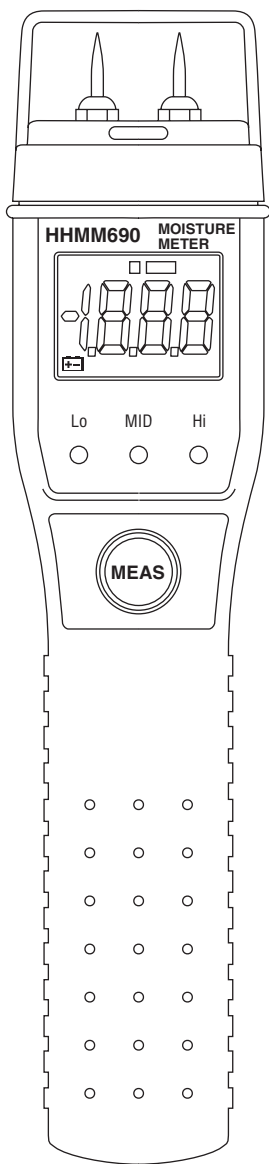


**1 YEAR**  
WARRANTY



# User's Guide



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## **HHMM690** **Wood Moisture Meter**



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The information contained in this document is believed to be correct, but OMEGA Engineering, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**WARNING:** These products are not designed for use in, and should not be used for, patient-connected applications.



## Introduction

The HHMM690 moisture meter is a handheld meter which allows for measurement of wood moisture content from 8% to 28%.

Moisture in wood is used to indicate the potential of wood to decay. The HHMM690 can be used on any type of wood. Best results are obtained if the measurement pins are inserted at least 4-5 mm into the wood. The insulated pins read only at the tip and can be inserted to the desired depth. Note the HHMM690 measures wood moisture only and is not designed for other materials.

## Operating Instructions

**Precaution:** Static Electricity can have an effect on measurement. Static electricity should be minimized before making a measurement.

To minimize the effect of "Static Electricity":

- a. Push the electrode pins into the wood with the meter turned off, and then turn the meter on when you are ready to take the reading.
- b. After driving the pins, place your hand next to them on each side of electrode to help discharge the static from the board.
- c. Passing a damp cloth over the board's surface to pick up any static charges before driving the pins.

## How to Use

1. Note Precaution for "Static Electricity".
2. Remove protective cover exposing the two pins.
3. Align the contact pins parallel to the grain of the wood and push them to their full penetration into the wood if possible. Pins should be at least 4-5 mm into wood for an accurate measurement. The pins are insulated and only read at the tip.
4. Press the "MEAS" button to measure the wood's moisture content. When the meter turns off press "MEAS" to resume use of the meter.
5. Hold down the "MEAS" button for continuous measurement of moisture content.
6. Note moisture level indicated and indication lights. The HHMM690 is designed for moisture levels between 8% and 28%. Readings above 28% will indicate and show increasing levels of moisture but is not an accurate measurement of percent moisture.

Indicating Lights (LED's)

GREEN (Less than 14.7%)


"Air Dry" decay unlikely

YELLOW (between 14.7 and 19.4%)

Slightly in excess of normal. Investigate further

RED (Greater than 19.4%)

Excess moisture. Decay inevitable.

7. Continuous display of “” indicates battery should be replaced.

## HHMM690 Calibration Procedure

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### NOTE

Only qualified technicians who have access to the items, as following should perform the following calibration procedure.

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### Operating description:

Step 1. Use a 10M resistor for standard and adjust the reading displayed to 18% within  $\pm 2\%$  the yellow LED should be indicating. VR2 is for coarse adjustment and VR1 is for fine adjustment.

Step 2. Use a 1.9M resistor. The reading should be 23%  $\pm 2\%$  and the red LED displayed.

Step 3. Check with a 100M resistor. The meter should read 13%  $\pm 2\%$ .

Step 4. Check with a 600M resistor. The meter should read 10%  $\pm 2\%$ .

## Safety Information

Replace protective cover on measurement probes when not in use.

Replace the contact pins when they are damaged.

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### WARNING

To avoid damage to instrument, remove dead battery immediately.

Remove battery when Low Batt light displayed.

Remove power from circuit under test.

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### WARNING

To avoid electrical shock remove test leads before opening case or battery cover. Do not operate with battery cover open.

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
## Specifications

### General

**Display:**

3½ digit liquid crystal display (LCD).

**Low battery indication:**

The “” is displayed when the battery voltage drops below the operating level.

**Auto power off:**

15 seconds approx.

**Operating Environment:**

0°C to 50°C (32°F to 122°F) < 80% relative humidity

**Storage Temperature:**

-20°C to 60°C (-4°F to 140°F), 0 to 80% R. H. with battery removed from meter

**Battery:**

4 pcs 1.5V (AAA size) MN-2400

**Battery Life:**

30 hours (continuity).

(No measurable current drawn when power is off)

**Dimensions:**

90 mm (H) x 42 mm (W) x 35 mm (D)

**Weight:**


approx. 170 g including battery

**Accuracy:**

Measurement is for estimation only. Accuracy up to ±2% between 8% and 28%

## Maintenance

**Battery Replacement**

Power is supplied by four 1.5V (AAA size) batteries. The “” appears on the LCD display when replacement is needed. To replace batteries, remove the screw from the back of the meter and lift off the battery cover case. Remove the batteries from battery contacts.

**Cleaning**

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



**NOTES:**

## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

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Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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