the red test lead into the "V $\Omega$ Hz" input jack.
3. Ensure test leads are fully inserted before taking measurements.

## 6. OPERATING INSTRUCTIONS

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The MS8301D uses a rotary switch to select the primary measurement function and function buttons for secondary selections or features.

### 6.1 General Operation

- **Power On/Off:** Rotate the function switch from "OFF" to any desired measurement function to turn on the meter. Rotate back to "OFF" to power off. The meter also features Auto Power Off.
- **Backlight:** Press the backlight button (often labeled with a light bulb icon) to illuminate the display.
- **Data Hold:** Press the "HOLD" button to freeze the current reading on the display. Press again to release.
- **MAX/MIN:** Press the "MAX/MIN" button to enter MAX/MIN recording mode. The meter will display the maximum or minimum value detected. Press again to cycle through MAX, MIN, and current readings.

### 6.2 Measurement Functions

Always ensure the correct function is selected and test leads are connected to the appropriate input jacks before making measurements.

#### 1. DC Voltage Measurement (V DC):

- Rotate the switch to the "V" position. The meter will automatically select DC or AC. If needed, press the "FUNC" button to select DC.
- Connect the red test lead to the positive (+) side of the circuit and the black test lead to the negative (-) side.
- Read the voltage value on the display.

#### 2. AC Voltage Measurement (V AC):

- Rotate the switch to the "V" position. The meter will automatically select DC or AC. If needed, press the "FUNC" button to select AC.
- Connect the test leads across the AC voltage source.
- Read the voltage value on the display.

#### 3. Resistance Measurement ( $\Omega$ ):

- Rotate the switch to the " $\Omega$ " position.
- Ensure the circuit is de-energized before measuring resistance.
- Connect the test leads across the component to be measured.
- Read the resistance value on the display.

#### 4. Continuity Test (with audible buzzer):

- Rotate the switch to the " $\Omega$ " position and press "FUNC" until the continuity symbol appears.

- Ensure the circuit is de-energized.
- Connect the test leads across the circuit or component. An audible beep indicates continuity (low resistance).

#### 5. Diode Test (diode function):

- Rotate the switch to the "Ω" position and press "FUNC" until the diode symbol appears.
- Connect the red test lead to the anode and the black test lead to the cathode of the diode.
- The display will show the forward voltage drop. Reverse the leads; an open circuit (OL) reading indicates a good diode.

#### 6. Frequency (Hz) and Duty Cycle (%) Measurement:

- Rotate the switch to the "Hz%" position.
- Connect the test leads across the signal source.
- The display will show the frequency. Press "FUNC" to switch to duty cycle measurement.

#### 7. Non-Contact Voltage (NCV) Detection:

- Rotate the switch to the "NCV" position.
- Move the top front part of the meter near the conductor.
- The meter will indicate the presence of AC voltage with an audible beep and/or visual indicator.

## 7. SPECIFICATIONS

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Detailed electrical and general specifications for the Mastech MS8301D Digital Multimeter:

### 7.1 Electrical Specifications

Function	Range	Resolution	Accuracy
DC Voltage	6V/60V/600V	0.01V/0.1V/1V	±(0.5%+3)
AC Voltage	6V/60V/600V	0.01V/0.1V/1V	±(0.8%+5)
Resistance	2kΩ/20kΩ/200kΩ/2MΩ/10MΩ	0.001kΩ/0.01kΩ/0.001MΩ/0.01MΩ	±(0.8%+3) for 2kΩ-2MΩ, ±(1.0%+5) for 10MΩ
Frequency	60Hz/600Hz/3kHz	0.1Hz/1Hz/10Hz	±(1.0%+5)
Duty Cycle	10% ~ 90%	1%	±(2.0%)

### 7.2 General Specifications

- **Manufacturer:** Mastech
- **Model Number:** YQ-MS8301D
- **Product Dimensions:** 20 x 15 x 25 cm
- **Item Weight:** 1 Kilogram
- **Power Source:** Battery Powered (2 x 1.5V AAA batteries)
- **Color:** Blue (Note: Product appearance may vary, typically green/black as shown in images)
- **Complied Specifications:** CE, UL, RoHS (Restriction of Hazardous Substances)
- **Upper Temperature Rating:** 50°C
- **EU Spare Part Availability:** 1 year

## 8. MAINTENANCE

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### 8.1 Battery Replacement

When the low battery indicator appears on the display, replace the batteries promptly to ensure accurate measurements.

1. Turn off the multimeter and disconnect all test leads.
2. Open the battery compartment cover on the back of the meter.
3. Remove the old 1.5V AAA batteries.
4. Insert new 1.5V AAA batteries, observing correct polarity.
5. Replace the battery compartment cover and secure it.

### 8.2 Cleaning and Storage

- Clean the meter's case with a damp cloth and mild detergent. Do not use abrasives or solvents.
- If the meter is not used for an extended period, remove the batteries to prevent leakage.
- Store the meter in a cool, dry place, away from direct sunlight and extreme temperatures.

## 9. TROUBLESHOOTING

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If you encounter issues with your MS8301D multimeter, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
No display or faint display	Dead or low batteries; incorrect battery polarity.	Replace batteries; check battery orientation.
"OL" (Overload) displayed	Input value exceeds selected range; open circuit.	Select a higher range (if not auto-ranging); check circuit connection.
Inaccurate readings	Low battery; damaged test leads; incorrect function selected.	Replace batteries; inspect and replace test leads; verify function switch position.
Continuity buzzer not working	Open circuit; function not selected.	Check circuit for breaks; ensure continuity function is active.

## 10. WARRANTY AND SUPPORT

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Mastech products are designed for reliability and performance. For warranty information, technical support, or service inquiries, please refer to the warranty card included with your product or visit the official Mastech website. Keep your purchase receipt as proof of purchase.

**EU Spare Part Availability:** 1 year from the date of purchase.

