



PIN-TYPE LCD MOISTURE METER WITH TRICOLOR BAR GRAPH

USER'S MANUAL



MM7

Please read these instructions carefully and thoroughly before using the product.

INTRODUCTION

Thank you for purchasing General Tools & Instruments' MM7 Pin-Type LCD Moisture Meter with Tricolor Bar Graph. Please read this user's manual carefully and thoroughly before using the instrument.

The MM7 is designed for use in woodworking, water damage restoration, building construction and home renovation.

Examples include:

- Checking for moisture and mold on or below the surface of carpets and subflooring
- Measuring the moisture content of wood, drywall or cement board before painting, wallpapering, sealing or treating
- Locating water leaks above ceilings, below floors or behind walls
- Selecting dry lumber

The MM7 bases its measurements on the relationship between the moisture content of a material and its electrical conductivity. The wetter a material, the higher its conductivity.

The two replaceable steel pins at the top of the MM7 serve as the electrodes of a conductance meter optimized for measuring moisture content. The meter displays measurements in the unit %WME (Wood Moisture Equivalent).

For hard materials like wood, the meter's readings largely reflect surface moisture content because: 1) Moisture close to a surface has a greater effect on a reading than moisture deep below it; and 2) The pins of the MM7 are only 0.3 in. (8mm) long and

therefore cannot be driven deep into a hard material. For softer materials like soil, paper or powders, readings are more likely to reflect the average moisture level of the material between its surface and the penetration depth of the pins (normally far less than 0.3 in.).

The **MODE** button on the front panel provides a convenient way to switch between testing wood and building materials. When the MM7 is powered on, it automatically enters wood measurement mode.

Below the LCD is an analog bar graph comprising three banks of different-colored LEDs. The LEDs light up in sync with changes in the digital readout.

As the test pins are moved around a sample, or moved among samples, the color of the right-most "lit" LED (green, orange or red) may change. Any such change indicates a sizable difference in the moisture content of different areas of the same sample, or of different samples of wood or building material.

See the Specifications table on page 3 for the different moisture ranges of wood and building materials indicated by the three LED bar graph bands.

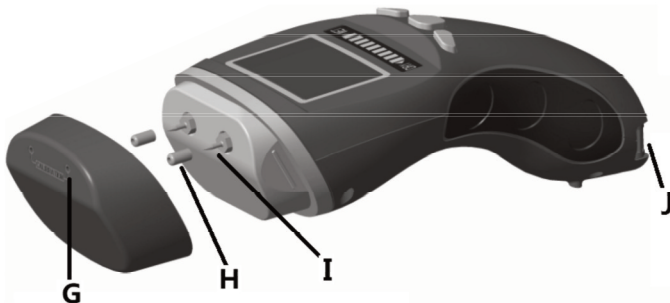
To extend battery life in both operating modes, the MM7 automatically 1) dims the brightness of its backlit LCD by one-half after 15 seconds and 2) powers itself off after 1 minute of inactivity.

The instrument is powered by a "9V" battery (included in the package).

PRODUCT OVERVIEW

Fig. 1 shows all of the controls, indicators and physical features of the MM7. Fig. 2 shows all possible display indications. Familiarize yourself with the position and function of all components before moving on to the Setup Instructions and Operating Instructions.

Fig. 1. The controls, indicators and physical features of the MM7



- A. Removable pin cover with fixed calibration-checking resistor on its underside
- B. High-contrast, white-on-black LCD (see Fig. 2)
- C. LED bar graph; mirrors reading on LCD
- D. **HOLD** button. “Freezes” and releases LCD and LED readouts. Also used to enable and silence out-of-range alarms.
- E. **⏻** button. **Pressed briefly**, powers the meter on. **Pressed and held** for at least 3 seconds, powers the meter off.
- F. **MODE** button. Pressed briefly, selects WME% moisture measurement of wood or building material.
- G. Calibration holes sized for the MM7's measurement pins
- H. Measurement pin covers
- I. Measurement pins
- J. Battery compartment

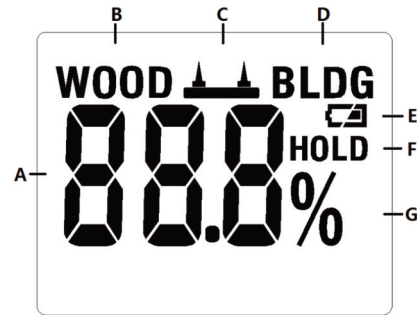


Fig 2. All possible display indications

- A. Moisture level readout
- B. Indicates operation in wood measurement mode
- C. Indicates operation in pin mode
- D. Indicates operation in building material measurement mode
- E. Low battery charge indication; replace the “9V” battery when it appears
- F. Indicates a held measurement
- G. Moisture measurement unit (%WME)

SETUP INSTRUCTIONS

INSTALL BATTERY

Open the battery compartment at the bottom of the meter (Fig. 1, Callout J) by placing a fingernail in the slot on the right side of the housing where it meets the compartment door. Push the tab on the door gently to the left until it pops open. Remove the “9V” battery from the packaging and slide it into the compartment “terminals-first”, with the anode (+ terminal) on the right, as indicated by the markings inside the compartment. Swing the door back toward its closed position until it snaps shut.

OPERATING INSTRUCTIONS

To power on the meter, press and hold the **⏻** button (Fig. 1, Callout E) for at least three seconds. (To power off the meter, follow the same instruction.)

To measure the moisture level of wood or a building material, power on the meter and remove the pin cover (Fig. 1, Callout A) by squeezing it gently to pop it off. The LCD will display the word **WOOD** (Fig. 2, Callout B) and the pin-mode icon (Callout C) at its right. Remove the black rubber insulating sleeves from the pins.

To measure wood, carefully press the test pins into the sample. Its absolute moisture level will be displayed as a percentage, with the unit %WME (Fig. 2, Callouts A and G). Simultaneously, the bar graph LEDs will illuminate to mirror the digital reading.

To measure a building material, press the **MODE** button to change the indication on the top line of the LCD from **WOOD** to **BLDG** (Fig. 2, Callout D). As with wood, carefully press the test pins into the sample. Its absolute moisture level will be displayed as a percentage, with the unit %WME. Again, one or more bar graph LEDs will illuminate to mirror the digital reading.

In wood measurement mode, the available moisture level range is 5% to 50%. When the level is below 5%, the LCD will show . When it is above 50%, the LCD will show .

In building material measurement mode, the available moisture level range is 1.5% to 33%. When the level is below 1.5%, the LCD will show . When it is above 33%, the LCD will show .

Whenever a test sample is determined to be "wet" (above 16% moisture content for wood, or above 20% for a building material), one or more red LEDs will illuminate and the meter will produce an audible alarm. The alarm will continue to sound until the test pins are removed from the sample, or moved to a drier area.

To silence the excessive-moisture alarm or re-enable it, press and hold the **HOLD** button for at least three seconds.

To hold a digital reading, briefly press the **HOLD** button within one minute of making the measurement. The LCD will add the word **HOLD** to the digital reading, and the bar graph LEDs will "freeze" in their current state (illuminated or not).

MEASUREMENT TIPS

Ideally, your test sample should be at least 3/8 in. thick. That is the thickness for which the meter is calibrated. If your sample is too thin, readings may be inaccurate.

Measurements of wood are skewed by two variables: ambient humidity and the density of the wood species. The best way to compensate for the effect of these variables is to develop your own moisture level curves, based on your experience working with different species of wood on a day-to-day basis.

CALIBRATING THE METER

Although the MM7 auto-calibrates each time it is powered on, you can manually check its calibration. Perform a calibration check whenever the meter cannot produce a reading, or if multiple measurements of the same sample produce very different readings.

To manually check calibration, power the meter on and open and remove the pin cover (Fig. 1, Callout A). Flip the cover over and insert the test pins into the calibration holes (Fig. 1, Callout G) through the top of the cover. The LCD should show a value between 17.3% and 19.3%. If the reading is outside this range, the MM7 has an accuracy problem. Contact General's Customer Service to arrange for a replacement.

SPECIFICATIONS

Measurement Ranges	5 to 50% for wood 1.5 to 33% for building materials
Measurement Accuracy	±2% for wood and building material
Measurement Resolution	0.1%
Calibration Check Range	17.3% to 19.3%
Out-of-Range Alarm Levels	>16% for wood >20% for building materials
LCD Size	2 in. (51mm) diagonal, with three 0.5 in. (13mm) high digits
Bar Graph Composition	3 each green, orange and red LEDs
LED Bands	In wood mode , only green LEDs indicate that a test area's moisture content is between 5% and 11.9% (dry). When only green and orange LEDs are lit, the area has a moisture content of 12% to 15.9% (medium moisture content). When green, orange and red LEDs are lit, the area has a moisture content between 16% and 50% (wet).

LED Bands (continued)

In building material mode, only green LEDs indicate that a test area's moisture content is between 1.5% and 16.9% (dry). When only green and orange LEDs are lit, the area has a moisture content of 17% to 19.9% (medium moisture content). When green, orange and red LEDs are lit, the area has a moisture content between 20% and 33% (wet).

Auto Power Off Trigger	1 minute of inactivity
Low Battery Icon Trigger	<7V
Operating Temperature	32° to 104°F (0° to 40°C)
Storage Temperature	14° to 122°F (-10° to 50°C)
Dimensions	6.9 x 2.8 x 2.9 in. (174 x 70 x 74mm)
Weight	5.3 oz. (150g) without battery
Power Source	(1) "9V" battery (included)

Replacement Test Pins Available

The MM7's stainless steel pins are replaceable. General's Item #PIN3 contains two pairs of compatible pins, each 0.3 in. (8mm) long.



WARRANTY INFORMATION

In the U.S., General warrants its instruments and accessories, and digital tools against defects in material or workmanship for one year from the date of purchase unless otherwise stated on the packaging, manual, and/or marketing materials. General also warrants its non-digital tools products against defects in material or workmanship on a limited lifetime term. The company will replace or repair the defective unit, at its option, subject to verification of the defect.

This warranty does not apply to defects resulting from abuse, neglect, accident, unauthorized repair, alteration, or unreasonable use of the product.

Any implied warranties arising from the sale of a General product, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the above. General shall not be liable for loss of use of the product or other incidental or consequential damages, expenses, or economic loss, or for any claim of such damage, expenses, or economic loss.

State laws vary. The above limitations or exclusions may not apply to you.

RETURN FOR WARRANTY CLAIM

Every effort has been made to provide you with a reliable product of superior quality. To make a warranty claim, please contact our Customer Service to obtain an RGA (Return Goods Authorization) number before forwarding the unit via prepaid freight to the attention of our Service Center at this address:

General Tools & Instruments
75 Seaview Drive
Secaucus, NJ 07094
212-431-6100



Remember to include a copy of your proof of purchase, your return address, and your phone number and/or e-mail address.