### AM-10

- **Pocket Size - Very Economical**
- **6 Functions, 10 Ranges**
  - ±4% Basic DC Accuracy
  - 2” Mirrored Scale
  - 2KΩ/V AC & DC Input Sensitivity
  - Fuse and Diode Protection
  - DC Current
  - Resistance
  - Decibels
  - Battery Test
  - 90-Day Limited Warranty

Test Leads (ML-10) and Operating Instructions Included

---

**SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>General</th>
<th>Operating Position: Horizontal or vertical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front/Side Controls: Range selector switch, “0” Ω adjustment</td>
<td>Power: 1.5V AA battery (not included)</td>
</tr>
<tr>
<td>Movement: 90° arc, 200µA full scale</td>
<td>Movement and Indicator Protection: Diode and Fuse (0.5A, 250V)</td>
</tr>
<tr>
<td>Scales (5): One scale for OHMS, 2 scales for AC/DC, one scale for dB and Battery test</td>
<td>Dimensions, Weight: 2.4” wide x 3.5” long x 1.1” thick (60mm x 89mm x 29mm), net weight 4oz. (113g)</td>
</tr>
<tr>
<td>Scale Length: 2”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC Voltage</th>
<th>AC Voltage</th>
<th>Decibels</th>
<th>Battery Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ranges:</strong> 0-15, 150, 500V</td>
<td><strong>Ranges:</strong> 0-15, 150, 500V</td>
<td><strong>Ranges:</strong> 0dB to +26dB on 15V AC range</td>
<td><strong>Ranges:</strong> 1.5V AA</td>
</tr>
<tr>
<td><strong>Input Impedance:</strong> 2kΩ per Volt</td>
<td><strong>Input Impedance:</strong> 2kΩ per Volt</td>
<td>0dB to +46dB on 150V AC range</td>
<td></td>
</tr>
<tr>
<td><strong>Rated Accuracy:</strong> ±4% of full scale</td>
<td><strong>Rated Accuracy:</strong> ±5% of full scale</td>
<td>10dB to +56dB on 500V AC range</td>
<td></td>
</tr>
<tr>
<td>DC Current</td>
<td>Resistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ranges:</strong> 0-150mA</td>
<td><strong>Ranges:</strong> R x 1K 0 - 1MΩ (full scale)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rated Accuracy:</strong> ±4% of full scale</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 800-631-1250 • www.nteinc.com
AM-30

**Our Top Of The Line Analog Meter**

**Full Function**

**Temperature Measurement**

- 3% DC Accuracy FS
- 5” Mirrored Scale
- 30kΩ/V DC, 10kΩ/V AC Input Sensitivity
- Fuse and Diode Protection
- 10 Amp DC Range
- 1000 Volts AC/DC
- Transistor Test
- Battery Test
- Continuity Buzzer
- Tilt Stand/Carrying Handle
- 90-Day Limited Warranty

Test Leads (ML-43), Temperature Probe (TC-30), Fuse and Operating Instructions Included

### SPECIFICATIONS:

**General**

- **Front Panel Controls:** Range selector switch with “OFF” position, 0Ω adjust/temperature calibration, 0Ω calibration switch
- **Movement:** 90° arc, 25µA movement
- **Scales (8):** One scale for OHMS, three scales for AC/DC, one scale for dB, two scales for temperature, one scale for battery test
- **Scale Length:** 5”
- **Operating Position:** Horizontal or vertical; rubber pads to prevent slipping on moderate horizontal slopes

**DC Voltage**

- **Ranges:** 0-0.6, 3, 12, 60, 300, 1000V
- **Input Impedance:** 30kΩ per Volt
- **Rated Accuracy:** ±3% of full scale

**AC Voltage**

- **Ranges:** 0-12, 30, 120, 300, 1000V
- **Input Impedance:** 10kΩ per Volt
- **Rated Accuracy:** ±4% of full scale

**Resistance**

- **Ranges:**
  - R x 1 0-5kΩ
  - R x 10 0-50kΩ
  - R x 1k 0-500kΩ
  - R x 10k 0-5MΩ
- **Rated Accuracy:** 3° arc

**Decibels**

- **Ranges:**
  - -10dB to +24dB on 12V AC range
  - -2dB to +32dB
  - 8dB to +44dB
  - 20dB to +52dB
  - 30dB to +62dB
- **0dB referenced to 1 milliwatt at 600Ω**

**Temperature**

- **Ranges:** -50°C to +260°C (-60°F to +400°F)

**Battery Test**

- **Ranges:** 1.5V AA, 9V

**Power:**

- 9V (NEDA 1604) and 1.5V AA (2) batteries (not included)

**Movement and Indicator Protection:**

- Fuse (0.5A, 250V)

**Operating Temperature:**

- 18°C to 25°C for rated accuracy

**Dimensions, Weight:**

- 4.8” wide x 6.9” long x 1.9” thick (127mm x 175mm x 48mm), net weight 14oz. (422g)

**Analog Multimeter**

- 3% DC Accuracy FS
- 5” Mirrored Scale
- 30kΩ/V DC, 10kΩ/V AC Input Sensitivity
- Fuse and Diode Protection
- 10 Amp DC Range
- 1000 Volts AC/DC
- Transistor Test
- Battery Test
- Continuity Buzzer
- Tilt Stand/Carrying Handle
- 90-Day Limited Warranty

Test Leads (ML-43), Temperature Probe (TC-30), Fuse and Operating Instructions Included

**SPECIFICATIONS:**

**General**

- **Front Panel Controls:** Range selector switch with “OFF” position, 0Ω adjust/temperature calibration, 0Ω calibration switch
- **Movement:** 90° arc, 25µA movement
- **Scales (8):** One scale for OHMS, three scales for AC/DC, one scale for dB, two scales for temperature, one scale for battery test
- **Scale Length:** 5”
- **Operating Position:** Horizontal or vertical; rubber pads to prevent slipping on moderate horizontal slopes

**DC Voltage**

- **Ranges:** 0-0.6, 3, 12, 60, 300, 1000V
- **Input Impedance:** 30kΩ per Volt
- **Rated Accuracy:** ±3% of full scale

**AC Voltage**

- **Ranges:** 0-12, 30, 120, 300, 1000V
- **Input Impedance:** 10kΩ per Volt
- **Rated Accuracy:** ±4% of full scale

**Resistance**

- **Ranges:**
  - R x 1 0-5kΩ
  - R x 10 0-50kΩ
  - R x 1k 0-500kΩ
  - R x 10k 0-5MΩ
- **Rated Accuracy:** 3° arc

**Decibels**

- **Ranges:**
  - -10dB to +24dB on 12V AC range
  - -2dB to +32dB
  - 8dB to +44dB
  - 20dB to +52dB
  - 30dB to +62dB
- **0dB referenced to 1 milliwatt at 600Ω**

**Temperature**

- **Ranges:** -50°C to +260°C (-60°F to +400°F)

**Battery Test**

- **Ranges:** 1.5V AA, 9V

**Power:**

- 9V (NEDA 1604) and 1.5V AA (2) batteries (not included)

**Movement and Indicator Protection:**

- Fuse (0.5A, 250V)

**Operating Temperature:**

- 18°C to 25°C for rated accuracy

**Dimensions, Weight:**

- 4.8” wide x 6.9” long x 1.9” thick (127mm x 175mm x 48mm), net weight 14oz. (422g)

**Analog Multimeter**

- 3% DC Accuracy FS
- 5” Mirrored Scale
- 30kΩ/V DC, 10kΩ/V AC Input Sensitivity
- Fuse and Diode Protection
- 10 Amp DC Range
- 1000 Volts AC/DC
- Transistor Test
- Battery Test
- Continuity Buzzer
- Tilt Stand/Carrying Handle
- 90-Day Limited Warranty

Test Leads (ML-43), Temperature Probe (TC-30), Fuse and Operating Instructions Included

**SPECIFICATIONS:**

**General**

- **Front Panel Controls:** Range selector switch with “OFF” position, 0Ω adjust/temperature calibration, 0Ω calibration switch
- **Movement:** 90° arc, 25µA movement
- **Scales (8):** One scale for OHMS, three scales for AC/DC, one scale for dB, two scales for temperature, one scale for battery test
- **Scale Length:** 5”
- **Operating Position:** Horizontal or vertical; rubber pads to prevent slipping on moderate horizontal slopes

**DC Voltage**

- **Ranges:** 0-0.6, 3, 12, 60, 300, 1000V
- **Input Impedance:** 30kΩ per Volt
- **Rated Accuracy:** ±3% of full scale

**AC Voltage**

- **Ranges:** 0-12, 30, 120, 300, 1000V
- **Input Impedance:** 10kΩ per Volt
- **Rated Accuracy:** ±4% of full scale

**Resistance**

- **Ranges:**
  - R x 1 0-5kΩ
  - R x 10 0-50kΩ
  - R x 1k 0-500kΩ
  - R x 10k 0-5MΩ
- **Rated Accuracy:** 3° arc

**Decibels**

- **Ranges:**
  - -10dB to +24dB on 12V AC range
  - -2dB to +32dB
  - 8dB to +44dB
  - 20dB to +52dB
  - 30dB to +62dB
- **0dB referenced to 1 milliwatt at 600Ω**

**Temperature**

- **Ranges:** -50°C to +260°C (-60°F to +400°F)

**Battery Test**

- **Ranges:** 1.5V AA, 9V

**Power:**

- 9V (NEDA 1604) and 1.5V AA (2) batteries (not included)

**Movement and Indicator Protection:**

- Fuse (0.5A, 250V)

**Operating Temperature:**

- 18°C to 25°C for rated accuracy

**Dimensions, Weight:**

- 4.8” wide x 6.9” long x 1.9” thick (127mm x 175mm x 48mm), net weight 14oz. (422g)
FET-43

- **Very High Input Impedance**
- **Excellent Trouble Shooting Tool**
- **5 Functions, 43 Ranges**

- 4.5" Meter Scale
- ±2.5% DC accuracy FS
- 10MΩ DC, 1MΩ AC Input Resistance
- FET Input
- Jeweled Meter Movement
- Overload Protection †

**Battery, Test Leads (ML-43) and Operating Instructions Included**

**SPECIFICATIONS:**

**General**
- Front Panel Controls: Range selector switch, power on-off switch, with operational LED, polarity reverse switch, "0" Ω ADJ, Center "0" ADJ
- Movement: Jeweled pivots, 90° arc, 44μA full scale
- Scales (9): Ω DC V•A, AC RMS, AC peak to peak (2), ±DC V•A (center null), AC 12 A, DC 0.1μA, dB
- Scale Length: 4.5"
- "Polarity Reverse Switch: DC and Ω ranges (Reverses meter movement only. Does not reverse test lead polarity.)

**Operating Position:** Horizontal or vertical, rubber pads to prevent slipping on moderate slopes

**Power:** 1.5V AA (2) and 9V (NEDA 1604) batteries

**Movement and Indicator Protection:** Double FET protection and fuse (2A/250V)

**Operating Temperature:** 25°C (75°F) rated accuracy, less than 4% additional error over the range of -4°C (25°F) to 50°C (130°F)

**Dimensions, Weight:** 5" wide x 6.75" long x 2" thick (125mm x 170mm x50mm), net weight 17oz. (480g)

**DC Voltage**
- Ranges: 0-0.3, 1.2, 3.0, 120, 300, 1200V, 0-±1.5, 0.6, 6, 15, 60, 150, 600V at Center 0
- Input Impedance: Approx. 10MΩ, 3MΩ on 300 mV range
- Rated Accuracy: ±2.5% DC and ±3.5% AC of full scale on all ranges

**DC Current**
- Ranges: 0-0.1μA, 0.3, 3, 30, 300mA, 12A
- Potential Drop: 300mV
- Rated Accuracy: Within ±2.5% full scale on all ranges

**AC Voltage**
- Ranges: RMS 0-3, 12, 30, 120, 300, 1200V, peak to peak 0-8.4, 33, 84, 330, 840, 3300RMS, 1200V (peak to peak 3300V) on separate jack
- Input Impedance: Approx. 1MΩ, 800pF; 2.5MΩ on 3V range
- Rated Accuracy:
  - 50Hz - 5MHz ±3%
  - 30Hz - 10MHz ±1dB sine wave
  - 30Hz - 120MHz ±5% sine wave
- dB: -10dB - +63dB on AC ranges

**AC Current**
- Ranges: 0-12A, within ± 3.5% full scale. DC, AC,12 Amp range on separate jack

**Resistance**
- Ranges:
  - R x 1 0 - 1KΩ (Center 1K)
  - R x 10 0 - 10KΩ (Center 10KΩ)
  - R x 100 0 - 100KΩ (Center 1KΩ)
  - R x 1K 0 - 1MΩ (Center 10KΩ)
  - R x 10K 0 - 10MΩ (Center 100KΩ)
  - R x 1M 0 - 1000MΩ (Center 10MΩ)
- Accuracy: ±2.5° of arc

† Does not apply to 12 Amp range. Damage to meter or injury to operator can occur if voltage or excessive current is applied to 12 Amp input.
Digital Multimeter

DM-21

- Low Cost General Purpose

- Transistor \( h_{FE} \)
- Diode Test
- LED Test
- Square Wave Generator
- 7 Functions, 11 Ranges
- 0.8% Basic DC Accuracy
- 3 1/2 Digit LCD, 0.55" H

Battery, Test Leads (ML-375) and Operating Instructions Included

SPECIFICATIONS:

General
Display: 3 1/2 Digit LCD, 0.55" high, with polarity
Overrange Indication: "1" or "–1" is displayed.
Measurement Rate: 2.5 times per second
Operating Environment: 0°C to 50°C, <70% relative humidity
Storage Environment: -20°C to 60°C, <80% relative humidity with battery removed

Power: 9V carbon zinc battery (NEDA 1604)
Battery Life: 150 hours typical with carbon zinc cells
Low Battery Indicator: Symbol is displayed
Dimensions, Weight: 2.8" wide x 6" long x 1.5" thick (70mm x 151mm x 38mm), net weight 7oz. (200g)

DC Voltage

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2V</td>
<td>1mV</td>
<td>±0.8% of rdg ±1D</td>
</tr>
<tr>
<td>20V</td>
<td>10mV</td>
<td>±0.8% of rdg ±1D</td>
</tr>
<tr>
<td>200V</td>
<td>100mV</td>
<td>±0.8% of rdg ±1D</td>
</tr>
<tr>
<td>600V</td>
<td>1V</td>
<td>±0.8% of rdg ±1D</td>
</tr>
</tbody>
</table>

Input Impedance: 1MΩ on all ranges.
Maximum Input: 600V DC or 500AC rms.

AC Voltage

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>200V</td>
<td>100mV</td>
<td>± 1.5% of rdg ±4D</td>
</tr>
<tr>
<td>500V</td>
<td>1V</td>
<td>± 1.5% of rdg ±4D</td>
</tr>
</tbody>
</table>

Input Impedance: 450KΩ on all ranges.
Maximum Input: 600V DC or 500AC rms.
Frequency Range: 50Hz - 500Hz.

Resistance

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>200Ω</td>
<td>0.1Ω</td>
<td>±1.5% of rdg ±3D</td>
</tr>
<tr>
<td>2KΩ</td>
<td>1Ω</td>
<td>±1.5% of rdg ±3D</td>
</tr>
<tr>
<td>20KΩ</td>
<td>10Ω</td>
<td>±1.5% of rdg ±3D</td>
</tr>
<tr>
<td>200KΩ</td>
<td>100Ω</td>
<td>±1.5% of rdg ±3D</td>
</tr>
<tr>
<td>2MΩ</td>
<td>1KΩ</td>
<td>±1.5% of rdg ±3D</td>
</tr>
</tbody>
</table>

Overload Protection: 500V DC or 350AC rms

Transistor \( h_{FE} \) Test (PNP, NPN)
Test Condition: 10µA Base Current @ <3.5V
\( h_{FE} \) Range: 0 - 1000

Diode Test
Voltage: <3.5V @ 1mA ±0.6mA

LED Test
Voltage: <3.5V @ 10mA ±0.6mA

Generator
Waveform: Square
Frequency: 50Hz approx
Output: ±3 to -0.5V DC, 50% Duty Cycle
Impedance: 120KΩ

ECG® 800-631-1250 • www.nteinc.com
**DM-38A**

- **Multifunction DMM**
- **3 3/4 Digit, 0.5” H**
- **Heavy Duty**
- **Peak Data Hold**
- **Overload Protection**
- **RF Shielded**
- **Lo Power Ohms**
- **Tilt Stand**
- **Polarity Indicator**
- **Overrange Indicator**
- **Low Battery Indicator**
- **1-Year Limited Warranty**

### Battery, Test Leads and Operating Instructions Included

### SPECIFICATIONS:

#### General
- **Display:** 3 3/4 Digit LCD, 0.5” high, with polarity indicator (4,000 count)
- **Overrange Indication:** “OL” is displayed
- **Measurement Rate:** 3 times per second
- **Operating Environment:** 0°C to 50°C, <70% relative humidity
- **Storage Environment:** -20°C to 60°C, <80% relative humidity with battery removed
- **Power:** 9V carbon zinc battery (NEDA 1604)
- **Battery Life:** 150 hours typical with carbon zinc cells
- **Low Battery Indicator:** Display indicates “B”
- **Dimensions, Weight:** 3.3” wide x 6.3” long x 1” thick (84mm x 160mm x 25mm), net weight 9oz. (250g)
- **Peak Data Hold:** When the Peak Hold function is engaged, the maximum reading is shown on the display until a higher reading is recorded or power to the meter is removed

#### DC Voltage

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>400mV</td>
<td>100µV</td>
<td>±0.5% of rdg 1D</td>
</tr>
<tr>
<td>4V</td>
<td>1mV</td>
<td>±0.5% of rdg 1D</td>
</tr>
<tr>
<td>40V</td>
<td>10mV</td>
<td>±0.5% of rdg 1D</td>
</tr>
<tr>
<td>400V</td>
<td>100mV</td>
<td>±0.5% of rdg 1D</td>
</tr>
<tr>
<td>1000V</td>
<td>1V</td>
<td>±0.5% of rdg 1D</td>
</tr>
</tbody>
</table>

Input Impedance: 20MΩ on all ranges

Overload Protection: 500V DC/350V AC for 15 sec. on 400mV range; 1,100V DC/800V AC on all other ranges

#### DC Current

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>40mA</td>
<td>10µA</td>
<td>±1% of rdg 1D</td>
</tr>
<tr>
<td>400mA</td>
<td>100µA</td>
<td>±1% of rdg 1D</td>
</tr>
<tr>
<td>20A</td>
<td>10mA</td>
<td>±2% of rdg 3D</td>
</tr>
</tbody>
</table>

Overload Protection: mA input 0.8A/250V fuse; 20A input (unfused), up to 20A for 15 seconds

#### AC Voltage

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>400mV</td>
<td>100µV</td>
<td>±1% of rdg 4D</td>
</tr>
<tr>
<td>4V</td>
<td>1mV</td>
<td>±1% of rdg 4D</td>
</tr>
<tr>
<td>40V</td>
<td>10mV</td>
<td>±1% of rdg 4D</td>
</tr>
<tr>
<td>400V</td>
<td>100mV</td>
<td>±1% of rdg 4D</td>
</tr>
<tr>
<td>750V</td>
<td>1V</td>
<td>±1.5% of rdg 4D</td>
</tr>
</tbody>
</table>

Input Impedance: 20MΩ on all ranges

Overload Protection: 500V DC/350V AC for 15 sec. on 400mV range; 1,100V DC/800V AC on all other ranges

Frequency Range: 50 - 500Hz

#### AC Current

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>40mA</td>
<td>10µA</td>
<td>±1.2% of rdg 4D</td>
</tr>
<tr>
<td>400mA</td>
<td>100µA</td>
<td>±1.2% of rdg 4D</td>
</tr>
<tr>
<td>20A</td>
<td>10mA</td>
<td>±2% of rdg 4D</td>
</tr>
</tbody>
</table>

Overload Protection: mA input, 0.8A/250V fuse; 20A input (unfused), up to 20A for 15 seconds

#### Resistance

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>400Ω</td>
<td>1Ω</td>
<td>±1% of rdg 1D</td>
</tr>
<tr>
<td>4KΩ</td>
<td>10Ω</td>
<td>±0.8% of rdg 1D</td>
</tr>
<tr>
<td>40KΩ</td>
<td>100Ω</td>
<td>±0.8% of rdg 1D</td>
</tr>
<tr>
<td>4MΩ</td>
<td>1kΩ</td>
<td>±0.8% of rdg 1D</td>
</tr>
<tr>
<td>40MΩ</td>
<td>10kΩ</td>
<td>±3% of rdg 3D</td>
</tr>
</tbody>
</table>

Overload Protection: 500V AC/DC, 10 seconds

#### Capacitance

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>4nF</td>
<td>1pF</td>
<td>±3% of rdg 10D</td>
</tr>
<tr>
<td>40nF</td>
<td>10pF</td>
<td>±3% of rdg 10D</td>
</tr>
<tr>
<td>400nF</td>
<td>100pF</td>
<td>±3% of rdg 10D</td>
</tr>
<tr>
<td>4µF</td>
<td>1nF</td>
<td>±3% of rdg 10D</td>
</tr>
</tbody>
</table>

Test Frequency: 400Hz

#### Frequency Measurement

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>4K to 4MHz</td>
<td></td>
<td>±1% rdg ±2D</td>
</tr>
</tbody>
</table>

Input Sensitivity: 50mV rms

Overload Protection: 500V DC/AC

#### Logic Measurement

- **Logic Type:** TTL
- **Input Impedance:** 120KΩ ±10K
- **Logic Thresholds:**
  - Logic 1: 2.4V, ±0.2V
  - Logic 0: 0.7V, ±0.2V
- **Frequency Response:** 20MHz

#### Continuity Test

- **Resistance Range:** 400Ω
- **Beeper Response:** <50Ω
- **Response Time:** <100mSec

#### Diode Test

- **Voltage:** 3.2V @ 1.6mA Max

- **Test Frequency:** 400Hz
- **Test Voltage:** 50mV
**DM-59**

- **Perfect For Workshop and School**
- **10 Functions, 30 Ranges**

**Digital Multimeter**

- Frequency Counter
- **hFE**
- Capacitance
- Diode Test
- 20MΩ FS
- 10A AC/DC
- 0.5% Basic DC Accuracy
- 3 1/2 Digit LCD, 0.55” H
- Audible Continuity Test
- 10MΩ Input Z
- Overload Protection
- RF Shielded
- Tilt Stand
- 1-Year Limited Warranty

Battery, Test Leads (ML-375), Spare Fuse and Operating Instructions Included

**SPECIFICATIONS:**

**General**

- **Display:** 3 1/2 Digit LCD, 0.55” high, with polarity
- **Overrange Indication:** “OL” is displayed
- **Measurement Rate:** 2.5 times per second
- **Operating Environment:** 0°C to 50°C, <70% relative humidity
- **Storage Environment:** -20°C to 60°C, <80% relative humidity with battery removed

**Power:** 9V carbon zinc battery (NEDA 1604)

**Battery Life:** 150 hours typical with carbon zinc cells

**Low Battery Indicator:** Symbol is displayed

**Dimensions, Weight:** 2.8” wide x 6” long x 1.5” thick (70mm x 151mm x 38mm) net weight 7oz. (200g)

**DC Voltage**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>200mV</td>
<td>100µV</td>
<td>±0.5% of rdg ±1D</td>
</tr>
<tr>
<td>2V</td>
<td>1mV</td>
<td>±0.5% of rdg ±1D</td>
</tr>
<tr>
<td>20V</td>
<td>10mV</td>
<td>±0.5% of rdg ±1D</td>
</tr>
<tr>
<td>200V</td>
<td>100mV</td>
<td>±0.5% of rdg ±1D</td>
</tr>
<tr>
<td>600V</td>
<td>1V</td>
<td>±0.5% of rdg ±1D</td>
</tr>
</tbody>
</table>

Input Impedance: 10MΩ on all ranges

Maximum Input: 600V DC or AC rms

**DC Current**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2mA</td>
<td>1µA</td>
<td>±1.0% of rdg ±1D</td>
</tr>
<tr>
<td>20mA</td>
<td>10µA</td>
<td>±1.0% of rdg ±1D</td>
</tr>
<tr>
<td>200mA</td>
<td>100µA</td>
<td>±1.0% of rdg ±1D</td>
</tr>
<tr>
<td>10A</td>
<td>10mA</td>
<td>±3.0% of rdg ±1D</td>
</tr>
</tbody>
</table>

Overload Protection: mA input, 0.5A/250V fuse; 10A input 10A/250V fuse

**AC Voltage**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>200mV</td>
<td>100µV</td>
<td>±1.0% of rdg ±4D</td>
</tr>
<tr>
<td>2V</td>
<td>1mV</td>
<td>±1.0% of rdg ±4D</td>
</tr>
<tr>
<td>20V</td>
<td>10mV</td>
<td>±1.0% of rdg ±4D</td>
</tr>
<tr>
<td>200V</td>
<td>100mV</td>
<td>±1.0% of rdg ±4D</td>
</tr>
<tr>
<td>600V</td>
<td>1V</td>
<td>±1.0% of rdg ±4D</td>
</tr>
</tbody>
</table>

Input Impedance: 10MΩ on all ranges

Maximum Input: 600V DC or AC rms

**AC Current**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2mA</td>
<td>1µA</td>
<td>±2.0% of rdg ±4D</td>
</tr>
<tr>
<td>20mA</td>
<td>10µA</td>
<td>±2.0% of rdg ±4D</td>
</tr>
<tr>
<td>200mA</td>
<td>100µA</td>
<td>±2.0% of rdg ±4D</td>
</tr>
<tr>
<td>10A</td>
<td>10mA</td>
<td>±3.5% of rdg ±4D</td>
</tr>
</tbody>
</table>

Overload Protection: mA input, 0.5A/250V fuse; 10A input 10A/250V fuse

**Resistance**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>20Ω</td>
<td>0.1Ω</td>
<td>±0.8% of rdg ±3D</td>
</tr>
<tr>
<td>2KΩ</td>
<td>1Ω</td>
<td>±0.8% of rdg ±1D</td>
</tr>
<tr>
<td>20KΩ</td>
<td>10Ω</td>
<td>±0.8% of rdg ±1D</td>
</tr>
<tr>
<td>200KΩ</td>
<td>100Ω</td>
<td>±0.8% of rdg ±1D</td>
</tr>
<tr>
<td>2MΩ</td>
<td>1KΩ</td>
<td>±0.8% of rdg ±1D</td>
</tr>
<tr>
<td>20MΩ</td>
<td>10KΩ</td>
<td>±3% of rdg ±3D</td>
</tr>
</tbody>
</table>

Overload Protection: 500V DC or AC rms

**Frequency Measurement**

- **Range:** 2kHz - 15MHz (Autorange)
- **Accuracy:** ±0.1% rdg ±1D
- **Input Sensitivity:** Trig Lo: 1 Vrms; Trig Hi: 2 Vrms
- Overload Protection: 500V DC or AC rms

**Continuity Test (Audible)**

- **Resistance Range:** 200Ω
- **Beeper Response:** <40Ω

**Transistor hFE Test (PNP, NPN)**

- **Test Condition:** 10µA Base Current @ <3.5V
- **hFE Range:** 0 - 1000

**Diode Test**

- **Voltage:** 2V @ 1.6mA Max

**Capacitance**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000pF</td>
<td>1pF</td>
<td>±2.0% of rdg ±1D</td>
</tr>
<tr>
<td>20nF</td>
<td>10pF</td>
<td>±2.0% of rdg ±1D</td>
</tr>
<tr>
<td>200nF</td>
<td>100pF</td>
<td>±2.0% of rdg ±1D</td>
</tr>
<tr>
<td>2µF</td>
<td>1nF</td>
<td>±2.0% of rdg ±1D</td>
</tr>
<tr>
<td>20µF</td>
<td>10nF</td>
<td>±2.0% of rdg ±1D</td>
</tr>
</tbody>
</table>

Test Frequency: 2.5Hz

Test Voltage: 3V

**Test Frequency:** 2kHz - 15MHz (Autorange)

**Accuracy:** ±0.1% rdg ±1D

**Input Sensitivity:** Trig Lo: 1 Vrms; Trig Hi: 2 Vrms

**Overload Protection:** 500V DC or AC rms

**General**

- **Display:** 3 1/2 Digit LCD, 0.55” high, with polarity
- **Overrange Indication:** “OL” is displayed
- **Measurement Rate:** 2.5 times per second
- **Operating Environment:** 0°C to 50°C, <70% relative humidity
- **Storage Environment:** -20°C to 60°C, <80% relative humidity with battery removed

**Power:** 9V carbon zinc battery (NEDA 1604)

**Battery Life:** 150 hours typical with carbon zinc cells

**Low Battery Indicator:** Symbol is displayed

**Dimensions, Weight:** 2.8” wide x 6” long x 1.5” thick (70mm x 151mm x 38mm) net weight 7oz. (200g)
**Digital Multimeter**

**DM-75**

- Low Cost
- Full Function General Purpose
- Rotary Range Switch
- Diode Test
- 0.7% Basic DC Accuracy
- 3 1/2 Digit LCD, 0.5” H
- 10A DC
- 10MΩ Input Impedance, DC
- Overload Protection
- Pocket Size
- 90-Day Limited Warranty

Battery, Test Leads and Operating Instructions Included

**SPECIFICATIONS:**

**General**

- **Display:** 3 1/2 Digit LCD, 0.5” high, with polarity indicator
- **Overrange Indication:** 3 least significant digits blanked
- **Operating Environment:** 0°C to 50°C, <80% relative humidity
- **Storage Environment:** -15°C to 50°C

- **Power:** 9V alkaline or carbon zinc battery
- **Battery Life:** 100 hours typical with carbon zinc cells, 200 hours typical with alkaline cells
- **Dimensions, Weight:** 2.8” wide x 5” long x 1” thick (71mm x 127mm x 25.4mm), net weight 6.1oz. (173g)

**DC Voltage**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>200mV</td>
<td>0.1mV</td>
<td>±0.7% of rdg ±4D</td>
</tr>
<tr>
<td>2000mV</td>
<td>1mV</td>
<td>±0.7% of rdg ±2D</td>
</tr>
<tr>
<td>20V</td>
<td>10mV</td>
<td>±0.7% of rdg ±2D</td>
</tr>
<tr>
<td>200V</td>
<td>100mV</td>
<td>±0.7% of rdg ±2D</td>
</tr>
<tr>
<td>1000V</td>
<td>1V</td>
<td>±0.7% of rdg ±2D</td>
</tr>
</tbody>
</table>

**Input Impedance:** 10MΩ on all ranges

**AC Voltage**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>200V</td>
<td>100mV</td>
<td>±1.2% of rdg ±10D</td>
</tr>
<tr>
<td>750V</td>
<td>1V</td>
<td>±1.2% of rdg ±10D</td>
</tr>
</tbody>
</table>

**Overload Protection:** 750V rms

**Frequency Range:** 45Hz - 450Hz

**Resistance**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>200Ω</td>
<td>0.1Ω</td>
<td>±0.7% of rdg ±2D</td>
</tr>
<tr>
<td>2000Ω</td>
<td>1Ω</td>
<td>±0.7% of rdg ±2D</td>
</tr>
<tr>
<td>20KΩ</td>
<td>10Ω</td>
<td>±0.7% of rdg ±2D</td>
</tr>
<tr>
<td>200KΩ</td>
<td>100Ω</td>
<td>±0.7% of rdg ±2D</td>
</tr>
<tr>
<td>2MΩ</td>
<td>1KΩ</td>
<td>±1% of rdg ±2D</td>
</tr>
</tbody>
</table>

**Diode Test**

- Voltage: 2.8V @ 1mA
- Overload Protection: mA input, 2A/250V fuse; 10A input (unfused) up to 10A for 15 seconds

**Display:** 3 1/2 Digit LCD, 0.5” high, with polarity indicator

**Overrange Indication:** 3 least significant digits blanked

**Operating Environment:** 0°C to 50°C, <80% relative humidity

**Storage Environment:** -15°C to 50°C

**Power:** 9V alkaline or carbon zinc battery

**Battery Life:** 100 hours typical with carbon zinc cells, 200 hours typical with alkaline cells

**Dimensions, Weight:** 2.8” wide x 5” long x 1” thick (71mm x 127mm x 25.4mm), net weight 6.1oz. (173g)
Digital Multimeter

DM-78A

• Heavy Duty, Ideal For Plant/Industrial Maintenance
  • Water Resistant (O-Ring Seals)
  • Withstands 5’ Drop
  • Protective Holster (MH-350)
  • Large Display Window
  • 3200 Count LCD, .55”H
  • 65 Segment Analog Bar Graph
  • 0.5% Basic DC Accuracy
  • Auto Power Off
  • 10MΩ Input Z
  • “No Hand” Data Hold
  • Input Warning Beeper*
  • 20A AC/DC Fused
  • Diode Test
  • Instant Continuity Beeper
  • Overload Protection
  • 1-Year Limited Warranty

Batteries, Test Leads (ML-375), and Operating Instructions Included

SPECIFICATIONS:

General
Display: 3200 count LCD, 65 segment bar graph, .55” high, with polarity
Auto Power Off: Approx. 10 min. after mode or function change
Overrange Indication: “OL” is displayed
Operating Environment: 0°C to 50°C, <80% relative humidity
Storage Environment: -20°C to 60°C, <80% relative humidity with battery removed
Temperature Coefficient: (0°C to 18°C and 28°C to 50°C), less than 0.15 x applicable accuracy specification per second

DC Voltage

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>300mV</td>
<td>0.1mV</td>
<td>±0.5% of rdg ±2D</td>
</tr>
<tr>
<td>3V</td>
<td>1mV</td>
<td>±0.5% of rdg ±2D</td>
</tr>
<tr>
<td>30V</td>
<td>10mV</td>
<td>±0.5% of rdg ±2D</td>
</tr>
<tr>
<td>300V</td>
<td>100mV</td>
<td>±0.5% of rdg ±2D</td>
</tr>
<tr>
<td>1000V</td>
<td>1V</td>
<td>±0.5% of rdg ±2D</td>
</tr>
</tbody>
</table>

Input Impedance: 10MΩ
Overload Protection: 1100Vpk (15 sec.)

AC Voltage

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>3V</td>
<td>1mV</td>
<td>±1.3% of rdg ±5D</td>
</tr>
<tr>
<td>30V</td>
<td>10mV</td>
<td>±1.3% of rdg ±5D</td>
</tr>
<tr>
<td>300V</td>
<td>100mV</td>
<td>±1.3% of rdg ±5D</td>
</tr>
<tr>
<td>750V</td>
<td>1V</td>
<td>±1.3% of rdg ±5D</td>
</tr>
</tbody>
</table>

Frequency Range: 3V on 40Hz - 300Hz; 40Hz - 500Hz all others
Overload Protection: 770V AC RMS or 1100Vpk (15 sec.)

AC Current

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>300µA</td>
<td>0.1µA</td>
<td>±1.5% of rdg ±3D</td>
</tr>
<tr>
<td>3mA</td>
<td>1µA</td>
<td>±1.5% of rdg ±3D</td>
</tr>
<tr>
<td>30mA</td>
<td>10µA</td>
<td>±1.5% of rdg ±3D</td>
</tr>
<tr>
<td>300mA</td>
<td>100µA</td>
<td>±2% of rdg ±3D</td>
</tr>
<tr>
<td>20A</td>
<td>10mA</td>
<td>±2.5% of rdg ±5D</td>
</tr>
</tbody>
</table>

Frequency Range: 40Hz - 500Hz
Overload Protection: µA, mA = 1A 240/250V, 20A = 13A 240/250V (readings over 10A max., 30 sec.)
Voltage Drop: 200mV on 300µA, 30mA ranges; 2V all others

Resistance

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>300Ω</td>
<td>0.1Ω</td>
<td>±1% of rdg ±4D</td>
</tr>
<tr>
<td>3KΩ</td>
<td>1Ω</td>
<td>±0.75% of rdg ±2D</td>
</tr>
<tr>
<td>30KΩ</td>
<td>10Ω</td>
<td>±0.75% of rdg ±2D</td>
</tr>
<tr>
<td>300KΩ</td>
<td>100Ω</td>
<td>±0.75% of rdg ±2D</td>
</tr>
<tr>
<td>3MΩ</td>
<td>1KΩ</td>
<td>±1.5% of rdg ±3D</td>
</tr>
<tr>
<td>30MΩ</td>
<td>10KΩ</td>
<td>±2.5% of rdg ±5D</td>
</tr>
</tbody>
</table>

Lo-Power Ω open circuit 1.3V
Overload Protection: 600VDC or 600V AC RMS (10 sec.)

Diode Test
Voltage: 3.3V @ 1.5mA max

Continuity Test
Beeper Response: <50Ω
Response Time: Instant
Delay Hold: Allows “No-Hand” data hold operation
* Input Warning Beeper: Eliminates incorrect test lead placement and selector switch settings
Digital Multimeter

DM-80

• Heavy Duty, Ideal For Plant/Industrial Maintenance
• Autoranging • 11 Functions, 39 Ranges

- 0.3% Basic DC Accuracy
- 42 Segment Bar Graph
- 4000 Count LCD
- Min./Max.
- Data Hold
- Memory
- Capacitance

- Frequency
- Temperature
- Diode Test
- Audible Continuity Test
- Overload Protection
- 1-Year Limited Warranty

Battery, Test Leads (ML-375), Thermocouple (TC-50P), Protective Holster and Operating Instructions Included

SPECIFICATIONS:

General
Display: 3 3/4 Digit LCD with polarity indicator, 42 segment bar graph, .5” high
Auto Power Off: 30 minutes
Overrange Indication: Most significant digit blinks
Operating Environment: 0°C to 40°C, <80% relative humidity
Storage Environment: -20°C to 60°C, <70% relative humidity

Measurement Rate: Digital 2 times per second, bargraph 20 times per second, capacitance 1 time per second
Power: 9V alkaline or carbon zinc battery (NEDA 1604)
Battery Life: 500 hours typical with alkaline cells
Fuse: 2A/250V
Dimensions, Weight: 3.25” wide x 7” long x 1.25” thick (82.6mm x 177.8mm x 31.8mm), net weight 11.5oz. (326g)

DC Voltage

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>400mV</td>
<td>0.1mV</td>
<td>±0.3% of rdg ±1D</td>
</tr>
<tr>
<td>4V</td>
<td>1mV</td>
<td>±0.3% of rdg ±1D</td>
</tr>
<tr>
<td>40V</td>
<td>10mV</td>
<td>±0.3% of rdg ±1D</td>
</tr>
<tr>
<td>400V</td>
<td>100mV</td>
<td>±0.3% of rdg ±1D</td>
</tr>
<tr>
<td>1000V</td>
<td>1V</td>
<td>±0.3% of rdg ±3D</td>
</tr>
</tbody>
</table>

Overload Protection: 1000V pk (10 sec.)

AC Current

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>4mA</td>
<td>0.001mA</td>
<td>±1% of rdg ±2D</td>
</tr>
<tr>
<td>40mA</td>
<td>0.01mA</td>
<td>±1% of rdg ±2D</td>
</tr>
<tr>
<td>400mA</td>
<td>1mA</td>
<td>±1% of rdg ±2D</td>
</tr>
<tr>
<td>4000mA</td>
<td>10mA</td>
<td>±2% of rdg ±2D</td>
</tr>
<tr>
<td>10A</td>
<td>0.1A</td>
<td>±2% of rdg ±2D</td>
</tr>
</tbody>
</table>

Overload Protection: mA = 2A/250V, 10A = Unfused

AC Voltage

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>4V</td>
<td>1mV</td>
<td>±1.2% of rdg ±5D</td>
</tr>
<tr>
<td>40V</td>
<td>10mV</td>
<td>±1.2% of rdg ±5D</td>
</tr>
<tr>
<td>400V</td>
<td>100mV</td>
<td>±1.2% of rdg ±5D</td>
</tr>
<tr>
<td>750V</td>
<td>1V</td>
<td>±1.2% of rdg ±5D</td>
</tr>
</tbody>
</table>

Input Impedance: 10MΩ on all ranges
Overload Protection: 1000V pk (10 sec.)

Resistance

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>400Ω</td>
<td>0.1Ω</td>
<td>±1% of rdg ±2D</td>
</tr>
<tr>
<td>4KΩ</td>
<td>1Ω</td>
<td>±0.7% of rdg ±2D</td>
</tr>
<tr>
<td>40KΩ</td>
<td>10Ω</td>
<td>±0.7% of rdg ±2D</td>
</tr>
<tr>
<td>400KΩ</td>
<td>100Ω</td>
<td>±0.7% of rdg ±2D</td>
</tr>
<tr>
<td>4MΩ</td>
<td>1KΩ</td>
<td>±0.7% of rdg ±2D</td>
</tr>
<tr>
<td>40MΩ</td>
<td>10KΩ</td>
<td>±2% of rdg ±5D</td>
</tr>
</tbody>
</table>

Overload Protection: 250V DC or peak AC,10 sec.

Frequency Measurement

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>100Hz</td>
<td>0.001Hz</td>
<td>±1% of rdg ±10D</td>
</tr>
<tr>
<td>1000Hz</td>
<td>0.1Hz</td>
<td>±1% of rdg ±10D</td>
</tr>
<tr>
<td>10kHz</td>
<td>1Hz</td>
<td>±1% of rdg ±10D</td>
</tr>
<tr>
<td>100kHz</td>
<td>10Hz</td>
<td>±1% of rdg ±10D</td>
</tr>
<tr>
<td>1000kHz</td>
<td>100Hz</td>
<td>Not Specified</td>
</tr>
</tbody>
</table>

Temperature Measurement
Range: 0°F to 2000°F
Resolution: 1°F
Accuracy: 0°F to 225°F (±5° ±2D)
225°F to 2000°F (±3% of rdg)

Diode Test: 3.2V

Continuity Test (Audible)
Beeper Response: <4Ω
Response Time: Instantly

Capacitance

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>4nF</td>
<td>0.001nF</td>
<td>±5% of rdg ±2D</td>
</tr>
<tr>
<td>40nF</td>
<td>0.01nF</td>
<td>±5% of rdg ±2D</td>
</tr>
<tr>
<td>400nF</td>
<td>0.1nF</td>
<td>±5% of rdg ±2D</td>
</tr>
<tr>
<td>4µF</td>
<td>1nF</td>
<td>±5% of rdg ±2D</td>
</tr>
<tr>
<td>40µF</td>
<td>10nF</td>
<td>±5% of rdg ±2D</td>
</tr>
</tbody>
</table>

Overload Protection: 250V DC or peak AC,10 sec.

General
Display: 3 3/4 Digit LCD with polarity indicator, 42 segment bar graph, .5” high
Auto Power Off: 30 minutes
Overrange Indication: Most significant digit blinks
Operating Environment: 0°C to 40°C, <80% relative humidity
Storage Environment: -20°C to 60°C, <70% relative humidity

Measurement Rate: Digital 2 times per second, bargraph 20 times per second, capacitance 1 time per second
Power: 9V alkaline or carbon zinc battery (NEDA 1604)
Battery Life: 500 hours typical with alkaline cells
Fuse: 2A/250V
Dimensions, Weight: 3.25” wide x 7” long x 1.25” thick (82.6mm x 177.8mm x 31.8mm), net weight 11.5oz. (326g)

Frequency Measurement

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>100Hz</td>
<td>0.001Hz</td>
<td>±1% of rdg ±10D</td>
</tr>
<tr>
<td>1000Hz</td>
<td>0.1Hz</td>
<td>±1% of rdg ±10D</td>
</tr>
<tr>
<td>10kHz</td>
<td>1Hz</td>
<td>±1% of rdg ±10D</td>
</tr>
<tr>
<td>100kHz</td>
<td>10Hz</td>
<td>±1% of rdg ±10D</td>
</tr>
<tr>
<td>1000kHz</td>
<td>100Hz</td>
<td>Not Specified</td>
</tr>
</tbody>
</table>

Temperature Measurement
Range: 0°F to 2000°F
Resolution: 1°F
Accuracy: 0°F to 225°F (±5° ±2D)
225°F to 2000°F (±3% of rdg)

Diode Test: 3.2V

Continuity Test (Audible)
Beeper Response: <4Ω
Response Time: Instantly

Capacitance

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>4nF</td>
<td>0.001nF</td>
<td>±5% of rdg ±2D</td>
</tr>
<tr>
<td>40nF</td>
<td>0.01nF</td>
<td>±5% of rdg ±2D</td>
</tr>
<tr>
<td>400nF</td>
<td>0.1nF</td>
<td>±5% of rdg ±2D</td>
</tr>
<tr>
<td>4µF</td>
<td>1nF</td>
<td>±5% of rdg ±2D</td>
</tr>
<tr>
<td>40µF</td>
<td>10nF</td>
<td>±5% of rdg ±2D</td>
</tr>
</tbody>
</table>

Overload Protection: 250V DC or peak AC,10 sec.
Digital Capacitance Meter

CX-920A

• A “Must” For Trouble Shooting and Circuit Design
• Measures To 20mF (20,000µF)
• Portable, Battery Operated

- 0.1pF to 20mF (20,000µF), 9 Ranges
- 0.5% Basic Accuracy
- 3 1/2 Digit LCD, 0.55” H
- Zero Adjustment
- Input Protected
- Overrange Indicator
- Rotary Range Switch
- Rugged Construction
- Tilt Stand
- 1-Year Limited Warranty

Battery, Test Leads (ML-920A), Spare Fuse and Operating Instructions Included

SPECIFICATIONS:

General
Display: 3 1/2 Digit LCD, 0.55” high
Overrange Indication: A “1” is displayed with the 3 least significant digits blanked
Operating Environment: 0°C to 50°C, <70% relative humidity
Storage Environment: -20°C to 60°C, <80% relative humidity with battery removed
Temperature Coefficient: 0.1 x specified accuracy per °C, which is only applicable for the temperature range of <18°C or >28°C

Power: 9V alkaline or carbon zinc battery (NEDA 1604)
Battery Life: 150 hours typical with carbon zinc cells
Low Battery Indicator: Symbol is displayed
Dimensions, Weight: 2.8” wide x 6” long x 1.5” thick (70mm x 151mm x 38mm), net weight 7oz. (200g)

Capacitance

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>200pF</td>
<td>0.1pF</td>
<td>±0.5% of rdg ±1D ±0.5pF</td>
</tr>
<tr>
<td>2000pF</td>
<td>1pF</td>
<td>±0.5% of rdg ±1D</td>
</tr>
<tr>
<td>20nF (.02µF)</td>
<td>10pF</td>
<td>±0.5% of rdg ±1D</td>
</tr>
<tr>
<td>200nF (.2µF)</td>
<td>100pF</td>
<td>±0.5% of rdg ±1D</td>
</tr>
<tr>
<td>2µF</td>
<td>1nF</td>
<td>±0.5% of rdg ±1D</td>
</tr>
<tr>
<td>20µF</td>
<td>10nF</td>
<td>±0.5% of rdg ±1D</td>
</tr>
<tr>
<td>200µF</td>
<td>0.1µF</td>
<td>±0.5% of rdg ±1D</td>
</tr>
<tr>
<td>2000µF</td>
<td>1µF</td>
<td>±2% of rdg ±1D</td>
</tr>
<tr>
<td>20mF (20,000µF)</td>
<td>10µF</td>
<td>±4% of rdg ±1D</td>
</tr>
</tbody>
</table>

Accuracy is based on an operating temperature of 23°C (73°F) at relative humidity up to 75%

Test Voltage
3.5V peak max., “+” input terminal voltage is always higher than “−” input terminal

Overload Protection
100mA/250V, fast blow fuse

Zero Capacitance Adjustment Range
Approx. ±20pF
Digital Infrared Thermometer

**DIT-205**

- **Pen-style IR thermometer fits easily in a pocket or purse for quick and easy surface temperature measurements**
- **Temperature Range:** -27° to 428°F (-33° to 220°C)
- **Accuracy:** ±2% of reading or ±2°C

- 0.1° resolution for accurate readings
- Selectable temperature units F/C
- 1:1 Optics (distance-to-spot size ratio)
- Emissivity preset to 0.95
- LCD display
- Non-contact
- Does not use a laser beam
- Metal alloy case
- Lithium batteries (2 LR44 included typically provide for 180 hours of continuous operation)
- Low battery indication
- Automatic power OFF after 15 seconds
- RoHS Compliant
- 1 Year Warranty
- Durable pocket clip

**SPECIFICATIONS:**

**General**
- **Measurement Range:** -27° to 428°F
  (-33° to 220°C)
- **Ambient Operating Range:** 32° to 122°F
  (0° to 50°C)
- **Storage Temperature Range:** -4° to 149°F
  (-20° to 65°C)
- **Accuracy:** ±2% of reading or ±2°C
- **Resolution at -9.9°~199.9°C:** 0.1° F or °C
- **Response Time (90%):** 1 second
- **D:S:** 1:1
- **Emissivity:** Fixed 0.95
- **Update Frequency:** 1.4Hz
- **Dimensions:** 3.25 x 0.5 inches

**Wave Length Response:** 5-14um
- **Weight (with battery):** 2 oz
- **Batteries:** 2 LR44 (included)
- **Battery Life:** 180hr (typical)

**Where can I use an infrared thermometer?**

**Kitchen:**
- Temperatures of all cooking surfaces
- Microwaved foods
- Dishes in microwave heat differently
- Baby formula bottles
- Baby foods
- Teflon fry pans actually become toxic at high temperatures
- Appliance performance: freezer and oven temperature
- Dishwasher water temperatures
- Hot oil temperatures in deep fryers
- Cookie sheet temperature
- Crack pot accuracy
- Melting chocolate
- Candle making
- Home beer brewing
- Fondues: cheese, oil, chocolate
- Serving temperatures of beer and wine
- Pizza ovens

**Safety:**
- Child car seats
- Bath water: especially children and infants
- Check playground equipment: slides and swings
- Beach sand
- Benches and chair temperatures

**Health:**
- Foot temperatures for diabetics
- Muscle tears and sprains
- Arthritic areas
- Horses: bad shoe, muscle tear, scar tissue
- Livestock breeding area temperatures
- Food serving quality at buffets
- Damp spots where mold and mildew grow

**Around the home:**
- Doors and windows for drafts
- Air conditioner air temperature
- Furnace registers
- Flue temperature in heating systems
- Ballasts in florescent lighting
- Dimmer switches for overheating
- Lightbulb before unscrewing
- Wood stoves flue temperature and ducts
- Fireplace logs (gas burn)
- Fuses and breakers for possible shorts
- Room temperatures (scan walls for heat layers)
- Reptile cages and environment
- Aquarium water temperatures
- Air conditioning: supply and return registers
- Surface temperature before painting

**Outdoor uses:**
- Verify BBQ surface temperatures
- Water temperatures in pools, spas and hot tubs
- Lawns for heat stress and areas sprinkler missed
- Outdoor fire pits and tool temperatures
- Small stove engines: mowers, snow blowers
- Driveway temperature before recoating surfaces

**Automotive, Hobby, Racing:**
- Engine check - spark plugs - manifold
- Air conditioning and heating
- Radiator blockages
- Brake temperatures overheating
- Catalytic converters blockage
- Tire temperatures - under/over inflated
- Track temperatures match correct tires
- Engine temperatures in remote control vehicles
Handheld Digital Thermometer

**DT-205**

- Perfect For - HVAC/Industrial Maintenance - Techs - Hobbyist
- Pocket Size - Light Weight  
- °C or °F Switchable

- ±1°C, ±2°F Accuracy
- Up to 0.1° Resolution
- 3.5 Digit LCD, 0.55” H
- Rugged Construction
- Low Battery Indicator
- Overrange Indicator
- 90 Day Limited Warranty

Battery, Carrying Case and Operating Instructions Included

**DESCRIPTION:**

The DT-205 is a pocket-sized Digital Thermometer with a built-in thermocouple probe that retracts into the case. It possesses features of more costly instruments such as switchable Fahrenheit and Celsius scales, up to 0.1° resolution and a large easy-to-read 3 1/2 digit display. Measurement range is -50°C to 150°C and -58°F to 302°F. Ruggedly constructed and fast acting, the DT-205 is ideally suited for set up, adjustment and monitoring heating and cooling systems plus checking for heat loss.

**SPECIFICATIONS:**

**General**
- Display: 3 1/2 Digit LCD, 0.5” high.
- Overrange Indication: A “1” or “–1” is displayed with the 3 least significant digits blanked
- Measurement Rate: 3 times per second
- Operating Environment: 0°C to 35°C, <90% relative humidity, 35°C to 50°C <70% relative humidity
- Storage Environment: -40°C to 60°C, with battery removed
- Power: 9V alkaline or carbon zinc battery (NEDA 1604)
- Battery Life: 300 hours typical with carbon zinc cells
- Low Battery Indicator: Display indicates “Bat”
- Dimensions, Weight: 1.8” wide x 5.6” long x 1.1” thick (46mm x 142mm x 28mm) Net weight 5.6oz. (142g) with battery

**Celsius**
- Range -50°C to 150°C
- Resolution 0.1°C
- Accuracy ±3° @ -50° to 0°  
  ±1° @ 0° to 100°  
  ±3° @ 100° to 150°
- Temperature Coefficient: <0.1 x the applicable accuracy specification per °C, from 0°C to 18°C and 28°C to 50°C

**Fahrenheit**
- Range -58°F to 302°F
- Resolution 1°F
- Accuracy ±6° @ -58° to 32°  
  ±2° @ 32° to 212°  
  ±6° @ 212° to 302°
- Temperature Coefficient: <0.1 x the applicable accuracy specification per °F, from 32°F to 64.4°F to 122°F
PR-21 Logic Probe/Pulse Detector

- **Perfect Trouble Shooting Tool**
- **20MHz Pulse Detector**

- Switch Selectable
  - Pulse Detection or Memory
  - TTL/CMOS
- Audible Logic State Tones
- Input Impedance 1MΩ
- Detects 30ns Pulses
- Operates to 20MHz
- Color Coded LEDs
- Circuit Powered
- 90-Day Limited Warranty

**DESCRIPTION:**

The PR-21 is a versatile instrument for troubleshooting and analyzing logic circuits. Features include visual indication of pulse level and pulse presence, pulse memory, plus an audible, two-tone, logic state indicator. The probe responds to pulses as narrow as 30ns and pulse trains up to 20MHz, and is compatible with TTL, DTL, RTL, HTL, CMOS and MOS. It is also compact and light weight. Three color-coded LEDs indicate pulse presence and high/low logic states. Visual indication is complemented by audible tones of two distinctly different frequencies to distinguish the logic states easily. The PR-21 Logic Probe is a valuable servicing aid, especially when used in conjunction with the PR-31 Logic Pulsar.

**SPECIFICATIONS:**

- **Input Signal Frequency:** 20MHz Max
- **Minimum Detectable Pulse Width:** 30ns
- **Input Impedance:** 1MΩ
- **Operating Supply Range (Vcc):** 4V DC Min., 18V DC Max.
  - **TTL Logic “1” (Hi LED):** >2.3 ±0.2V DC
  - **Logic “0” (Lo LED):** <0.8 ±0.2V DC
  - **CMOS Logic “1” (Hi LED):** >70% Vcc ±10%
  - **Logic “0” (Lo LED):** <30% Vcc ±10%

- **Maximum Allowable Supply Voltage (Vcc):** ±20V DC
- **Power Supply Protection:** ±20V DC Max. (15 sec.)
- **Signal Input Protection:** ±220V AC/DC Max. (15 sec.)
- **Pulse Indicator Flash Time:** 500ms
- **Operating Environment:** 0°C to 50°C, <80% relative humidity
- **Storage Environment:** -20°C to 65°C, <75% relative humidity
- **Dimensions, Weight:** 8.2” long x 0.7” dia. (21cm x 1.8cm)
  - net weight 1.6 oz. (45g)
PR-31 Logic Probe/Pulse Generator

- **Trouble Shooting/Design Tool**
- **Pulse Generator**
  - Use with Companion Logic Probe PR-21 or Scope
  - Compatible with Most Logic Families
  - Signal Injector (Square Wave)
  - Switchable 0.5/400Hz Pulse Rate
  - Sources/Sinks 100mA Pulses
  - External Sync Input
  - Circuit Powered
  - 90-Day Limited Warranty

**DESCRIPTION:**

The PR-31 Pulse Generator is used to inject a signal into a logic circuit without having to remove the IC or open the circuit. Using the companion PR-21 Logic Probe you can detect component failures or wiring errors. The average power of the injected signal is limited by supply voltage (Vcc) of the circuit under test, and with its short duration pulses, will not damage circuit components.

The PR-31 Logic Pulsar produces a 10µs signal at a 100 mA load and can be switched to either 0.5Hz or 400Hz. It is also capable of generating a square wave equal to approximately 90% of the supply voltage (Vcc) at the square wave output terminal so that an oscilloscope can be used to observe and trace signals. The PR-31 Logic Pulsar also has an external sync input, which enables the user to synchronize the pulse output with an external signal, such as a computer clock circuit.

**SPECIFICATIONS:**

- **Input Signal Frequency:** 20MHz Max
- **Minimum Detectable Pulse Width:** 30ns
- **Input Impedance:** 1MΩ
- **Operating Supply Range (Vcc):** 4V DC Min., 18V DC Max.
  - TTL Logic “1” (Hi LED) >2.3 ±0.2V DC
  - Logic “0” (Lo LED) <0.8 ±0.2V DC
  - CMOS Logic “1” (Hi LED) >70% Vcc ±10%
  - Logic “0” (Lo LED) <30% Vcc ±10%
- **Maximum Allowable Supply Voltage (Vcc):** ± 20V DC
- **Power Supply Protection:** ±20V DC Max. (15 sec.)
- **Signal Input Protection:** ±220V AC/DC Max. (15 sec.)
- **Pulse Indicator Flash Time:** 500ms
- **Operating Environment:** 0°C to 50°C, <80% relative humidity
- **Storage Environment:** -20°C to 65°C, <75% relative humidity
- **Dimensions, Weight:** 8.2” long x 0.7” dia. (21cm x 1.8cm)
  - net weight 1.6 oz. (45g)
- **Output Pulse Rate:** 0.5/400Hz
- **Output Pulse Width:** 10-15µs
- **Output Pulse Amplitude:** Approx. 90% Vcc
- **Output Current:** 100mA Sink/Source
- **Square Wave Output Current:** 5mA Sink/Source
- **Sync Input Impedance:** 1MΩ
- **Power Supply Range (Vcc):** 5-15V DC
- **Overload Protection:**
  - Power Supply 20V DC Max. (30 sec.)
  - Sync Input 120V DC Max. (30 sec.)
  - Test Point 35V DC Max. (30 sec.)
- **Operating Environment:** 0°C to 50°C, <80% relative humidity
- **Storage Environment:** -20°C to 65°C, <75% relative humidity
- **Dimensions, Weight:** 8.2” long x 0.7” dia. (21cm x 1.8cm)
  - net weight 1.4oz. (40g)
PR-60A, PR-100, PR-200B

- High Quality At Economical Prices
- Compatible with Popular Scopes
- Switchable X1, X10 and Ground Reference

**PR-60A**

- 60 MHz Bandwidth

**PR-100**

- 100 MHz Bandwidth

**PR-200B**

- 200 MHz Bandwidth

**SPECIFICATIONS:**

**Switch Function**

**X1:**
- Attenuation: 1:1
- Bandwidth: DC to 15MHz
- Input Capacitance: 45pf

**X10:**
- Attenuation: 10:1
- Bandwidth: DC to 60MHz
- Compensation Range: 10 to 35pF
- Input Capacitance: 15pF
- Input Resistance: 10MΩ, with Oscilloscope of 1MΩ Input Resistance

**Working Voltage:** 600V (DC + peak AC)

**Operating Temperature:** 0°C to +70°C

**Coaxial Cable Length:** 47.24” (1200mm)

**Accessories Supplied**

- Ground Lead and Clip
- Retractable Hook

**Replacement Accessories**

- PR-200BGL - Ground Lead and Clip
- PR-200BSH - Retractable Hook
- PR-200BKT Accessory Kit: Ground Lead and Clip; IC Tip; BNC Adapter; Retractable Hook; Insulating Tip; Trimmer Tool; Replacement Tip

**Switch Function**

**X1:**
- Attenuation: 1:1
- Bandwidth: DC to 10MHz
- Rise Time: 35ns
- Input Capacitance: 75pF + Oscilloscope Input Capacitance

**X10:**
- Attenuation: 10:1
- Bandwidth: DC to 100MHz
- Rise Time: 3.5ns
- Compensation Range: 15 to 50pF
- Input Resistance: 10MΩ, with Oscilloscope of 1.0MΩ Input Resistance

**Reference Position:** Tip Grounded via 9MΩ, Oscilloscope Input Grounded

**Working Voltage:** 600V (DC + peak AC)

**Operating Temperature:** 0°C to +70°C

**Coaxial Cable Length:** 57” (1478mm)

**Accessories Supplied**

- Ground Lead and Clip
- Retractable Hook
- IC Tip
- Insulating Tip
- BNC Adapter
- Trimmer Tool
- Replacement Tip

**Replacement Accessories**

- PR-200BGL - Ground Lead and Clip
- PR-200BSH - Retractable Hook
- PR-200BKT Accessory Kit: Ground Lead and Clip; IC Tip; BNC Adapter; Retractable Hook; Insulating Tip; Trimmer Tool; Replacement Tip

**Switch Function**

**X1:**
- Attenuation: 1:1
- Bandwidth: DC to 5MHz
- Rise Time: 75ns
- Input Capacitance: 60pf + Oscilloscope Input Capacitance

**X10:**
- Attenuation: 10:1 (±3%)
- Bandwidth: DC to 200MHz
- Rise Time: 1.8ns
- Compensation Range: 10 to 60pF
- Input Resistance: 10MΩ, with Oscilloscope of 1.0MΩ Input Resistance

**Reference Position:** Tip Grounded via 9MΩ, Oscilloscope Input Grounded

**Working Voltage:** 600V (DC + peak AC)

**Operating Temperature:** 0°C to +70°C

**Coaxial Cable Length:** 47.2” (1200mm)

**Accessories Supplied**

- Ground Lead and Clip
- Retractable Hook
- IC Tip
- Insulating Tip
- BNC Adapter
- Trimmer Tool
- Replacement Tip

**Replacement Accessories**

- PR-200BGL - Ground Lead and Clip
- PR-200BSH - Retractable Hook
- PR-200BKT Accessory Kit: Ground Lead and Clip; IC Tip; BNC Adapter; Retractable Hook; Insulating Tip; Trimmer Tool; Replacement Tip
Replacement Test Leads

- Flexible
- Heavy Duty
- Insulated

DESCRIPTION:

<table>
<thead>
<tr>
<th>Meter Model No.</th>
<th>Part No.</th>
<th>Length (Nom.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-10</td>
<td>ML-10</td>
<td>26.5 in.</td>
</tr>
<tr>
<td>AM-30</td>
<td>ML-43</td>
<td>43 in.</td>
</tr>
<tr>
<td>AM-1200</td>
<td>ML-370</td>
<td>(includes alligator clips)</td>
</tr>
<tr>
<td>AM-22</td>
<td>ML-375</td>
<td>42 in.</td>
</tr>
<tr>
<td>DM-21</td>
<td>ML-375</td>
<td>42 in.</td>
</tr>
<tr>
<td>DM-50</td>
<td>ML-375</td>
<td>42 in.</td>
</tr>
<tr>
<td>DM-59</td>
<td>ML-375</td>
<td>42 in.</td>
</tr>
<tr>
<td>DM-78A</td>
<td>ML-375</td>
<td>42 in.</td>
</tr>
<tr>
<td>DM-80</td>
<td>ML-375</td>
<td>42 in.</td>
</tr>
<tr>
<td>DM-500</td>
<td>ML-375</td>
<td>42 in.</td>
</tr>
<tr>
<td>CX-920A</td>
<td>ML-920A</td>
<td>13 in.</td>
</tr>
</tbody>
</table>

MULTIMETER TEST LEADS - CROSS REFERENCE