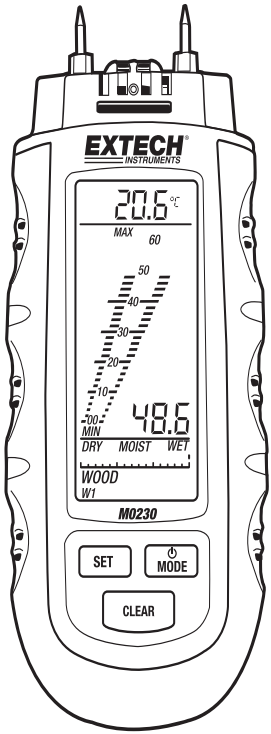
EXTECH INSTRUMENTS

User Guide

Moisture Meter

Model MO230



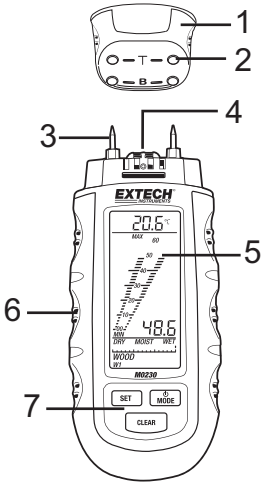
Introduction

Congratulations on your purchase of the Extech MO230 Moisture Meter. The MO230 detects moisture in wood and building materials such as wall board, sheet rock, cardboard, paper, mortar, and plaster. Additionally, the meter measures Relative Humidity (RH) and Temperature. This device is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please visit our website (www.extech.com) to check for the latest version of this User Guide, Product Updates, Product Registration, and Customer Support.

Description

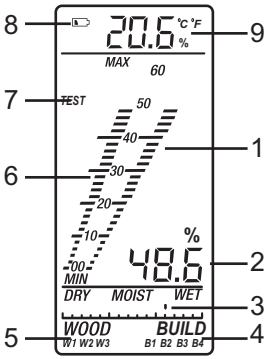
Meter Description

1. Protective Cap
2. Test Point pairs
3. Measurement electrode pins
4. Temperature and RH sensors
5. LCD
6. Hand grips
7. SET, CLEAR, and MODE/POWER buttons



Display Description

1. Measured value scale
2. Measured value
3. Relative Dry-Moist-Wet scale
4. Building mode and groups
5. Wood mode and groups
6. MAX value scale
7. TEST mode icon
8. Battery Status Indicator
9. Temperature or Relative Humidity display



Note: The LCD screen is optimized for a 30 degree viewing angle.

Operation

CAUTION: The electrode measurement pins are extremely sharp; Use care when handling. Cover the pins with the protective cap when the instrument is not in use.

Getting Started

1. Remove the protective cap to expose the electrode measurement pins.
2. Press and hold the power button for 2 seconds to switch the meter ON. The ambient temperature will display and then the display will switch to the moisture measurement mode.

Note: To conserve battery life, the meter automatically shuts off after 3 minutes.

Measuring Temperature and Relative Humidity

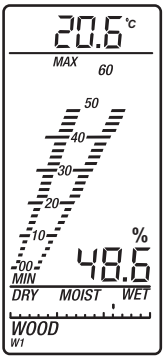
The MO230 measures ambient temperature and relative humidity via the built-in sensors at the top of the meter. The ambient temperature is used as a temperature compensation utility for moisture measurements.

1. The temperature or humidity reading is shown at the top of the LCD display window.
2. Press and hold the SET button for 2 seconds to switch from temperature display to humidity display.

Note: Refer to the programming section of this guide for instructions on switching the temperature units of measure (°C / °F).

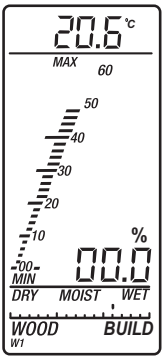
Measuring Moisture

1. The MO230 measures moisture via the pins affixed to the top of the meter.
2. Carefully push the electrode pins as far as possible into the material under test. The pins should be inserted into wood perpendicular to the wood's fiber structure.
3. Take several readings in several locations on the material for the best representation of the amount of moisture present.
4. Read the measurement values on the display. Readings are represented in %. The measurement range for wood is 1 to 75%. The measurement range for other building materials is 0.1 to 24%.
5. Replace the protective cap when finished.



Maximum (MAX) reading Indication

The bargraph on the left side of the LCD display indicates and holds the highest reading encountered during a measurement session. Use the CLEAR button to reset the MAX reading indication.



Measurement Modes

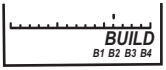
There are three (3) measurement modes. Momentarily press the MODE button to step from one mode to the next:

- WOOD MEASUREMENT MODE (WOOD GROUPS WI, W2, W3)
- BUILDING MEASUREMENT MODE (MATERIAL GROUPS B1, B2, B3, B4)
- SELF TEST MODE (TEST)

Wood Measurement mode

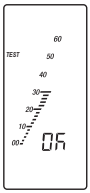
Momentarily press the MODE button to select the Wood Measurement Mode. Use the SET button to choose the desired wood group (W1, W2, W3) (refer to the Wood Group Table in the Appendix).

Building Material Measurement Mode



Momentarily press the MODE button to select the Building Measurement Mode and use the SET button to choose the desired building material group (B1, B2, B3, B4). (refer to the Building Material Group Table in the Appendix).

Self Test Mode



Momentarily press the MODE button to select the Self Test Mode. Touch the measurement pins to the test points labeled ‘T’ on the protective cap. The display will read OK if the test passes (30 units ±2) or it will display dashes if the test fails. Next, touch the measurement pins to the test points labeled ‘B’. The display will read OK if the test passes (60 ±2) or it will display dashes if the test fails. If tests are failing please return the unit for repair or replacement.

Dry/Wet Indication

Moisture reading will also be displayed on the user defined wet-moist-dry display. Setting the range of the display is described in the programming section.

Programming Menu

The programming menu offers five configurable parameters. To access the menu, turn the meter on, then momentarily press and release the SET and CLEAR buttons at the same time.

Once in the programming menu, use the MODE button to step through the parameters and also to exit the mode.

Material Temperature Offset

The first parameter in the programming menu is the material temperature offset feature. Use the SET button to increase the temperature value and use the CLEAR button to decrease the temperature value.

Material moisture measurements can be dependent on the temperature of the material. This meter automatically compensates for material temperature changes by measuring ambient temperature. The temperature offset allows for adjusting the temperature reading when the material measured is not at ambient temperature.. Note: the temperature reading will return to normal when the meter is turned off.

DRY/WET Scale

The second and third parameters in the programming menu set the lower and upper range of the Dry-Wet scale. This relative scaling allows the user to specify what value is considered a DRY reading and what value is considered a WET reading. The values can be programmed from 0000 to 0999 (999=99.9%). Use the SET button to increase the displayed value and use the CLEAR button to decrease the displayed value.

LCD Backlight Modes

The fourth parameter is the LCD backlight configuration. There are three (3) LCD backlight modes: AUTO, ON, and OFF. In AUTO mode, the backlight switches ON and OFF automatically according to use. In the ON mode, the backlight is always ON. In the OFF mode, the backlight is always OFF. The default setting is the AUTO mode. Use the SET button to select the mode.

Temperature units of measure (°C / °F)

The fifth mode is the temperature unit selection. The units of measure for ambient temperature and material compensation can be set to either °C or °F. The setting is stored and remains in effect until it is changed manually. Use the SET button to toggle the units.

Maintenance

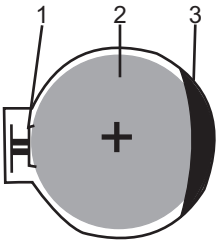
- Always keep the instrument dry
- Prevent dirt from accumulating at the electrode pins

Electrode Pin Replacement

To replace the two electrode pins:

1. Remove the protective cap
2. Unscrew the electrode pins
3. Install the new pins
4. Replace the protective cap

Battery Installation and Replacement



If the instrument does not switch on or if it displays the low battery symbol, replace the batteries:

1. Remove the Phillips head screw at the rear of the instrument and remove the battery compartment cover.
2. Install new batteries (2) by placing the edge of the battery under to lip (3) and pressing the battery until the latch (1) locks the battery in place.
3. Observe the correct polarity when installing batteries.
4. Remove old batteries by pressing the latch (1) and allowing the battery to pop out.
5. Replace and secure the battery cover.

Note: Do not mix old and new batteries, always replace all three batteries.

You, as the end user, are legally bound (**EU Battery ordinance**) to return all used batteries, **disposal in the household garbage is prohibited!** You can hand over your used batteries / accumulators at collection points in your community or wherever batteries / accumulators are sold!

Disposal: Follow the valid legal stipulations in respect of the disposal of the device at the end of its lifecycle

Specifications

Measurement Principle	Electrical resistance
Display	LCD
Measurements	Moisture, Relative Humidity and Temperature
Relative Humidity Range	0 to 100%
Temperature Range	-40 to 70°C (-40 to 158°F)
Electrode length	8mm (0.3”)
Electrode pins	Integrated, replaceable
Auto Power OFF	After 3 minutes
Power supply	Three (3) CR-2032 button cells
Operating Temperature	0 to 40°C (32 to 104°F)
Operating Humidity	85% Relative Humidity maximum
Housing material	Impact resistant plastic
Dimensions	159 x 63.5 x 30.5mm (6.25 x 2.5 x 1.2”)
Weight	100g (3.5 oz)

Function	**Range**	**Accuracy**
Moisture in wood	0 to 30%	± 1%
	30 to 60%	± 2%
	60 to 75%	± 4%
Moisture in building materials	0.1 to 2.4%	± 0.5%
Ambient Temperature	-40 to -10°C	± 2°C
	40 to 70°C	± 2°C
	-10 to 40°C	± 1°C
Ambient Relative Humidity	0 to 20%	± 5%
	80 to 100%	± 5%
	20 to 80%	± 3.5%

Appendices

Wood Groups

W1	W1	W2	W3
Abachi	Agda	Mahogany	Afrormosia
Abura	Maple	Pine	Rubber tree
Pear wood	Alder	Cherry wood	Imbuia
Black Afara	Patagonian cypress	Kosipo	Kokrodua
Parana pine	Purpleheart	Larch	Niove Bidinkala
Beech	Andiroba	Limba	Tola-real,red
Dabema	Aspen	Cherry mahogany	Cork
Ebony	Balsa	Meleze	Melamine particle board
Oak,red	Basralocus	Poplar (all)	Phenolic resin particle board
Oak,white	Tree Health	Plum wood	
Ash	Ebiara	Pine	
Yellowheart	Birch	Red sandalwood	
Ash-American	Logwood	Elm	
Ash-Japanese	Juniper	Maritime pine	
Hichory-silver poplar	Beech-European hombean	English oak	
Hickory-swap	Hombeam-white	Durmast oak	
Ilomba	Campeachy	Tola	
Ipe	Aiele	Tola-branca	
Iroko	Kapok	Walnut	
Small-leaved lime	Douka	Westem red	
Small-leaved lime - American	Douglas fir	Cedar	
Mockemut hickory	Oak	White maple	
Niangon	Oak-holm	White birch	
Niove	English,dumast	White beech	
Okoume	Emien	White poplar	
Rosewood	Alder-red,black	Swiss pine	
Rio rosewood	Ash	Common aspen	
Common beech	Yellow birch	Damson wood	
Red oak	Southem yellow pine	Cypress,red	
Teak	Hombeam	Fibre board	
Willow	Hickory-silver poplar	Wood fibre insulating board	
White oak	hickory-poplar	Wood fibre hardboard	
Cedar	Izombe	Kauramin partide board	
Cypress - C. Lusit	Guanandi	Paper	
Board	Jarrah	Textiles	
Chestnut-sweet, red	Elm		
African	Karri		

Building Material Groups

B1	B2	B3	B4
Gypsum plaster	Aerated concrete	Sand/Cement top mix	Concrete