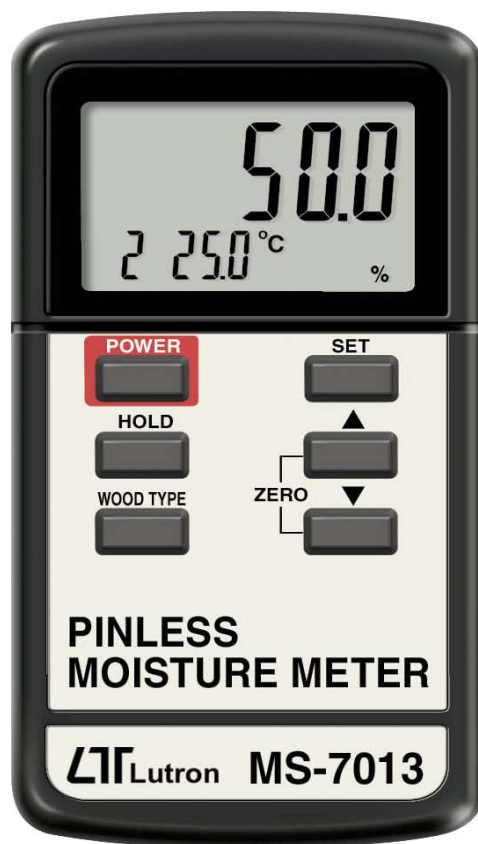# PINLESS
WOOD MOISTURE METER

Model : MS-7013

Your purchase of this MOISTURE METER marks a step forward for you into the field of precision measurement. Although this meter is a complex and delicate instrument, its durable structure will allow many years of use if proper operating techniques are developed. Please read the following instructions carefully and always keep this manual within easy reach.

OPERATION MANUAL

TABLE OF CONTENTS

1. FEATURES

*   Designed to check the moisture level of wood.
*   Use high-frequency induction, will not damage the wood surface
*   0 % to 50 % moisture range on wood.
*   0℃ to 50℃ Temperature range.
*   Provides automatic temperature compensation.
*   8 kinds of wood density, provide the choice
*   Moisturer limit value alarm setting
*   Data hold function to freeze the desired value on display.
*   Microprocessor circuit ensures high accuracy and
    provides special functions and features.
*   Operates from DC 9V (006P,MN1604) batteries.
*   Built-in low battery indicator.
*   Durable, long-lasting components, enclosed in strong,
    compact ABS-plastic housing.

2. SPECIFICATIONS

Applications	Designed to check the moisture level of wood.
Measuring Principal	Use high-frequency induction Then the conductivity of species Converter reads % " moisture Content "
Display	LCD size :46.5 mm x28.5 mm.

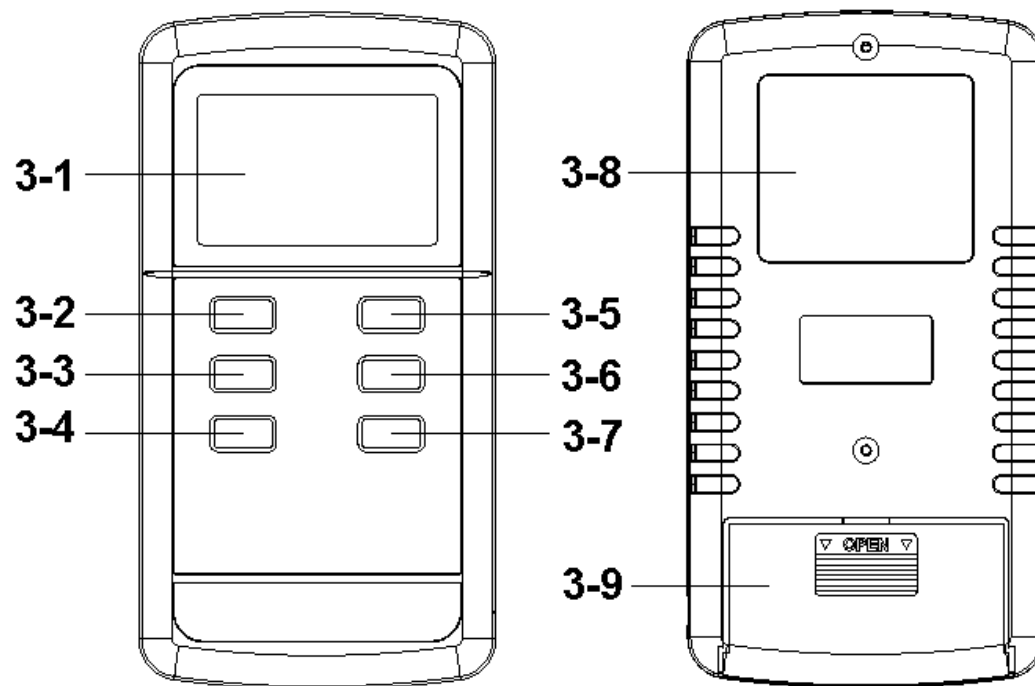|			
Moisture	Range	0 % to 50 %	@ 23 ℃ ±5 ℃
	Resolution	0.5%	
	Accuracy	±3 % Full-scale	
TEMP	Range	0℃ to 50℃	
	Resolution	0.1 ℃	
	Accuracy	±2 ℃(3.6℉)	
Measuring Depth Range	0~50mm		
Wood Density Range	$0.27{\sim}1.05 \text{ g/cm}^3$		
Circuit	Custom one-chip of microprocessor LSI circuit.		
Data Hold	Freeze the display reading.		
Sampling Time	Approx. 0.8 second.		
Operating Temperature	0 to 50 ℃.		
Operating Humidity	Less than 80% R.H.		
Power Supply	DC 9 V battery (006P, MIN1604)		
Power Current	Approx. DC 7.0 mA		
Weight	109 g/ 0.24 LB.		
Dimension	131 x70 x 26 mm (5.15" x 2.75" x 1.0")		
Accessories Included	Instruction manual................................. 1 PC.		
Optional Accessory	* Soft carrying case with sash (140 x 77 x 40 mm), Model : CA-04		

3. FRONT PANEL DESCRIPTION

Fig. 1

3-1 LCD Display
3-2 Power Button
3-3 Hold Button
3-4 Wood Type Button
3-5 Set Button
3-6 (▲) button

3-7 (▼) button
3-8 Induction Area
3-9 Battery Compartment/Cover

4. MEASURING PROCEDURE

4-1 Measurement selecting the different wood material

1) Power ON the meter by pressing the " Power Button "
(3-2, Fig. 1) momentarily.

> * *Pressing the " Power Button " (3-2, Fig. 1)
> continuously and > 1.5 seconds again will turn off the
> meter.*

2) Press the" Wood Type Button " (3-5, Fig. 1) to select the
wood density value,Please refer to appendix (Fig 2).

3) After selecting the density value(1 to 8), put instrument sensing
area "(3-1, Fig. 1 ") is placed close to the surface of the wood
to be measured for moisture measurement.

4) Display will show the moisture contents in " % moisture content "
directly.

4-2 Data Hold

1) During the measurement, press the " Hold Button "(3-3, Fig. 1)
momentarily to hold the measured value. The LCD will show a
" HOLD " symbol.

2) Press the" Hold Button " once again to release the data hold
function.

4-3 Zero adjusting

 * pressing and holding the the " ▲ Button " (3-6, Fig. 1) and
" ▼ Button " (3-7, Fig. 1) for at least 1.5 seconds to
the display reading will show zero .

4

4-4 Wood Density Tables

GEAR	Density g/cm^3	Wood Variety
1	0.27~0.38	Poplar, cathay poplar, fir, Monterey pine, bass wood, red wood, white pine, thalictrum, sago palm, hard Chinese parasol.
2	0.38~0.45	Douglas fir, yellow cedar, pine wood, aspen, cotton wood, hemlock, spruce, rose wood, okoume, okoumev, fir wood, African cordia, red pine, hemlock, cypress, dyera.
3	0.45~0.55	Douglas fir, yellow cedar, pine wood, fir wood, cotton wood, cypress, alder, African mahogeny, Philippines mahogany, hard wood, stained wood, aspen, ramin, karuri, hoop pine, hemlock, kahikatea, ivy tree bark.
4	0.55~0.65	Birch, elm, red oka, black walnut, beech, lroko, keruing, cashew, rubber wood.
5	0.65~0.75	Pecan, merbau, white oak, olive, lauan, beech, teak wood, apocynaceae, bangkirai, ash wood.
6	0.75~0.85	Wenge, philippines mahogany, palaquium spp australia mahogaany, jatoba, garapa, beech, ebony, copaifera religiosa, african buginga, reular buginga, bubinga, punah.
7	0.85~0.95	Hainan yellow pear wood, aspidosperma spp, beefwood, cumaru, dracaena goldieana.
8	0.95~1.05	dipteryx spp, lapacho, logwood, xylia spp, red sandalwood, Indian pterocarpus spp, southeast asian pterocarpus spp, dalbergia spp. ebony,

Fig. 2

5. ADVANCED SETTING

1) Press the " SET Button " (3-5, Fig. 1) continuously at least two seconds will enter the " Advanced Setting " mode.

2) then press the " WOOD TYPE " (3-4, Fig. 1) once a while in sequence to select the four main function, the display will show :

   SEt...............Moisturer limit value alarm setting
   PoFF............SET Auto power OFF management
   bEEP............Set beeper sound ON/OFF
   dCdF..........Set Temperature unit ℃ or ℉

   Remark :
   In the implementation of the "Advanced Settings" function,
   If within 10 seconds without work, will exit
   " Advanced Settings " function, the LCD will return
   Normal screen.

5-1 Set the moisture limit value

When the display show " SEt "

The 8 modes of wood moisture limit can be set individually. If the measured value is greater than the limit, there will be an alarm sound and the display " P " symbol will disappear.

1) Use the " ▲ Button " (3-6, Fig. 1) or " ▼ Button " (3-7, Fig. 1) to adjust the moisture default value displayed on the monitor.

2) When the water limit adjustment is completed, press the " WOOD TYPE Button " (3-4, Fig. 1) will save the setting function with default.

6

5-2 Set Auto power OFF management

When the display show " PoFF "

1) Use the " ▲ Button " (3-6, Fig. 1) or " ▼ Button "
   (3-7, Fig. 1) to select the upper text to " YES " or
   " no ".
   YES - Auto Power Off management will enable.
   　　　※ *During the measurement, after 10 minutes*
   　　　　 the meter will auto power off.
   no - Auto Power Off management will disable.

2) After select the upper text to " YES " or " no ", press the
   " WOOD TYPE Button " (3-4, Fig. 1) will save the setting
   function with default.

5-3 Set beeper sound ON/OFF

When the display show " bEEP "

1) Use the " ▲ Button " (3-6, Fig. 1) or " ▼ Button "
   (3-7, Fig. 1) to select the upper text to " YES " or
   " no ".

   YES - Meter's beep sound will be ON with default.
   no - Meter's beep sound will be OFF with default.

2) After select the upper text to " YES " or " no ", press the
   " WOOD TYPE Button " (3-4, Fig. 1) will save the setting
   function with default.

5-4 Set Change the Temp. ℃, ℉ unit

When the display show " 'dCdF "

a. Use the " ▲ Button " (3-6, Fig. 1) or " ▼ Button "
(3-7, Fig. 1) to select the " ℃ " or " ℉ ".

b. After select the desiring text (℃ or ℉), press the
" WOOD TYPE button " (3-8, Fig. 1) to save the data with
default.

6. MAINTENANCE

6-1 Battery replacement

1) When the LCD display showing the mark of " ", it is
necessary to replace the battery, However in-spec.
measurement may still be made for several hours after "
Low battery indicator " appears before the instrument
become inaccurate.

2) Open the screw of " Battery Cover " (3-9, Fig. 1) by
loosing the screws, then move the battery.

3) Replace with 9 V batteries (006P, MIN1604) and
reinstate the cover.

7. OPTIONAL CARRYING CASE

Soft carrying case with sash.
Size : 140 x 77 x 40 mm
Model : CA-04