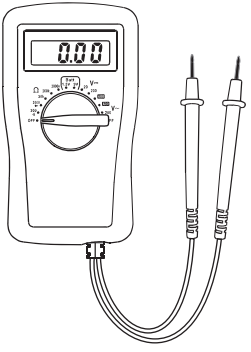
INSTRUCTION MANUAL

GREENLEE®
A Textron Company



DM-25

Digital Multimeter

52059485 REV 1

1/12

Description

The Greenlee DM-25 Digital Multimeter is a hand-held testing device with the following measurement capabilities: AC and DC voltage, and resistance. This meter also checks diodes, verifies continuity, and tests 1.5 V and 9 V batteries.

Safety

Safety is essential in the use and maintenance of Greenlee tools and equipment. This instruction manual and any markings on the tool provide information for avoiding hazards and unsafe practices related to the use of this tool. Observe all of the safety information provided.

Purpose of This Manual

This instruction manual is intended to familiarize all personnel with the safe operation and maintenance procedures for the Greenlee DM-25 Digital Multimeter.

Keep this manual available to all personnel. Replacement manuals are available upon request at no charge at www.greenlee.com.

Do not discard this product or throw away!
For recycling information, go to www.greenlee.com.

KEEP THIS MANUAL

Important Safety Information

SAFETY ALERT SYMBOL

This symbol is used to call your attention to hazards or unsafe practices which could result in an injury or property damage. The signal word, defined below, indicates the severity of the hazard. The message after the signal word provides information for preventing or avoiding the hazard.

⚠DANGER

Immediate hazards which, if not avoided, WILL result in severe injury or death.

⚠WARNING

Hazards which, if not avoided, COULD result in severe injury or death.

⚠CAUTION

Hazards or unsafe practices which, if not avoided, MAY result in injury or property damage.

⚠WARNING

Read and **understand** this material before operating or servicing this equipment. Failure to understand how to safely operate this tool could result in an accident causing serious injury or death.

Important Safety Information

⚠WARNING

Electric shock hazard:

Contact with live circuits could result in severe injury or death.

⚠WARNING

Electric shock hazard:

- The test leads supplied with this product comply with IEC 61010-031:2008, UL 61010-031:2010 and CAN/CSA-C22.2 NO. 61010-031A-07–Amendment 1:2010. These safety standards limit the exposed length of the probe tip to 4 mm for measurement category III. These test leads include a cap that must be in place when used in measurement category III applications.
- Do not apply more than the rated voltage between any two input terminals, or between any input terminal and earth ground.
- Do not contact the test lead tips or any uninsulated portion of the accessory.

Failure to observe these warnings could result in severe injury or death.

Important Safety Information

⚠WARNING

Electric shock and fire hazard:

- Do not expose this unit to rain or moisture.
- Do not use the unit if it is wet or damaged.
- Inspect the test leads before use. They must be clean and dry, and the insulation must be in good condition. Do not use the unit if the contrasting inner layer of insulation is visible.
- Use this unit for the manufacturer's intended purpose only, as described in this manual. Any other use can impair the protection provided by the unit.

Failure to observe these warnings could result in severe injury or death.

⚠WARNING

Electric shock hazard:

- Do not operate with the case open.
- Before opening the case, remove the test leads from the circuit and shut off the unit.

Failure to observe these warnings could result in severe injury or death.

⚠WARNING

Electric shock hazard:

- Unless measuring voltage, shut off and lock out power. Make sure that all capacitors are discharged. Voltage must not be present.
- Set the selector and connect the test leads so that they correspond to the intended measurement.
- Using this unit near equipment that generates electromagnetic interference can result in unstable or inaccurate readings.

Failure to observe these warnings could result in severe injury or death.

Important Safety Information

⚠CAUTION

Electric shock hazard:

Do not change the measurement function while the test leads are connected to a component or circuit.

Failure to observe this precaution may result in injury and can damage the unit.

⚠CAUTION

Electric shock hazard:

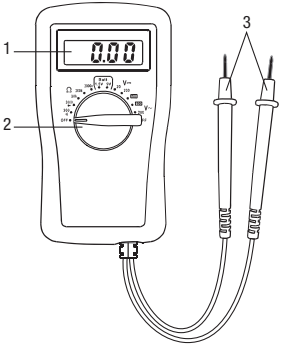
- Do not attempt to repair this unit. It contains no user-serviceable parts.
- Do not expose the unit to extremes in temperature or high humidity. Refer to “Specifications.”

Failure to observe these precautions may result in injury and can damage the unit.

Note: The test leads of this unit are not removable. Do not attempt to remove them.

Identification

1. LCD display
2. Selector to select a function or turn power off
3. Permanently attached test leads and probes



Display Icons

4. **HV** 600 V AC or DC range selected
5. **–** Polarity indicator
6. Low battery indicator
7. ***1*** Overload indicator

Symbols on the Unit

- Warning—Read the instruction manual
- Battery
- Double insulation

Using the Test Leads

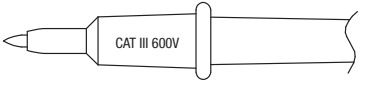
⚠WARNING

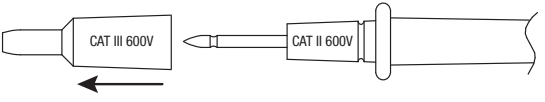
Electric shock hazard:

The test leads supplied with this product comply with IEC 61010-031:2008, UL 61010-031:2010 and CAN/CSA-C22.2 NO. 61010-031A-07–Amendment 1:2010. These safety standards limit the exposed length of the probe tip to 4 mm for measurement category III. These test leads include a cap that must be in place when used in measurement category III applications.

Failure to observe this warning could result in severe injury or death.

Cap must be in place for measurement category III applications.





Cap can be removed for measurement category I or II applications.

Operation

⚠WARNING

Electric shock hazard:

Contact with live circuits could result in severe injury or death.

1. Refer to the Settings Table. Set the selector to the proper setting. Start with the highest measurement range.
2. Refer to "Typical Measurements" for specific measurement instructions.
3. Test the unit on a known functioning circuit or component.
   - If the unit does not function as expected on a known functioning circuit, replace the battery.
   - If the unit still does not function as expected, call Greenlee for technical assistance at 800-435-0786.
4. Take the reading from the circuit or component to be tested. If the resolution is not satisfactory, remove the meter from the circuit and change to the next lower range.

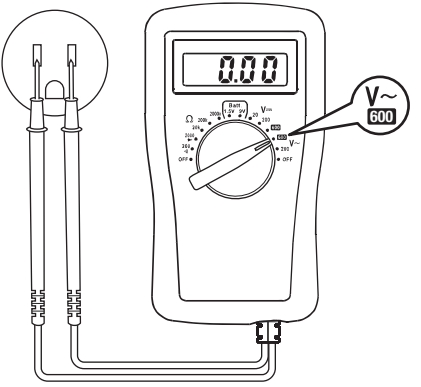
Settings Table

To measure this value:	Set the selector to this symbol:
Continuity*	•))
Diode	⊣◁
Resistance	Ω
Battery	**Batt.**
Voltage (DC)	**V⎓**
Voltage (AC)	**V~**

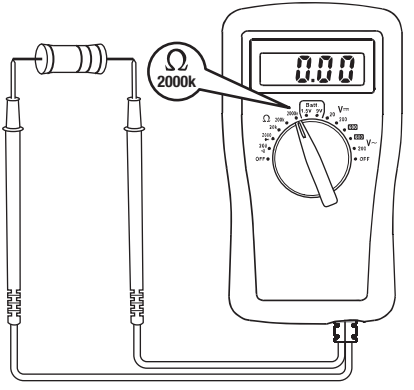
* Tone indicates continuity. The threshold is between 30 Ω and 100 Ω.

Typical Measurements

AC Voltage Measurement

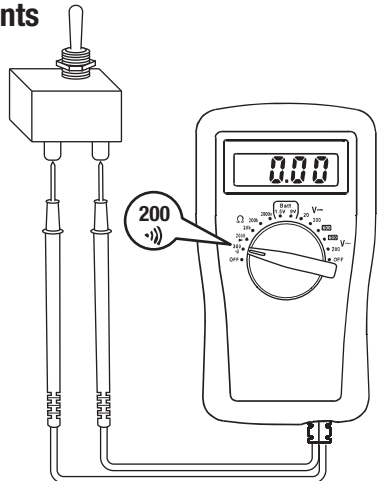


Resistance Measurement

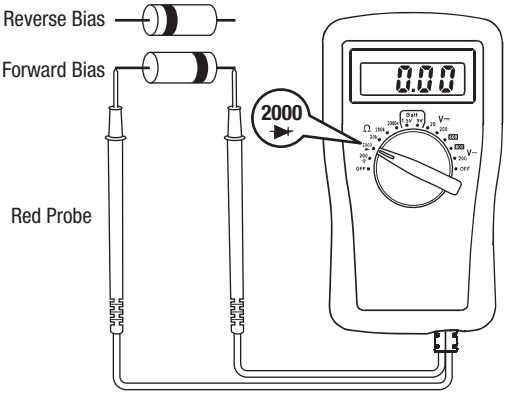


Typical Measurements

Continuity Check



Diode Measurement



Accuracy

Refer to the “Specifications” section for operating conditions and temperature coefficient.

Accuracy is specified as follows: ± (a percentage of the reading + a fixed amount) at 23 °C ± 5 °C (73.4 °F ± 9 °F), 0% to 75% relative humidity.

Accuracy is specified from 5% to 100% of the range unless noted otherwise.

AC Voltage

Range (40 Hz to 400 Hz)	Accuracy	Input Impedance
200.0 V	± (1.2% + 1.0 V)	450 kΩ
600 V*	± (1.2% + 10 V)	

* 600 V range is specified from 20% to 100% of range.

DC Voltage

Range	Accuracy	Input Impedance
20.00 V	± (0.8% + 0.05 V)	1 MΩ
200.0 V	± (0.8% + 0.5 V)	
600 V*	± (1.0% + 5 V)	

* 600 V range is specified from 20% to 100% of range.

Resistance

Range	Accuracy	Open Circuit Voltage
200.0 Ω	± (1.2% + 0.5 Ω)	< 3 VDC
2000 Ω	± (1.0% + 5 Ω)	
20.00 kΩ	± (1.0% + 0.05 kΩ)	
200.0 kΩ	± (1.0% + 0.5 kΩ)	
2000 kΩ	± (1.2% + 5 kΩ)	

Accuracy (con't)

Battery Test

Test Current: Approximately 30 mA for 1.5 V, 8 mA for 9 V
Accuracy: ± (5% + 0.1 V)

Diode Test

Measuring Range: 2000 mV (on 2000 Ω setting)
Test Current (typical): 1.0 mA
Open Circuit Voltage (typical): < 3 V

Continuity

Tone Threshold: Between 30 Ω and 100 Ω

Specifications

Display: 3-1/2–digit LCD (1999 maximum count)

Polarity: Automatic

Sampling Rate: Approximately 2.5 per second

Temperature Coefficient: 0.2 x (accuracy) per °C below 18 °C or above 28 °C

Operating Conditions:
- Temperature: 0 °C to 40 °C (32 °F to 104 °F)
- Relative Humidity: 0% to 75%
- Altitude: 2000 m (6500') maximum
- Indoor use only
- Pollution Degree: 2

Storage Conditions:
- Temperature: –10 °C to 50 °C (14 °F to 122 °F)
- Relative Humidity: 0% to 85%
- Remove battery.

Battery: One 9 V battery (NEDA 1604, JIS 006P, or IEC 6F22)

Overload Protections: 600 VAC RMS and 600 VDC

Overvoltage Category: Category III 600 V

Measurement Categories

These definitions were derived from the international safety standard for insulation coordination as it applies to measurement, control, and laboratory equipment. These measurement categories are explained in more detail by the International Electrotechnical Commission; refer to either of their publications: IEC 61010-1 or IEC 60664.

Measurement Category I

Signal level. Electronic and telecommunication equipment, or parts thereof. Some examples include transient-protected electronic circuits inside photocopiers and modems.

Measurement Category II

Local level. Appliances, portable equipment, and the circuits they are plugged into. Some examples include light fixtures, televisions, and long branch circuits.

Measurement Category III

Distribution level. Permanently installed machines and the circuits they are hard-wired to. Some examples include conveyor systems and the main circuit breaker panels of a building's electrical system.

Measurement Category IV

Primary supply level. Overhead lines and other cable systems. Some examples include cables, meters, transformers, and other exterior equipment owned by the power utility.

Statement of Conformity

Greenlee Textron Inc. is certified in accordance with ISO 9001 (2000) for our Quality Management Systems.

The instrument enclosed has been checked and/or calibrated using equipment that is traceable to the National Institute for Standards and Technology (NIST).

Maintenance

⚠WARNING

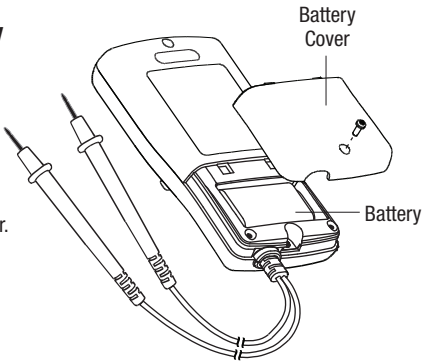
Electric shock hazard:

Before opening the case, remove the test leads from the circuit and shut off the unit.

Failure to observe this warning could result in severe injury or death.

Replacing the Battery

1. Disconnect the unit from the circuit. Turn the unit OFF.
2. Remove the rubber boot.
3. Remove the screw from the battery cover.
4. Remove the battery cover.
5. Replace the battery (observe polarity).
6. Replace the battery cover, screw, and rubber boot.



Cleaning

Periodically wipe the case with a damp cloth and mild detergent; do not use abrasives or solvents.