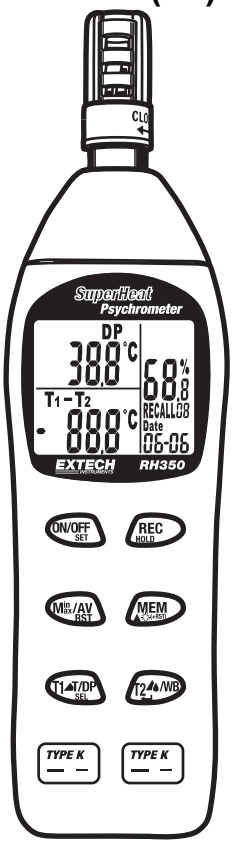
User's Guide

EXTECH INSTRUMENTS
A FLIR COMPANY

SuperHeat Psychrometer

Models RH350 and RH355 (kit)



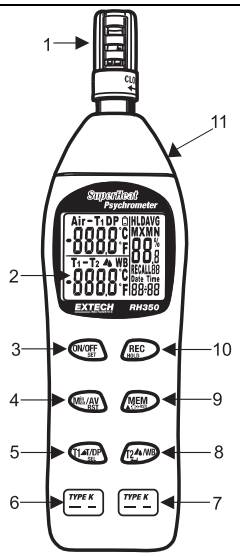
Introduction

Congratulations on your purchase of the Extech RH350 SuperHeat Psychrometer. This device measures Differential Temperature (T1-T2, Air-T1, T1-DP), Humidity, Air Temperature, Dew Point and Wet Bulb. Advanced features include built-in memory and recall of up to 99 data points, Min/MAX/Average readings from the captured data, Data Hold, selectable Auto Power Off, and an RS-232 interface for capturing readings to a PC using optional 407752 software. Careful use of this meter will provide years of reliable service.

Meter Description

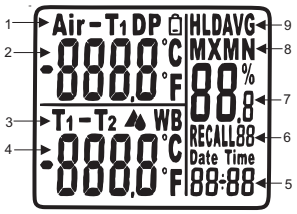
1. Humidity Sensor & Air Temperature Sensor
2. Triple LCD Display
3. On/Off; Set Mode
4. Min/Max/Average; Reset Min/Max
5. Air, T1, Air-T1, Dew Point
6. T1 probe input
7. T2 probe input
8. T1-T2, T2, T1-Dew Point, Wet Bulb
9. Store Current Reading; Backlight
10. Hold; Recall Mode
11. RS232 port

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

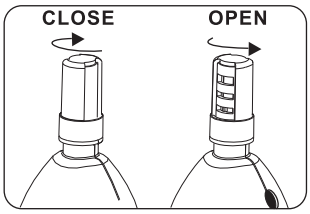


Display Description

1. Air, T1, Air-T1, Dew Point, Low Battery
2. Temperature °C/°F
3. T2, T1-T2, T1-Dew Point, Wet Bulb
4. Temperature °C/°F
5. Date (month, day, year), Time (24 hour clock)
6. Memory Store/Recall Location
7. Relative Humidity %
8. Maximum, Minimum
9. Hold, Average



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 sensors.

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 right display along with the date and time.
4. Air Temperature appears in the top left display.
5. Wet Bulb is in the lower left display.
6. Pressing the **[T1T/DPSEL]** button toggles the top left display between Air temperature, T1 temperature, Air-T1, and DP (Dew Point).
7. Pressing the **[T2▲WB]** button toggles the lower left display between WB (Wet Bulb), T1-T2, T2, and T1-DP (Dew Point).

Selecting temperature units of measure (C/F)

When the meter is off, press and hold the **[ON/OFFSET]** button for more than one second to enter setup mode. Momentarily press the **[T1T/DPSEL]** button until “unit” appears in the display. Press the **[MEM]** button to toggle between C or F. Press the **[T2▲WB]** button to confirm the setting and return to normal operation.

Setting the Date/Time (24 hour clock)

When the meter is off, press and hold the **[ON/OFFSET]** button for more than one second to enter setup mode. Press the **[T1T/DPSEL]** button to select Year, Month, Day, Hour and Minute in sequence. Press the **[MEM]** button to change the settings. After the Minute setting is complete, press the **[T2▲WB]** button to confirm the date/time setting and return to normal operation.

Data Hold

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

Minimum (MN) Maximum (MX) Average (AVG) Function

The MIN/MAX/Average mode allows the user to view only the lowest (**MN**), highest (**MX**) or average readings. Press the **[MIN/AVRST]** button once and **MN** appears on the display. The display is now showing the lowest humidity and temperature readings in memory. Press the **[MIN/AVRST]** button again and **MX** appears on the display. The display is now showing the maximum humidity and temperature readings in memory. Press the **[MIN/AVRST]** button again to display the average (**AVG**) readings in memory. To exit the MIN/MAX/AVG mode, press the **[MIN/AVRST]** button. To clear the current min/max/avg readings in memory, press and hold the **[MIN/AVRST]** button for more than two seconds.

Backlight Display

Press the **[M^{in}/AVRST]** and **[MEM]** buttons together to turn on the backlight. It will remain on for ten seconds.

Automatic Power OFF

With the meter off, press and hold down the **[ON/OFFSET] + [RECHOLD]** buttons for more than 1 second to enter auto power off settings. Press the **[MEM]** button to select non-sleep (n) or 2, 5, 10, 20, 40 and 60 minutes autosleep. Press **[T2▲WB]** to confirm the selection.

Manual Datalogging

Manual datalogging allows the user to store and recall up to 99 readings with the press of a button.

1. Press the **[MEM]** button to manually store a single reading into memory. The display will flash 3 times and the memory location number will be displayed below the humidity reading.
2. To view stored readings, press and hold the **[RECHOLD]** button for 2 seconds and "RECALL" will blink next to the memory location number on the display.
3. Press the **[MEM]** button to manually increment through the stored readings.
4. Press **[RECHOLD] + [MEM]** for more than 1 second to clear the memory.
5. Press **[RECHOLD]** for more than 1 second to return to normal operation.

Note: In RECALL mode, pressing the **[M^{in}/AVRST]** button for min/max/avg readings will auto search the stored readings in memory and display the minimum, maximum and average values of the stored readings.

Note: An infrared printer port is located on the side of the meter. This feature is used on more advanced models and is not functional on this model.

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 at (781) 890-7440 ext. 210 for authorization or 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

The following verification and calibration procedures require the 33% and 75% RH reference bottles which are supplied with the Model RH355 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 a minimum of 10 minutes
3. Verify that the reading is within the accuracy specification

Relative Humidity Calibration (33% and 75%)

33% Calibration

1. Turn 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 **[MIN/AVRST]** button, press and hold the **[ON/OFFSET]** button for 2 seconds to enter calibration mode.
5. "**32.8%**" (reading may vary depending on operating temperature) will flash on the LCD screen. 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/OFFSET]** 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 **[MIN/AVRST]** button for 2 seconds to enter the 75% calibration.
4. "**75.3%**" (reading may vary depending on operating temperature) 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: Frequently check the water level in the salt bottles. Both the 33% and 75% bottles should be completely saturated with some water present. The bottles are sealed and not refillable.

RS-232 PC Communications Interface

The meter is equipped with an RS-232 PC interface jack (3.5mm phono) for connection to a PC. The cable to connect the meter to the PC is included in the optional 407752 data acquisition kit. The kit includes Windows™ compatible software that allows the user to store readings in a text file and display real-time measurements in a series of selectable formats. For more information or specific operating instructions, refer to the User Guide included with the 407752 kit or contact Extech Instruments.

Specifications

Function	Range and Resolution	Accuracy
Humidity	0.0 to 100.0% RH	±3% RH (10 to 90%) @ 23°C
Temperature (air)	-4.0 to 122.0°F (-20 to 50°C)	±1.8°F (±1°C)
Temperature (external K)	-40 to 1832°F (-40 to 1000°C)	±(0.3% rdg + 1.8°F (1°C))

Display	Triple LCD
Sensor Type	Humidity: Precision capacitance sensor Internal Temperature: Thermistor External Temperature: K-Type Thermocouple
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)
Low Battery Indicator	Yes
Overrange Indicator	E2 (air) E5 (T1), E8 (T2)
Underrange Indicator	E3 (air), E6 (T1), E9 (T2)
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	4 x 1.5V 'AAA' batteries
Battery Life	Approx. 300 hours
Dimensions / Weight	9 x 2.2 x 1.7" (230 x 57 x 44mm); 5.3 oz. (153g)

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 four (4) 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.

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

For the latest version of this User's Guide, Software updates, and other up-to-the-minute product information, visit our website: www.extech.com

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