EXTECH INSTRUMENTS®

Pinless Moisture/Humidity Meter + IR

Model MO290
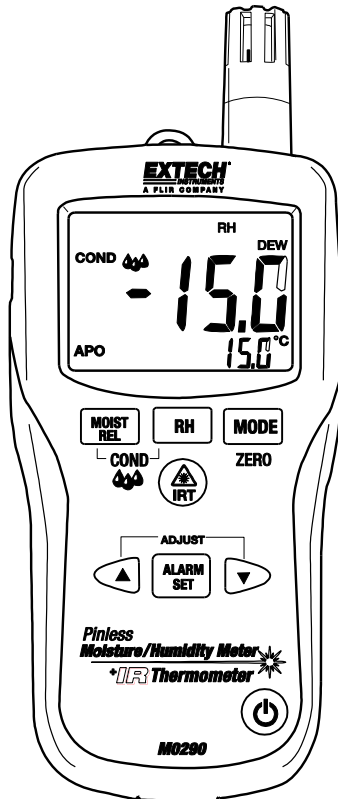
Thank you for selecting the Extech Instruments Model MO290. This device is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please visit our website (www.extech.com) to check for the latest version of this User Guide, Product Updates, and Customer Support.

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 button
11. ON/OFF power button
12. Remote pin probe input jack (bottom)
13. Battery compartment (rear)
14. Alarm adjust up button
15. Moisture/Relative button
16. Protective cap
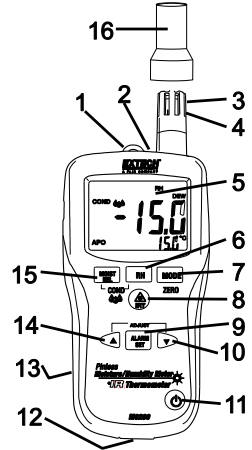
LCD Display

1. MIN MAX – Minimum and maximum value
2. HIGH LOW – Alarm limits
3. INT EXT – Internal/External probe
4. mBar – Vapor pressure
5. kPa – Vapor pressure
6. GPP – Grains per Pound
7. g/kg – Grains per kilogram
8. MOIST – Moisture mode
9. RH% - Relative Humidity mode
10. COND – Condensation mode
11. APO – Auto power off
12. DEW – Dew Point temperature
13. C/F – Temperature units
14. ⊟ - Low battery
15. ⚠ - Laser pointer On
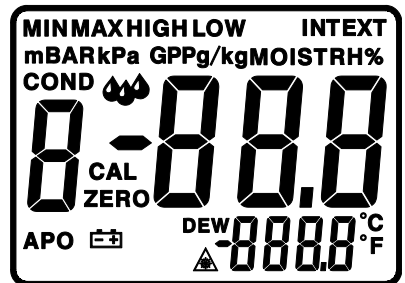
Safety

- 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

⚠ CAUTION AVOID EXPOSURE
Laser radiation is emitted from this aperture
LASER RADIATION-DO NOT STARE INTO BEAM
OUTPUT<1mW WAVELENGTH 630-670nm
CLASS 2 LASER PRODUCT
Complies with: FDA 21 CFR 1040.10 and 1040.11
IEC 60825-1 (2001-08) Edition 1.2
EN 60825-1:1994/A11:1996/A2:2001/A1:2002
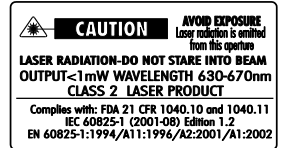
Cautions

- This device is not a toy and must not reach children's hands. It contains hazardous objects as well as small parts that the children could swallow. In case a child swallows any of them, please contact a physician immediately

- Do not leave the battery and packing material lying around unattended; they can be dangerous for children if they use them as toys

- In case the device is going to be unused for an extended period of time, remove the battery to prevent them from draining

- Expired or damaged batteries can cause cauterization on contact with the skin. Always, therefore, use suitable hand gloves in such cases

- See that the battery is not short-circuited. Do not throw the battery into a fire.

Battery Replacement

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

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

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.

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)

Pinless Moisture Measurements (Zero set)

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. **Zero the meter**: 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.

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.

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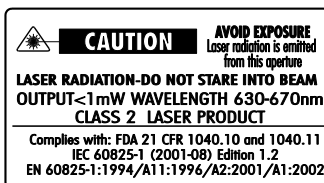
1. With the meter in the IR hold mode, press the MODE button. "MIN" will appear in the display.

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.

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.
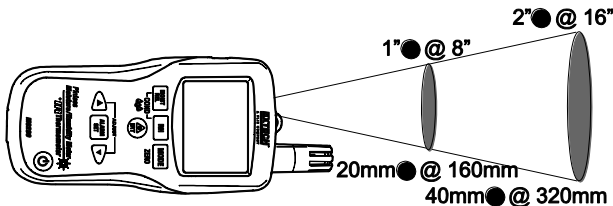
WARNING: Do not directly view or direct the laser pointer at an eye. Low power visible lasers do not normally present a hazard, but may present some potential for hazard if viewed directly for extended periods of time.

⚠ **CAUTION**   AVOID EXPOSURE
Laser radiation is emitted from this aperture

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

Complies with: FDA 21 CFR 1040.10 and 1040.11
IEC 60825-1 (2001-08) Edition 1.2
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Condensation Mode

The Condensation feature alerts the used 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/REL 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

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

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 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 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/REL 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 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 ALARM SET button to save the value and to return to the normal mode.
7. If the moisture measurement is higher 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.

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	-20 to 170°F (-29 to 77°C)	± 3.6°F (2.0°C)
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
Dew Point	-22 to 199°F (-30 to 100°C)
Mixing Ratio	0-999 GPP (0 to 160g/kg)
Sample Rate	2 per second
Backlight	White LED
Operating Temperature	40 to 110°F (4 to 43°C)
Storage Temperature	-14 to 140°F (-30 to 60°C)
Operating Humidity	90%, 32-86°F (0-30°C), 75%, 86-104°F (30-40°C), 45%, 104-122°F (40-50°C)
Storage Humidity	90%
Power Supply	9V battery
Battery Life	6-8 weeks (4 hrs/day use), using alkaline batteries
Auto Power Off (APO)	After 30 minutes (nominal) inactivity. The APO function can be disabled by the user.
APO Quiescent Current	50µA maximum
Dimensions	6.5x2.8x1.5'(165x70x38mm)
Weight	7.4oz (210g)

Warranty

EXTECH INSTRUMENTS CORPORATION (a FLIR company) warrants this instrument to be free of defects in parts and workmanship for **one year** from date of shipment (a six month limited warranty applies to sensors and cables). If it should become necessary to return the instrument for service during or beyond the warranty period, contact the Customer Service Department for authorization. Visit our website www.extech.com for contact information. A Return Authorization (RA) number must be issued before any product is returned to Extech. The sender is responsible for shipping charges, freight, insurance and proper packaging to prevent damage in transit. This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. Extech's total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.

Calibration and Repair Services

Extech offers repair and calibration services for the products we sell. Extech also provides NIST certification for most products. Call the Customer Service Department for information on calibration services available for this product. Extech recommends that annual calibrations be performed to verify meter performance and accuracy.

Support lines: U.S. 877-439-8324, Intl. 603-324-7800

Technical support: Option 3; E-mail: support@extech.com

Repair & Returns: Option 4; E-mail: repair@extech.com

Product specifications subject to change without notice

Visit our website: www.extech.com

Extech Instruments Corporation, 9 Townsend West, Nashua, NH 03063

ISO 9001 Certified since 1995

Garantie

EXTECH INSTRUMENTS CORPORATION (une société FLIR) garantit que cet instrument est exempt de défectuosité ou de défaut de fabrication pendant une période d'un anà compter de la date de livraison (une garantie limitée de six mois est applicable pour les sondes et les câbles). S'il s'avère nécessaire de retourner l'instrument pour un dépannage durant ou après la période de garantie, contactez le service à la clientèle pour obtenir une autorisation de retour. Visitez notre site Web au www.extech.com pour des informations. Un numéro d'autorisation de retour (AR) doit être émis avant que tout produit puisse être retourné à Extech. L'expéditeur est responsable des frais d'expédition, de transport, d'assurance et d'emballage adéquat afin de prévenir les dommages durant le transit. Cette garantie ne s'applique pas aux défauts résultant d'une action de l'utilisateur tels un mauvais usage, un câblage adéquat, un fonctionnement hors des spécifications, un entretien ou un dépannage inadéquat, ou une modification non autorisée. Extech décline précisément toute garantie implicite ou garantie marchande ou d'adaptation à un usage particulier et ne pourra être tenu responsable d'aucun dommage direct, indirect, accidentel ou consécutif. La responsabilité totale d'Extech se limite à la réparation ou au remplacement du produit. La garantie énoncée ci-dessus est inclusive et aucune autre garantie, qu'elle soit écrite ou orale, n'est stipulée ou sous-entendue.

Service de calibrage et de réparation

Extech offre un service de calibrage et de réparation pour toute sa gamme de produits. Extech fournit également une certification NIST pour la plupart de ses produits. Contactez le Service Clients pour de plus amples informations concernant les services de calibrage disponibles pour ce produit. Extech vous recommande de procéder à un test de calibrage annuel afin de vérifier régulièrement les performances et la précision de votre appareil.

Appui de produit U.S. 877-439-8324, Intl. 603-324-7800

Service d'assistance technique: l'option 3 , email; support@extech.com -
Réparations et retours : l'option 4, email :repair@extech.com

Spécifications produit sujettes à modifications sans préavis

www.extech.com

Extech Instruments Corporation, 9 Townsend West, Nashua, NH 03063

ISO 9001 Certified since 1995

MO290-EN V3.3   9/12

Garantía

EXTECH INSTRUMENTS CORPORATION garantiza este instrumento libre de defectos en partes o mano de obra durante un año a partir de la fecha de embarque (se aplica una garantía limitada a seis meses para los cables y sensores). Si fuera necesario regresar el instrumento para servicio durante o después del periodo de garantía, llame al Departamento de Servicio a Clientes para autorización. Visite nuestra página en Internet www.extech.com para Información de contacto. Se debe otorgar un número de Autorización de Retorno (RA) antes de regresar cualquier producto a Extech. El remitente es responsable de los gastos de embarque, flete, seguro y empaque apropiado para prevenir daños en tránsito. Esta garantía no se aplica a defectos resultantes de las acciones del usuario como el mal uso, alambrado equivocado, operación fuera de las especificaciones, mantenimiento o reparación inadecuada o modificación no autorizada. Extech específicamente rechaza cualesquier garantías implícitas o factibilidad de comercialización o aptitud para cualquier propósito determinado y no será responsable por cualesquier daños directos, indirectos, incidentales o consecuentes. La responsabilidad total de Extech está limitada a la reparación o reemplazo del producto. La garantía precedente es inclusiva y no hay otra garantía ya sea escrita u oral, expresa o implícita.

Servicios de reparación y calibración

Extech ofrece servicios completos de reparación y calibración para todos los productos que vendemos. Extech además provee certificación NIST para la mayoría de los productos. Llame al Departamento de Servicio al Cliente para solicitar información de calibración para este producto. Extech recomienda realizar calibraciones anuales para verificar el desempeño y precisión del medidor.

Ayuda de producto: U.S. 877-439-8324, Intl. 603-324-7800
Soporte Técnico Opción 3, e-mail support@extech.com
Reparación / Retornos: Opción 4, e-mail repair@extech.com
Las especificaciones del producto están sujetas a cambios sin aviso
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