■ DIGITAL MULTIMETER

DMM 110
DMM 120
DMM 140

ENGLISH **User Manual**

Multimetrix®

Table of Contents

CHAPTER 1

INTRODUCTION

⚠ Warning ⚠

These safety warnings are provided to ensure the safety of personnel and proper operation of the instrument.

- NEVER use the current probe on electrical conductors rated above 600V in overvoltage category III (CAT III).
- For your own safety, only use the leads supplied with the mulitmeter. If they appear defective or worn, replace before testing.
- Never open the multimeter case before disconnecting from any electrical source.
- Never connect up to a circuit to be measured if the multimeter case is not closed correctly.
- Before any measurements are taken, ensure the leads and switch are in the correct positions.
- Never perform resistance measurements on live circuits.
- When performing current measurements, do not connect or disconnect leads without first isolating the current. If you do, there is a risk of generating surge currents that can blow the fuses or damage the instrument.

1.1 International Electrical Symbols

This symbol signifies that the instrument is protected by double or reinforced insulation. Use only specified replacement parts when servicing the instrument.

This symbol on the instrument indicates a WARNING and that the operator must refer to the user manual for instructions before operating the instrument. In this manual, the symbol preceding instructions indicates that if the instructions are not followed, bodily injury, installation/sample and product damage may result.

Risk of electric shock. The voltage at the parts marked with this symbol may be dangerous.

1.2 Receiving Your Shipment

Upon receiving your shipment, make sure that the contents are consistent with the packing list. Notify your distributor of any missing items. If the equipment appears to be damaged, file a claim immediately with the carrier and notify your distributor at once, giving a detailed description of any damage. Save the damaged packing container to substantiate your claim. Do not use an instrument that appears to be damaged.

1.3 Ordering Information

Model DMM 110.....**Cat. #MMX-DMM110**
Includes multimeter, grey rubber holster, 1 lead set with needle point test probe (red & black), 2 x 1.5V AA batteries and user manual.

Model DMM 120.....**Cat. #MMX-DMM120**
Includes multimeter, grey rubber holster, 1 lead set with needle point test probe (red & black), 2 x 1.5V AA batteries and user manual.

Model DMM 140.....**Cat. #MMX-DMM140**
Includes multimeter, grey rubber holster, 1 lead set with needle point test probe (red & black), 2 x 1.5V AA batteries and user manual.

1.3.1 Accessories

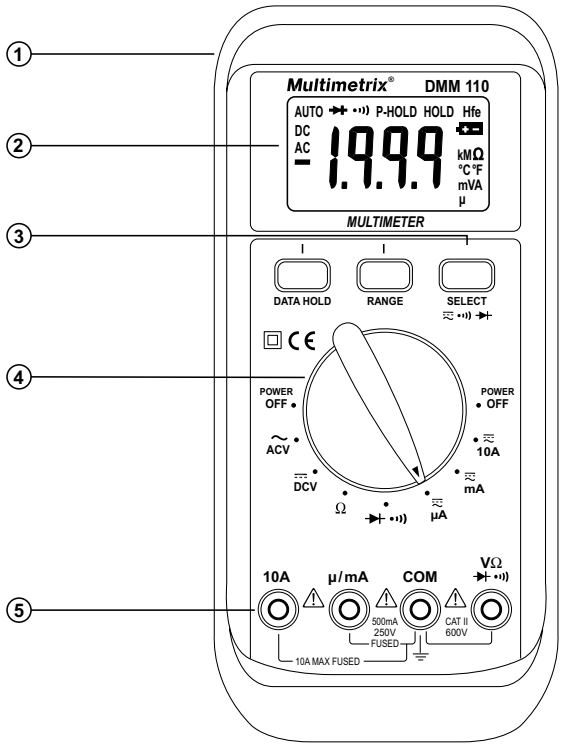
Carry Case, Accessory No. 20.....Cat. #MMX-ACC20
Soft padded carrying case, with compartment for lead storage, belt loop and attachment ring. Front flap with Velcro® closure.

CHAPTER 2

PRODUCT FEATURES

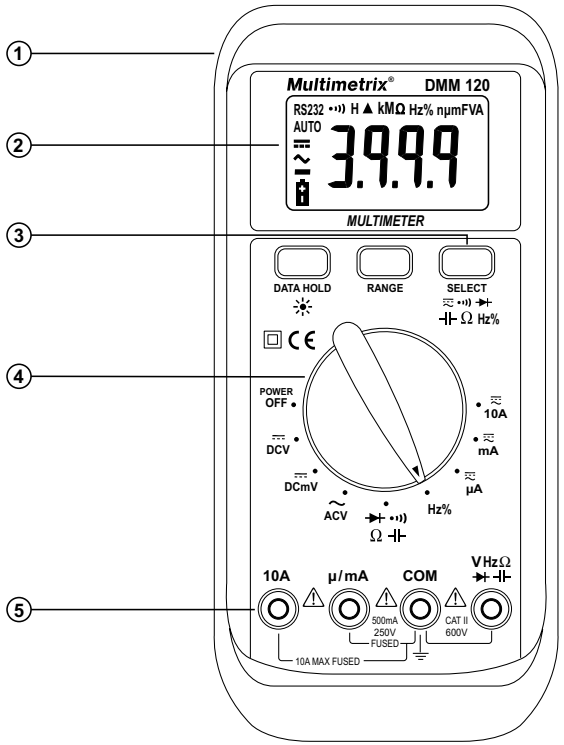
2.1 Control Features

2.1.1 Model DMM 110



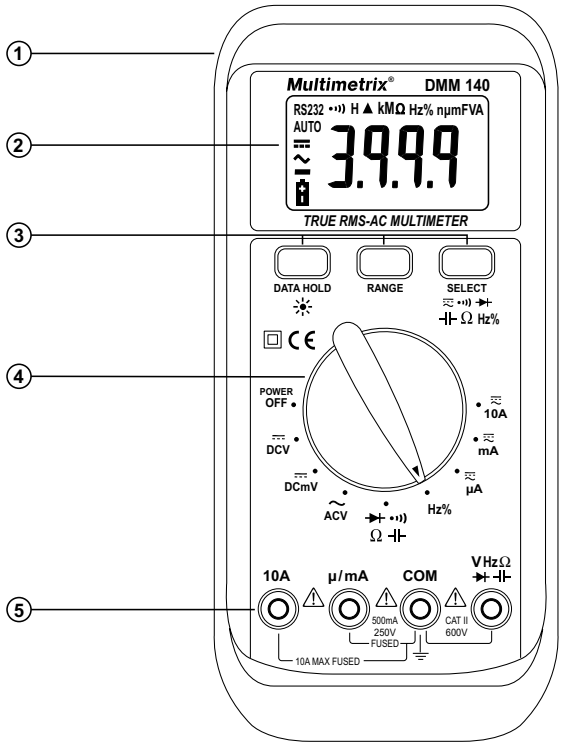
1. Protective Holster
2. 2000-count 3½ LCD display
3. Function buttons:
   Data Hold - Freezes the display
   Range - Selects auto or manual ranging
   Select - Selects the range
4. Range selection switch
5.

2.1.2 Model DMM 120



1. Protective Holster
2. 2000-count 3½ LCD display
3. Function buttons:
   Data Hold - Freezes the display
   Range - Selects auto or manual ranging
   Select - Selects the range
4. Range selection switch
5.

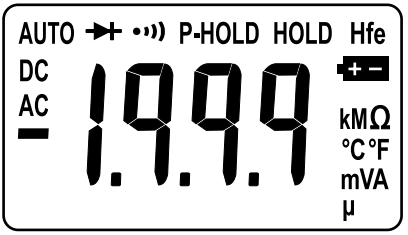
2.1.3 Model DMM 140



1. Protective Holster
2. 2000-count 3½ LCD display
3. Function buttons:
   Data Hold - Freezes the display
   Range - Selects auto or manual ranging
   Select - Selects the range
4. Range selection switch
5.

2.2 Display Features

DMM 110



DMM 120 / DMM 140

AUTO	Auto range
•ıı))	Continuity
⎓	DC mode
∿	AC mode
▬	Negative polarity
⊣▶	Diode Test
P-HOLD	
HOLD	Data Hold
Hfe	
▭	Low battery indication
kMΩ	
°C °F	Temperature selection
mVA	
µ	
RS232	
▲	
Hz%	Frequency Percentage

2.3 Button Functions

2.3.1 Data Hold Button

This function locks the present displayed value.

To activate, press and hold down the **DATA HOLD** button. Press once again to exit this function.

2.3.2 Range Button

This button is used to toggle between auto and manual ranging. By default, the meter is in the auto-ranging mode.

To enter the manual-ranging mode, press the **RANGE** button. The AUTO icon on the display will disappear.

To return to the auto-ranging mode, press and hold the **RANGE** button for 2s or more.

2.3.3 Select Button

This button is used to select different functions and ranges.

2.3.4 Auto-Off Function

The meter will shut down automatically approximately 30 minutes (DMM 120/140) or 15 minutes (DMM 110) of no activity.

To disable the Auto-Off function, press and hold down the **SELECT** button while turning the meter on.

2.3.5 Backlight

To turn the backlight ON, press and hold the **DATA HOLD** button for 2s or more. Press and hold again to turn the backlight OFF.

Note: When the **DATA HOLD** button is pushed to turn on the backlight, the Hold function is enabled. Press the **DATA HOLD** button again to release the Data Hold function.

CHAPTER 3

SPECIFICATIONS

3.1 Electrical Specifications

**Accuracy given @ 23°C ± 5°C, 80% RH max*

DC Voltage

DMM 110	DMM 120/140	Resolution	Accuracy	Input Impedance
200mV	400mV	0.1mV	0.5% ± 2cts	10MΩ
2V	4V	1mV		
20V	40V	10mV		
200V	400V	100mV		
600V	600V	1V		

AC Voltage (TRMS - Model DMM 140 only)

DMM 110	DMM 120/140	Resolution	Accuracy	Input Impedance
200mV	400mV	0.1mV	1.0% ± 4cts	10MΩ
2V	4V	1mV		
20V	40V	10mV		
200V	400V	100mV		
600V	600V	1V		

DC Amperes

DMM 110	DMM 120/140	Resolution	Accuracy
200µA	400µA	0.1µA	1.2% ± 2cts
2mA	4mA	0.001mA	
20mA	40mA	0.01mA	
200mA	400mA	1mA	
2A	4A	1mA	
10A	10A	10mA	

AC Amperes (TRMS - Model DMM 140 only)

DMM 110	DMM 120/140	Resolution	Accuracy
200µA	400µA	0.1µA	1.5% ± 4cts
2mA	4mA	0.001mA	
20mA	40mA	0.01mA	
200mA	400mA	1mA	
2A	4A	1mA	
10A	10A	10mA	

Resistance (Ω)

DMM 110	DMM 120/140	Resolution	Accuracy
20Ω	40Ω	0.01Ω	1.0% ± 3cts*
200Ω	400Ω	0.1Ω	
2000Ω	4000Ω	1Ω	
20kΩ	40kΩ	0.01kΩ	
200kΩ	400kΩ	0.1kΩ	
2MΩ	4MΩ	0.001MΩ	
20MΩ	40MΩ	0.01MΩ	

Continuity (•ı))

DMM 110	DMM120/140	Buzzer	Protection
200Ω	400Ω	<100Ω (<10ms)	500V PTC

Diode (→|)

DMM 110	DMM 120/140
0 to 2V	0 to 4V

Capacitance ⊣⊢ (Model DMM 120/140 only)

Range	Resolution	Accuracy
40nF	0.01nF	3% ± 3cts
400nF	0.1nF	
4µF	0.001µF	
40µF	0.01µF	
100µF	0.1µF	

Frequency - Hz (Model DMM 120/140 only)

Range	Resolution	Accuracy
40Hz	0.01Hz	0.2% ± 2cts
400Hz	0.1Hz	
4000Hz	1Hz	
40kHz	0.01kHz	
400kHz	0.1kHz	
4Hz	0.01MHz	

Duty Cycle % (Model DMM 120/140 only)
0.1 to 99.9%, Accuracy 1% ± 3cts

Digital display: 2000-count 3¾ digit LCD (DMM 110)
4000-count 3¾ digit LCD (DMM 120 and DMM 140)

Overload: If the range is exceeded, the OL symbol is displayed.

Low battery indicator: is displayed when the voltage supplied by the batteries is lower than the operating voltage.

Power Supply: 2 Batteries – 1.5V type AA (LR6)

Fuse: 500mA, 250V (5x20mm)

Auto-Off: Automatic shut down after approx 30 minutes (DMM 120/140) or 15 minutes (DMM 110) of no use.

3.2 Environmental Specifications

Operating Temperature: 32º to 104ºF (0º to 40ºC)
80% RH max non-condensing

Storage Temperature: 14º to 122ºF (-10º to 50ºC)
80% RH max non-condensing, battery removed

Altitude: 6000 ft (2000m)

3.3 Mechanical Specifications

Dimensions: 1.38 x 3.07 x 5.84" (35 x 78 x 152mm)

Weight: 11.8 oz (330g) with holster

3.4 Safety Specifications

IEC/EN 61010, 600V Cat. II, 300V Cat. III

CE

CHAPTER 4

OPERATION

4.1 AC/DC Voltage Measurement (~ACV ⎓DCV ⎓DCmV)

- Turn the rotary switch to the appropriate range.
- Insert the black test lead to the "**COM**" input connector and the red test lead to the "**V**" input connector.
- Connect the test leads to the device or circuit to be measured and read the data on the display.

  Note: Autorange can be changed into manual operation by holding down the RANGE button for approx 2s.

4.2 AC/DC Current Measurement (⎓~μA ⎓~mA ⎓~10A)

- Turn the rotary switch to the appropriate range.
- Insert the black test lead to the "**COM**" input connector (or 10A input connector if measurement is <200mA) and the red test lead to the "**μ/mA**" input connector.
- Connect the test leads to the device or circuit to be measured and read the data on the display.

4.3 Resistance Measurement (Ω)

⚠ **WARNING: When making a resistance measurement, make sure that the power is off (dead circuit). It is also important that all capacitors in the measured circuit be fully discharged.**

- Insert the black test lead to the "**COM**" input connector and the red test lead to the "**Ω**" input connector.
- Turn the rotary switch to the **Ω** range.
- Bring the test probe tips into contact with the sample under test and read the data on the display.

4.4 Continuity Test (•ı))

WARNING: When testing continuity, make sure that the power is off (dead circuit). Never apply voltage to the input terminals.

- Insert the black test lead to the "**COM**" input connector and the red test lead to the "**Ω**" input connector.
- Turn the rotary switch to the •ı)) range.
- Bring the test probe tips into contact with the sample under test and read the data on the display.
- If the resistance is <100Ω, the beeper emits a continuous sound.

4.5 Diode Test (→|)

WARNING: Never apply voltage to the input terminals.

- Turn the rotary switch to the →| position.
- Insert the black test lead to the "**COM**" input connector and the red test lead to the "→|" input connector.
- Touch the red lead to the anode of the diode and the black lead to the cathode of the diode.
- Read the voltage on the display.

4.6 Capacitance Measurement (⊣⊢)

WARNING: Discharge any capacitors before testing

- Turn the rotary switch to the ⊣⊢ position.
- Insert the capacitor leads into the capacitor test socket. Because there are two groups of holes, one lead must be inserted into the hole of one of the two groups and the other lead into the hole of the other group.
- Read the capacitance value on the display.

MAINTENANCE

5.1 Warning ⚠

- Remove the test leads from any input before opening the case. Do not operate the instrument without a battery case cover.
- To avoid electrical shock, do not attempt to perform any servicing unless you are qualified to do so.

5.2 Battery Replacement

- Replace the batteries when the + − symbol appears on the display.
- The meter must be in the OFF position and disconnected from any circuit or input.
- Remove the two screws located near the bottom of the rear cover to remove the battery cover.
- Replace the old batteries with two new 1.5V AA (LR6) batteries.
- Screw the battery cover back on.

5.3 Cleaning

- To clean the instrument, wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents.
- Do not get water inside the case. This may lead to electrical shock or damage to the instrument.

5.4 Storage

- If the meter is not used for periods longer than 60 days, remove the batteries and store them separately.

Repair and Calibration

To ensure that your instrument meets factory specifications, we recommend that it be scheduled back to our factory Service Center at one-year intervals for recalibration, or as required by other standards or internal procedures.

For instrument repair and calibration:

You must contact our Service Center for a Customer Service Authorization Number (CSA#). This will ensure that when your instrument arrives, it will be tracked and processed promptly. Please write the CSA# on the outside of the shipping container. If the instrument is returned for calibration, we need to know if you want a standard calibration, or a calibration traceable to N.I.S.T. (Includes calibration certificate plus recorded calibration data).

Ship To: Multimetrix®
15 Faraday Drive
Dover, NH 03820 USA
Tel: (800) 945-2362 (Ext. 360)
(603) 749-6434 (Ext. 360)
Fax: (603) 742-2346 or (603) 749-6309
repair@multimetrix.com

(Or contact your authorized distributor)

Costs for repair, standard calibration, and calibration traceable to N.I.S.T. are available.

NOTE: You must obtain a CSA# before returning any instrument.

Technical and Sales Assistance

If you are experiencing any technical problems, or require any assistance with the proper operation or application of your instrument, please call, mail, fax or e-mail our technical support team:

Multimetrix®
200 Foxborough Boulevard
Foxborough, MA 02035 USA
Phone: (800) 343-1391
(508) 698-2115
Fax: (508) 698-2118
techsupport@multimetrix.com
www.multimetrix.us

NOTE: Do not ship Instruments to our Foxborough, MA address.

Limited Warranty

The Model DMM 120 and DMM 140 are warranted to the owner for a period of one year from the date of original purchase against defects in manufacture. This limited warranty is given by Multimetrix®, not by the distributor from whom it was purchased. This warranty is void if the unit has been tampered with, abused or if the defect is related to service not performed by Multimetrix®.

For full and detailed warranty coverage, go to www.multimetrix.us. The warranty information is located in our customer service section.

What Multimetrix® will do:

If a malfunction occurs within the one-year period, you may return the instrument to us for repair, provided you submit a proof of purchase. Multimetrix® will, at its option, repair or replace the faulty material.

Warranty Repairs

What you must do to return an Instrument for Warranty Repair:

First, request a Customer Service Authorization Number (CSA#) by phone or by fax from our Service Department (see address below), then return the instrument along with the signed CSA Form. Please write the CSA# on the outside of the shipping container. Return the instrument, postage or shipment pre-paid to:

Multimetrix®
Service Department
15 Faraday Drive • Dover, NH 03820 USA
Tel: (800) 945-2362 (Ext. 360)
(603) 749-6434 (Ext. 360)
Fax: (603) 742-2346 or (603) 749-6309

Caution: To protect yourself against in-transit loss, we recommend you insure your returned material.

NOTE: You must obtain a CSA# before returning any instrument.

Multimetrix®

08/04

99-MAN 100009 v1

Multimetrix® a division of Chauvin Arnoux®, Inc.
15 Faraday Drive • Dover, NH 03820 USA
www.multimetrix.us