Introduction

Congratulations on your purchase of the Extech MN15A MultiMeter. The MN15A offers AC/DC Voltage, AC/DC Current, Resistance, Diode, and Continuity testing plus Type K thermocouple temperature measurements. Proper use and care of this meter will provide many years of reliable service.

Safety

This symbol adjacent to another symbol, terminal or operating device indicates that the operator must refer to an explanation in the Operating Instructions to avoid personal injury or damage to the meter.

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

This **CAUTION** symbol indicates a potentially hazardous situation, which if not avoided, may result damage to the product.

This symbol advises the user that the terminal(s) so marked must not be connected to a circuit point at which the voltage with respect to earth ground exceeds 600V.

This symbol adjacent to one or more terminals identifies them as being associated with ranges that may, in normal use, be subjected to particularly hazardous voltages. For maximum safety, the meter and its test leads should not be handled when these terminals are energized.

This symbol indicates that a device is protected throughout by double insulation or reinforced insulation.

SAFETY INSTRUCTIONS

This meter has been designed for safe use, but must be operated with caution. The rules listed below must be carefully followed for safe operation.

1. **NEVER** apply voltage or current to the meter that exceeds the specified maximum:

<table>
<thead>
<tr>
<th>Function</th>
<th>Maximum Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>VDC or VAC</td>
<td>600VAC and VDC</td>
</tr>
<tr>
<td>VDC or VAC 200mV range</td>
<td>200Vrms</td>
</tr>
<tr>
<td>mA AC/DC</td>
<td>200mA 250V fast acting fuse</td>
</tr>
<tr>
<td>A AC/DC</td>
<td>10A 250V fast acting fuse (for 30 seconds max. every 15 minutes.)</td>
</tr>
<tr>
<td>Resistance, Continuity</td>
<td>250Vrms for 15 sec. max.</td>
</tr>
</tbody>
</table>

2. **USE EXTREME CAUTION** when working with high voltages.
3. **DO NOT** measure voltage if the voltage on the "COM" input jack exceeds 600V above earth ground.
4. **NEVER** connect the meter leads across a voltage source while the function switch is in the current, resistance, or diode mode. Doing so can damage the meter.
5. **ALWAYS** discharge filter capacitors in power supplies and disconnect the power when making resistance or diode tests.
6. **ALWAYS** turn off power and disconnect test leads before opening the covers to replace the fuse or battery.
7. **NEVER** operate the meter unless the back cover and the battery and fuse covers are in place and fastened securely.
8. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
Controls and Jacks

1. LCD display
2. Rotary function switch
3. 10 ampere test lead jack
4. Test lead jack for voltage, milliamp, resistance/continuity, diode and temperature functions
5. COM test lead jack
6. Battery compartment (rear)

SYMBOLS

• ))) Continuity
~ AC
M megga (10^6) (ohms)
k kilo (10^3) (ohms)
A Amps
BAT Battery test
°F Degrees Fahrenheit

Diode
DC
m milli (10^-3) (volts, amps)
V Volts
Ω Ohms
°C Degrees Celsius

Low battery indicator
**Operating Instructions**

**WARNING:** Risk of electrocution. High-voltage circuits, both AC and DC, are very dangerous and should be measured with great care.

**NOTE:** On some low AC and DC 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 a circuit.

### AC Voltage Measurements

**WARNING:** Risk of Electrocution. The probe tips may not be long enough to contact the live parts inside some 240V outlets for appliances because the contacts are recessed deep in the outlets. As a result, the reading may show 0 volts when the outlet actually has voltage on it. Make sure the probe tips are touching the metal contacts inside the outlet before assuming that no voltage is present.

**CAUTION:** Do not measure AC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the 600 VAC position.
2. Insert the black test lead banana plug into the negative **COM** jack. Insert red test lead banana plug into the positive **V** jack.
3. Touch the black test probe tip to the neutral side of the circuit.
4. Touch the red test probe tip to the “hot” side of circuit.
5. Read the voltage in the display.
6. If the reading is less than 200V, switch to the 200V range to improve resolution.

### DC Voltage Measurements

**CAUTION:** Do not measure DC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the highest 600VDC position.
2. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive **V** jack.
3. 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.
4. Read the voltage in the display.
5. If the reading is less than the maximum of a lower range, switch to that range to improve resolution.
DC CURRENT MEASUREMENTS

**CAUTION:** Do not make current measurements at 10 Amps for longer than 30 seconds. Exceeding 30 seconds may cause damage to the meter and/or the test leads.

1. Insert the black test lead banana plug into the negative **COM** jack.

2. For current measurements up to 200mA, set the function switch to the 200mA position and insert the red test lead banana plug into the **mA** jack.

3. For current measurements up to 10A, set the function switch to the 10A position and insert the red test lead banana plug into the **10A** jack.

4. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.

5. 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.

6. Apply power to the circuit.

7. Read the current in the display.
RESISTANCE MEASUREMENTS

**WARNING:** To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements.

1. Set the function switch to the highest Ω position.
2. Insert the black test lead banana plug into the negative COM jack. Insert the red test lead banana plug into the positive Ω jack.
3. Touch the test probe tips across the circuit or part under test.
4. Read the resistance in the display. Move the function switch to successively lower Ω ranges to obtain a higher resolution reading.

CONTINUITY CHECK

**WARNING:** To avoid electric shock, never measure continuity on circuits that have a voltage potential.

1. Set the function switch to the position.
2. Insert the black lead banana plug into the negative COM jack. Insert the red test lead banana plug into the positive Ω jack.
3. Touch the test probe tips to the circuit or wire you wish to check.
4. If the resistance is less than approximately 100Ω, the audible signal will sound. If the circuit is open, the display will indicate “1.”

DIODE TEST

1. Set the function switch to the position.
2. Insert the black test lead banana plug into the negative COM jack. Insert the red test lead banana plug into the positive Ω jack.
3. Touch the test probes to the diode under test.
4. A typical diode will indicate approximately .400 to .500 volts for the forward test and “1.” for the reverse test.
5. A shorted diode will indicate a low value in both the reverse and forward test directions. An open diode will indicate “1.” in both test directions.
BATTERY VOLTAGE TEST

**CAUTION:** Do not measure batteries while they are installed in the devices they are powering. The batteries must be removed from installations before tests can be made.

1. Set the function switch to the **1.5V** or **9V BAT** switch position. Use the 1.5V position for ‘AAA’, ‘AA’, ‘C’, ‘D’, and other 1.5V batteries. Use the 9V position for square 9V transistor batteries.

2. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive **V** jack.

3. Touch the black test probe tip to the negative side of the battery. Touch the red test probe tip to the positive side of the battery.

4. Read the voltage in the display.

TEMPERATURE MEASUREMENTS

1. Set the function switch to the **°F** or **°C** position.

2. Insert the Temperature Probe into the **COM** and **Temp** jacks, making sure to observe the correct polarity.

3. Touch the Temperature Probe head to the part to be measured. Keep the probe touching the part under test until the reading stabilizes.

4. Read the temperature in the display.

**Note:** The temperature probe is fitted with a type K mini connector. A mini connector to banana connector adaptor is supplied for connection to the input banana jacks.
Maintenance

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before removing the back cover or the battery or fuse covers.

WARNING: To avoid electric shock, do not operate your meter until the battery and fuse covers are in place and fastened securely.

This MultiMeter is designed to provide years of dependable service, if the following care instructions are performed:

1. **KEEP THE METER DRY.** If it gets wet, wipe it off.
2. **USE AND STORE THE METER IN NORMAL TEMPERATURES.** Temperature extremes can shorten the life of the electronic parts and distort or melt plastic parts.
3. **HANDLE THE METER GENTLY AND CAREFULLY.** Dropping it can damage the electronic parts or the case.
4. **KEEP THE METER CLEAN.** Wipe the case occasionally with a damp cloth. DO NOT use chemicals, cleaning solvents, or detergents.
5. **USE ONLY FRESH BATTERIES OF THE RECOMMENDED SIZE AND TYPE.** Remove old or weak batteries so they do not leak and damage the unit.
6. **IF THE METER IS TO BE STORED FOR A LONG PERIOD OF TIME,** the battery should be removed to prevent damage to the unit.

**BATTERY/FUSE INSTALLATION and LOW BATTERY INDICATION**

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before removing the battery cover. Do not operate meter unless the battery is in place.

**LOW BATTERY INDICATION**

The icon will appear in the display when the battery voltage becomes low. Replace the battery when this appears.

**BATTERY REPLACEMENT**

1. Disconnect the test leads from the meter.
2. Remove the 2 Phillips head screws located on the back of the instrument and remove the battery cover.
3. Replace the 9V battery.
4. Secure the fuse/battery compartment cover.
5. Dispose of the old battery as required by local regulations.

**Battery Safety Reminders**

- Please dispose of batteries responsibly; observe local, state, and national regulations.
- Never dispose of batteries in a fire; batteries may explode or leak.
- Never mix battery types; install new batteries of the same type

**FUSE REPLACEMENT**

1. Disconnect the test leads from the meter.
2. Remove the 2 Phillips head screws located on the back of the instrument and remove the battery cover.
3. Gently remove the fuse(s) and install the new fuse(s) into the holder(s).
4. Always use fuses of the proper size and value (200mA/250V (5x20mm) ceramic fast blow for the mA / µA ranges, 10A/250V (5x20mm) ceramic fast blow for the A range).
5. Secure the fuse/battery compartment cover.

**WARNING:** To avoid electric shock, do not operate your meter until the fuse cover is in place and fastened securely.
## Range Specifications

<table>
<thead>
<tr>
<th>Function</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Voltage (V DC)</td>
<td>200mV</td>
<td>0.1mV</td>
<td>±(0.5% reading + 2 digits)</td>
</tr>
<tr>
<td></td>
<td>2000mV</td>
<td>1mV</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20V</td>
<td>0.01V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200V</td>
<td>0.1V</td>
<td>±(0.8% reading + 2 digits)</td>
</tr>
<tr>
<td></td>
<td>600V</td>
<td>1V</td>
<td></td>
</tr>
<tr>
<td>AC Voltage (V AC)</td>
<td>200V</td>
<td>0.1V</td>
<td>±(1.2% reading + 10 digits (50/60Hz))</td>
</tr>
<tr>
<td></td>
<td>600V</td>
<td>1V</td>
<td></td>
</tr>
<tr>
<td>DC Current (A DC)</td>
<td>200mA</td>
<td>0.1mA</td>
<td>±(1.2% reading + 2 digits)</td>
</tr>
<tr>
<td></td>
<td>10A</td>
<td>10mA</td>
<td>±(2.0% reading + 2 digits)</td>
</tr>
<tr>
<td>Resistance</td>
<td>200Ω</td>
<td>0.1Ω</td>
<td>±(0.8% reading + 2 digits)</td>
</tr>
<tr>
<td></td>
<td>2000Ω</td>
<td>1Ω</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20kΩ</td>
<td>0.01kΩ</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200kΩ</td>
<td>0.1kΩ</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20MΩ</td>
<td>10kΩ</td>
<td>±(1.5% reading + 2 digits)</td>
</tr>
<tr>
<td>Battery Test</td>
<td>9V</td>
<td>10mV</td>
<td>±(1.0% reading + 2 digits)</td>
</tr>
<tr>
<td></td>
<td>1.5V</td>
<td>1mV</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>-20°C to 750°C</td>
<td>1°C</td>
<td>±(3% of reading +5°C/9°F)</td>
</tr>
<tr>
<td></td>
<td>-4°F to 1400°F</td>
<td>1°F</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

Accuracy specifications consist of two elements:

- (% reading) – This is the accuracy of the measurement circuit.
- (+ digits) – This is the accuracy of the analog to digital converter.

Accuracy is stated at 65°F to 83°F (18°C to 28°C) and less than 75% RH.
General Specifications

Diode Test  Bias voltage: 2.8VDC typical
Continuity Check  Audible signal will sound if the resistance is less than 100Ω
Input Impedance  1MΩ (VDC & VAC)
AC Bandwidth  50 / 60Hz
Display  2000 count (0 to 1999) LCD
Overrange indication  “1___” is displayed
Polarity  Automatic (no indication for positive); Minus (-) sign for negative
Measurement Rate  2 times per second, nominal
Low Battery Indication  “Œ” is displayed
Battery  One (1) 9V battery (NEDA 1604)
Fuses  mA range; 200mA/250V ceramic fast blow (5x20mm)
   A range; 10A/250V ceramic fast blow (5x20mm)
Operating Temperature  32°F to 122°F (0°C to 50°C)
Storage Temperature  -4°F to 140°F (-20°C to 60°C)
Operating Humidity  Max 70% up to 87°F (31°C) decreasing linearly to 50% at 122°F (50°C)
Storage Humidity  < 80% RH
Operating Altitude  7000 ft. (2000 meters) maximum.
Weight  9.17 oz (255g)
Size  5.2” x 2.6” x 1.5” (132 x 66 x 38mm)

Approvals  CE, ETL

PER IEC1010 OVERVOLTAGE INSTALLATION CATEGORY

OVERVOLTAGE CATEGORY I
Equipment of OVERVOLTAGE CATEGORY I is equipment for connection to circuits in which measures are taken to limit the transient overvoltages to an appropriate low level. Note – Examples include protected electronic circuits.

OVERVOLTAGE CATEGORY II
Equipment of OVERVOLTAGE CATEGORY II is energy-consuming equipment to be supplied from the fixed installation.
Note – Examples include household, office, and laboratory appliances.

OVERVOLTAGE CATEGORY III
Equipment of OVERVOLTAGE CATEGORY III is equipment in fixed installations.
Note – Examples include switches in the fixed installation and some equipment for industrial use with permanent connection to the fixed installation.

OVERVOLTAGE CATEGORY IV
Equipment of OVERVOLTAGE CATEGORY IV is for use at the origin of the installation.
Note – Examples include electricity meters and primary over-current protection equipment
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Support Lines: U.S. (877) 439-8324; International: +1 (603) 324-7800
- Technical Support: Option 3; E-mail: support@extech.com
- Repair & Returns: Option 4; E-mail: repair@extech.com
- Product specifications are subject to change without notice

Please visit our website for the most up-to-date information
www.extech.com

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**Calibrage, réparation et services après-vente**


<table>
<thead>
<tr>
<th align="center">Lignes d’assistance: États-Unis (877) 439-8324; international: +1 (603) 324-7800</th>
</tr>
</thead>
<tbody>
<tr>
<td align="center">Service d’assistance technique : Option 3 ; E-mail : <a href="mailto:support@extech.com">support@extech.com</a></td>
</tr>
<tr>
<td align="center">Réparations et retours : Option 4 ; E-mail : <a href="mailto:repair@extech.com">repair@extech.com</a></td>
</tr>
<tr>
<td align="center">Les spécifications produit sont sujettes à modifications sans préavis.</td>
</tr>
<tr>
<td align="center">Pour les toutes dernières informations, veuillez visiter notre site Web.</td>
</tr>
<tr>
<td align="center"><a href="http://www.extech.com">www.extech.com</a></td>
</tr>
<tr>
<td align="center">FLIR Commercial Systems, Inc., 9 Townsend West, Nashua, NH 03063 USA</td>
</tr>
<tr>
<td align="center">Certifié ISO 9001</td>
</tr>
</tbody>
</table>

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Soporte Técnico Opción 3; correo electrónico: support@extech.com

Reparación / Devoluciones: Opción 4; correo electrónico: repair@extech.com

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