



# PINLESS LCD MOISTURE METER

*USER'S MANUAL*



## MMD5NP

*Please read this manual carefully and thoroughly before using this product.*

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## INTRODUCTION

Thank you for purchasing General Tools & Instruments' MMD5NP Pinless LCD Moisture Meter. Please read this user's manual carefully and thoroughly before using the meter.

The MMD5NP is a non-invasive (pinless) instrument that can detect moisture up to 3/4 in. (20mm) below the surface of wood or building material (concrete, bricks, wallboard, etc.). The meter infers the level of moisture from the material's capacitance, which the meter reads by measuring its effect on an electric field it generates every time it is powered on.

The meter exploits two physical phenomena to make its measurements:

1. The linear relationship between a solid material's moisture level and its dielectric constant—and therefore its capacitance.
2. The so-called fringe-field effect—the slight spreading of the electric field produced by current flow between two electrodes when both electrodes are on the same side of a material.

Behind the back cover of the MMD5NP are two metal plates. When the meter is powered on, the plates are given small and opposite charges. The potential difference causes current to flow, creating a three-dimensional electric field.

When the back of the meter is placed against one side of a material with moisture on or slightly below its surface, the increased capacitance of the material distorts the electric field to an extent that can be sensed (as a change in flux over the sensing area) and measured. Displayed readings reflect the average moisture level of the material between its surface and the electric field's maximum penetration of 3/4 in.

Moisture closer to the surface has a greater effect on the reading than moisture at the maximum penetration depth.

The MMD5NP has been calibrated at the factory for use with wood and building material (concrete, bricks, wallboard, etc.). Because the capacitance of wood and the capacitance of building material are affected differently by moisture, the meter measures their moisture content on different scales. A button on the front of the MMD5NP provides a convenient way to switch between the two materials. Display icons indicate which material is being tested, as well as whether the current reading is considered low, medium or high for the material. Any reading can be held by pushing another front-panel button; this feature makes it possible to make a measurement in a dark place and display it after bringing the meter into a lighted area. The meter also is equipped with a buzzer whose tone rises with increasing wetness; this feature makes it easy to detect areas of peak moisture.

The MMD5NP is powered by a 9V battery included in the blister pack.

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## KEY FEATURES

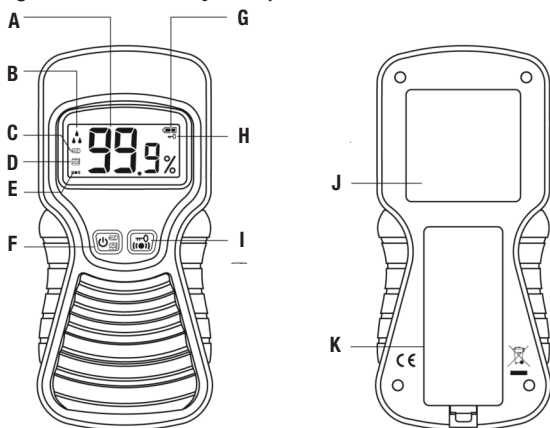
- Non-invasive/non-destructive measurement technique
- Jumbo display
- Wide measurement range
- Intuitive display icons: Low/medium/high moisture content; wood/building material mode
- Measurement hold function
- Audible peak reading alert
- Auto-calibrating
- Auto power off
- Low and very low battery warnings

## WHAT'S IN THE BLISTER PACK

The MMD5NP comes in a plastic blister pack along with a 9V battery and this user's manual.

## PRODUCT OVERVIEW

The figure below shows all of the controls and indicators on the front of the MMD5NP, as well as the locations of the sensing area and battery compartment on its back.



**A.** LCD display

**B.** Moisture level icons:

▲ Low; ▲ Medium; ▲▲ High

**C.** 🌳 Wood

**D.** 🏠 Building material

**E.** 🔔 Buzzer enabled icon

**F.** Dual-function button:

1. Power ON/OFF  
(press and hold)
2. Wood/Building material  
(press briefly)

**G.** Low battery icon

**H.** Measurement hold icon

**I.** Dual-function button:

1. Buzzer enable/disable  
(press and hold)
2. Measurement hold  
(press briefly)

**J.** Sensing area

**K.** Battery compartment - 1 "9V"  
battery


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## SETUP INSTRUCTIONS


### **INSTALL BATTERY**

To open the battery compartment, turn the meter over and lift the tab on the bottom of the battery compartment cover. Remove the cover and set it aside. Then plug the included 9V battery into the wired socket inside the compartment. The terminals of the battery and the socket mate in only one way, with the smaller male terminal plugging into the larger female terminal. Close the battery compartment by replacing its cover and snapping it shut.

### **OPERATING INSTRUCTIONS**



To power on the meter, press the  button and hold it for at least three seconds. (To power off the meter, follow the same instruction.)



To measure the moisture level of wood or building material, first make sure that the correct icon appears on the left side of the display. If it does not, press the  button briefly to toggle between wood and building material. Then scan the material by gently pressing the square sensing area on the upper back of the meter against it. The display will instantly show your material's moisture content.

Each measurement is also accompanied by a display of one, two or three droplet icons (  ) at its left, indicating whether the reading is low, medium or high for the material. The moisture-level range for each category is different for wood and building material; see the Specifications section for the exact percentages.

### **Some measurement tips:**

1. For maximum accuracy, press the sensing area against a flat area of the material.
2. The material must be at least 3/4 in. thick; this is the meter's maximum measurement depth and the thickness it is calibrated for. If your sample is too thin, the meter will measure material beneath it as well and produce an inaccurate reading. One way to compensate for thin samples is to stack them.
3. The sample's length and width should be at least as large as the dimensions of the sensing area: 1.6 x 1.6 in. (40 x 40mm).
4. 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.

**To hold a measurement**, press the  button briefly. The display will show the held value, along with a  icon at upper right.

**To scan wood or building material for an area of peak moisture**, first make sure that the buzzer is enabled (indicated by a  icon at lower left). If the icon is absent, press the  button and hold it for at least three seconds. Then scan the material while paying attention to the buzzer's tone. A rising tone indicates increasing moisture. When the tone is highest, the meter is over the area of highest moisture.

## SPECIFICATIONS

Measurement Range	0 to 99.9% WME (Wood Moisture Equivalent) for wood; 0 to 56.5% for building material
Measurement Accuracy	±3%
Measurement Resolution	0.1%
Measurement Depth	3/4 in. (20mm)
Display Type/Size	99.9 count LCD with 0.4 in. (10mm) high digits
Droplet Icon Ranges	Low/Medium/High moisture: >0.1%/30%/70% for wood; >0.1%/14%/42% for building material
Sensing Area	1.6 x 1.6 in. (40 x 40mm)
Auto Power Off	After 3 to 4 minutes with 0% reading
Low/Very Low Battery Warning Levels	<7.5V/<6.5V
Operating Temperature @<80% relative humidity	32° to 122°F (0° to 50°C)
Dimensions	5.75 x 2.6 x 0.87 in. (146 x 66 x 22mm)
Weight	5.1 oz. (145g) with battery
Current Consumption	<20mADC
Power Source	9V battery (included)



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## WARRANTY INFORMATION

General Tools & Instruments' (General's) MMD5NP Pinless LCD Moisture Meter is warranted to the original purchaser to be free from defects in material and workmanship for a period of one year. Subject to certain restrictions, General will repair or replace this instrument if, after examination, the company determines it to be defective in material or workmanship.

This warranty does not apply to damages that General determines to be from an attempted repair by non-authorized personnel or misuse, alterations, normal wear and tear, or accidental damage. The defective unit must be returned to General Tools & Instruments or to a General-authorized service center, freight prepaid and insured.

Acceptance of the exclusive repair and replacement remedies described herein is a condition of the contract for purchase of this product. In no event shall General be liable for any incidental, special, consequential or punitive damages, or for any cost, attorneys' fees, expenses, or losses alleged to be a consequence of any damage due to failure of, or defect in any product including, but not limited to, any claims for loss of profits.

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## **RETURN FOR REPAIR POLICY**

Every effort has been made to provide you with a reliable product of superior quality. However, in the event your instrument requires repair, 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  
80 White Street  
New York, NY 10013  
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.





## **Specialty Tools & Instruments**

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MMD5NP Series User's Manual

Specifications subject to change without notice

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