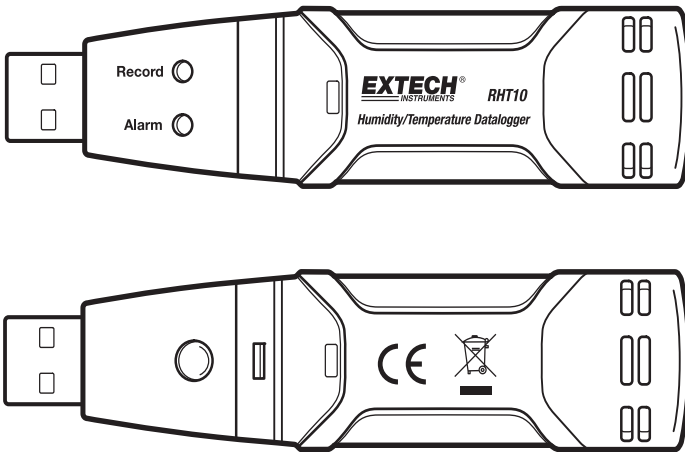# Humidity / Temperature Datalogger

Model RHT10

Introduction

Congratulations on your purchase of the Relative Humidity and Temperature Datalogger. This datalogger measures and stores up to 16,000 relative humidity and 16,000 temperature readings over 0 to 100%RH and -40 to +70°C (-40 to +158°F) measurement ranges. The user can easily configure the logging rate, high/low alarm and start-mode, and download the stored data by plugging the module into a PC's USB port and running the supplied PC software. Relative Humidity, Temperature and Dew Point data can then be graphed, printed and exported to other applications. GPP (grains per pound) data can be viewed using the optional RHT10-SW software. The data logger is supplied with a long-life lithium battery, which can typically allow logging for one year. This meter is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please visit our website to check for the latest version of this User Guide, Product Updates, and Customer Support.

Features

- Memory for 32,000 readings (16,000 temperature and 16,000 humidity readings)
- Dew point indication via supplied Windows™ Software
- Grains per pound indication via optional Windows™ Software (order RHT10-SW)
- Selectable data sampling rate: 2s, 5s, 10s, 30s, 1m, 5m, 10m, 30m, 1hr, 2hr, 3hr, 6hr, 12hr, 24hr
- Status Indication via Red/Yellow LED and Green LED
- USB Interface for Set-up and Data Download
- User-Programmable Alarm Thresholds for Relative Humidity and Temperature
- Long battery life

Description

1. Protective cover

2. USB connector to PC port

3. Start button

4. RH and Temperature sensors

5. Alarm LED (red/yellow)

6. Record LED (green)

7. Mounting clip
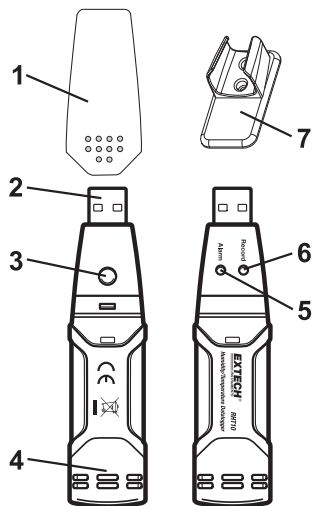
Operation

System Software Required:
Windows 7, Windows 8.1 or Windows 10

Minimum Hardware Required:
PC or Notebook with Pentium 90MHz or higher 32 MB RAM;
At least 7 MB of hard disk space available to install Datalogger USB software.
Recommended display resolution 1024X768 with High Color(16 bit).

INSTALLING THE GRAPHING SOFTWARE and USB driver
Install the supplied Windows PC Datalogger Software by placing the supplied program disk in the PC's CD-ROM drive or by downloading the program from the web page.

If the installation program does not automatically open and provide on-screen prompts, open and browse the CD-ROM drive, then find and double-click on the SETUP.EXE file included on the program disk. Follow the on-screen prompts to complete the installation.

Software Install
Run SETUP.up.exe and follow the defaults to install he RTH10 software

USB Driver Install

1. Open the root folder of the RHT10.

2. Open the folder   Driver\DriverUSBXPRESS and double-click on USBXpressInstaller.exe.

3. Follow the default choices to load this USBXpress driver.

Note: When the RHT10 is connected to the USB port, the battery inside the device is discharged at a higher rate than normal. To conserve battery life, do not leave the RHT10 connected to the USB port for a prolonged period of time
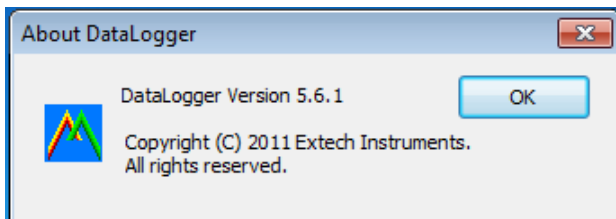
RUNNING THE GRAPHING SOFTWARE

With the RHT10 inserted in the PC's USB port, double-click the Datalogger Graph icon on your desktop to launch the program. The opening screen will appear as shown below.
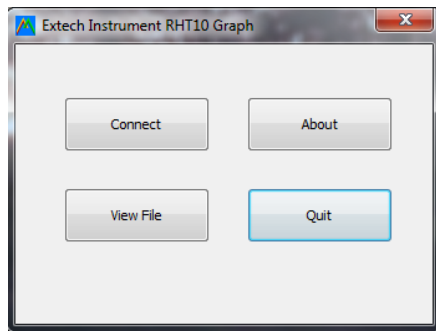
Click on "Connect" to open the main screen,

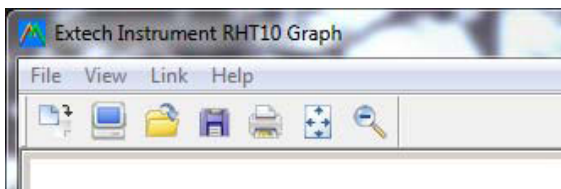Click on "About" to view the version number,

Click on "View File" to open an existing file,

Click on "Quit" to close the program.

MENU BAR DESCRIPTION

The main menu for the software appears as follows:

From left to right the MENU BAR icons represent DATA DOWNLOAD, LOGGER SETUP, FILE OPEN, FILE SAVE-AS, FILE PRINT, VIEW ALL, and ZOOM. In addition, the FILE, VIEW, LINK, and HELP pull-down menus are available here. All of these functions are described in the following paragraphs.

LOGGER SETUP

Click on the computer icon on the menu bar (2nd from left) or select LOGGER SET from the LINK pull-down menu. The Setup window will appear as shown below; descriptions for each field in the Setup window are listed directly below the illustration:

- The CURRENT TIME field will automatically synchronize with the PC date and time setting.

- The MANUAL and INSTANT select buttons allow the user to start data logging immediately when the Setup window is exited (INSTANT), or at a later time (MANUAL).

- The LOGGER NAME field allows the user to select a unique name for the RHT10.

- The SAMPLE POINTS field instructs the RHT10 to take a fixed number of readings.

- The SAMPLE RATE pull-down menu instructs the RHT10 to log readings at a specific rate.

- The LED Flash Cycle can be set by the user: longer cycle times help to extend the battery life.

- The ALARM SETTINGS area of the SETUP window allows the user to set high and low temperature and humidity limits and to disable the flashing of the RHT10's LEDs, thereby conserving battery energy.

Once the changes have been made, click on the SETUP button to save them. Press the DEFAULT button to set the RHT10 back to factory default conditions. Press the CANCEL button to abort the setup.

Note: Any stored data will be permanently erased when the user clicks on Setup. To save the data before creating a new setup, click Cancel and then download the data.

Note: The battery may run out before the RHT10 has finished collecting a specified number of sample points. Always ensure that the remaining charge in the battery is sufficient to last the complete duration of your logging exercise. When in doubt, we recommend that you always install a fresh battery before logging critical data.

If INSTANT was selected in the SETUP window, the RHT10 begins logging at the instant the SETUP button is pressed. If MANUAL was selected, the RHT10 must be manually started by pressing and holding the device's yellow button for approx. 3 seconds, or until the two LEDs on the RHT10 flash at the same time.

Logging will continue at the programmed sample rate until the number of readings (sample points) specified in the Setup window is reached.
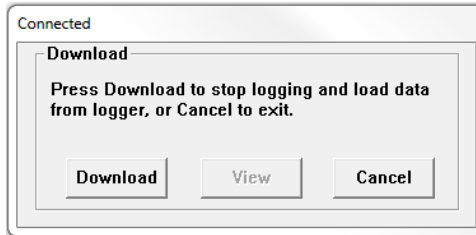
The green LED flashes once per sample point and the red or yellow LED flashes when user programmed alarm limits are exceeded. For details, see LED status guide.
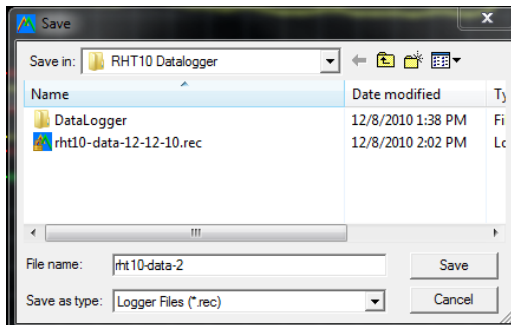
DATA DOWNLOAD

To transfer the readings stored in the RHT10 to the PC:

1. Connect the RHT10 to the same USB port used when the RHT10 was initialized.
2. Open the graphing software program if it is not still running.
3. Click the Download icon (1st on the left) or select Data Download from the LINK pull-down menu
4. The Window shown below will appear. Press DOWNLOAD to begin transferring readings

Connected

Download

Press Download to stop logging and load data from logger, or Cancel to exit.

| Download | View | Cancel |

If the readings are successfully transferred, the VIEW screen and the SAVE screen (both shown below) will appear. In the SAVE screen, name the file and save it to a convenient location. The data is saved as an .rec file for use in this program only. At a later time, the user can select SAVE-AS and save the data as an Excel, Text, or Bitmap file (explained in next section).

Save

| Save in: | RHT10 Datalogger |

Name	Date modified	Ty
DataLogger	12/8/2010 1:38 PM	Fi
rht10-data-12-12-10.rec	12/8/2010 2:02 PM	Lc

File name: rht10-data-2   Save

Save as type: Logger Files (*.rec)   Cancel

In the screen below press VIEW to see the data graphically. If there are no readings currently stored in the RHT10, the program will let the user know via a warning screen.

Connected

Download

39 points finished! Press View to show graph, or Cancel to exit.

| Download | View | Cancel |

When VIEW is pressed, the Data Graph window appears,

The Data Graph window presents the transferred data in an x-y graph format with Date/Time represented on the horizontal axis and Temperature / Relative Humidity / Dew Point / Grains per pound GPP (with optional RHT10-SW only) / Alarm Limits represented on the vertical axis:
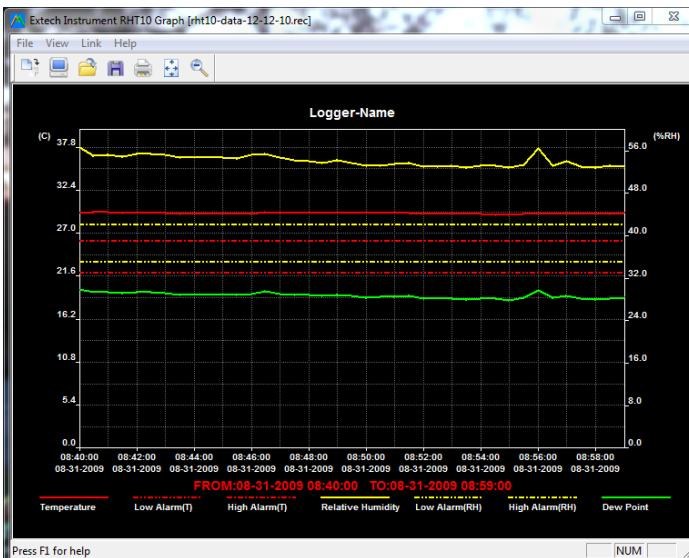
To zoom in and out of data regions, there are several approaches:

1. Use the mouse to click and drag a box around any data area to magnify the selected area.

2. Click on the zoom magnifier icon tool on the menu bar

3. Select VIEW ALL or ZOOM OUT from the VIEW pull-down menu.

In the example graph above, the Temperature is represented by the solid red line (the lines are known as 'traces'); the RH and Dew Point are represented by the solid yellow and green lines, respectively. The low and high alarm values for temperature are represented by the dashed red traces; the corresponding alarms for humidity are represented by the dashed yellow traces.

To customize the graph window select SHOW TRACES, BACKGROUND, GRID LINES, and MASK POINTS from the VIEW pull-down menu. These options provide the following features:

SHOW TRACES:	Allows the user to select which data to view as a trace (Temperature & Alarms).
BACKGROUND:	Select background color scheme.
GRID LINES:	Add or remove grid lines from x and y axes.
MASK POINTS:	Places dots on the traces for the actual data points, breaking up the continuous nature of the trace.

FILE OPEN, FILE SAVE-AS

To save the transferred data in a format other than the proprietary .rec format, click the SAVE AS icon from the menu bar (4th from right) or select SAVE AS from the FILE pull-down menu. The data can be saved in the following formats:

TEXT FILE (.txt)

EXCEL FILE (.xls)

BITMAP FILE (.bmp)

To open an existing data file for viewing on the data graph window, click on the FILE OPEN icon on the menu bar (3rd from left), or select FILE OPEN from the FILE pull-down menu. When prompted, select a .rec file saved earlier.

FILE PRINT

To print a data graph window to a line or network printer, click on the printer icon or select PRINT from the FILE pull-down menu. Note that color graph windows can be accurately printed on color printers.

Note: The RHT10 retains data in its internal memory until the user begins a new logging session. Starting a new logging session clears all of the RHT10's stored readings; be sure to save previous data before starting a new logging session.
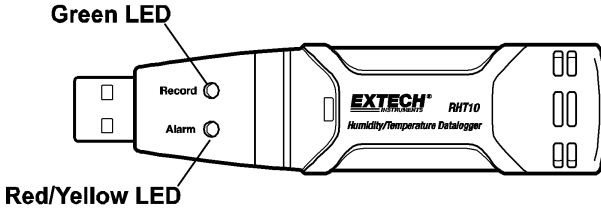
GRAINS PER POUND (GPP)   (RHT10-SW)

GPP values are obtained only by purchasing and loading the optional **RHT10-SW** software.

The optional software can be purchased through an Extech distributor using the part number **RHT10-SW.**
 Note that the standard RHT10 software must be un-installed before the optional RHT10-SW software can be installed.

To view GPP data, click on the VIEW menu heading and scroll down to the SHOW TRACES tab. Ensure that the GPP line is checked. If checked, the graph will display GPP data. If unchecked, the graph will not show GPP data.

RHT10 LED STATUS GUIDE

Green LED

Red/Yellow LED

LEDs	Meaning	Action
Record Alarm ○ ○	**No LEDs flashing** -No logging in process Or -No battery found Or -Battery completely discharged	**Fit battery in place** **Replace the battery and download the data**
Record Alarm ● ○	**Green single flash every 10 sec. *** -Logging, no alarm** **Green double flash every 10 sec. *** -Delayed start	**To start, Hold the start button until Green and Yellow LED flash**
Record Alarm ○ ●	**Red single flash every 10 sec. *** -Logging, low alarm for RH **Red double flash every 10 sec. ‡** -Logging, high alarm for RH **Red single flash every 60 sec.** - Low Battery †	**Logging, if enabled, will stop automatically. No data will be lost. Replace battery**
Record Alarm ○ ●	**Yellow single flash every 10 sec. *** -Logging, low alarm for TEMP **Yellow double flash every 10 sec. ‡** -Logging, high alarm for TEMP **Yellow single flash every 60 sec.** - RHT10 memory full	**Download data**

*   To save power, the RHT10's LED flashing cycle can be changed to 20s or 30s via the supplied software.

**   To save power, alarm LEDs for temperature can be disabled via the supplied software.

†   When the battery is low, all operations will be disabled automatically. NOTE: Logging automatically stops when the battery weakens (logged data will be retained). The supplied software is required to restart logging and to download logged data.

‡   When both temperature and relative humidity readings exceed alarm level simultaneously, LED status indication alternates every other cycle.

Specifications

|			
Relative Humidity		Overall Range	0 to 100%
	Accuracy (0 to 20 and 80 to 100%)		±5.0%
	Accuracy (20 to 40 and 60 to 80%)		±3.5%
	Accuracy (40 to 60%)		±3.0%
Temperature		Overall Range	-40 to 158°F (-40 to 70°C)
	Accuracy (-40 to -10 and +40 to +70°C)		±2°C
	Accuracy (-10 to +40°C)		±1°C
	Accuracy (-40 to +14 and 104 to 158°F)		±3.6°F
	Accuracy (+14 to 104°F)		±1.8°F
Dew Point Temperature		Overall Range	-40 to 158°F (-40 to 70°C)
	Accuracy (25°C, 40 to 100%RH)		±4.0°F (±2°C)
Grains per pound	1120 gpp (160g/kg) max.; Available only with optional RHT10-SW software		
Logging rate	Selectable sampling interval: From 2 seconds up to 24 hours		
Operating temperature	-31 to 176°F (-35 to 80°C)		
Battery type	3.6V Lithium (1⁄2 AA) (SAFT LS14250, Tadiran TL-5101 or equivalent)		
Battery life	1 year (typ.) depending on logging rate, ambient temperature, & use of Alarm LEDs		
Dimensions/Weight	4x1x.9" (101x25x23mm) / 6oz (172g)		

Battery Replacement

⚠️ **!** It is highly recommended that the battery be replaced every 12 months, or prior to logging critical data.

The RHT10 does not lose its stored readings when the battery weakens or when the battery is replaced; the data logging process will however be stopped and cannot be re-started until the battery has been replaced and the logged data has been downloaded to PC.

Use only 3.6V lithium batteries. Before replacing the battery, remove the datalogger from the PC. Follow diagrammatic steps 1 through 4 below.

NOTE: Leaving the RHT10 plugged into the PC USB port longer than necessary will cause some of the battery capacity to be lost.
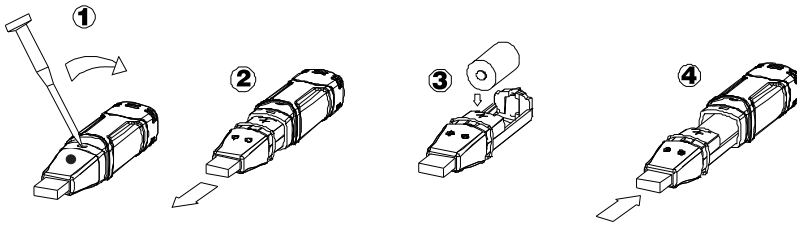
WARNING: Handle lithium batteries carefully, observe warnings on battery casing. Dispose of in accordance with local regulations.

Safety: Please dispose of batteries responsibly; never dispose of batteries in a fire, batteries may explode or leak. If the meter is not to be used for 60 days or more, remove the battery and store separately.