

User's Guide



Digital Psychrometer

Models RH300 and RH305 (kit)



Introduction

Congratulations on your purchase of the Extech RH300 Digital Psychrometer. This device measures Humidity, Air Temperature, Dew Point temperature and Wet Bulb temperature. Advanced features include External Temperature Measurement (with optional probe), Data Hold, selectable Auto Power Off, and MAX/MIN/Average reading. Careful use of this meter will provide years of reliable service.

Specifications

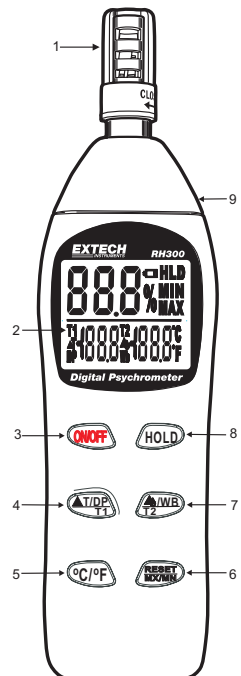
Function	Range and Resolution	Accuracy
Humidity	0.0 to 100.0% RH	±3% RH (10 to 90%) @ 23°C
Temperature (internal)	-4.0 to 122.0°F (-20 to 50°C)	±1.8°F (±1°C)
Temperature (external)	-4.0 to 158.0°F (-20 to 70°C)	±1.8°F (±1°C)

Display	Triple LCD
Sensor Type	Humidity: Precision capacitance sensor Temperature: Thermistor
Response Time	60 seconds typical
Dew Point	-90.4 to 122.0°F (-68 to 50°C) (calculated from RH and Air temperature measurements)
Wet Bulb	-6.88 to 122.0°F (-21.6 to 50°C) (calculated from RH and Air temperature measurements)
Operating Conditions	-4 to 122°F (-20 to 50°C); < 99% RH non-condensing
Storage Conditions	-40 to 185°F (-40 to 85°C); <99% RH non-condensing
Power Supply	2 x 1.5V 'AAA' batteries
Battery Life	Approx. 80 hours
Dimensions / Weight	7 x 1.9 x 1" (178.5 x 48.8 x 25.2mm); 4.9 oz. (140g)

Meter Description

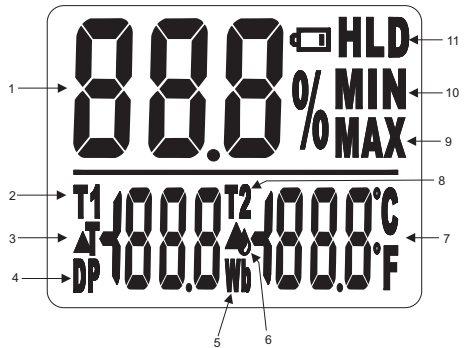
1. Humidity Sensor & Air Temperature Sensor
2. Triple LCD Display
3. ON/OFF button
4. T1-T2/Dew Point/T1 button
5. °F/°C select
6. MIN/MAX/RESET button
7. T2-DP/Wet Bulb/T2 button
8. HOLD button
9. T2 Probe Jack

Note: The battery compartment is located on the rear of the instrument



Display Description

1. Relative Humidity %
2. T1
3. T1-T2
4. Dew Point
5. Wet Bulb
6. T2-Dew Point
7. °C/°F
8. T2
9. Maximum
10. Minimum
11. Low Battery/Hold

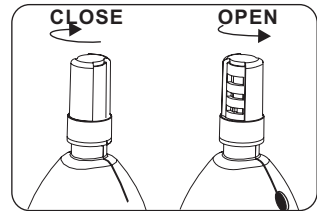


Operation

Open the Protective Sensor Cap

Twist the protective sensor cap, located at the top of the meter, counter-clockwise a quarter of a turn to expose the sensor

Plug in the optional external temperature probe (if needed).

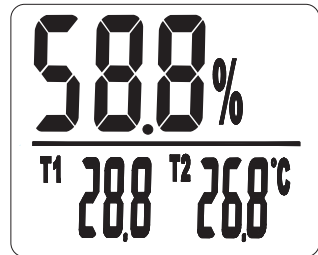


Turn Power ON or OFF

Press the ON/OFF button to turn power on or off. The meter will perform a short self-test when turned on.

Taking measurements

1. Hold the probe in the area to be tested.
2. Allow adequate time for readings to stabilize.
3. The Relative Humidity measurement appears in the top display.
4. Pressing the $\triangle T/DP$ button toggles the lower left display between T1-T2 (internal temperature-external temperature), DP (Dew Point), and T1 (internal temperature).
5. Pressing the $\triangle WB$ button toggles the lower right display between T2-DP (external temperature-Dew Point), WB (Wet Bulb), and T2 (external temperature).



Note: If the external probe is not connected, T1-T2, T2-DP, and T2 measurements will not be displayed.

Selecting temperature units of measure (C/F)

Press and hold the °C/°F button momentarily to toggle the temperature units.

Wet Bulb and Dew Point measurements

1. To read the Wet Bulb measurement, press the $\frac{\Delta WBP}{T_2}$ button until the symbol **Wb** appears in the lower right display. Note: T2 will not be displayed unless the external probe is connected.
2. Wet Bulb temperature is now displayed.
3. To read the Dew Point measurement, press the $\frac{\Delta T/DP}{T_1}$ button until the symbol **DP** appears in the lower left display .
4. Dew Point temperature is now displayed.

Minimum (MIN) Maximum (MAX) Function

The MIN/MAX mode allows the user to view only the lowest (**MIN**) or highest (**MAX**) readings. Press the $\frac{\text{RESET}}{\text{MAX/MIN}}$ button once and **MIN** appears on the display. The display is now showing the lowest humidity and temperature reading in memory. Press the $\frac{\text{RESET}}{\text{MAX/MIN}}$ button again and **MAX** appears on the display. The display is now showing the maximum humidity and temperature readings in memory. To exit the MIN/MAX mode, press the $\frac{\text{RESET}}{\text{MAX/MIN}}$ button again and the **MIN** and **MAX** icons disappear. To clear the current min/max readings in memory, press and hold the $\frac{\text{RESET}}{\text{MAX/MIN}}$ button for more than two seconds.

Data Hold

Press the **HOLD** button momentarily to freeze the displayed reading. The 'HLD' icon will appear on the upper right-hand side of the display. Press the **HOLD** button again to return to normal operation.

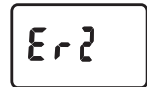
Automatic Power OFF

The meter automatically shuts off after a programmed period of time. The default time is 10 minutes. To program the time period, press down the **HOLD** button while turning the meter on. Continue to hold down both buttons and the meter will cycle through the selectable power-off times: n, 2, 5, 10, 20, 40 or 60 minutes. "n" disables the auto power off function. When the desired power-off time appears in the display, release both buttons to select the time and return to normal operation.

Error Messages

An error message will appear on the display if the meter fails an internal diagnostic test.

1. **ER1:** Relative Humidity failure. Repair/replacement is necessary.
2. **ER2:** Internal temperature failure. Repair/replacement necessary.
3. **ER3:** Reference resistance failure. Repair/replacement necessary.
4. **ER4:** Internal temperature is out of range.
5. **ER5:** External temperature is out of range.



CALIBRATION

The following verification and calibration procedures require the 33% and 75% RH reference bottles which are supplied with the Model RH305 kit.

Accuracy Verification

Checking the 33% or 75% RH Calibration


1. Insert meter's sensor into the 33% or 75% salt reference bottle
2. Check the reading after 10 minutes
3. Verify that the reading is within the accuracy specification

Relative Humidity Calibration (33% and 75%)

33% Calibration

1. Ensure that "**DP**" and "**WB**" appear in the bottom displays before turning the meter OFF.
2. Insert the meter sensor into the 33% salt reference bottle.
3. Allow the meter one hour to stabilize.
4. While holding down the °C/°F button, press and hold the **ON/OFF** button for 2 seconds to enter calibration mode.
5. "**32.8%**" will flash on the LCD screen and "**DP**" and "**WB**" will display "___". After 30 minutes, the flashing will stop to indicate that the 33% calibration is complete. Note: To exit from the calibration procedure before completion, pressing the **ON/OFF** button will turn the meter off.
6. Proceed to the 75% Calibration below.

75% Calibration

1. Insert the meter sensor into the 75% salt reference bottle.
2. Allow the meter one hour to stabilize.
3. Press and hold the  button for 2 seconds to enter the 75% calibration.
4. "**75.3%**" will flash on the LCD. After 30 minutes, the flashing will stop to indicate that the 75% calibration is complete.
5. Turn power off. Calibration is now complete.


Note: If the salt at the bottom of the calibration bottles appears dry, the bottles should be replaced.

Maintenance

Cleaning and storage

1. The meter should be cleaned with a damp cloth and mild detergent when necessary. Do not use solvents or abrasives.
2. Store the meter in an area with moderate temperature and humidity (refer to the operating and storage range in the specifications chart earlier in this manual).

Battery Replacement

When the battery power falls low, the  symbol will appear on the LCD. Replace the two (2) 1.5 'AAA' batteries by removing the rear battery compartment cover and accessing the battery compartment. Observe polarity when placing the batteries in the compartment. Ensure that the compartment cover is securely fastened when finished.

Warranty

EXTECH INSTRUMENTS CORPORATION warrants the basic instrument to be free of defects in parts and workmanship for one year from date of shipment (a six month limited warranty applies on 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 at (781) 890-7440 EXTENSION 210 for authorization or visit www.extech.com for more 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.



Support line (781) 890-7440

Technical support: Extension 200; E-mail: support@extech.com

Repair & Returns: Extension 210; E-mail: repair@extech.com

Product specifications subject to change without notice

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