ECG®

Test Equipment

COMPLETE LINE

NTE® ELECTRONICS, INC.

Analog Multimeter

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:

General

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

DC Voltage

Ranges: *0-15, 150, 500V*
Input Impedance: *2kΩ per Volt*
Rated Accuracy: *±4% of full scale*

DC Current

Ranges: *0-150mA*
Rated Accuracy: *±4% of full scale*

AC Voltage

Ranges: *0-15, 150, 500V*
Input Impedance: *2kΩ per Volt*
Rated Accuracy: *±5% of full scale*

Resistance

Ranges:
R x 1K 0 - 1MΩ (full scale)

Decibels

Ranges:
-20dB to +26dB on 15V AC range
0dB to +46dB on 150V AC range
10dB to +56dB on 500V AC range

Battery Test

Ranges: *1.5V AA*

Analog Multimeter

AM-22

- **General Purpose VOM**
- **7 Functions, 20 Ranges**

- ±4% DC Accuracy FS
- 4" Mirrored Scale
- 20KΩ/VDC, 8KΩ/VAC Input Sensitivity
- Fuse and Diode Protection
- 10 Amp DC Range
- 1000 Volts AC/DC
- Continuity Buzzer
- Battery Test
- Tilt Stand
- Anti-Skid Pads
- 90-Day Limited Warranty

Test Leads (ML-375), Spare Fuse and Operating Instructions Included
OPTIONAL ACCESSORY - Carrying Case (MC-300) - See Page 24

SPECIFICATIONS:

General

Front Panel Controls: *Range selector switch with power "OFF" position, 0 Ω adjust and mechanical zero adjuster*

Movement: *90° arc, 40μA full scale*

Scales (6): *One scale for OHMS, 3 scales for AC/DC, one scale for dB and one scale for battery test*

Scale Length: *4"*

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

Power: *1.5V AA (2) batteries (not included)*

Movement and Indicator Protection: *Diode and Fuse (0.5A/250V)*

Dimensions, Weight: *3.8" wide x 5.875" long x 1.5" thick (97 mm x149 mm x 38 mm), net weight 8.2oz. (231g)*

DC Voltage

Ranges: *0-2.5, 10, 50, 250, 1000V*
Input Impedance: *20kΩ per Volt*
Rated Accuracy: *±4% of full scale*

DC Current

Ranges: *0-5m, 50m, 500m, 10A*
Rated Accuracy: *±4% of full scale*

AC Voltage

Ranges: *0-10, 50, 250, 1000V*
Input Impedance: *8kΩ per Volt*
Rated Accuracy: *±5% of full scale*

Resistance

Ranges:
R x 1 0 - 10KΩ
R x 10 0 - 100KΩ
R x 1K 0 - 10MΩ
Rated Accuracy: *±4% of arc*

Decibels

Ranges:
-8dB to +22dB on 10V AC range
+6dB to +36dB on 50V AC range
+20dB to +50dB on 250V AC range
+32dB to +62dB on 1000V AC range

Continuity Test

Buzzer Response: *<100Ω*
Response Time: *Instant*

Battery Test

Ranges: *1.5V, 9V*

Analog Multimeter

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

OPTIONAL ACCESSORY - Carrying Case (MC-30) - See Page 24

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*

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)*

DC Voltage

Ranges: *0-0.6, 3, 12, 60, 300, 1000V*

Input Impedance: *30kΩ per Volt*

Rated Accuracy: *±3% of full scale*

DC Current

Ranges: *120µ, 13m, 30m, 300m, 10A*

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 100	0-500kΩ
R x 1k	0-5MΩ
R x 10k	0-50MΩ

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*

Analog Multimeter

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 †
- Polarity Reversing Switch *
- Zero Center Scale Adjustment
- Low Battery Indicator
- Metal Tilt Stand
- 1-Year Limited Warranty

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 - 1MHz ±1dB rectangular wave at 3V range only
30Hz - 3MHz ±5% sine wave
30Hz - 120MHz ±5% rectangular on all other ranges except 3V

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 10)*
R x 10	*0 - 10KΩ (Center 100Ω)*
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.

Pocket Digital Multimeter

DM-15

Use For: • Home • Office • Factory • Car • Boat • School

- Autoranging
- Auto Power OFF
- Bar Graph
- 3 1/2 Digit LCD, 0.35" H
- 3200 Count
- 10MΩ Input Z
- Data Hold
- Range Hold
- Diode Test
- Audible Continuity Test
- 32MΩ FS
- Overload Protection
- 1-Year Limited Warranty

Batteries, Test Leads, Carrying Case and Operating Instructions Included

SPECIFICATIONS:

General

Display: *3.5 Digit LCD, 0.35" high, with polarity indicator*

Overrange Indication: *"OL" is displayed*

Auto Power Off: *Approx. 10 min. after mode or function change*

Measurement Rate: *2 times per second*

Operating Environment: *0°C to 40°C, <70% relative humidity*

Storage Environment: *-20°C to 60°C, <80% relative humidity*

Power: *1.5V button-type batteries (2) IEC LR-44, NEDA 1166A*

Low Battery Indicator: *"B" is displayed.*

Dimensions, Weight: *2.2" wide x 4.4" long x .41" thick (56mm x 111.5mm x 10.5mm), net weight 3oz. (86g)*

DC Voltage

Range	Resolution	Accuracy
320mV	100µV	±2% of rdg ±2D
3.2V	1mV	±1% of rdg ±2D
32V	10mV	±2% of rdg ±2D
320V	100mV	±2% of rdg ±2D
450V	1V	±2% of rdg ±2D

Input Impedance: mV = >1000MΩ; 3.2V = 11MΩ. 10MΩ all other ranges

Maximum Input: 450V DC

AC Voltage

Range	Resolution	Accuracy
3.2V	1mV	±3% of rdg ±5D
32V	10mV	±3% of rdg ±5D
320V	100mV	±3% of rdg ±5D

Input Impedance: 3.2V = 11MΩ, 10MΩ all other ranges

Maximum Input: 320V AC rms

Frequency Range: 50/60Hz

Resistance

Range	Resolution	Accuracy
320Ω	100mΩ	±2% of rdg ±4D
3.2KΩ	1Ω	±2% of rdg ±2D
32KΩ	10Ω	±2% of rdg ±2D
320KΩ	100Ω	±2% of rdg ±2D
3.2MΩ	1KΩ	±5% of rdg ±5D
32MΩ	10KΩ	±10% of rdg ±2D

Input Protection: 450V DC or 320 AC rms

Continuity Test (Audible)

Resistance Range: *320Ω*

Beeper Response: *<20Ω*

Diode Test

Voltage: *3.2V @ 0.6mA*

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
- Low Power Ω
- Overload Protection
- RF Shielded
- Polarity Indicator
- Low Battery Indicator
- Tilt Stand
- 1-Year Limited Warranty

Battery, Test Leads (ML-375) and Operating Instructions Included
OPTIONAL ACCESSORY - Carrying Case (MC-50) - See Page 24

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

Range	Resolution	Accuracy
2V	1mV	±0.8% of rdg ±1D
20V	10mV	±0.8% of rdg ±1D
200V	100mV	±0.8% of rdg ±1D
600V	1V	±0.8% of rdg ±1D

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

AC Voltage

Range	Resolution	Accuracy
200V	100mV	± 1.5% of rdg ±4D
500V	1V	± 1.5% of rdg ±4D

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

Resistance

Range	Resolution	Accuracy
200Ω	0.1Ω	±1.5% of rdg ±3D
2KΩ	1Ω	±1.5% of rdg ±3D
20KΩ	10Ω	±1.5% of rdg ±3D
200KΩ	100Ω	±1.5% of rdg ±3D
2MΩ	1KΩ	±1.5% of rdg ±3D

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

Digital Multimeter

DM-38A

- **Multifunction DMM**
- **Heavy Duty**
- **3 3/4 Digit, 0.5" H**
- **Peak Data Hold**
- Frequency Counter
- Capacitance Test
- Logic Detector
- 20A AC/DC
- 0.5% Basic DC Accuracy
- 40MΩ Full Scale
- Transistor h_{FE} Test
- Diode Test
- Audible Continuity Test
- 20MΩ Input Z
- 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

OPTIONAL ACCESSORY - Carrying Case (MC-300) - See Page 24

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

Range	Resolution	Accuracy
400mV	100µV	±0.5% of rdg ±1D
4V	1mV	±0.5% of rdg ±1D
40V	10mV	±0.5% of rdg ±1D
400V	100mV	±0.5% of rdg ±1D
1000V	1V	±0.5% of rdg ±1D

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

Range	Resolution	Accuracy
40mA	10µA	±1% of rdg ±1D
400mA	100µA	±1% of rdg ±1D
20A	10mA	±2% of rdg ±3D

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

AC Voltage

Range	Resolution	Accuracy
400mV	100µV	±1% of rdg ±4D
4V	1mV	±1% of rdg ±4D
40V	10mV	±1% of rdg ±4D
400V	100mV	±1% of rdg ±4D
750V	1V	±1.5% of rdg ±4D

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

Range	Resolution	Accuracy
40mA	10µA	±1.2% of rdg ±4D
400mA	100µA	±1.2% of rdg ±4D
20A	10mA	±2% of rdg ±4D

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

Resistance

Range	Resolution	Accuracy
400Ω	0.1Ω	±1% of rdg ±3D
4KΩ	1Ω	±0.8% of rdg ±1D
40KΩ	10Ω	±0.8% of rdg ±1D
400KΩ	100Ω	±0.8% of rdg ±1D
4MΩ	1KΩ	±0.8% of rdg ±1D
40MΩ	10KΩ	±3% of rdg ±3D
400MΩ	1MΩ	±5% of rdg -10D, +4D

Overload Protection: 500V DC/AC, 10 seconds

Capacitance

Range	Resolution	Accuracy
4nF	1pF	±3% of rdg ±10D
40nF	10pF	±3% of rdg ±10D
400nF	100pF	±3% of rdg ±10D
4µF	1nF	±3% of rdg ±10D
40µF	10nF	±3% of rdg ±10D

Test Frequency: 400Hz

Test Voltage: 50mV

Frequency Measurement

Range: 4K to 4MHz (Autorange)

Accuracy: ± 1% rdg ± 2D

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

Detestable Pulse Width: 25ns, min.

Overload Protection: 50V DC/AC

Continuity Test

Resistance Range: 400Ω

Beeper Response: <50Ω

Response Time: <100mSec

Transistor h_{FE} Test (PNP, NPN)

Test Condition: 10µA Base Current @ 2.8V

h_{FE} Range: 0 - 1000

Diode Test

Voltage: 3.2V @ 1.6mA Max

Digital Multimeter

DM-50

- **Low Cost-Multipurpose**
- **9 Functions, 20 Ranges**

- Frequency Counter
- Transistor h_{FE}
- Battery Tester
- Diode Test
- 20MΩ FS
- 10A DC
- 0.5% Basic DC Accuracy
- 3 1/2 Digit LCD, 0.55" H
- Audible Continuity Test
- 10MΩ Input Z
- Low Power Ω
- Overload Protection
- RF Shielded
- Tilt Stand
- 1-Year Limited Warranty

Battery, Test Leads (ML-375), Spare Fuse and Operating Instructions Included
OPTIONAL ACCESSORY - Carrying Case (MC-50) - See Page 24

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

Range	Resolution	Accuracy
200mV	100µV	±0.5% of rdg ±1D
2V	1mV	±0.5% of rdg ±1D
20V	10mV	±0.5% of rdg ±1D
200V	100mV	±0.5% of rdg ±1D
600V	1V	±0.5% of rdg ±1D

Input Impedance: 10MΩ on all ranges
Maximum Input: 600V DC or AC rms

DC Current

Range	Resolution	Accuracy
2mA	1µA	±1% of rdg ±1D
20mA	10µA	±1% of rdg ±1D
200mA	100mA	±1% of rdg ±1D
10A	10mA	±3% of rdg ±1D

Overload Protection: mA input, 0.5A/250V fuse; 10A input 10/600V fuse

AC Voltage

Range	Resolution	Accuracy
200V	100mV	±1.5% of rdg ±4D
600V	1V	±1.5% of rdg ±4D

Input Impedance: 4.5MΩ on all ranges
Maximum Input: 600V DC or AC rms
Frequency Range: 50Hz - 500Hz

Battery Tester

1.5V (Load Current Approximately 150mA)
9V (Load Current Approximately 6mA)

Resistance

Range	Resolution	Accuracy
200Ω	0.1Ω	±0.8% of rdg ±3D
2KΩ	1Ω	±0.8% of rdg ±1D
20KΩ	10Ω	±0.8% of rdg ±1D
200KΩ	100Ω	±0.8% of rdg ±1D
2000KΩ	1KΩ	±0.8% of rdg ±1D
20MΩ	10KΩ	±3% of rdg ±3D

Overload Protection: 500V DC or 350AC 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 500AC rms

Continuity Test (Audible)

Resistance Range: 2KΩ
Beeper Response: <30Ω

Transistor h_{FE} Test (PNP, NPN)

Test Condition: 10µA Base Current @ 3.5V
h_{FE} Range: 0 - 1000

Diode Test

Voltage: 2V @ 1.6mA Max

Digital Multimeter

DM-59

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

- Frequency Counter
- h_{FE}
- 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
OPTIONAL ACCESSORY - Carrying Case (MC-50) - See Page 24

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

Range	Resolution	Accuracy
200mV	100µV	±0.5% of rdg ±1D
2V	1mV	±0.5% of rdg ± 1D
20V	10mV	±0.5% of rdg ±1D
200V	100mV	±0.5% of rdg ±1D
600V	1V	±0.5% of rdg ±1D

Input Impedance: 10MΩ on all ranges
Maximum Input: 600V DC or AC rms

DC Current

Range	Resolution	Accuracy
2mA	1µA	±1.0% of rdg ±1D
20mA	10µA	±1.0% of rdg ±1D
200mA	100mA	±1.0% of rdg ±1D
10A	10mA	±3.0% of rdg ±1D

Overload Protection: mA input, 0.5A/250V fuse; 10A input 10A/600V fuse

AC Voltage

Range	Resolution	Accuracy
200mV	100µV	±1.0% of rdg ±4D
2V	1mV	±1.0% of rdg ±4D
20V	10mV	±1.0% of rdg ±4D
200V	100mV	±1.0% of rdg ±4D
600V	1V	±1.9% of rdg ±4D

Input Impedance: 10MΩ on all ranges
Maximum Input: 600V DC or AC rms
Frequency Range: 50Hz - 500Hz

AC Current

Range	Resolution	Accuracy
2mA	1µA	±2.0% of rdg ±4D
20mA	10µA	±2.0% of rdg ±4D
200mA	100mA	±2.0% of rdg ±4D
10A	10mA	±3.5% of rdg ±4D

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

Resistance

Range	Resolution	Accuracy
200Ω	0.1Ω	±0.8% of rdg ±3D
2KΩ	1Ω	±0.8% of rdg ±1D
20KΩ	10Ω	±0.8% of rdg ±1D
200KΩ	100Ω	±0.8% of rdg ±1D
2000KΩ	1KΩ	±0.8% of rdg ±1D
20MΩ	10KΩ	±3% of rdg ±3D

Overload Protection: 500V DC or AC rms

Capacitance

Range	Resolution	Accuracy
2000pF	1pF	±2.0% of rdg ±10D
20nF	10pF	±2.0% of rdg ±10D
200nF	100pF	±2.0% of rdg ±10D
2µF	1nF	±2.0% of rdg ±10D
20µF	10nF	±2.0% of rdg ±10D

Test Frequency: 2.5Hz
Test Voltage: 3V

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 h_{FE} Test (PNP, NPN)

Test Condition: 10µA Base Current @ <3.5V
h_{FE} Range: 0 - 1000

Diode Test

Voltage: 2V @ 1.6mA Max

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
OPTIONAL ACCESSORY - Carrying Case (MC-50) - See Page 24

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

Range	Resolution	Accuracy
200mV	0.1mV	±0.7% of rdg ±4D
2000mV	1mV	±0.7% of rdg ±2D
20V	10mV	±0.7% of rdg ±2D
200V	100mV	±0.7% of rdg ±2D
1000V	1V	±0.7% of rdg ±2D

Input Impedance: 10MΩ on all ranges

DC Current

Range	Resolution	Accuracy
200µA	0.1µA	± 1% of rdg ± 2D
2000µA	1µA	± 1% of rdg ± 2D
20mA	10µA	± 1% of rdg ± 2D
200mA	100µA	± 1.2% of rdg ± 2D
2000mA	1mA	± 1.5% of rdg ± 2D
10A	10mA	± 1.5% of rdg ± 2D

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

AC Voltage

Range	Resolution	Accuracy
200V	100mV	±1.2% of rdg ±10D
750V	1V	±1.2% of rdg ±10D

Overload Protection: 750V rms

Frequency Range: 45Hz - 450Hz

Resistance

Range	Resolution	Accuracy
200Ω	0.1Ω	±0.7% of rdg ±2D
2000Ω	1Ω	±0.7% of rdg ±2D
20KΩ	10Ω	±0.7% of rdg ±2D
200KΩ	100Ω	±0.7% of rdg ±2D
2000KΩ	1KΩ	±1% of rdg ±2D

Diode Test

Voltage: 2.8V @ 1mA

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
OPTIONAL ACCESSORY - Carrying Case (MC-300) - See Page 24

SPECIFICATIONS:

General

Display: *3200 count LCD, 65 segment bar graph, 0.55" 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*

Measurement Rate: *Digital 2 times per second, analog 12 times per second*

Power: *1.5V AAA (2) alkaline or carbon zinc batteries*

Battery Life: *1000 hours with alkaline cells*

Low Battery Indicator: *Symbol is displayed*

Fuse: *1A 240/250V Fast*

Dimensions, Weight: *3.3" wide x 6.9" long x 1.2" thick (84mm x 175mm x 31mm), net weight 12oz. (340g)*

DC Voltage

Range	Resolution	Accuracy
300mV	0.1mV	±0.5% of rdg ±2D
3V	1mV	±0.5% of rdg ±2D
30V	10 mV	±0.5% of rdg ±2D
300V	100mV	±0.5% of rdg ±2D
1000V	1V	±0.5% of rdg ±2D

Input Impedance: 10MΩ

Overload Protection: 1100VpK (15 sec.)

DC Current

Range	Resolution	Accuracy
300µA	0.1µA	±1% of rdg ±2D
3mA	1µA	±1.2% of rdg ±2D
30mA	10µA	±1% of rdg ±2D
300mA	100µA	±1.2% of rdg ±2D
20A	10mA	±2% of rdg ±3D

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

AC Voltage

Range	Resolution	Accuracy
3V	1mV	±1.3% of rdg ±5D
30V	10mV	±1.3% of rdg ±5D
300V	100mV	±1.3% of rdg ±5D
750V	1V	±1.3% of rdg ±5D

Frequency Range: 3V on 40Hz - 300Hz; 40Hz - 500Hz all others

Input Impedance: 10MΩ on all ranges

Overload Protection: 770V AC RMS or 1100Vpk (15 sec.)

AC Current

Range	Resolution	Accuracy
300µA	0.1µA	±1.5% of rdg ±3D
3mA	1µA	±1.5% of rdg ±3D
30mA	10µA	±1.5% of rdg ±3D
300mA	100µA	±2% of rdg ±3D
20A	10mA	±2.5% of rdg ±5D

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

Range (Lo-Power Ω)	Resolution	Accuracy
300Ω	0.1Ω	±1% of rdg ±4D
3KΩ	1Ω	±0.75% of rdg ±2D
30KΩ	10Ω	±0.75% of rdg ±2D
300KΩ	100Ω	±0.75% of rdg ±2D
3MΩ	1KΩ	±1.5% of rdg ±3D
30MΩ	10KΩ	±2.5% of rdg ±5D

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

OPTIONAL ACCESSORY - Carrying Case (MC-80) - See Page 24

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

Range	Resolution	Accuracy
400mV	0.1mV	±0.3% of rdg ±1D
4V	1mV	±0.3% of rdg ±1D
40V	10mV	±0.3% of rdg ±1D
400V	100mV	±0.3% of rdg ±1D
1000V	1V	±0.3% of rdg ±3D

Overload Protection: 1000V pk (10 sec.)

DC Current

Range	Resolution	Accuracy
4mA	0.001mA	±1.5% of rdg ±2D
40mA	0.01mA	±1.5% of rdg ±2D
400mA	0.1mA	±1.5% of rdg ±2D
4000mA	1mA	±1.5% of rdg ±2D
10A	0.01A	±2% of rdg ±2D

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

AC Voltage

Range	Resolution	Accuracy
4V	1mV	±1.2% of rdg ±5D
40V	10mV	±1.2% of rdg ±5D
400V	100mV	±1.2% of rdg ±5D
750V	1V	±1.2% of rdg ±5D

Input Impedance: 10MΩ on all ranges

Overload Protection: 1000V pk (10 sec.)

AC Current

Range	Resolution	Accuracy
4mA	0.001mA	±2% of rdg ±5D
40mA	0.01mA	±2% of rdg ±5D
400mA	0.1mA	±2% of rdg ±5D
2000mA	1mA	±2% of rdg ±5D
10A	0.01A	±2% of rdg ±5D

Frequency Range: 50Hz - 500Hz

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

Resistance

Range	Resolution	Accuracy
400Ω	0.1Ω	±1% of rdg ±2D
4KΩ	1Ω	±0.7% of rdg ±2D
40KΩ	10Ω	±0.7% of rdg ±2D
400KΩ	100Ω	±0.7% of rdg ±2D
4MΩ	1KΩ	±0.7% of rdg ±2D
40MΩ	10KΩ	±2% of rdg ±5D

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

Capacitance

Range	Resolution	Accuracy
4nF	0.001nF	±5% of rdg ±2D
40nF	0.01nF	±5% of rdg ±2D
400nF	0.1nF	±5% of rdg ±2D
4µF	1nF	±5% of rdg ±2D
40µF	10nF	±5% of rdg ±2D

Frequency Measurement

Range	Resolution	Accuracy
100Hz	0.001Hz	±1% of rdg ±10D
1000Hz	0.1Hz	±1% of rdg ±10D
10kHz	1Hz	±1% of rdg ±10D
100kHz	10Hz	±1% of rdg ±10D
1000kHz	100Hz	Not Specified

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: <40Ω

Response Time: Instantly

Digital Multimeter

DM-500

- **Our Top Of The Line DMM**
- **High Accuracy & Resolution - Affordable Price**
- **Perfect For Lab Use or Plant Maintenance**

- Auto Ranging/True RMS
- Dual Display
- Analog Bar Graph
- 3 3/4 Digit LCD, 1.8" H
- 10 Location Memory
- Time Mode
- MIN, MAX, AVG and REL
- Capacitance/Inductance
- Temperature (C & F)
- Logic Detector
- Continuity/Diode Test
- Fused 20A Input
- Data Hold
- 2-Year Limited Warranty

Battery, Test Leads (ML-375), Thermocouple (TC-50P), Adapter (MA-500), Carrying Case, Spare Fuse and Operating Instructions Included

OPTIONAL ACCESSORIES - Safety Holster with Probe Holders (MH-500), Soft Carrying Case (MC-500) - See Page 24

SPECIFICATIONS:

General

Display: *3 3/4 Digit LCD, 1.8" high, 21 segment bar graph*

Overrange Indication: *"OL" is displayed.*

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

Storage Environment: *-40°C to 70°C, <95%relative humidity with battery removed*

Auto Power OFF: *After 30 min. ±1 min. with no key operation except for Hz, C or L*

Power: *9V alkaline or carbon zinc battery*

Battery Life: *60 hours typical with carbon zinc cells, 120 hours typical with alkaline cells*

Low Battery Indication: *Below 6.9V ±0.5V*

Dimensions, Weight: *3.46" wide x 7.83" long x 1.45" thick (88mm x 199mm x 37mm), Net weight 14.5oz. (410g)*

DC Voltage

Range	Resolution	Accuracy
400mV	0.1mV	±0.3% of rdg ±2D
4V	0.001V	±0.5% of rdg ±2D
40V	0.01V	±0.5% of rdg ±2D
400V	0.1V	±0.5% of rdg ±2D
1000V	1V	±0.5% of rdg ±2D

Overload Protection: 250V rms, PTC on 400mV range, 1000V rms on all other ranges

Input Impedance: 71GΩ on 400mV range, 10MΩ on all other ranges

DC Current

Range	Resolution	Accuracy
400µA	0.1µA	± 1% of rdg ± 2D
400mA	0.1mA	± 1% of rdg ± 2D
20A	0.1A	± 1% of rdg ± 2D

Overload Protection: 250V rms, PTC on 400µA range, 0.5A/250V fuse on 400µA range, 20A/250V fuse on 20A range

AC Voltage

Range	Resolution	Accuracy
400mV	0.1mV	±1% of rdg ±3D
4V	0.001V	±1.5% of rdg ±5D
40V	0.01V	±1.5% of rdg ±5D
400V	0.1V	±1.5% of rdg ±5D
750V	1V	±1.5% of rdg ±5D

Input Impedance: >1GΩ on 400mV range, 10MΩ on all other ranges

Overload Protection: 250V rms, PTC on the 400mV range, 100V rms on all other ranges

Frequency Range: 50Hz to 1KHz on 400mV range, 50Hz to 100Hz on the 4V range, 50Hz to 500Hz on all other ranges

AC Current

Range	Resolution
400µA	0.1µA
400mA	0.1mA
20A	0.01A

Accuracy: ±1.5% of rdg ±3D @ 50Hz to 100Hz, ±3% of rdg ± 5D @ 100Hz to 1kHz

Overload Protection: Use DC current values

Resistance

Range	Resolution	Accuracy
400Ω	0.1Ω	±0.5% of rdg ±2D
4KΩ	0.001KΩ	±0.5% of rdg ±2D
40KΩ	0.01KΩ	±0.5% of rdg ±2D
400KΩ	0.1KΩ	±0.5% of rdg ±2D
4MΩ	0.001MΩ	±1% of rdg ±2D
40MΩ	0.01MΩ	±1% of rdg ±2D

Overload Protection: 250V rms, PTC

Frequency Measurement

Range	Resolution	Accuracy
10kHz	1Hz	±0.01% of rdg ±1D
100kHz	10Hz	±0.01% of rdg ±1D
1MHz	100Hz	±0.01% of rdg ±1D
10MHz	1kHz	±0.01% of rdg ±1D

Continued on next page.

DM-500 continued

SPECIFICATIONS:

Decibel

Range	dBm Range	Frequency	Accuracy
4V	-25.74 to 14.25	30 to 200Hz	±0.5dB
40V	-5.74 to 8.24	20 to 1kHz	±0.5dB
40V	-5.74 to 8.24	1k to 2kHz	±1dB
40V	-5.74 to 8.24	2k to 5kHz	±2dB
40V	8.24 to 34.25	30 to 5kHz	±0.5dB
40V	8.24 to 34.25	5k to 10kHz	±1dB
40V	8.24 to 34.25	10k to 20kHz	±2dB
400V	31.76 to 54.25	30 to 20kHz	±0.5dB
750V	51.76 to 59.71	30 to 20kHz	±0.5dB

Input Impedance: 10MΩ

Resolution: 0.01dBm

Logic Measurement

Logic Type: TTL

Range: Lo = <0.8V, Hi = >2V, Mid = 0.8V to 2V

Capacitance

Range: 0 - 100µF

Resolution: 0.01µF

Accuracy: ±3% of rdg ±5D

Diode

Open Circuit Voltage: 3.3V max.

Test Current: 1mA

Inductance

Range: 0 to 100H

Resolution: 0.01H

Accuracy: ±3% of rdg ±5D up to 20H

±5% of rdg ±5D up to 50H

±10% of rdg ±5D up to 100H

Signal Out

Frequency: 2048Hz, 4096Hz, 8192Hz Square Wave

Output Level: 4V p-p min.

Accuracy: ±0.01%

Output Impedance: 1.5kΩ

Time

Range: 1 sec. to 10 hours (presettable)

Resolution: 1 sec

Accuracy: ±0.2% of rdg ±1D

Temperature

Range: -17°C to 1200°C (0°F to 2000°F)

Resolution 1°C (1°F)

Accuracy:

±3% of rdg ±5D from -20°C to 10°C (0°F to 50°F)

±3 of rdg ±3D from 10°C to 350°C (50°F to 662°F)

±5% of rdg ±3D from 350°C to 1200°C (662°F to 2000°F)

Continuity

Beeper Response: <100Ω

AC Clamp-On Current Adapter

CM-100

- **Ideal For Plant/Industrial Maintenance**
- **Adds AC Clamp-On Current Measurement Capability To Standard DMMs***

- 0-1000 Amps AC
- ±2.5% Basic Accuracy 0-800 A; 3.5% 800-1000A
- 1mV/1A Resolution
- 0-1V RMS AC Output with ≥1mΩ Meters
- 2.1" Jaw Opening
- Works with Most DMMs (Full Scale ≤1-2V AC)
- Small Size
- Light Weight
- Durable, High Impact Plastic Case
- 90-Day Limited Warranty

Test Leads, Wrist Strap and Operating Instructions Included

SPECIFICATIONS:

General

Input: *0-1000A AC max.*
Output: *0-1V AC RMS with ≥1MΩ meters*
Resolution: *1mV/1A*
Accuracy (50 Hz - 60 Hz):

0-800A	*±2.5% of rdg ±4D*
800-1000A	*±3.0% of rdg ±4D*

Operating Temperature: *0°C to +50°C*
Storage Temperature: *-20°C to +60°C*
Dimensions, Weight: *3.4" wide x 7.25" long x 1" thick (86mm x 184mm x 25mm), net weight 7oz. (198g)*
Output Jacks: *Standard banana type*

The ECG model CM-100 Adapter Jaw enables clamp-on AC current measurements of up to 1000 amperes to be made with a conventional digital multimeter.

** The CM-100 works with most popular brands and models of DMMs. It requires a meter with an AC voltage range ≤1-2V AC full scale and an input impedance of 1.0mΩ or greater.*

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
- Low Battery Indicator
- 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

Range	*Resolution*	*Accuracy*
200pF	0.1pF	±0.5% of rdg ±1D ±0.5pF
2000pF	1pF	±0.5% of rdg ±1D
20nF (.02µF)	10pF	±0.5% of rdg ±1D
200nF (.2µF)	100pF	±0.5% of rdg ±1D
2µF	1nF	±0.5% of rdg ±1D
20µF	10nF	±0.5% of rdg ±1D
200µF	0.1µF	±0.5% of rdg ±1D
2000µF	1µF	±2% of rdg ±1D
20mF (20,000µF)	10µF	±4% of rdg ±1D

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

Battery Tester

BAT-15

Ideal For: • Home • Office • Workshop
• Very Economical
• 15 Measuring Ranges
• Pocket Size

- Moving Coil -90° Arc, 200µA FS Movement
- Easy To Read Scales
- Self Storing Test Leads
- High Impact ABS Plastic Case

Battery, Test Leads and Operating Instructions Included

SPECIFICATIONS:

General

Front Panel Controls: *Function selector switch, mechanical zero adjuster*

Movement: *Moving coil -90° arc, 200µA full scale*

Scales (3): *Silver, mercury, all other batteries*

Operating Position: *Horizontal or vertical*

Dimensions, Weight: *4.12" long x 2.5" wide x 1.2" thick (105mm x 64mm x 32mm), net weight 4.1oz. (116g)*

Battery	Total Load Ohm	Working Fine Current (mA)	Max. Replace Volts	Max. Good Volts
1.5V Button	750	2	1.05	1.65
All Chemistries* 1.5V "AAA"	75	20	1.05	1.65
All Chemistries* 1.5V "AA"	37.5	40	1.05	1.65
All Chemistries* 1.5V "C"	10	150	1.05	1.65
All Chemistries* 1.5V "D"	5	300	1.05	1.65
3V Lithium	3,000	1	2.1	3.3
22.5V	2,250	10	15.7	24.7
12V	60	200	8.4	13.2
9V	500	18	6.3	9.9
6V Lantern	15	400	4.2	6.6
5.6-6.0V	1,200	5	3.8	6.0
4.0-4.5V	900	5	2.86	4.5
2.7-3.0V	600	5	1.91	3.0
1.6-1.7V	1,500	1	1.08	1.7
1.35-1.4V	292	5	1.05	1.65

1. Working Fine Currents (mA) are based on nominal battery voltage
2. Max. Replace Volts are 70% of nominal battery voltage
3. Max. Good Volts are 110% of nominal battery voltage

***NOTICE**

1.5V AAA, AA all chemistries: General purpose (carbon zinc)
1.5V C, all chemistries: Heavy-duty (zinc chloride)
1.5V D, all chemistries: Alkaline (alkaline manganese)

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*
- *Crock 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 stoke 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**
- **Built-In Retractable 3.5" Probe**
- **°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	Resolution	Accuracy
-50°C to 150°C	0.1°C	±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	Resolution	Accuracy
-58°F to 302°F	1°F	±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

PR21 Logic Probe

- **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 PR21 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 PR21 Logic Probe is a valuable servicing aid, especially when used in conjunction with the PR31 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)*

Logic Circuit Test Probes

PR31 Logic Probe

- **Trouble Shooting/Design Tool**
- **Pulse Generator**

- Use with Companion Logic Probe PR21 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 PR31 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 PR21 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 PR31 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 PR31 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)*

Oscilloscope Probes

PR60, PR100, PR200B

- **High Quality At Economical Prices**
- **Compatible with Popular Scopes**
- **Switchable X1, X10 and Ground Reference**
- **Stable Calibration**
- **Ground Clip Rotates 360°**
- **Pin-Point Probe Tip**
- **90-Day Limited Warranty**

PR60

- 60 MHz Bandwidth

SPECIFICATIONS:

Switch Function

X1:
Attenuation: 1:1
Bandwidth: DC to 20MHz
Input Capacitance: 72pf
Input Resistance: 237Ω

X10:
Attenuation: 10:1
Bandwidth: DC to 60MHz
Internal Resistance: 9MΩ
Compensation Range: 15 to 40pF
Input Capacitance: 14pF
Input Resistance:
10MΩ, with Oscilloscope of 1MΩ Input Resistance

Working Voltage: *600V AC p-p or 300V DC + AC p-p*

Operating Temperature: *-15°C to +70°C*

Coaxial Cable Length: *53.6" (1363mm)*

Accessories Supplied

Ground Lead and Clip
Retractable Hook

Replacement Accessories

PR200BGL *- Ground Lead and Clip*
PR60SH *- Retractable Hook*

PR100

- 100 MHz Bandwidth

SPECIFICATIONS:

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
Input Capacitance: 11pF

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
IC Tip
BNC Adapter
Retractable Hook
Insulating Tip
Trimmer Tool

Replacement Accessories

PR200BGL *- Ground Lead and Clip*
PR200BSH *- Retractable Hook*
PR200BKT Accessory Kit: *Ground Lead and Clip; IC Tip; BNC Adapter; Retractable Hook; Insulating Tip; Trimmer Tool*

PR200B

- 200 MHz Bandwidth

SPECIFICATIONS:

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
Input Capacitance: 14pF

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

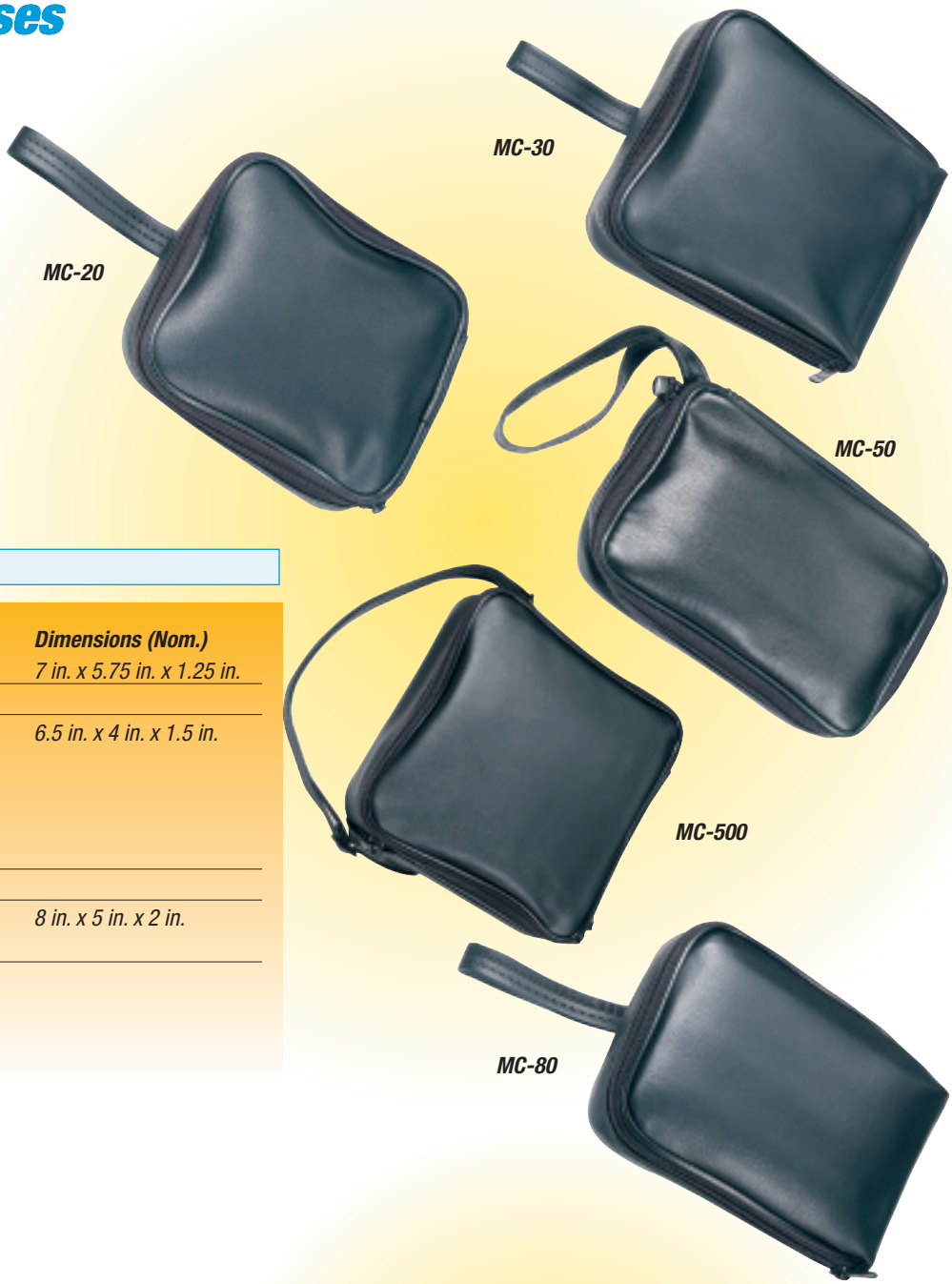
Ground Lead and Clip
IC Tip
BNC Adapter
Replacement Tip
Retractable Hook
Insulating Tip
Trimmer Tool

Replacement Accessories

PR200BGL *- Ground Lead and Clip*
PR200BSH *- Retractable Hook*
PR200BKT Accessory Kit: *Ground Lead and Clip; IC Tip; BNC Adapter; Retractable Hook; Insulating Tip; Trimmer Tool; Replacement Tip*

Soft Carrying Cases

- Cloth Reinforced Vinyl
- Double Machine Stitched
- Cushion Lining
- Dependable Fasteners
- Carrying Handles



DESCRIPTION:

Meter Model No.	Part No.	Dimensions (Nom.)
AM-20	MC-20	7 in. x 5.75 in. x 1.25 in.
AM-30	MC-30	
CX-920A	MC-50	6.5 in. x 4 in. x 1.5 in.
DM-21		
DM-50		
DM-59		
DM-75		
DM-80	MC-80	
DM-37	MC-300	8 in. x 5 in. x 2 in.
DM-78A		
DM-500	MC-500	

Protective Holster and Tilt Stand

- Fitted
- Resilient Molded Plastic
- Belt Clip

DESCRIPTION:

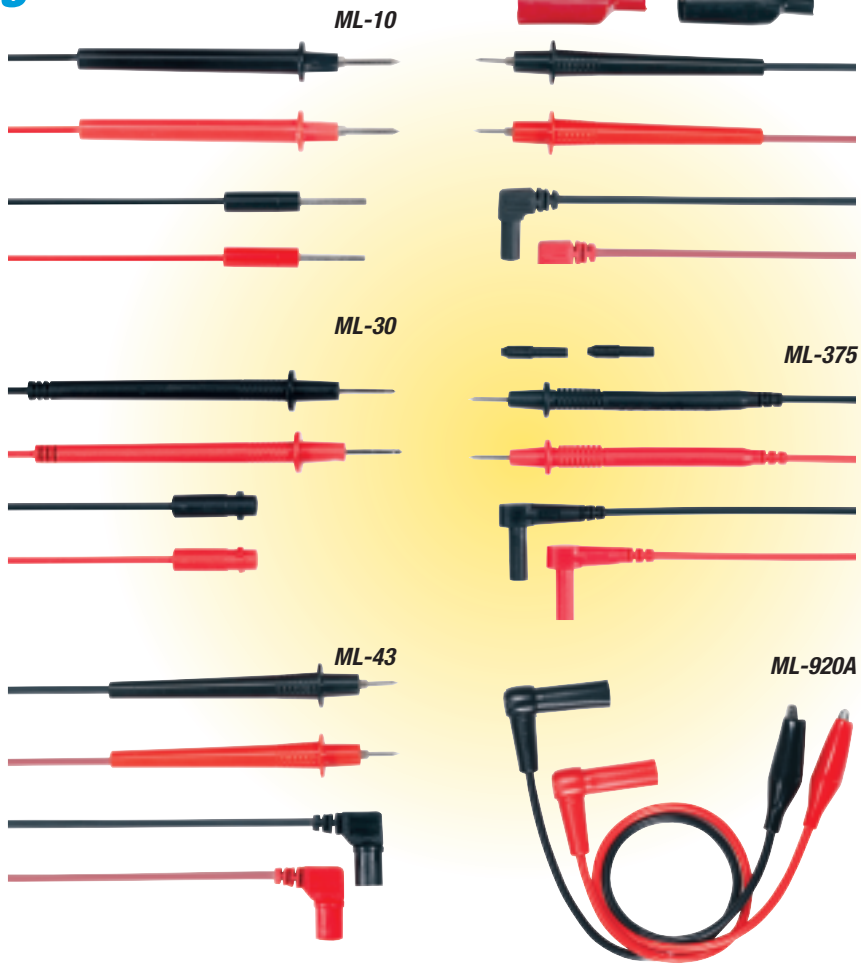
Meter Model No.	Part No.
DM-500	MH-500

Replacement Test Leads

• Flexible • Heavy Duty • Insulated

DESCRIPTION:

Meter Model No.	Part No.	Length (Nom.)
AM-10	ML-10	26.5 in.
AM-30	ML-43	43 in.
FET-43		
DM-37	ML-370	48 in. (Includes alligator clips)
AM-22	ML-375	42 in.
DM-21		
DM-50		
DM-59		
DM-78A		
DM-80		
DM-500		
CX-920A	ML-920A	13 in.



MULTIMETER TEST LEADS - CROSS REFERENCE

Amprobe
AM-4A.....ML-43
AM-4B.....ML-370
AM-1200....ML-375
AM-1280....ML-375

B&K
213.....ML-43
340A.....ML-30
350.....ML-370
377.....—
388HD.....ML-370
388A.....ML-375
389.....ML-375
390.....ML-375
391.....ML-375
815.....ML-375
2703.....—
2703A.....ML-370
2704.....—
2704A.....ML-370
2706.....ML-370
2707.....ML-370
2806.....ML-370
2807.....ML-370
2816.....ML-370
2817.....ML-370
2845.....ML-370
2860.....ML-375
2905.....ML-370
2906.....ML-370
2907.....ML-370
2911.....ML-370
2912.....ML-370
2940.....ML-370
2945.....ML-370

Beckman/ Wavetek
151.....ML-370
152.....ML-370
153.....ML-370
300.....ML-370
310.....ML-370
320.....ML-370
330.....ML-370
350.....ML-370
360.....ML-370
3000.....ML-43
3010.....ML-43
3010UL.....ML-43
3020.....ML-43
3020B.....ML-43
3030.....ML-43
3050.....ML-370
3060.....ML-370
4410.....ML-370
DM10.....—
DM15B.....—
DM20L.....—
DM23.....—
DM25L.....—
DM25XL.....—
DM27XL.....—
DM800.....ML-370
DM850.....ML-370
DM-10.....ML-43
DM-40.....ML-370
DM-45.....ML-370
DM-50.....ML-370
HD-100.....ML-370
HD-110.....ML-370
HD-130.....ML-370
HD-140.....ML-370
RMS225.....ML-370
TECH300.....ML-43
TECH310.....ML-43
TECH320.....ML-43
TECH330.....ML-43
TECH350.....ML-370
TECH360.....ML-370

Extech
380165.....—
380166.....—
380168.....ML-375
308196.....ML-375
380198.....ML-375
380451.....ML-370
380650.....ML-30
380776.....ML-370
380911.....ML375
380972.....ML-370
383487.....ML-370

Fluke
10.....ML-370
11.....ML-375
12.....ML-375
21.....ML-375
23.....ML-370
25.....ML-370
27.....ML-370
29.....ML-370
37.....ML-370
45.....ML-370
70.....ML-370
73.....ML-370
75.....ML-370
77.....ML-370
79.....ML-370
83.....ML-370
85.....ML-370
87.....ML-370
8020B.....ML-370
8021B.....ML-370
8022B.....ML-370
8024B.....ML-370
8026B.....ML-370
8050A.....ML-370
8060A.....ML-370
8062A.....ML-370

Goldstar
DM-1835....ML-370
DM-6335....ML-370
DM-7143....ML-370
DM-7333....ML-370
DM-8243....ML-370
DM-8433....ML-370

Heathkit
2208.....ML-30
2311.....—
2372.....—
2374.....—
2380.....ML-375
SM-77.....ML-370

H. P.
E2373A.....ML-370
E2377A.....ML-370
E2378A.....ML-370

Hitachi
3510.....ML-370
3525.....ML-370
3550.....ML-370

Mercer
9120.....ML-43
9301.....ML-370
9370.....ML-370
9401.....ML-370
9702.....ML-30

Protek
301U.....—
505.....ML-375
A800.....ML-10
A802.....ML-375
A803.....ML-43
A-400.....ML-43
A-420S.....ML-43
A-423.....ML-43
A-423.....TC-50P
A-445.....ML-43
A-450.....ML-43
D-901.....—
D-902.....ML-370
D-906.....ML-370
D-910F.....ML-370
D-910F.....TC-50P
D-927.....ML-370
D-937.....ML-370
D-945.....ML-370
D-981.....ML-370
D-981.....TC-50P
D-982.....ML-370

Philips ECG
AM-10.....ML-10
AM-20.....ML-43
AM-22.....ML-375
AM-30.....ML-43
CM-30.....ML-30
CM-33.....—
CX-920.....—
CX-920A...ML-920A
DM-21.....ML-375
DM-25.....—
DM-26.....—
DM-27.....—
DM-50.....ML-375
DM-51.....—
DM-53.....—
DM-55L.....—
DM-59.....ML-375
DM-71.....ML-370
DM-74.....ML-370
DM-75.....—
DM-76.....ML-370
DM-78.....ML-375
DM-78A.....ML-375
DM-80.....ML-375
DM-300.....ML-370
DM-305.....ML-375
DM-305A....ML-375
DM-310.....ML-370
DM-410.....ML-370
DM-500.....ML-375
FET-43.....ML-43

Scope
DCM-602.....—

Simpson
DVM-634.....ML-43
DVM-636.....ML-43
DVM-638.....ML-43
DVM-642....ML-375
DVM-6005.....—
LCR-680.....—
470.....ML-370
474.....ML-370

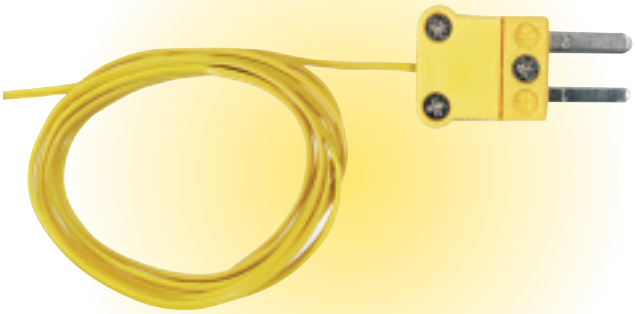
Soar
3025.....ML-370
3030.....ML-370
3050.....ML-370
3200.....ML-370
3210.....ML-370
3220.....ML-370
3230.....ML-370
3430.....ML-370
3450.....ML-370
3510.....ML-370
3520.....ML-370
4010.....ML-370
4020.....ML-370
4030.....ML-370
4040.....ML-370
4050.....ML-370
5025.....ML-370
5026.....ML-370
5030.....ML-370

A. W. Sperry
DM-3010....ML-370
DM-4000A.....—
DM-6510....ML-370
DM-6910....ML-370
DM-7010....ML-370
DM-8010....ML-370
DSA-2002...ML-370
DSA-2002P.ML-370
DSA-2003...ML-370
DSA-2007...ML-370
DSA-2007A.ML-370
DSA-2009...ML-370
SP-170B.....ML-43
SP-250B.....ML-43
SPR-300+ ..ML-370
SPR-931.....ML-370
TD-2608.....ML-370
TD-2608A...ML-370

Tektronix
DM250.....ML-375
DM251.....ML-375
DM253.....ML-375
DM254.....ML-375
DM255.....ML-370
DM256.....ML-370
DM257.....ML-370

Triplett
50.....ML-370
3350.....ML-370
3360.....ML-370
3500.....ML-370
3550.....ML-370
3560.....ML-370
3565.....ML-370
4700.....ML-370
4750.....ML-370
4800.....ML-370

Replacement Thermocouples (K-Type)



DESCRIPTION:

Meter Model No.	
DM-80	TC-50P (With Connector)
DM-500	TC-50P (With Connector)

Replacement Oscilloscope Probe Accessories

DESCRIPTION:

Probe Model No.	Part No.
PR200B	PR200BSH (Retractable Hook)

Temperature Probe

DESCRIPTION:

Meter Model No.	
AM-30	TC-30

K-Type Temperature Probe Adapter

DESCRIPTION:

Meter Model No.	Part No.
DM-500	MA-500

Distributed by:

ECG® Test Equipment

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