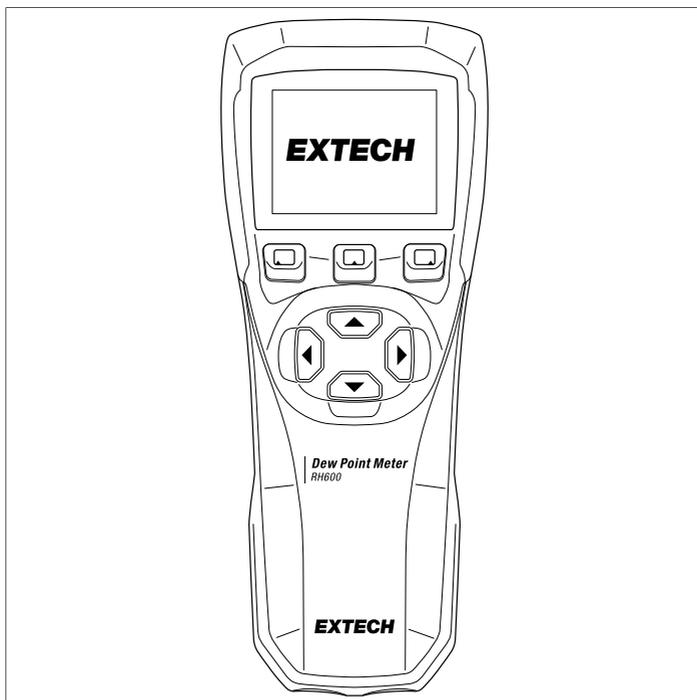


# **EXTECH**<sup>®</sup>

# USER MANUAL

## **RH600 Dew Point Meter**



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# 1 Introduction

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Thank you for selecting the Extech RH600 Dew Point Meter. The supplied RH601 probe measures temperature and relative humidity over a wide range with high accuracy. The RH600 then calculates other readings based on the probe measurements. See the full list of readings in Section 11, *Specifications*.

On the meter's home page (Section 6), any two readings can be selected to display, in addition to the fixed temperature display, for a total of three readings on one page.

The RH600 can perform spot checks in ambient air and in industrial processes where the probe can be mounted directly into pressurized systems. The probe adapts rapidly from ambient to process conditions and includes a purge (purification) feature allowing it to dry quickly from process moisture and condensation (see Section 4).

RH600 features include:

- Color LCD with adjustable brightness.
- Intuitive user interface with three context-sensitive function buttons.
- High quality industrial design for long-term stability and low maintenance.
- Wide measurement range: -58 to 86°F (-50 to 30°C).
- High and low alarms with audible and visual alerts.
- Sensor is designed especially for low humidity measurements.
- Selectable probe pressure/molar mass settings to match gas under test.
- Data Logger stores time-stamped readings to internal flash drive.
- Data Hold feature locks readings on the display.
- Data Hold readings can also be saved to the internal flash drive.
- PC interface for downloading stored Data Logger and Data Hold readings.
- Open downloaded data files in PC spreadsheet programs.
- Firmware can be upgraded by the user.
- Programmable auto power off utility.
- The package includes RH600 meter, RH601 probe, USB cable, 3.7 V lithium rechargeable battery, AC power plugs, and user documentation.

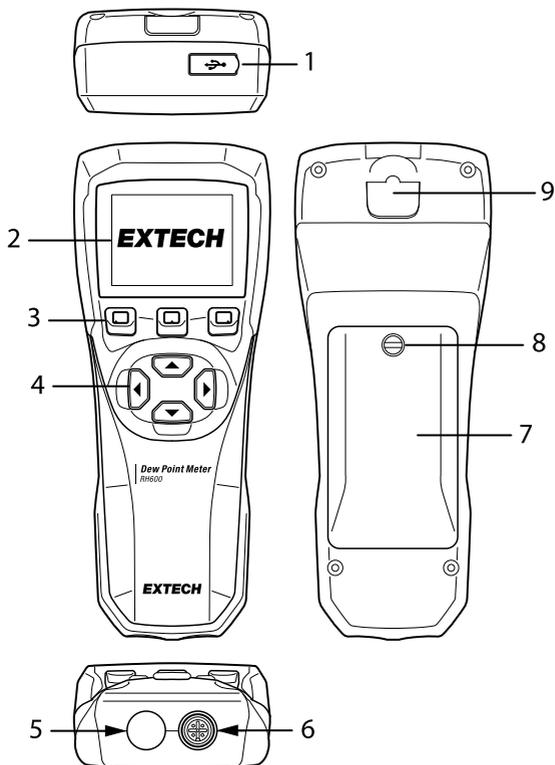
## **NOTE**

This document does not contain export-controlled information.

# 2 Descriptions

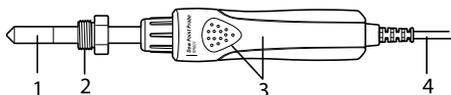
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## 2.1 Meter (RH600) Description



1. USB charging and PC interface port.
2. Color LCD.
3. Three function buttons, F1, F2, and F3 (see Section 2.2).
4. Four navigation and programming arrow buttons (see Section 2.2).
5. Unused port.
6. Probe connector.
7. Battery compartment.
8. Compartment locking screw.
9. Mounting hole.

## 2.2 Probe (RH601) Description



1. Probe sensor tip with protective cap.
2. Threaded connector (0.5 inch).
3. Probe handle grip.
4. Probe cable.

## 2.3 Button Descriptions

### 2.3.1 Function Buttons

The context-sensitive function buttons (F1 , F2 , and F3 ) are located directly below the display, from left to right. The function that is selected by pressing one of these buttons is dependent on the icon (or text) directly above it, in almost all cases. The only exception is the F2 power ON/OFF functions; short press F2 to power the meter ON, long press F2 to power OFF. See Section 2.4, below, for explanations of the icons and text that appear above the function buttons.

### 2.3.2 Arrow Buttons

The four arrow buttons (, , , ) are used to navigate and change settings in menus as explained throughout this user manual. When viewing graphs of data recorded using the Data Logger or the Data Hold function (not the real-time graphs accessible from the Home page), you can use the left and right arrows to move the cursor along the points of the graph curve, as explained in Section 8, *Data Recording*. The up and down arrow buttons are also used when performing a firmware update, as explained in Section 10.3.

## 2.4 Function Button Icon and Text Descriptions

	Press F1 to return from (exit) a menu.
	Press F3 to select, confirm, or change a menu option.
<b>HOLD</b>	Press F2 to freeze the displayed readings. See Section 6.4, <i>Data Hold</i> , and Section 8, <i>Data Recording</i> , for specifics.
	Press F3 to open the programming menu. See Section 7 for Programming menu information.

	<p>From the Home page (Section 6), press F1 to begin viewing real-time readings plotted on graphs. When the first graph opens, this icon will move to the area above F3, press F3 at that point to step through all the available graphs.</p> <p>When you select <b>View Data File</b> from the <i>Recording</i> menu, and then open a Data Log or a Data Hold file, press F3 to step through the four graphs that represent the saved readings. See Section 8, <i>Data Recording</i>, for specifics.</p>
<p><b>1S, 1min</b></p>	<p>When viewing real-time readings plotted on a graph, as explained directly above and in Section 6, press F2 to set the sampling rate (interval of time between readings). The options are 1, 5 or 30 seconds and 1, 5, or 10 minutes.</p>
	<p>Press F3 to save the readings that are held while the Data Hold function is engaged. See Section 6.4, <i>Data Hold</i>, and Section 8, <i>Data Recording</i>, for complete details.</p>
	<p>Press F2 to view a Data Log file or a Data Hold file as a summary page. See Section 8, <i>Data Recording</i>, for details.</p>

# 3 Quick Steps

---

1. Connect the probe to the port at the bottom of the meter (Section 4.1).
2. Remove the probe's protective cap and mount it in the process under test using the threaded connector (0.5 inch) or hold it in ambient air (Section 4.2).
3. Short press F2 (orange colored function button) to power the meter, the Home page will appear (Section 6).
4. View the three displayed readings. Press the left or right arrow button to view the readings in a concise text format. Press the left or right arrow to return to the Home page.
5. Press F2 (HOLD), to freeze readings. Press F1  to release the held readings. Press F3 , while readings are held, to save them.
6. Press F1  to view real-time readings plotted on a set of four graphs (Section 6). When the first graph is shown, the graph icon moves above F3. Press F3 to step through the graph pages. Press F2 to set the interval of time between captured readings. Press F1  to return to the Home page.
7. Press F3  to open the Programming menu (Section 7).
8. Long press F2, until the progress bar reaches 100%, to power off.

# 4 Probe Use and Configuration

---

## 4.1 Connecting the Probe to the Meter

The probe connects to the port at the bottom of the meter. The four-pin connection is keyed allowing only one insertion orientation; ensure proper orientation before applying pressure when inserting, do not force the connector. Once the probe is connected to the meter, tighten the knurled screw to secure the connection.

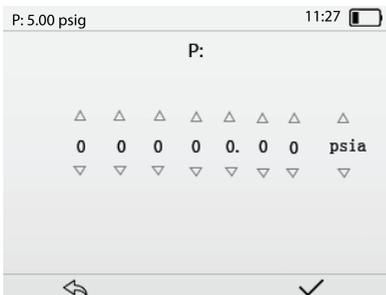
## 4.2 Connecting the Probe to a Process

Remove and safely store the probe's protective cap. Insert the probe into the access port of the process under test. The probe has 0.5 inch threads for mounting. The probe can also be used in ambient air.

## 4.3 Setting the Probe Pressure

Set the probe's Pressure setting to match the gas under test. See the steps below.

- Press F3  to open the programming menu.
- Use the left or right arrow to scroll to *Environment*.
- Press F3  to open the *Environment* menu.
- At the **Pressure (P:)** menu option, press F3.
- Use the arrow buttons to set the pressure (psi). Press F1  to confirm and to return to the previous menu.



**Figure 4.1** Use the arrow buttons to set the probe pressure to match the pressure of the gas under test.

#### 4.4 Setting the Probe Molar Mass

Set the probe's Molar Mass setting to match the gas under test. See the steps below. The molar mass of air is 28.96 g/mol and the molar mass of SF6 is 146.05 g/mol.

- Press F3  to open the Programming menu.
- Use the left or right arrow to scroll to *Environment*.
- Press F3  to open the *Environment* menu.
- At the **PPM** option (2nd row), press F3.
- Use the arrow buttons to set the molar mass value. Press F1  to confirm and to return to the previous menu.



**Figure 4.2** Use the arrow buttons to set the probe molar mass to match the molar mass of the gas under test.

#### 4.5 Purging Moisture from Probe (Purification)

When you activate the Purification option, the probe enters a five-minute purge cycle. See the steps below.

- Press F3  to open the programming menu.
- Use the left or right arrow to scroll to *Environment*.
- Press F3  to open the *Environment* menu.
- At the **Purification** option, press F3.
- The display will show an alert message indicating that a five-minute purge cycle is in process. The meter menus are not accessible during the purge cycle. When the purge cycle is complete, the alert message will switch off and the meter menus will be fully operational.

# 5 Powering the Meter

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The RH600 is supplied with a 3.7 V rechargeable lithium battery. Insert the battery in the rear compartment, observing correct polarity. The rear compartment is secured by one screw.

The battery status icon is located on the upper right corner of the display . To charge the battery, connect the RH600 to a power source using the supplied USB cable and AC mains plug. When the RH600 is charging, the battery status icon appears with a charging symbol embedded .

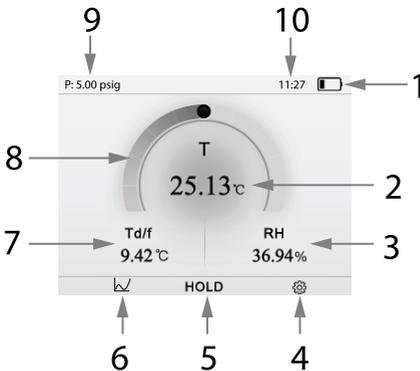
Short press F2 (centre, orange function button) to power the meter. Long press F2, until the displayed progress bar reaches 100%, to switch the meter off.

For battery servicing and replacement, see Section 12, *Maintenance*.

# 6 Home Page

## 6.1 Home Page Description

The home page (Figure 6.1) appears soon after the meter is switched on.



**Figure 6.1** Home Page

1. Battery voltage status.
2. Temperature reading.
3. Selectable reading (relative humidity, in this example). See *Display* in the Programming menu (Section 7) for details on selecting a reading type.
4. Programming menu icon. Press F3 under this icon to open the menu.
5. Data Hold. Press F2 under the word HOLD to freeze the displayed readings.
6. Press F1  to view real-time readings plotted on x-y graphs. Once in the graph mode, the graph icon will appear above F3. Press F3 at that point to step through all four of the real-time data graphs.
7. Selectable reading (dew point/frost point temperature, in this example). See *Display* in the Programming menu (Section 7) for details.
8. Temperature reading, shown on a bar graph.
9. Selectable pressure value. See Section 4.3 for details on setting the probe pressure value to match the gas under test.
10. Time, in hours and minutes. Set the Time in the *Settings* programming menu, see Section 7. If you select the 12 hour clock mode the display will show AM or PM after the time.

## 6.2 Home Page Summary Display

If you press the left or right arrow button at the Home page, the readings are presented in a summary format as shown in Figure 6.2. Press the left or right arrow button to return to the Home page.

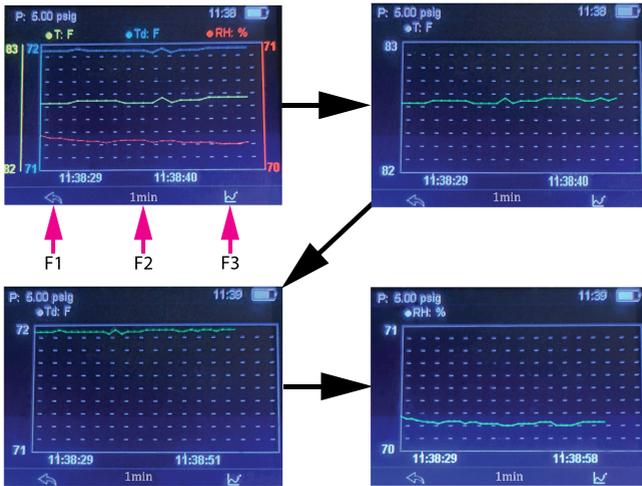


**Figure 6.2** Press the right or left arrow button from the Home page to view the readings in summary format.

## 6.3 Real-Time Readings Plotted on Graphs

If you press F1 at the Home page, you can view readings plotted in real-time on a set of four graphs. As shown in Figure 6.3, below, the first graph (upper left) shows all three readings plotted on one graph. The remaining three graphs show one reading per graph. Note that once you've accessed the graph mode, the graph icon is located above F3. Press F3 to step through all graphs.

Press F2 to set the rate at which readings are plotted on the graphs. You can select 1 second (1S), 5 seconds (5S), 30 seconds (30S), 1 minute (1min), 5 minutes (5min), or 10 minutes (10min). Press F1 to return to the Home page.



**Figure 6.3** Real-time readings shown on four graphs. Press F1 from the Home Page to open the first graph (upper left) which shows all readings on one graph. Press F3 to step through the other graphs which show one reading per graph and then back to the first graph. Press F2 to change the sampling rate (interval between each captured reading). Press F1 to return to the Home page.

#### 6.4 Data Hold Mode

The Data Hold feature allows you to freeze readings on the display. The readings are held on the display until you release them, as explained below.

1. From the Home page, press F2 under the word HOLD.
2. The display will show the word **HOLD** in red, and the readings will be frozen.
3. To save these readings press F3 .
4. To release the readings and return to the Home page, press F1.

The readings that you save in the Data Hold mode are saved to a file named *Hold and Save* in the RH600 internal flash drive for later viewing on the meter display and for downloading to a PC. Files downloaded to a PC can be opened in a spreadsheet for general use and for creating professional reports. See Section 8, *Data Recording*, for complete information on viewing and downloading recorded data.

# 7 Programming Menu

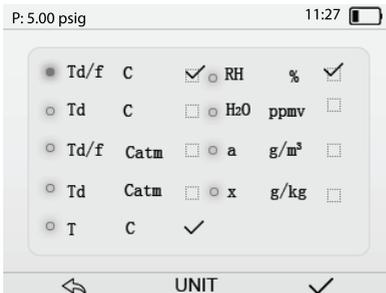


**Figure 7.1** Programming menu

Press F3  to open the Programming menu. The menu has five (5) items, *Functions, Recording, Display, Environment, and Settings*. Use the left/right arrow buttons to highlight an item. Press F3  to open an item. Press F1  from any page to return to the previous page. Each menu option is outlined below, with complete details provided in separate dedicated sections where necessary.

## 7.1 Display Menu

The *Display* menu is where you select the two readings that are displayed on the Home page, on the lower left and lower right side of the temperature reading (the temperature reading at the centre of the Home page is fixed; it cannot be removed or changed).



**Figure 7.2** Display menu. Select the readings that will be displayed on the Home page. The temperature reading is fixed on the Home page, the two other readings are selected on this menu page. Press F2 under UNIT to change the unit of measure for a highlighted reading.

Use the arrow buttons to scroll to a reading, and then press F3 ✓ to select or deselect the reading. Three readings must be selected at all times, otherwise an error message will appear. You must deselect a reading, when three are already selected, before you can select a new one.

Press F2 (UNIT), to change the unit of measure for the selected reading.

Press F1 ↶ to return to the main menu.

## 7.2 Functions Menu

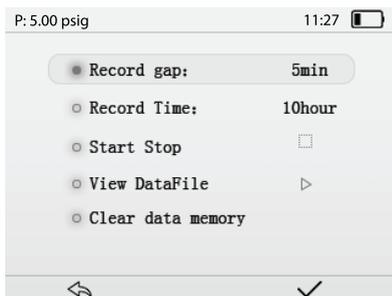
In the *Functions* menu you can configure low and high Alarms, turn the Alarms ON/OFF, and initiate meter-to-PC communication, after connecting the RH600 to a PC using the supplied USB cable. Use the arrow buttons to scroll. Press F3 ✓ to open or select an item. See Section 9, *Alarms*, and Section 10, *PC interface*, for details.



**Figure 7.3** Functions menu. Set Low/High Alarm Limits and switch the Alarm function ON/OFF. Initiate meter/PC communication after connecting the meter to the PC using the supplied USB cable.

### 7.3 Recording Menu

In the *Recording* menu you can start/stop the data logger, configure the logging sample rate (gap) and session duration (time), and view/erase logged data. Use the arrow buttons to scroll. Press F3 ✓ to open or select an option. See Section 8, *Data Logging*, for specifics.



**Figure 7.4** The first Recording menu page. See Section 8, *Data Recording*, for additional display pages and instructions.

### 7.4 Environment Menu

In the *Environment* menu you can set the probe's pressure and molar mass values to match the gas pressure/molar mass under test. In this menu, you can also purge the probe of process liquids and condensation by selecting *Purification*. Use the arrow buttons to scroll. Press F3 ✓ to open or select an option. See Section 4 for specifics on Probe Pressure, Molar Mass, and Purification.



**Figure 7.5** The first Environment menu page. See dedicated Probe section for additional screens and instructions.

## 7.5 Settings Menu

In the *Settings* menu you can set the displayed language, auto power off (APO) time, display brightness, date/time, and keypad tone ON/OFF. You can also view the meter firmware version (see Section 10.3 for firmware update information). Press F3 ✓ to open and to change a setting. Additional information below.



**Figure 7.6** Settings menu.

- Language selection: Press F3 to select a language.
- Auto Power Off (APO) time: Press F3 to set the APO time to OFF, 10, 15, 20, 25, or 30 minutes. Note that APO is disabled while the Data Logging is running. The APO function will be enabled automatically when the Data Logging stops recording.
- Display brightness: Press F3 to select the brightness level from 1 (dimmed) to 10 (brightest).
- Date/Time setting: Use the navigation arrow buttons to set the Year, Month, Day, Hour, and Minutes. You can also select 12 or 24 clock modes. When 12 hour clock mode is selected, the display shows AM or PM after the time.
- Keypad tone ON/OFF: Press F3 to set the keypad tone ON or OFF.



**Figure 7.7** Setting the Time and Date. Use the arrow buttons to change the Year, Month, Day, Hour, Minutes, and 12 or 24 hour clock.

# 8 Data Recording

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## 8.1 Data Recording Overview

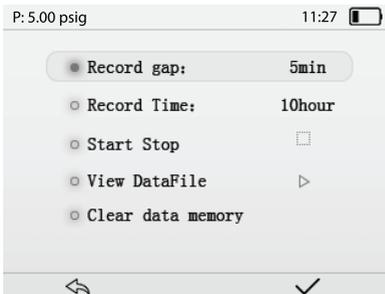
There are two ways to record readings to the RH600 internal flash drive. One way is using the **Data Logger**, where readings are automatically recorded at a selectable sample rate over a programmable time period. The second way is using the **Data Hold** function.

The internal flash drive can store up to 32 files. Each file can hold 1000 readings for an overall total of 32,000 readings. Data recorded using the Data logger or the Data Hold function can be viewed on the RH600 display (graphically and as text summary) and downloaded to a PC for viewing and saving in spreadsheet programs.

Note that even though the RH600 shows only 3 readings at one time on its Home page, *all* available readings are captured when data is recorded, as shown in Figure 8.7, below.

## 8.2 Programming the Data Logger

Navigate to the *Recording* page in the programming menu, by first pressing F3 , and then use the arrow buttons to step to *Recording*. Press F3  to open the *Recording* menu, and then use the arrow buttons to step through the options. Set the Data logger options as explained below.



**Figure 8.1** Recording menu main page.

**Record Gap:** Use F3 to set the sampling rate of the Data logger. Set it to record a reading every 10 seconds, 1 minute, 5 minutes, 10 minutes or 20 minutes.

**Record Time:** Use F3 to set the logging duration: 1, 5, 10, 12, 24, or 48 hours. Data logging sessions will automatically end after the programmed recording time. You can manually stop a recording session by selecting **Stop** in the *Recording* menu.

For long logging sessions, it is recommended that you connect the RH600 to a power source to ensure that it does not switch off during the session because of a low battery condition.

The APO (automatic power off) function is disabled while the RH600 is logging. When logging stops the APO function is again active. The APO utility is configured in the *Settings* programming menu (Section 7).

### 8.3 Start/Stop Data Log Recording

On the *Recording* page, as covered in section 8.2, scroll to the **Start/Stop** option and press F3 to start or stop the Data logger. When the logger is recording, a red circle is shown at the top of the screen . The logger will automatically stop when the programmed logging time has elapsed; the red circle will switch off. Note that you can manually stop the recording session at any time by selecting **Stop** in the *Recording* menu.

### 8.4 Data Recording Using the Data Hold Function

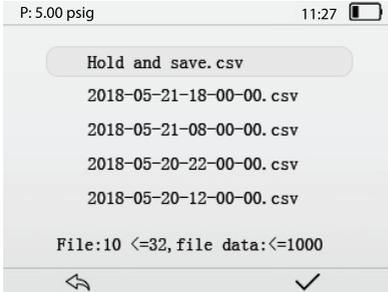
As mentioned in Section 2.3, *Button Descriptions*, and Section 6.4, *Data Hold*, you can freeze displayed readings by pressing F2 (HOLD). The word **HOLD** (in red) then appears on the display, indicating that the Data Hold function is engaged, and the readings are frozen.

If you press F3 , in the Data Hold mode, the held readings will be stored to a file named *Hold and Save*, in the internal flash drive. These readings can be viewed on the RH600 display (graphically and as text) and can be downloaded to PC, as explained in Sections 8.6 and 8.8, below. Press F1  to exit the Data Hold mode.

### 8.5 Viewing Recorded Data on the RH600 Display

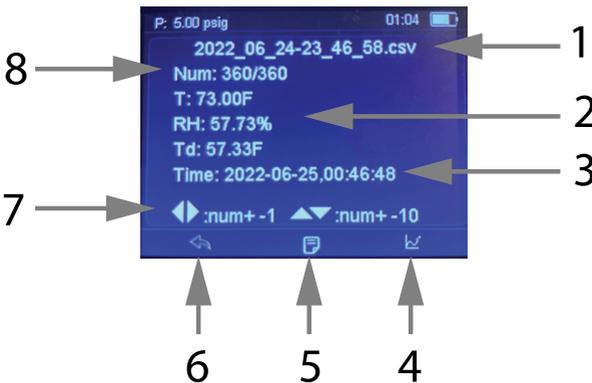
To view readings saved by the Data Logger or the Data Hold function, scroll to the **View Data File** option in the *Recording* menu and press F3. The list of stored files will appear as shown in Figure 8.2. Use the up and down arrow buttons to scroll through the files. Data logger files are named using the date and time of recording – there is a data log file for each logging session. All

data saved using the Data Hold function, however, are cumulatively saved in **one file** named *Hold and Save*. Press F3 to open a selected file.



**Figure 8.2** Data Logger files are named using the date and time of the logging session (one file for each logging session). There is only one Data Hold file, named 'Hold and Save', which stores all the readings that you save, at various times, using the Data Hold function.

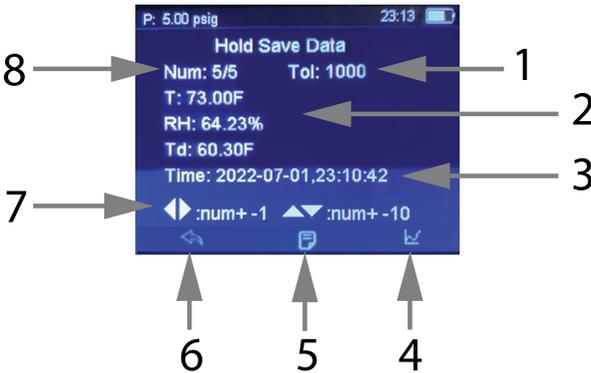
Figure 8.3, below, shows an opened Data Logger file. Figure 8.4 shows an opened Data Hold file. Reference the steps below each diagram for details regarding the opened file.



**Figure 8.3** An example of an opened Data Log file viewed on the RH600 display.

1. Filename for saved Data Log file.
2. Logged reading values.
3. Time and date of readings.
4. Press F3  to step through graphical representations of the logged data, as covered in the next section.

5. Press F2  to show a summary page of the logged data file, as shown in the next section.
6. Press F1 to return to the previous page.
7. Use the left/right arrow buttons to scroll data one by one; use the up/down arrow buttons to scroll data ten readings at a time.
8. In this example, reading number 360, of the 360 saved readings in the file, is shown on this page.

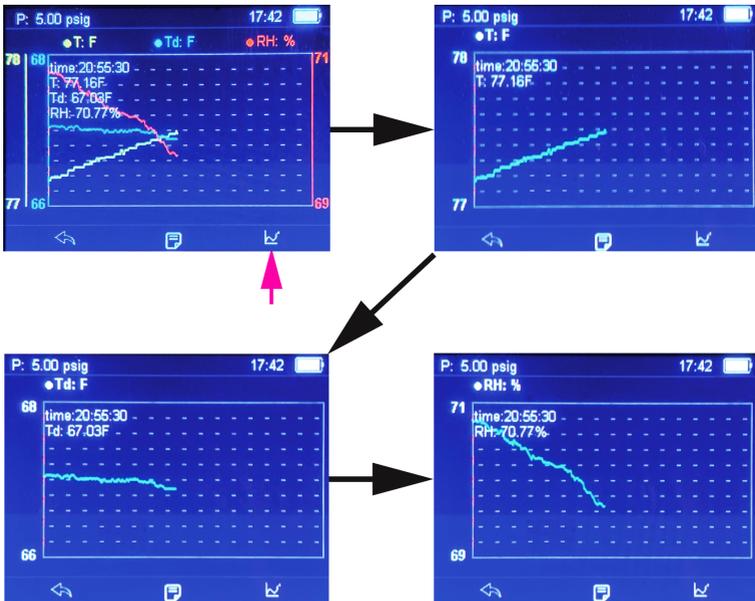


**Figure 8.4** An example of an opened Data Hold file, viewed on the RH600 display.

1. Total number of readings that can be stored in one file is 1000. Up to 32 files can be stored in the RH600.
2. Saved readings.
3. Time and Date of readings.
4. Press F3  to step through graphical representations of the readings, as covered in the next section.
5. Press F2  to show a summary page of the data file, as shown in the next section.
6. Press F1 to exit this page.
7. Use the left/right arrow buttons to step through readings one at a time. Use the up/down arrows to skip 10 readings at a time.
8. In this example, reading number 5, of the 5 saved readings, is shown.

## 8.6 Viewing Data Files on Graphs

When you press F3  from an opened Data Log or Data Hold file, the data are presented on graphs. Step through the set of four graphs by pressing F3 . The first graph that appears shows all readings on one graph, as shown on the upper left screen in Figure 8.5, below. The next three graphs show each reading represented on its own graph. Use the left and right arrow buttons to move the cursor along a data curve to analyze individual measurement points.



**Figure 8.5** Graphical representations of recorded data. Press F3 in an opened data file to step through the four graphs. The first graph (upper left), shows all the data on one graph, the second screen (upper right) shows only the Temperature data, the next two screens show the user-selected readings. In this example, dew point and relative humidity. Use the left/right arrow buttons to move the cursor along a curve to analyze individual measurement points.

Press F2 , from a graph page, to show a summary of the data file, as shown below in Figure 8.6.



**Figure 8.6** Data file summary page.

1. Start and Stop time and date for the recorded data.
2. Maximum (MAX) and Minimum (MIN) values show the highest and lowest readings recorded in a data file.
3. Press F1 to return to previous page.

### 8.7 Clearing Data Memory

To clear ALL user data, scroll to the **Clear Data Memory** option in the *Recording* menu and press F3 to execute the procedure. Press F1 ↩ to abort the procedure and to return to the previous page. Back up important data to your PC, as explained in Section 8.8, before clearing user data.

### NOTE

When you clear memory, all Data Log files, Data Hold files, and the firmware file are removed. Please backup all important data, as explained in Section 8.8, before clearing the memory. Erasing the firmware file will not affect meter operation, but you'll need to obtain a new file if you wish to reset the current firmware or to upgrade the firmware; see the firmware update instructions in Section 10.3.

### 8.8 Downloading and Backing Up Data Files to a PC

Recorded data is stored in plain text CSV (Comma Separated Values) files, and can be easily opened in spreadsheet programs. See Figure 8.6 below for an example of a data file opened in a spreadsheet.

To download and back up files, connect the RH600 to a PC using the supplied USB cable. The RH600 USB port is located at the top of the meter, as shown in Section 2.1. Once connected, go to *Functions* in the programming menu and select **Connect Computer**; the PC will recognize the RH600 as an external storage drive. Simply move files from the RH600 root directory to the PC to download and back up files.

Num	Date	Time	T	Td/f	RH	H2Oppm	a	x	Td	Td(f(atm))	Td(atm)	pressure	ppmwM
#1	6/21/2022	0:10:00	67.68F	50.65F	54.29%	12569ppmv	9.30g/m3	7.81g/kg	50.65F	10.36Catm	10.36Catm	-0.00psig	28.96g/mol
#2	6/21/2022	0:10:10	67.68F	50.65F	54.31%	12573ppmv	9.30g/m3	7.82g/kg	50.65F	10.36Catm	10.36Catm	-0.00psig	28.96g/mol
#3	6/21/2022	0:10:20	67.68F	50.65F	54.29%	12570ppmv	9.30g/m3	7.81g/kg	50.65F	10.36Catm	10.36Catm	-0.00psig	28.96g/mol
#4	6/21/2022	0:10:30	67.66F	50.63F	54.28%	12559ppmv	9.29g/m3	7.81g/kg	50.63F	10.35Catm	10.35Catm	-0.00psig	28.96g/mol
#5	6/21/2022	0:10:40	67.66F	50.61F	54.27%	12557ppmv	9.29g/m3	7.81g/kg	50.61F	10.34Catm	10.34Catm	-0.00psig	28.96g/mol
#6	6/21/2022	0:10:50	67.66F	50.61F	54.26%	12555ppmv	9.29g/m3	7.81g/kg	50.61F	10.34Catm	10.34Catm	-0.00psig	28.96g/mol

**Figure 8.7** Data file opened in a spreadsheet. Note that ALL available readings are captured, not only the three readings that are shown on the RH600 Home page. Each reading is numbered and date/time-stamped.

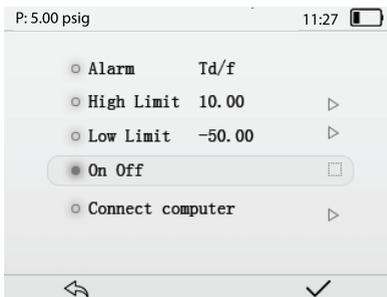
# 9 Alarm Utility

## 9.1 Alarm Utility Overview

The RH600 has a programmable low and high alarm. In the programming menu, you enable/disable the alarm function, select a specific parameter to monitor, and set the low and high alarm limits. When an alarm is triggered, a red alarm icon will flash at the top of the display and the beeper will sound.

## 9.2 Alarm Operation

1. Press F3  to open the Programming menu.
2. Use the left or right arrow to scroll to *Functions*.
3. Press F3 to open the *Functions* menu.
4. At the **Alarm** row, press F3 to select a reading type to monitor.
5. Scroll to **High Limit** and press F3. Use the arrow buttons to set the high alarm limit. Press F3 to confirm.
6. Scroll to **Low Limit** and press F3. Use the arrow buttons to set the low alarm limit. Press F3 to confirm.
7. Scroll to **ON/OFF** and press F3 to turn the alarm function ON or OFF.
8. Press F1  to return to the main menu.
9. When an alarm is triggered, the red alarm icon  will flash at the top of the display and the alarm beeper will sound. To silence the alarm, select OFF in the *Functions* menu.



**Figure 9.1** Functions menu showing the low and high alarm options. Note that the Connect to Computer option is used when connecting the RH600 to a PC, see Section 10, PC Interface, for specifics.

# 10 PC Interface

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## 10.1 PC Connection Overview

The RH600 can be connected to a PC to download saved Data Logger and Data Hold readings and to perform a firmware upgrade. Use the supplied USB cable to connect the RH600 to a PC USB port. The RH600 USB port is located at the top of the meter as shown in Section 2.1, *Meter Description*.

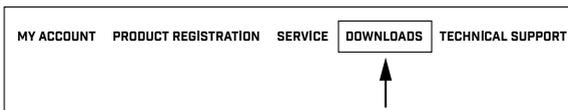
## 10.2 Initiating Meter-to-PC Communication

1. Connect the meter to the PC using the supplied USB cable.
2. Press F3  to open the programming menu.
3. Use the left arrow button to step to *Functions*.
4. Use the down arrow button to scroll to **Connect to Computer**.
5. Press F3  at the **Connect to Computer** command to initiate communication.
6. The USB icon  will appear the top of the RH600 display when communication has been established. The PC will recognize the RH600 as a standard external drive. The RH600 drive will appear in *File Explorer* (Windows) or in the *Finder* (Mac).
7. Follow the instructions in Section 8, *Data Recording*, above, for saving and downloading recorded data files.

## 10.3 Updating the RH600 Firmware

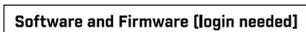
Occasionally, the RH600 firmware is updated to add or improve functionality. Follow the steps below to check for, and perform, available firmware updates.

1. Go to the support site: <https://support.flir.com>
2. Click on the **DOWNLOADS** menu heading, as shown.



**Figure 10.1** Click 'DOWNLOADS'.

3. Click **Software and Firmware** as shown.



**Figure 10.2** Click the 'Software and Firmware' item from the options list.

4. Type your **Email Address** to log in or to create an account, as shown. Click **Continue**.

### Sign in

Or create a new account by entering your email address below

**EMAIL ADDRESS**

**CONTINUE**

5. For Figure 10.3, below, 1. Type **RH600** in the search field; 2. Select **FLIR / Extech Meters Software** from the pull-down menu; 3. Select **Extech Software** from the pull-down menu; 4. Click **SEARCH**; 5. Click the update file to download it to your PC.

### Software and Firmware

Click [here](#) for the 10 most recently uploaded downloads

**Product**

2 →  v

3 →  v

1 ↓

4 ← **SEARCH**

*i* Please click one of the links below to get more info about the download

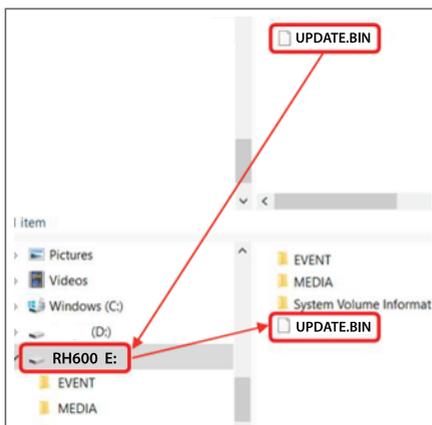
Software for Extech Test & Measurement meters can be found here:

5 → (available firmware update files would be listed here)

**Figure 10.3** Follow the steps to complete the download process.

6. Clear the RH600 memory by navigating to *Recording* in the programming menu and selecting **Clear Data Memory**. Save any important data (Section 8.8) before performing this step as all user data will be lost once you clear the data.
7. With the RH600 powered OFF, hold the **UP** and **DOWN** arrow buttons while powering ON the RH600 (short press F2). Release the arrow buttons when you see *UBOOT* on the RH600 display.
8. Connect the RH600 to the PC using the supplied USB cable.

9. The PC should now recognize the RH600 as an external storage drive. For Windows, the RH600 drive will be given a drive letter in File Explorer (E:, for example). For Mac, the RH600 drive icon will appear on the desktop.
10. Move the firmware file from your PC to the root (top level) directory of the RH600 as shown in the Windows example below in Figure 10.4.



**Figure 10.4** Windows PC example: Moving the update file to the RH600 root directory.

## NOTE

Drag only the update file into the RH600 root directory. Do not drag other files or folders that may accompany the update file (*readme.txt*, for example).

11. Safely eject the RH600 from the PC (for Windows, right-click the drive letter in File Explorer and select *Eject*; For Mac, drag the drive icon into the Trash).
12. Physically disconnect the RH600 from the PC.
13. Press F3 on the RH600 to begin the update.
14. When the RH600 reboots, verify that the new firmware version is displayed in the *Settings* programming menu. The **Version** option is the last item in the *Settings* menu.
15. If you require assistance, please go to the customer support website. <https://support.flir.com>

# 11 Specifications

## 11.1 General Specifications

Display	Color multifunction LCD with adjustable brightness.
Control buttons	Three (3) context-sensitive function buttons and four (4) arrow buttons for navigation and programming.
Programming menu	Intuitive user interface offers five (5) menu categories ( <i>Display</i> , <i>Functions</i> , <i>Recording</i> , <i>Environment</i> , and <i>Settings</i> ) for customizing and configuring the meter.
Alarm utility	Low and High Alarms. User selects reading to monitor and alarm limits. Triggered alarms alert the user visually and audibly.
Data storage	Data Logger and Data Hold functions allow readings to be saved to internal flash drive. Internal drive can store 32 files, each file can hold 1000 readings.  Readings are saved as CSV files that can be opened in a spreadsheet.
PC Interface	Supplied micro USB cable for connecting to PC.  PC interface allows data file downloading and firmware upgrades.
Meter battery power	3.7 V rechargeable lithium battery (included).  Supplied USB cable and AC mains plugs for charging.
Operating conditions	Temperature: 14 to 140°F (-10 to 60°C)  Relative Humidity: 10 to 90 % (non-condensing)
Dimensions	Meter: 7.5 x 3.0 x 1.6 in. (192 x 77 x 40 mm)  Probe: 10.5 x 1.6 x 1.4 in. (270 x 40 x 35 mm)
Weight	Meter: 21.1 oz. (598 g); Probe: 10.8 oz. (307 g)

## 11.2 Measurement Specifications

FUNCTION	RANGE	RESOLUTION	ACCURACY
			Specified at 68°F (20°C) unless otherwise noted
Relative Humidity	0 to 5 % 5 to 15 % 15 to 100 %	0.01 %	RH <5%: $\pm(0.025 \%RH + 17.5\% \text{ of reading})$ RH >5%: $\pm(1 \%RH + 5\% \text{ of reading})$ RH > 15%: $\pm (2 \%RH + 3\% \text{ of reading})$
Temperature	14 to 140°F (-10 to 60°C)	0.01°	0.54°F ( $\pm 0.3^\circ\text{C}$ )
Dew Point	-40 to 86°F (-40 to 30°C) -58 to -40°F (-50 to -40°C)	0.01°	$\pm 3.6^\circ\text{F}$ ( $\pm 2^\circ\text{C}$ ) $\pm 4.5^\circ\text{F}$ ( $\pm 2.5^\circ\text{C}$ ) Specified at 16 to 25°C (61 to 77°F)
Humid/dry air (H <sub>2</sub> O ppm)	40 to 20,000 ppm	1	$\pm (8.3\% \text{ of reading} + 7.3 \text{ ppm})$
Response time	Flow rate: 0.2m/s, 1 bar pressure, 20°C (68°F) 63% [90%] 32 to -40°F Td (0 to -40°C Td) 20s [120s] -40 to 32°F Td (-40 to 0°C Td) 10s [20s]		

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### 11.3 List of Measurements and Calculated Readings

Parameters	Ranges
Temperature (T)	14.00 to 140.00°F (-10.00 to 60.00°C)
Dew point/Frost point temperature (T d/f)	-58.00 to 86.00°F (-50.00 to 30.00°C)
Dew point temperature (Td)	-58.00 to 86.00°F (-50.00 to 30.00°C)
Dew point / frost point temperature in atmospheric pressure (T d/f atm)	-58.00 to 68.00°F atm (-50.00 to 20.00°C atm)
Dew point temperature in atmospheric pressure (Td atm)	-58.00 to 68.00°F atm (-50.00 to 20.00°C atm)
Relative humidity (RH%)	0.00 to 100.00 %RH
Humid air / dry air (H <sub>2</sub> O PPM <sub>v</sub> [by volume] or PPM <sub>w</sub> [by weight])	4 to 20,000 H <sub>2</sub> O PPM <sub>v</sub> or PPM <sub>w</sub>
Absolute humidity (a)	0.2 to 40.0 gr/ft <sup>3</sup> (0.5 to 100.0 g/m <sup>3</sup> )
Mixing ratio (x)	2 to 700 gr/lbs (0.2 to 100 g/kg)

# 12 Maintenance

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## 12.1 Battery Replacement

If the supplied rechargeable 3.7 lithium battery needs to be replaced, contact customer support; see the Customer Support section for contact information.

Replace the battery if it will not hold a charge or exhibits unusual behavior (overheating, warping, leaking, etc.). Please dispose of battery responsibly, following all applicable regulations; contact customer support if you require assistance.

## 12.2 Cleaning

To clean the body of the RH600 meter and the RH601 probe, use a lightly dampened, lint-free cloth. Use a mild detergent, if necessary. Dry the unit completely before use. Do not use abrasives or solvents to clean any area of the meter.

To clean the display, use a soft cloth moistened with a high quality lens cleaner to gently wipe the glass. The display can be scratched if wiped with a rough material.

# 13 CUSTOMER SUPPORT

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**Customer Support Telephone List:** <https://support.flir.com/contact>

**Service e-mail:** [repair@extech.com](mailto:repair@extech.com)

**Technical Support:** <https://support.flir.com>

**Extech Website:** [www.extech.com](http://www.extech.com)

# 14 Warranty

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FLIR Systems, Inc. warrants this Extech brand instrument to be free of defects in parts and workmanship for **two years** from date of shipment. View the full warranty at this link:

<http://www.extech.com/support/warranties>





**Website**

<http://www.flir.com>

**Customer support**

<http://support.flir.com>

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