

# Hygro-Thermometer Pen

## Model 445580

### ***Introduction***

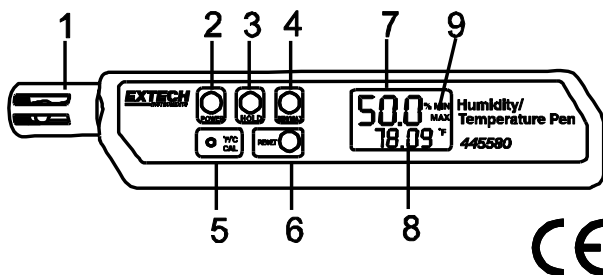
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Congratulations on your purchase of the Extech Hygro-Thermometer Pen Model 445580. The 445580 can measure Relative Humidity from 10% to 90% and Temperature from 14 to 122°F (0 to 50°C). Advanced features include MIN/MAX Memory, Push-button Calibration, Display Hold, and Automatic Power Off.

### ***Meter Description***

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1. Humidity/Temperature Sensor
2. POWER ON/OFF button
3. Data HOLD button
4. MIN/MAX Memory button
5. Calibration and units select button



## Operation

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Press the **ON/OFF** button to turn the meter ON. After a 5-second initialization, the Relative Humidity reading will appear in the upper display and the Temperature reading will appear in the lower display. Allow time for measurement readings to stabilize when moving the meter from one area to another.

### Displayed Error Messages

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

**E2:** Calibration error. Recalibration is necessary.

**E5:** Relative Humidity sensor failure. Repair/replacement is necessary.

### Data Hold

1. Press the **HOLD** button to freeze the displayed reading. The display icon 'HLD' and the held reading will appear on the display.
2. To return the meter to the normal operation mode, press and hold the **RESET** button until the 'HLD' icon switches off.

### MIN-MAX Memory

1. Press and hold the **MIN/MAX** button until 'MIN' appears in the display. The reading will then represent the lowest humidity and temperature measurements recorded since the meter was turned on or last reset.
2. Press and hold the **MIN/MAX** button until the 'MAX' appears on the display. The reading will then represent the highest humidity and temperature measurements recorded since the meter was turned on or last reset.
3. Press the **MIN/MAX** key again to return to normal operation.
4. To reset (clear) the MIN/MAX memory, press and hold the **RESET** button until '88.8' appears in the display.

### Automatic Power OFF (Sleep mode)

The meter will automatically shut off after a period of approximately 20 minutes. To defeat this mode, press and hold the **MIN/MAX** button while turning the meter on. Release the **ON/OFF** button after the display initializes. 'n' will appear on the display indicating that the non-sleep mode has been activated. Note that Sleep mode will be re-activated when the meter is turned off.

### Selecting Temperature Units (C or F)

<b>Caution:</b> Follow this procedure carefully. Accidentally pressing the <b>RESET</b> button during this procedure will compromise the meter's calibration.
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1. Ensure that the meter is off.
2. Press and Hold the recessed **F/C** button (use a paper clip or similar object) and then press the **ON/OFF** button. The unit will power up and the display will flash once. When only the 'F' and 'C' icons appear together in the display, release the **F/C** button.
3. The display will then show either 'C' or 'F'. Press the **MIN/MAX** key to select degrees 'C' or 'F'. The display will reflect the change.
4. Press the recessed **F/C** button to store the selection. 'S' will appear in the display.
5. The display will then show '%MIN'. Turn off the meter to complete the operation.

## Calibration and Verification Procedures

The following procedures require 33% & 75% RH references available through Extech. The meter should be placed in a room temperature environment for the duration of the calibration.

### Verification (Checking the 33% or 75% RH Calibration)

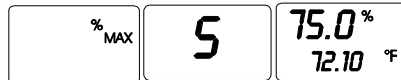
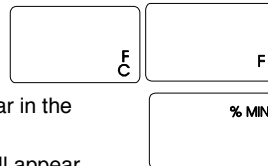
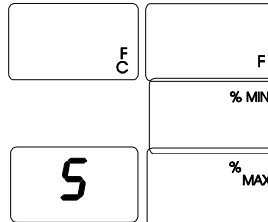
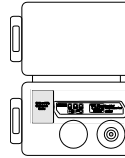
Skip the verification and go directly to the Cal procedure below if it has already been determined that the meter calibration is compromised or if the E2 display appears.

1. Insert meter's sensor into the 33% or 75% salt reference bottle
2. Wait 40 minutes and then check if the reading is within the published specifications

### Relative Humidity Calibration (33% and 75%)

The 33% and the 75% calibrations must both be performed.

1. Start with the meter OFF.
2. Insert the meter's sensor into the 33% salt reference bottle. Allow the meter to stabilize for 40 minutes. Note that for diagnostic purposes the stabilization process can be shortened to 5 minutes.
3. While holding down the recessed **CAL** button with a paper clip, press and release the ON-OFF button. Continue to hold down the **CAL** button, the unit will turn ON and the display will flash once.
4. When only the **F** and **C** icons appear, release the **CAL** button. After releasing the **CAL** button, the display will indicate either **F** or **C** (depending on which one was selected).
5. Press and hold the **RESET** button for 3 seconds. **%MIN** will appear in the display after the **RESET** button is released.
6. Press and release the **CAL** button. **'S'** will briefly display followed by **%MAX** display.
7. Turn the meter OFF. Insert the meter sensor into the 75% salt reference bottle and wait 40 minutes.
8. While holding down the recessed **CAL** button with a paper clip, press and release the **ON-OFF** button. Continue to hold down the **CAL** button, the unit will turn ON and the display will flash once.
9. When only the **F** and **C** icons appear, release the **CAL** button. After releasing the **CAL** button, the display will indicate either **F** or **C**.
10. Press and hold the **RESET** button for 3 seconds. **%MIN** will appear in the display after the **RESET** button is released.
11. Press and hold the **RESET** button again for 3 seconds. **%MAX** will appear after the key is released.
12. Ensure that **%MAX** is displayed and then press **CAL**. **'S'** will appear briefly and the meter will return to normal operation. Turn the power OFF; calibration is complete.



## Battery Replacement

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Use a coin to remove the battery compartment cover on the rear of the meter. Replace the 2032 lithium battery; install the new battery face up (+) in the battery compartment.

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.

## Specifications

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Relative Humidity Sensor	High Precision thin-film capacitance type
Temperature Range	-10 to 50°C (14 to 122°F)
Relative Humidity Range	10 to 90% Relative Humidity
Resolution	Temperature: 0.1°; Relative Humidity: 0.1%
Accuracy (32 to 122°F & 0 to 50°C)	Temperature: $\pm 1.0^{\circ}\text{C}$ ( $\pm 1.8^{\circ}\text{F}$ ); RH: $\pm 5\%$
Power	2032 button battery (150 hour battery life)
Response time	120 seconds
Dimensions	175 x 42 x 16mm (6.9 x 1.6 x 0.6")

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