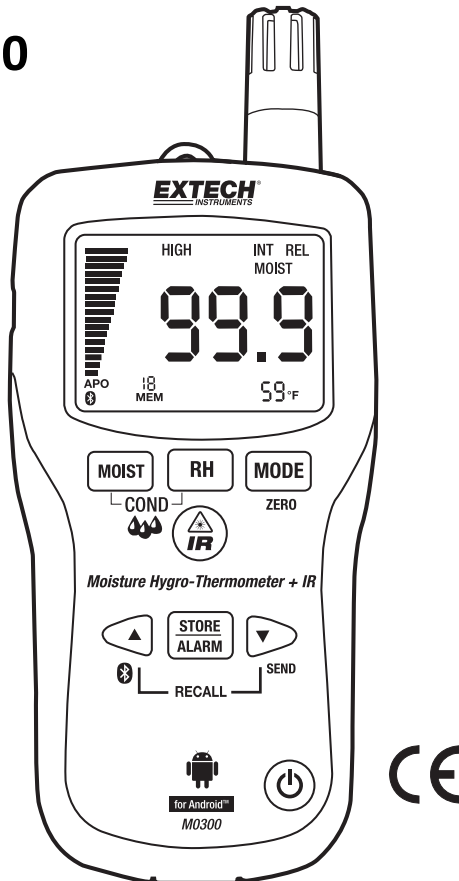# EXTECH®
INSTRUMENTS

Pinless Moisture/Humidity Meter with IR Thermometer

# Bluetooth and Android™ ready

Model MO300

Introduction

Congratulations on your purchase of the Extech MO300 with Bluetooth capabilities for use with the Android Application **ExView™ MO300**. This Pinless Moisture Meter incorporates a Patented Built-in IR Thermometer and 20 Point Memory. Monitor moisture in wood and other building materials with no surface damage with the Pinless Moisture sensor (Pin-type Moisture Probe included). Measure Humidity and Air Temperature with built-in probe plus non-contact InfraRed Temperature with patented IR design. Advanced functions provide Grains per Pound, Dew Point and Vapor Pressure calculations. This meter is shipped fully tested and calibrated and, with proper use, will provide years of reliable service.

Meter Description

1. IR temperature sensor
2. Laser pointer
3. Humidity sensor
4. Temperature sensor
5. LCD display
6. Relative Humidity button
7. Mode/Zero Button
8. IR thermometer button
9. Alarm set button
10. Alarm adjust down / SEND button
11. ON/OFF power button
12. Remote pin probe input jack (bottom)
13. Battery compartment (rear)
14. Alarm adjust up / Bluetooth button
15. Moisture/Relative button

Note: Protective sensor cap not pictured.
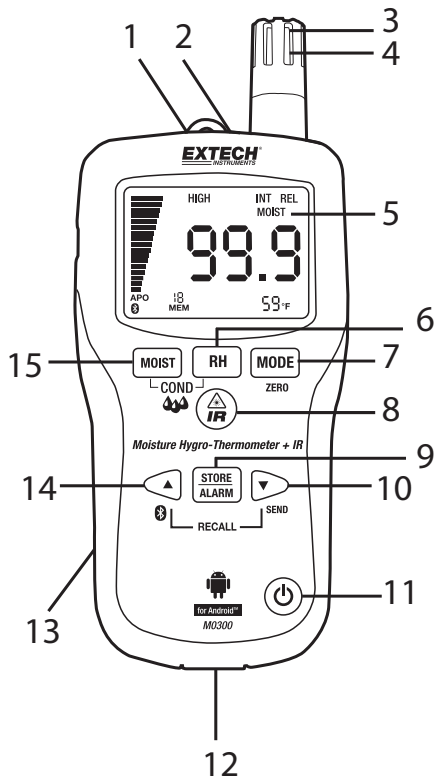
LCD Display Icons

MIN MAX REL – Minimum, Maximum, Relative values

HIGH LOW – Alarm limits

INT EXT – Internal/External probe

mBar – Vapor pressure

kPa – Vapor pressure

GPP – Grains per Pound

g/kg – Grains per kilogram

MOIST – Moisture mode

RH% - Relative Humidity mode

COND – Condensation mode

APO – Auto power OFF feature

DEW – Dew Point temperature

C/F – Temperature units

⊟ - Low battery

MEM - Memory location indicator

⚠ - Laser pointer ON

🅱 - Bluetooth ON

Safety

- Use extreme caution when the laser pointer beam is on

- Do not point the beam toward anyone's eye or allow the beam to strike the eye from a reflective surface

- Do not use the laser near explosive gases or in other potentially explosive areas

Features

- Quickly indicates the moisture content of materials with Pinless technology without damaging the surface;

- Optional remote Pin-type probe (MO290-P) allows for moisture readings at different penetration levels (3ft/0.9m cable length);

- Easy to read, large dual display with backlit feature;

- Simultaneously displays % moisture of wood or material being tested and Air Temperature, IR Temperature, or Humidity

- Designed with patented IR design to measure non-contact surface temperature; 8:1 distance to spot ratio with 0.95 fixed emissivity

- Built-in Humidity/Temperature probe measures Relative Humidity,

- Air Temperature plus Grains Per Pound (GPP) and Dew Point (DP)

- Ambient and Surface Vapor Pressure

- Automatic calculation of differential Temperature (IR - DP)

- Min/Max and Data Hold

- 20 point internal memory

- Auto power off and low battery indication

Battery Replacement

1. Turn off the meter.
2. Remove one rear Philips head screw and lift off the rear battery cover.
3. Replace the 9V battery.
4. Secure the rear battery cover.

Never dispose of used batteries or rechargeable batteries in household waste. As consumers, users are legally required to take used batteries to appropriate collection sites, the retail store where the batteries were purchased, or wherever batteries are sold.

Disposal: Do not dispose of this instrument in household waste. The user is obligated to take end-of-life devices to a designated collection point for the disposal of electrical and electronic equipment.

Operation

Powering the meter

1. Remove the RH sensor protective cap before use.

2. Press the power ⏻ button to turn the meter on.

3. If the 🔋 symbol appears or the meter does not turn on, replace the battery.

Note: Operation with Bluetooth enabled reduces battery life to less than 8 hours. Using an external AC adaptor is recommended when the meter will be used for monitoring over a long period of time.

Humidity (Dew point, GPP, g/kg) Measurements

1. Press the power ⏻ button to turn the meter on.

2. Press the RH button

3. Relative Humidity will be displayed in the primary display and the temperature will be displayed in the secondary display.

4. Press the up or down arrow button to change the temperature units.

5. Press the MODE button to display the DEW point.

6. Press the MODE button to display GPP (°F) or g/kg (°C). Press the ▲ or ▼ button to toggle between GPP or g/kg.

Pinless Moisture Measurements

1. Press the power ⏻ button to turn the meter on.

2. Press the MOIST button to select Moisture measurement." MOIST", and "INT" (internal pinless sensor) will appear in the display.

3. Hold the meter so that the rear sensor is away from any surface or your hand. The reading should be near 0.0. If not, press and hold the ZERO button for more than 2 second and the ZERO icon appears.

4. Place the rear sensor on the surface of the material to be tested and read the relative moisture content.

Pin Type Moisture Measurements

1. Connect the external pin probe to the jack on the bottom of the meter.

2. Press the power ⏻ button to turn the meter on.

3. Press the MOIST button twice to select Moisture measurement." MOIST", and "EXT" (external pin probe) will appear in the display.

4. Press the probe pins into the material and read the % moisture content in the display.

Infrared Temperature Measurements

1. Press the power ⏻ button to turn the meter on.

2. Press the IRT button to enable the IR thermometer and the laser pointer. The laser pointer icon will flash while the mode is active.

3. Press the ▲ or ▼ button to change the temperature units

4. Aim the laser pointer at the surface to be measured and read the surface temperature in the secondary display.

5. Release the IRT button. The last temperature measured and the laser icon will remain on the display for approximately 10 seconds before returning to ambient temperature measurement.

IRT MAX MIN display:

The meter can be set to display only the maximum or minimum temperature measured during an IR scan.

1. With the meter in the IR hold mode, press the MODE button. "MIN" will appear in the display.

2. Press the IRT button to enable the IR thermometer. The meter will display the minimum temperature measured and will update only when a lower temperature is measured.

3. Press the MODE button twice to enable the MAX mode and proceed as stated above for the maximum temperature.

4. The MAX or MIN temperature is not stored when the function is exited. The unit automatically exits MAX/MIN mode after approximately 10 seconds.

IR Field of View

Ensure that the desired target is larger than the spot size. As the distance from an object increases, the spot size of the area measured by the meter becomes larger. The meter's field of view ratio is 8:1, meaning that if the meter is 8 inches (cm) from the target, the diameter (spot) of the object under test must be at least 1 inch (cm). Refer below to the field of view diagram.

2"● @ 16"
1"● @ 8"
20mm● @ 160mm
40mm● @ 320mm
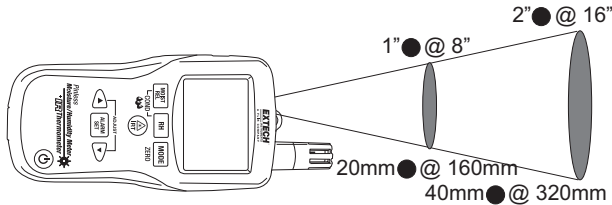
WARNING: Do not directly view or direct the laser pointer at an eye. Low power visible lasers do not normally present a hazard, but may present some potential for hazard if viewed directly for extended periods of time.

AVOID EXPOSURE
Laser radiation is emitted from this aperture

CAUTION

LASER RADIATION-DO NOT STARE INTO BEAM
OUTPUT<1mW WAVELENGTH 630-670nm
CLASS 2 LASER PRODUCT

Condensation Mode

The Condensation feature alerts the user when the surface temperature as measured by the IR thermometer is close to or has reached the Dew Point temperature.

1. Press the power ⏻ button to turn the meter on.
2. Simultaneously press the MOIST and RH buttons. The "COND" icon will appear.
3. Point the meter at a surface, press the IRT button to measure the surface temperature. The small display will indicate the IR surface temperature and the large display will indicate the difference between the IR temperature and the Dew Point temperature.
4. The meter will then report the potential for condensation on that surface in the following manner
   - If the temperature of the IRT is more than 14°C (25°F) above the Dew Point, the temperature difference shall be displayed, with no other warning.
   - If the temperature of the IRT is 3-14°C (5-25°F) above the Dew Point, the temperature difference shall be displayed, along with a standard Condensation Indicator icon. The meter shall beep once to confirm that the reading is in the risk area.
   - If the temperature of the IRT is less than 3°C (5°F) above the Dew Point, the temperature difference shall be displayed, along with a flashing Condensation Indicator icon. The meter shall beep twice to confirm that the reading is in the high-risk area.
5. Press the RH button to exit the mode.

Vapor Pressure Mode

Ambient Vapor Pressure

1. With the Condensation mode active, press the MODE button to display the Vapor Pressure in mBAR (°F) or kPa (°C). Press the ▲ or ▼ button to toggle between mBAR and kPa.
2. Press the MODE button to exit the Vapor Pressure mode.

Surface Vapor Pressure

1. Enter the Vapor Pressure mode as described above.
2. Press the IRT button and aim the laser pointer at the surface to be measured to display the Surface Vapor Pressure in mBAR (°F) or kPa (°C).

Alarm High and Low Limit Setting

High and Low alarm points can be set for Humidity and Moisture measurements.

Humidity Alarm Set Procedure:

1. With RH% displayed, simultaneously press the RH and MODE buttons.
2. The "HIGH" icon will appear on the display.
3. Press the ▲ or ▼ button to set the high limit desired.
4. Press the STORE/ALARM SET button to save the value and proceed to the LOW set value.
5. With the "LOW" icon in the display, Press the ▲ or ▼ button to set the low limit desired.
6. Press the STORE/ALARM SET button to save the value and to return to the normal mode.
7. If the humidity measurement is lower than the low alarm setting or higher than the high alarm setting, the meter will beep once every second.

Moisture Alarm Set Procedure

1. With MOIST displayed, simultaneously press the MOIST and MODE buttons.
2. The "HIGH" icon will appear on the display.
3. Press the ▲ or ▼ button to set the high limit desired.
4. Press the STORE/ALARM SET button to save the value and proceed to the LOW set value.
5. With the "LOW" icon in the display, Press the ▲ or ▼ button to set the low limit desired.
6. Press the STORE/ALARM SET button to save the value and to return to the normal mode.
7. If the moisture measurement is lower than the LOW alarm setting, the meter will beep once every second
8. If the moisture measurement is higher than the HIGH alarm setting, the meter will beep continuously.

Data Memory Storage

Storing Readings:

1. With the data to be saved in the display, press the **STORE** button for 2 seconds until the unit beeps. The data will be saved to the memory location indicated. The numeric display above the **MEM** icon will then advance to the next location.

2. When the 20 memory locations are full, the unit will overwrite old saved readings starting with memory location 01.

Recalling Stored Readings:

1. Simultaneously press and release the ▲ and ▼ buttons to display stored readings. The numeric display above the **MEM** icon will flash and the data stored in that location will be displayed.

2. Press the ▲ or ▼ button to scroll through the memory locations.

3. To return to normal operating mode, press the **STORE** button.

Clearing Stored Data:

1. To clear stored data, press and hold the ▲ and **STORE** buttons simultaneously until **CLR** appears on the display.

Auto Power Off

The meter will enter a sleep mode after 30 minutes of inactivity. The meter will emit a warning beep 15 seconds before shutting down.

To disable the APO feature, press the MODE button when turning the meter ON. The "APO" icon will not appear, indicating it is disabled.

Bluetooth^{TM} and Android^{TM} Communication

This meter includes a Bluetooth module designed to communicate with an Android Application **ExView™ MO300**. Get this App from the Google Play store.

1. Enable the MO300 Bluetooth by pressing and holding the ▲ button for two seconds. The Bluetooth icon will appear in the display.

2. Pair the meter to the Android tablet. Use pairing code 1234.

3. Start the **ExView™** MO300 App. Tap "Connect" icon 📶 to pair the meter with the App.

4. Once paired, the data from the MO300 will be continuously displayed and updated on the Android App **ExView™ MO300**.

Typical Moisture Measurement and Documentation Procedures

1. Use the Moisture meter to measure the moisture levels at various suspect locations.

2. When a spot of interest is located, store the moisture reading in the moisture meter's memory.

3. Recall the reading from memory. The moisture meter will now continuously transmit this reading via Bluetooth.

FCC COMPLIANCE

FCC ID: IWK-MO300

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.

2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement
1. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.
3. To maintain compliance with FCC RF exposure compliance requirements, avoid direct contact to the transmitting antenna during transmission.

⚠ **WARNING:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

INDUSTRY CANADA (IC) COMPLIANCE

IC ID: 1590A-MO300

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

> ⚠ **CAUTION: IC Radiation Exposure Statement**
>
> 1. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
>
> 2. This equipment complies with RSS 102 RF radiation exposure limits set forth for an uncontrolled environment.
>
> 3. To maintain compliance with RSS 102 RF exposure compliance requirements avoid direct contact to the transmitting antenna during transmission.

Specifications

Function	Range	Accuracy
Pinless Moisture	0 to 99.9	Relative only
External - Moisture in wood	6-99 %	± 5%
External - Moisture in building materials	13-99 %	± 5%
Pinless Depth	Up to 0.75" (19mm)	
RH Measurement	0 to 10%	± 3%RH
	11 to 90%	± 2.5%RH
	91 to 100%	± 3%RH
Air Temperature	-29 to 77°C (-20 to 170°F)	± 2.0°C (3.6°F)
IR Temp	-4 to 31°F	± 9°F
	32°F	± 2°F
	33 to 392°F	Greater of ±3.5% or ±9°F
	-20 to-1°C	± 4.5°C
	0°C	± 1°C
	1 to 200°C	Greater of ±3.5% or ± 4.5°C

Display	3-digit primary display, 4-digit secondary display
Vapor Pressure	0 to 20.0kPA, calculated from temperature and RH measurements
Dew Point	-22 to 199°F (-30 to 100°C)
Mixing Ratio	0 to 160g/kg (0-999 GPP [grains per pound])
Sample Rate	2 per second
Backlight	White LED
Memory	20 point memory
Bluetooth range	10m (32 feet) approximately
Operating Temperature	4 to 43°C (40 to 110°F)
Storage Temperature	-30 to 60°C (-14 to 140°F)
Operating Humidity:	90%: 0-30°C (32-86°F)
	75%: 30-40°C (86-104°F)
	45%: 40-50°C (104-122°F)
Storage Humidity	90%
Power Supply	9V battery
Auto Power Off (APO)	After 30 min. of inactivity. APO function can be disabled by the user.
APO Quiescent Current	50µA maximum
Dimensions	165 x 70 x 38mm (6.5 x 2.8 x 1.5'')
Weight	210g (7.4 oz.)