# Micro DM-100 Digital Multimeter


**⚠ WARNING!**

**Read this Operator's Manual carefully before using this tool. Failure to understand and follow the contents of this manual may result in electrical shock, fire and/or serious personal injury.**

| micro DM-100 Digital Multimeter | |
|---|---|
| Record Serial Number below and retain product serial number which is located on nameplate. | |
| Serial No. | |

# Safety Symbols

In this operator's manual and on the product, safety symbols and signal words are used to communicate important safety information. This section is provided to improve understanding of these signal words and symbols.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

**⚠ DANGER** DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

**⚠ WARNING** WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**⚠ CAUTION** CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

***NOTICE*** NOTICE indicates information that relates to the protection of property.

This symbol means read the operator's manual carefully before using the equipment. The operator's manual contains important information on the safe and proper operation of the equipment.

This symbol indicates the risk of electrical shock.

This symbol indicates the presence of a high voltage hazard.

# General Safety Rules

**⚠ WARNING**

**Read all safety warnings and instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.**

**SAVE THESE INSTRUCTIONS!**

## Work Area Safety

- **Keep your work area clean and well lit.** Cluttered or dark areas invite accidents.
- **Do not operate equipment in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Equipment can create sparks which may ignite the dust or fumes.
- **Keep children and by-standers away while operating equipment.** Distractions can cause you to lose control.

## Electrical Safety

- **Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electrical shock if your body is earthed or grounded.
- **Do not expose equipment to rain or wet conditions.** Water entering equipment will increase the risk of electrical shock.

## Personal Safety

- **Stay alert, watch what you are doing and use common sense when operating equipment. Do not use equipment while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating equipment may result in serious personal injury.

- **Use personal protective equipment.** Always wear eye protection. Protective equipment such as as protective gloves and clothing, dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the equipment in unexpected situations.

### Equipment Use and Care

- **Do not force equipment. Use the correct equipment for your application.** The correct equipment will do the job better and safer at the rate for which it is designed.
- **Do not use equipment if the switch does not turn it ON and OFF.** Any tool that cannot be controlled with the switch is dangerous and must be repaired.
- **Store idle equipment out of the reach of children and do not allow persons unfamiliar with the equipment or these instructions to operate the equipment.** Equipment can be dangerous in the hands of untrained users.
- **Maintain equipment.** Check for missing parts, breakage of parts and any other condition that may affect the equipment's operation. If damaged, have the equipment repaired before use. Many accidents are caused by poorly maintained equipment.
- **Use the equipment and accessories in accordance with these instructions, taking into account the working conditions and the work to be performed.** Use of the equipment for operations different from those intended could result in a hazardous situation.
- **Use only accessories that are recommended by the manufacturer for your equipment.** Accessories that may be suitable for one piece of equipment may become hazardous when used with other equipment.
- **Keep handles dry and clean; free from oil and grease.** Allows for better control of the equipment.

### Service

- **Have your equipment serviced by a qualified repair person using only identical replacement parts.** This will ensure that the safety of the tool is maintained.

## Specific Safety Information

**⚠ WARNING**

**This section contains important safety information that is specific to this tool.**

**Read these precautions carefully before using the RIDGID® micro DM-100 Digital Multimeter to reduce the risk of electrical shock or other serious injury.**

**SAVE THESE INSTRUCTIONS!**

Keep this manual with the tool for use by the operator.

### Multimeter Safety

- **Use caution when working with voltages above 30 V AC RMS, 42 V AC peak or 60 V DC.** These voltages pose serious shock hazard. High-voltage circuits, both DC and AC, are very dangerous and should be measured with great care. Avoid working alone.
- **Do not connect to voltages that exceed 600 VAC or VDC relative to earth ground.** This may damage the meter and expose the operator to a shock hazard.
- **When using the probes, keep your fingers behind the finger guards on the probes.** This reduces the risk of electric shock.
- **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 using appropriate methods.

- **When measuring current, turn off the circuit power before connecting the meter in series with the circuit.** Improper set up could result in electrical shock.
- **When measuring resistance, disconnect all power (remove batteries, unplug cord, discharge all capacitors, etc.) to the circuit being measured.** This reduces the risk of electric shock.
- **After resistance test, the capacitive circuits must be discharged.** This will help protect against electric shock.
- **Use extreme caution when working near bare conductors and bus bars.** Accidental contact with conductors could result in electrical shock.
- **Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit.** Small amount of current can expose the operator to a shock hazard.

The EC Declaration of Conformity (890-011-320.10) will accompany this manual as a separate booklet when required.

If you have any question concerning this RIDGID® product:

- Contact your local RIDGID distributor.
- Visit www.RIDGID.com or www.RIDGID.eu to find your local RIDGID contact point.
- Contact Ridge Tool Technical Service Department at rtctechservices@emerson.com, or in the U.S. and Canada call (800) 519-3456.

# Description, Specifications And Standard Equipment

## Description

The RIDGID® DM-100 Digital Multimeter is a handheld instrument. The unit can measure DC and AC Voltage and Current, Resistance, Capacitance, Frequency, Temperature, Continuity (audible signal) and Test Diodes. The multimeter can automatically select the best range for measurement.

The unit has data hold and relative measurement functions. Overload protection and low battery indication are provided. The unit has a 4000-count backlight LCD.

The multimeter is powered by a 9V battery and has auto power-off function after 15 minutes of inactivity.

## Specifications

| | |
|---|---|
| Display | 4000 Count backlight LCD |
| Overvoltage Category | CAT III 1000V, CAT IV 600V |
| Fuse Rating | 0.5A/1000V Fast Blow for the 400mA Range, 10A/1000V Fast Blow for the 10A Range |
| Insulation | Class 2, Double Insulation |
| Protection Rating | IP 67 |
| Polarity | Auto Polarity Indication |
| Operating Temperature | 0°C to 50°C (32°F to 122°F) |
| Power Supply | 9V Battery, NEDA 1604, IEC 6F22 or 6LR61 |
| Weight | 0.82 lbs (375 g) |
| Dimension | 7.2" x 3.2" x 2.2" (182 x 82 x 55 mm) |

**Input Limits**

| Function | Maximum Input |
|---|---|
| Voltage V DC/AC | 1000 V DC/AC |
| Current mA DC/AC | 400 mA DC/AC |
| Current A DC/AC | 10 A DC/AC |
| Frequency, Duty Cycle | 600 V DC/AC |

Accuracy is given at 18°C to 28°C (65°F to 83°F), less than 70% RH

**DC Voltage** (Autoranging)

| Range | Resolution | Accuracy |
|---|---|---|
| 400.0 mV | 0.1 mV | ±0.5% of Reading ± 2 Digits |
| 4.000 V | 1 mV | ±1.2% of Reading ± 2 Digits |
| 40.00 V | 10 mV | |
| 400.0 V | 100 mV | |
| 1000 V | 1 V | ±1.5% of Reading ± 2 Digits |

Input Impedance ..... 7.8 MΩ
Maximum Input ..... 1000V DC or 1000V AC RMS

**AC Voltage** (Autoranging)

| Range | Resolution | Accuracy |
|---|---|---|
| 400.0 mV | 0.1 mV | ±1.5% of Reading ± 70 Digits |
| 4.000 V | 1 mV | ±1.2% of Reading ± 3 Digits |
| 40.00 V | 10 mV | ±1.5% of Reading ± 3 Digits |
| 400.0 V | 100 mV | |
| 1000 V | 1 V | ±2.0% of Reading ± 4 Digits |

Input Impedance ..... 7.8 MΩ
AC Response ..... True RMS 50 Hz to 400 Hz
Maximum Input ..... 1000V DC or 1000V AC RMS

**DC Current** (Autoranging for µA and mA)

| Range | Resolution | Accuracy |
|---|---|---|
| 400.0 µA | 0.1 µA | ±1.0% of Reading ± 3 Digits |
| 4000 µA | 1 µA | ±1.5% of Reading ± 3 Digits |
| 40.00 mA | 10 µA | |
| 400.0 mA | 100 µA | |
| 10 A | 10 mA | ±2.5% of Reading ± 5 Digits |

Overload protection ..... 0.5A/1000V and 10A/1000V Fuse
Maximum Input ..... 400 mA DC or 400mA AC RMS on µA/mA Ranges,
10A DC or AC RMS on 10A Range

**AC Current** (Autoranging for µA and mA)

| Range | Resolution | Accuracy |
|---|---|---|
| 400.0 µA | 0.1 µA | ±1.5% of Reading ± 5 Digits |
| 4000 µA | 1 µA | ±1.8% of Reading ± 5 Digits |
| 40.00 mA | 10 µA | |
| 400.0 mA | 100 µA | |
| 10 A | 10 mA | ±3.0% of Reading ± 7 Digits |

Overload protection ..... 0.5A/1000V and 10A/1000V Fuse
AC Response ..... True RMS 50 Hz to 400 Hz
Maximum Input ..... 400 mA DC or 400mA AC RMS on µA/mA Ranges,
10A DC or AC RMS on 10A Range

**Resistance** (Autoranging)

| Range | Resolution | Accuracy |
|---|---|---|
| 400.0 Ω | 0.1 Ω | ±1.2% of Reading ± 4 Digits |
| 4.000 kΩ | 1 Ω | ±1.0% of Reading ± 2 Digits |
| 40.00 kΩ | 10 Ω | ±1.2% of Reading ± 2 Digits |
| 400.0 kΩ | 100 Ω | |
| 4.000 MΩ | 1 kΩ | |
| 40.00 MΩ | 10 kΩ | ±2.0% of Reading ± 3 Digits |

Input Protection..... 600V DC or 600V AC RMS

**Capacitance** (Autoranging)

| Range | Resolution | Accuracy |
|---|---|---|
| 4.000 nF | 1 pF | ±5.0% of Reading ± 0.5 nF |
| 40.00 nF | 10 pF | ±5.0% of Reading ± 7 Digits |
| 400.0 nF | 0.1 nF | ±3.0% of Reading ± 5 Digits |
| 4.000 uF | 1 nF | |
| 40.00 uF | 10 nF | |
| 200.0 uF | 0.1 uF | ±5.0% of Reading ± 5 Digits |

Input Protection..... 600V DC or 600V AC RMS

**Frequency** (Autoranging)

| Range | Resolution | Accuracy |
|---|---|---|
| 9.999 Hz | 0.001 Hz | ±1.5% of Reading ± 5 Digits |
| 99.99 Hz | 0.01 Hz | |
| 999.9 Hz | 0.1 Hz | ±1.2% of Reading ± 3 Digits |
| 9.999 kHz | 1 Hz | |
| 99.99 kHz | 10 Hz | |
| 999.9 kHz | 100 Hz | |
| 9.999 MHz | 1 kHz | ±1.5% of Reading ± 4 Digits |

Sensitivity ..... > 0.5 V RMS while ≤ 100kHz
Sensitivity ..... > 8 V RMS while > 100kHz
Overload protection..... 600V DC or AC RMS

**Duty Cycle**

| Range | Resolution | Accuracy |
|---|---|---|
| 0.1% to 99.9% | 0.1% | ±1.2% of Reading ± 2 Digits |

Pulse Width ..... > 100 µs, < 100 MS
Frequency Width ..... 5 Hz to 150 kHz
Sensitivity ..... >0.5 V RMS
Overload protection..... 600V DC or AC RMS

**Temperature**

| Range | Resolution | Accuracy |
|---|---|---|
| -20°C to +760°C | 1°C | ±3% of Reading ± 5°C / 9°F |
| -4 °F to +1400 °F | 1°F | |

Sensor..... Type K Thermocouple
Overload protection..... 600V DC or AC RMS

**Diode Test**

| Range | Resolution | Accuracy |
|---|---|---|
| 0.3 mA Typical | 1 mV | ±10% of Reading ± 5 Digits |

Open Circuit Voltage..... 1.5 V DC Typical
Overload protection..... 600V DC or AC RMS

**Audible Continuity**
Audible Threshold..... < 150 Ω
Test Current..... < 0.3 mA
Overload protection.....600V DC or AC RMS

## Standard Equipment

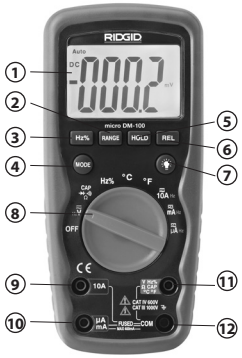
The RIDGID® micro DM-100 Digital Multimeter comes with the following items:

- micro DM-100 Digital Multimeter
- Test Leads with Covers, Black and Red
- K Type Adapter and Temperature Probe
- Terminal Plugs
- User Manual and Instruction CD
- Carrying Case


**Figure 1 – micro DM-100 Digital Multimeter**


**Figure 2 – Back of micro DM-100 Digital Multimeter**

## Controls

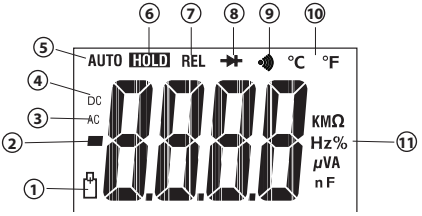



(Not Shown – Backside of unit) Battery Door, Fuse Compartment, fold out stand, Probe holder

**Figure 3 – DM-100 Digital Multimeter Controls**

## Icons

### Screen Icons




| Icon Number | Icons on Screen | Description |
|---|---|---|
| 1 | | Low Battery. |
| 2 | — | Polarity Indicator. Negative readings, In relative mode, this sign indicates that the present input is less than the stored reference value. |
| 3 | AC | Alternating Current or Voltage. |
| 4 | DC | Direct Current or Voltage. |
| 5 | AUTO | Autoranging Mode is Active. Automatically selects the best range for measurements. |
| 6 | HOLD | Data Hold is Active. |
| 7 | REL | Relative Mode is Active. |
| 8 | | Diode Test Mode. |
| 9 | | Continuity Check Mode. |
| 10 | °C and °F | Temperature Mode (Degree Celsius, Degree Fahrenheit). |
| 11 | Ω, kΩ , M | ohm, kilohm, Megohm |
| | Hz, kHz | hertz, kilohertz |
| | % | Percent. Used for Duty Cycle Measurements. |
| | V, mV | volts, millivolts |
| | A, µA, mA | amperes (amps), microamp, milliamp |
| | µµF, nF | microfarad, nanofarad |
| — | OL | Overload Condition. |

**Figure 4 – Screen Icons**

**On Product Icons**

| | | | |
|---|---|---|---|
|  | Double Insulation Symbol |  | Fuse Symbol |
|  | Earth Ground Symbol |  | 9V Battery Symbol |
| CAT III | IEC Overvoltage Category III<br>CAT III equipment is designed to protect against transients in equipment in fixed equipment installations, such as distribution panels, feeders and short branch circuits, and lighting systems in large buildings. | CAT IV | IEC Overvoltage Category IV<br>CAT IV equipment is designed to protect against transients from the primary supply level, such as an electricity meter or an overhead or underground utility service. |
| CE | Conforms to European Union directives |  | Do not dispose of electrical equipment with household waste! |

***NOTICE*** This equipment is used to make electrical measurements. Incorrect use or improper application may result in incorrect or inaccurate measurements. Selection of appropriate measurement methods for the conditions is the responsibility of the user.

## FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult the dealer or an experienced radio/TV technician for help.

## Electromagnetic Compatibility (EMC)

The term electromagnetic compatibility is taken to mean the capability of the product to function smoothly in an environment where electromagnetic radiation and electrostatic discharges are present and without causing electromagnetic interference to other equipment.

***NOTICE*** The RIDGID micro DM-100 conforms to all applicable EMC standards. However, the possibility of it causing interference in other devices cannot be precluded.

## Changing/Installing Batteries

The RIDGID DM-100 Digital Multimeter is supplied without the battery installed. When the low battery [  ] icon appears on the display screen, replace the battery. Operating the multimeter with a low battery can cause incorrect readings. Remove the battery prior to long-term storage to avoid battery leakage.

1. Switch OFF the device and disconnect test leads.
2. Use a Phillips head screwdriver to loosen the battery compartment cover screws and remove the cover. Remove existing battery.
3. Install 9V alkaline battery (NEDA 1604, IEC 6F22 or 6LR61), observing the correct polarity as indicated on the battery compartment.
4. Securely install the battery compartment cover. Do not operate without the battery cover secured.

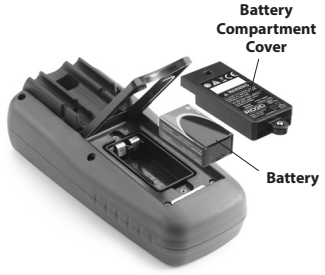



**Figure 5 – Changing Battery**

## Pre-Operation Inspection

**⚠ WARNING**

**Before each use, inspect your tool and correct any problems to reduce the risk of serious injury from electric shock and other causes and prevent tool damage.**

1. Make sure the unit is OFF and the leads are not connected.
2. Clean any oil, grease or dirt from the equipment. This aids inspection and helps prevent the tool from slipping from your grip.
3. Inspect the tool.
   - For any broken, worn, missing or binding parts or any condition which may prevent safe and normal operation.
   - Confirm that battery compartment cover and back cover (fuse cover) are properly secured.
   - Inspect the test leads for damaged insulation or exposed wire. Check the test leads for continuity.
   - Check that the markings and warning label are present, firmly attached and readable.

If any issues are found during the inspection, do not use the tool until it has been properly serviced.

4. Verify the meter operation (following the *Set-Up and Operation Instructions*).
   - Turn the unit ON and confirm that the Low Battery icon is not ON.
   - Perform a continuity test.
5. Do not use the meter if it operates abnormally. When in doubt, have the meter serviced.

# Set-Up and Operation

**⚠ WARNING**

**Set up and operate the Multimeter according to these procedures to reduce the risk of injury from electric shock and other causes, and prevent tool damage.**

**Use caution when working with voltages above 30 V AC RMS, 42 V AC peak or 60 V DC.** These voltages pose serious shock hazard. High-voltage circuits, both DC and AC, are very dangerous and should be measured with great care. Avoid working alone.

**Do not connect to voltages that exceed 1000 VAC or VDC relative to earth ground.** This may damage the meter and expose the operator to a shock hazard.

**When using the probes, keep your fingers behind the finger guards on the probes.** This reduces the risk of electric shock.

**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 using appropriate methods.

**Use extreme caution when working near bare conductors and bus bars.** Accidental contact with conductors could result in electrical shock.

1. Check for an appropriate work area as indicated in the General Safety section.
2. Inspect the work to be done and confirm that you have correct equipment for the application. See the Specifications section for range, accuracy and other information.
   - To select a function, turn the rotary function switch to the appropriate position.
   - Select the proper function and range for your measurement.
   - Determine the voltage to be measured. Do not apply more than the rated voltage, as marked on the meter, between terminals or between any terminal and earth ground.
   - When measuring current, turn off circuit power before connecting the meter in the circuit. Remember to place the meter in series with the circuit.
   - Turn the function switch to the OFF position after inspection.
3. Make sure all equipment being used has been properly inspected.
4. Use correct accessories for the application. Select the proper terminals, function, and range for all measurements.
5. When making electrical connections, connect the common test lead (black) before connecting the live test lead (red); when disconnecting, disconnect the live test lead (red) before disconnecting the common test lead (black). Cover unused input terminals with terminal plugs.
6. If "OL" appears in the display during a measurement, the value exceeds the range you

have selected, change to a higher range. On some low DC and AC voltage ranges, with the test leads not connected to a device, the display may show a random, changing reading. This is normal and is caused by the high-input sensitivity. The reading will stabilize and give a proper measurement when connected to the circuit.

7. Always turn the function switch to the OFF position when the meter is not in use. The meter will automatically shut OFF if not used for 15 minutes.

## Rotary Function Switch

The Rotary Function switch permits the user to select a measurement function by positioning the rotary switch to one of the icons around its perimeter.


**Figure 6 – Rotary Function Switch**

| Switch Position | Function |
|---|---|
| OFF | Switch Off the Multimeter |
| Hz V | DC/AC Voltage Measurement |
| CAP | Capacitance Measurement |
| Ω | Continuity Check and Diode Test |
| Ω | Resistance Measurement |
| Hz% | Frequency Measurement |
| °C | Temperature Measurement in °C |
| °F | Temperature Measurement in °F |
| 10A Hz | DC/AC Current Measurement up to 10 A |
| mA Hz | DC/AC Current Measurement up to 400 mA |
| µA Hz | DC/AC Current Measurement up to 4000 µA |

## Input Terminals

The black test lead plugs into the negative (COM) terminal and the red test lead plugs into any of the three the positive input terminals according to the measurement to be made. Use the provided terminal plugs in idle terminals during operation.


**Figure 7 – Input Terminals**

| Terminals | | Description |
|---|---|---|
| 10A | 10 A | Input Terminal for 0 to 10 A |
| µA mA | µA / mA | Input Terminal for 0 to 400 mA |
| V Hz% Ω CAP °C °F | V / Hz% / Ω / CAP / TEMP | Input Terminal for DC/AC Voltage Measurement, Resistance Measurement, Continuity Check, Diode Test, Frequency Measurement, Capacitance Measurement and Temperature Measurement |
| COM | COM | Negative Terminal for all measurements |

## Pushbuttons

**Mode Button (MODE)**

The Mode Button is used to select Ohms/Diode/Continuity or DC/AC current in the appropriate rotary switch settings.

**Range Button (RANGE)**

When the meter is turned on, it automatically goes into Autoranging. This automatically selects the best range for the measurement being made and is generally the best mode for most measurements. For selecting the range manually, perform the following:

1. Press the Range button. The "AUTO" display indicator will turn off.
2. Press the Range button to step through the available ranges until you select the range you want.
3. Press and hold the Range button for 2 seconds to exit the Manual Ranging mode and return to Autoranging.

**Data Hold Button (HOLD)**

The Data Hold function allows the meter to freeze a measurement for later reference.

1. Press the Data Hold button to freeze the reading on the display. The indicator "HOLD" will appear in the display.
2. Press the Data Hold button to return to normal operation.

**Relative Button (REL)**

The relative measurement feature allows you to make measurement relative to a stored reference value. A reference voltage, current or other value can be stored and measurement can be made in comparison to that value.

1. Perform any measurement as described in the operating instructions.
2. Press the Relative button to store the reading in the display and the "REL" indicator will appear on the display.
3. The display will now indicate the difference between the stored value and the measured value.
4. Press the Relative button to return to normal operation

**Backlight Button ( )**

1. Press the Backlight button for 2 seconds to turn the display light on.
2. Press Backlight button again to exit the backlight mode.

**Hz% Button (Hz%)**

1. Press Hz% Button to measure Frequency or Duty Cycle while measuring voltage or Current.
2. In Frequency mode, the frequency is measured in Hz units and in % mode the readings from 0.1 through 99.9 are displayed.
3. Press Hz% Button to return to measurement of Voltage or Current.

# DC/AC Voltage Measurement

***NOTICE*** Do not measure DC/AC voltage if a motor (or other high current equipment) on the circuit is being switched ON and OFF. Large voltage surges may occur that can damage the meter.

Do not measure DC/AC voltage if a motor (or other high current equipment) on the circuit is being switched ON and OFF. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the V DC/AC ( $\overset{\sim}{\underset{Hz}{V}}$ ) position and use the MODE button to select AC or DC.
2. Insert the black test lead plug into the "COM" terminal and the red test lead plug into the "V" terminal.
3. Touch the test probe tips to the circuit under test. Be sure to observe the correct polarity (red lead to positive, black lead to negative). Range switching and DC/AC selection are automatic.

   The probe tips may not be long enough to contact the live parts inside some fixtures because the contacts are deeply recessed. The reading may show 0 volts when the outlet actually has voltage on it. Make sure the probe tips are touching metal contacts before assuming that no voltage is present.
4. Read the voltage in the display. The display will indicate the proper value with decimal point and symbol (DC/AC and V). If the polarity is reversed, the display will show minus (-) before the value.

## DC/AC Current Measurement

**⚠ WARNING** To reduce risk of electric shock, do not measure AC current on any circuit whose voltage exceeds 250V AC. When measuring current, turn off the circuit power before connecting the meter in series with the circuit. Improper set up could result in electrical shock.

1. For current measurement up to 4000 µA, set the function switch to the µA ( $\overset{\sim}{\underset{Hz}{\mu A}}$ ) position and insert the red test lead plug into the "µA / mA" terminal.
2. For current measurement up to 400 mA, set the function switch to the mA ( $\overset{\sim}{\underset{Hz}{mA}}$ ) range and insert the red test lead plug into the "µA / mA" terminal.
3. For current measurement up to 10 A, set the function switch to the A ( $\overset{\sim}{\underset{Hz}{10A}}$ ) position and insert the red test lead plug into the "10 A" terminal.
4. Press MODE button to select DC or AC.
5. Insert the black test lead plug into the "COM" terminal.
6. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
7. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.

***NOTICE*** Do not make current measurement on the 10 A scale for longer than 30 seconds. Exceeding 30 seconds may cause damage to the meter and/or the test leads.

8. Apply power to the circuit.
9. Read the current in the display. The display will indicate the proper value with decimal point and symbol.

## Resistance Measurement

**⚠ WARNING** To reduce risk of electric shock, disconnect all power (remove batteries, unplug cord, discharge all capacitors, etc.) to the circuit being measured before taking any resistance measurement.

1. Set the function switch to Ω position.

2. Insert the black test lead plug into the "COM" terminal and the red test lead plug into the "Ω" terminal.
3. Touch the test probe tips across the circuit or part under test. It is good practice to disconnect one side of the part under test so the rest of the circuit will not interfere with the resistance reading.
4. Read the resistance in the display. The display will indicate the proper value with decimal point and symbol.
5. After resistance test, the capacitive circuits must be discharged. This will help protect against electric shock.

## Diode Test

**⚠ WARNING** To reduce the risk of electric shock, do not test any diode that has voltage on it.

1. Set the function switch to position.
2. Press the button until the symbol appears in the display.
3. Insert the black test lead plug into the "COM" terminal and the red test lead plug into the "Ω" terminal.
4. Touch the test probe tips to the diode or semiconductor junction to test. Note the meter reading.
5. Reverse the probe polarity by switching probe position. Note this reading.
6. The diode or junction can be evaluated as follows:
   - If one reading shows a value and the other reading shows OL, the diode is good.
   - If both readings show OL, the device is open.
   - If both readings are very small or 0, the device is shorted.

NOTE! The value indicated in the display during the diode check is the forward voltage.

## Continuity Check

**⚠ WARNING** To reduce risk of electric shock, never measure continuity on circuits or wires that have voltage on them.

1. Set the function switch to position.
2. Insert the black test lead plug into the "COM" terminal and the red test lead plug into the "Ω" terminal.
3. Press the button until the symbol appears on display screen.
4. Check meter operation by touching probe tips together. An audible signal should sound.
5. Touch the test probe tips to the circuit or wire to check.
6. If the resistance is less than approximately 150 Ω, an audible signal will sound. The display will also show the actual resistance.

## Capacitance Measurement

**⚠ WARNING** To reduce risk of electric shock, disconnect all power (remove batteries, unplug cord, discharge all capacitors, etc.) to the circuit being measured before taking any capacitance measurement. Use the DC Voltage function to confirm that the capacitor is discharged.

1. Set the function switch to CAP position. ("nF" and a small value will appear in the display).
2. Insert the black test lead plug into the "COM" terminal and the red test lead plug into the "CAP" terminal.
3. Touch the test leads to the capacitor to be tested. The display will indicate the value, proper decimal point and symbol.

## Frequency Measurement

1. Set the function switch to Hz% position.
2. Insert the black test lead plug into the "COM" terminal and the red test lead plug into the "F" terminal.
3. Touch the test probe tips to the circuit under test.
4. Read the frequency in the display. The digital reading will indicate the value, proper decimal point and symbols (Hz, kHz).

## Temperature Measurement

**⚠ WARNING** To reduce the risk of electric shock, disconnect both test probes from any source of voltage before making a temperature measurement.

1. If you wish to measure temperature in °F, set the function switch to °F range. If you wish to measure temperature in °C, set the function switch to °C range.
2. Insert the temperature adapter in **"COM"** and **"V Ω CAP TEMP Hz"** terminal with –ve side in **"COM"** and +ve side in **"V Ω CAP TEMP Hz"** terminal.
3. Insert the Temperature Probe into the adapter.
4. Touch the Temperature Probe head to the part whose temperature is to be measured. Keep the probe in contact with the part under test until the reading stabilizes (about 30 seconds).
5. Read the temperature in the display. The digital reading will indicate the proper value with decimal point.

**Figure 8 – Temperature Probe**

**⚠ WARNING** To reduce risk of electric shock, be sure the thermocouple has been removed before changing to another measurement function.

# Maintenance Instructions

**⚠ WARNING**

**To reduce risk of electric shock, disconnect the test leads from any source of voltage before performing any maintenance activity.**

## Cleaning

- Do not immerse the multimeter in water. Wipe off dirt with a damp soft cloth. Do not use aggressive cleaning agents or solutions. Gently clean the display screen with a clean dry cloth. Avoid rubbing too hard.
- Use only alcohol swabs to clean the test lead connections.

## Calibration

The calibration of the meter should be checked once a year to ensure that it performs according to the specifications.

## Fuse Replacement

If when measuring current the display shows zero, the fuse(s) may need to be changed.

1. Switch off the multimeter.
2. Remove the battery (see "Changing/Installing Battery").
3. Loosen the 6 screws that hold the case together (see Figure 9) and remove back of multimeter case.
4. Inspect fuses. If needed, remove fuse by gently pulling it out.
5. Install the new fuse into the holder. Always use a fuse of the proper size and value. (F500mA/1000V fast blow for the 400mA range, F10A/1000V fast blow for the 10A range – see Accessory section for catalog numbers).


**Figure 9 – Removing Back of Multimeter Case**

6. Carefully reassemble the multimeter ensuring seals are properly in place and are not damaged. Do not operate without the case or battery cover secured.

# Accessories

**⚠ WARNING**

**To reduce the risk of serious injury, only use accessories specifically designed and recommended for use with the RIDGID DM-100 Digital Multimeter such as those listed below. Other Accessories suitable for use with other tools may be hazardous when used with this meter.**

| Catalog Number | Description |
|---|---|
| 44753 | Test Leads with Covers, Black and Red |
| 45023 | Terminal Plugs |
| 44758 | K Type Adaptor and Temperature Probe |

| Catalog Number | Description |
|---|---|
| 44768 | Fuse F500mA/1000V fast blow for 400mA range |
| 44763 | Fuse F10A/1000V fast blow for 10A range |

Further information on accessories specific to this tool can be found in the RIDGID Catalog and online at www.RIDGID.com or www.RIDGID.eu

## Storage

The RIDGID micro DM-100 Digital Multimeter must be stored in a dry secure area between -20°C to 60°C (-4°F to 140°F) and humidity less than 80% RH.

Store the tool in a locked area out of the reach of children and people unfamiliar with the multimeter.

Remove the battery before any long period of storage or shipping to avoid battery leakage.

The multimeter should be protected against hard impacts, moisture and humidity, dust and dirt, extreme high and low temperatures and chemical solutions and vapors.

## Service and Repair

**⚠ WARNING**

**Improper service or repair (or calibration) can make the micro DM-100 Digital Multimeter unsafe to operate.**

Service and repair of the micro DM-100 Digital Multimeter must be performed by a RIDGID Independent Authorized Service Center.

For information on your nearest RIDGID Independent Service Center or any service or repair questions:

- Contact your local RIDGID distributor.
- Visit www.RIDGID.com or www.RIDGID.eu to find your local RIDGID contact point.
- Contact Ridge Tool Technical Service Department at rtctechservices@emerson.com, or in the U.S. and Canada call (800) 519-3456.

## Disposal

Parts of the RIDGID micro DM-100 Digital Multimeter contain valuable materials and can be recycled. There are companies that specialize in recycling that may be found locally. Dispose of the components in compliance with all applicable regulations. Contact your local waste management authority for more information.

**For EC Countries:** Do not dispose of electrical equipment with household waste!

According to the European Guideline 2002/96/EC for Waste Electrical and Electronic Equipment and its implementation into national legislation, electrical equipment that is no longer usable must be collected separately and disposed of in an environmentally correct manner.

## Battery Disposal

For EC countries: Defective or used batteries must be recycled according to the guideline 2006/66/EEC.

## Troubleshooting

| SYMPTOM | POSSIBLE REASON | SOLUTION |
|---|---|---|
| **Meter does not work properly.** | Fuse not properly inserted. | Check the fuse, insert properly. |
| | Battery low on power. | Replace battery. |
| | Meter needs calibration. | Send the unit for calibration. |
| | Loose test plug connections. | Check connections, reattach. |
| | Meter not set for proper measurement. | Move the Rotary Function Switch according to the correct measurement. |
| | Use of incorrect input terminal, range or mode for measurement. | Use proper input terminal, range or mode for measurement. See *Set-Up and Operation Instructions.* |
| **Unit will not turn ON.** | Blown fuse. | Replace the fuse. |
| | Dead battery. | Replace battery. |