



Models RL-WiFi-TH and RL-WiFi-TH+ are WiFi-based, wireless data loggers for time and date-stamped temperature and humidity measurements. They adhere to the 802.11b standard and can integrate with any new or existing WiFi network. Each data logger is powered by a built-in, re-chargeable battery to allow purely stand-alone performance, and is packaged in a small, IP55-rated enclosure to tolerate dusty and sprayed water environments. They are fully programmable, initially via a built-in USB interface, and thereafter wirelessly via the WiFi link using included Windows-based software. Programmable parameters include a unique logger name, °F or °C, logging rate, report rate, as well as temperature and humidity alarms. The same software acts as a repository for temperature and humidity data, which the data logger uploads at programmable periodic intervals. Built-in memory seamlessly buffers over 57 days of readings when contact is lost with the WiFi network, the software, or the PC on to which the software is running. When the connection is re-established the data logger transparently uploads its memory contents to the PC while still logging data. Data is stored on the host PC in comma-separated value (CSV) format, and the host program allows the graphical review of acquired temperature and humidity data along with a dew-point calculation and time and date of acquisition, and seamless data export to Microsoft Excel.

Features

- RL-WiFi-TH+ provides higher accuracy ([see Specifications](#))
- 0 to 100% RH measurements
- -20 to +60°C (-4 to +140°F) temperature measurements
- Ingress Protection Rating of 55 resists dust and water spray
- Built-in display shows current, min/max readings, alarm states
- Wireless communication to any PC using WiFi
- 802.11b-compliant for universal compatibility
- Built-in, rechargeable battery for independent deployment
- Seamlessly uploads memory to host PC at programmable intervals
- Huge buffer memory of 500,000 readings tolerates disconnects
- Programmable high/low alarm limits
- Built-in USB interface for battery charging and initial configuration
- Free configuration, review, and Excel-export software
- Supplied with mounting bracket and USB cable

Programmable Elements

- Logger Name
- °C, °F
- Logging Interval (10s, 1m, 5m, 30m, 1hr, 6hr, 12hr)
- High and Low Alarms for humidity and temperature
- Alarm Hold (on/off)

Buffer Depth*

Sampling Interval	Buffer Depth
1 sample every 10 seconds	57 days
1 sample every minute	340 days
1 sample every 5 minutes	years
1 sample every 30 minutes	years
1 sample every hour	years
1 sample every 6 hours	years
1 sample every 12 hours	years

* The maximum time that the data logger can remain disconnected from the WiFi network, host PC, or host software before losing data.

RL-WiFi-TH and RL-WiFi-TH+ Close-up



RL-WiFi-TH in its included mounting bracket



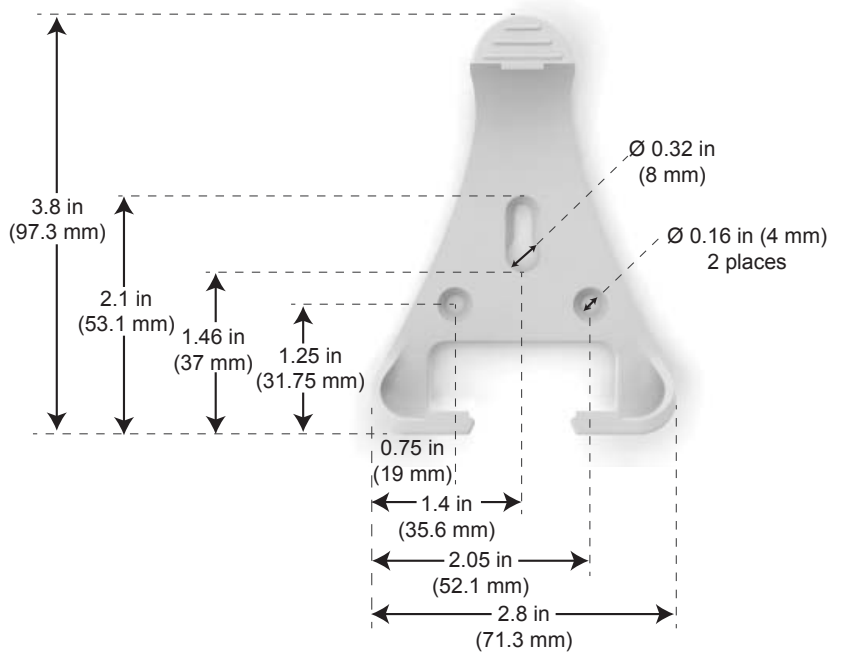
USB port sealed with rubber gasket



Included Wall Bracket

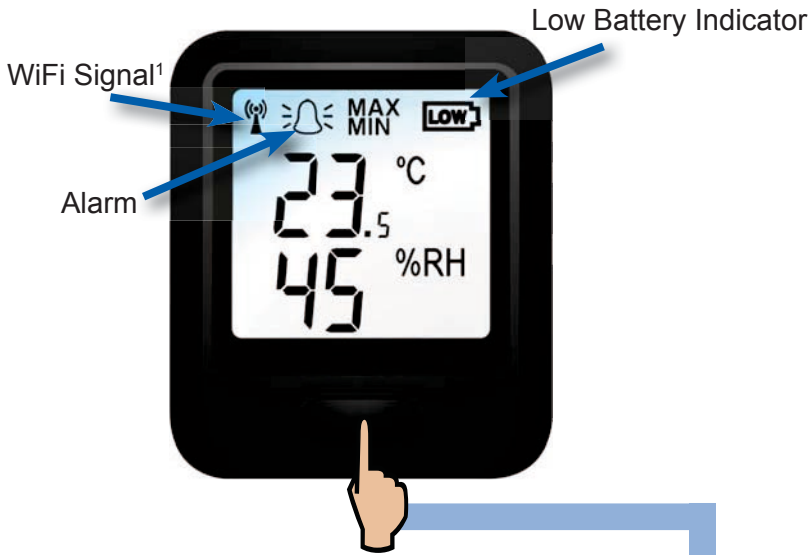


Environmental Vent



RL-WiFi-TH and RL-WiFi-TH+ Major Operating Modes

Current measured values:



Maximum recorded values since reset:²



Minimum recorded values since reset:²



WiFi signal strength ("- -" to 10):



OR

Sync³
(uploading recorded data to host):



¹Flashes when not connected to WiFi router.

²Min and Max values may be reset from these screens by holding the button for three seconds.

³If the data logger is in its sleep mode after losing contact with the WiFi router, PC, or software for a lengthy period, cycling to this WiFi screen forces a reconnect.

RL-WiFi-TH and RL-WiFi-TH+ Specifications

Specification	Minimum	Typical	Maximum	Unit
Battery Life		>1*		Year
USB Supply Voltage	4.5		5.5	VDC
Temperature Measurement Range	-20 (-4)		+60 (+140)	°C (°F)
Internal Temperature Resolution (TH)		±0.5		°C
Internal Temperature Resolution (TH+)		±0.01		°C
TH Temperature Accuracy		±0.3 (+5 to +60°C)	±0.8 (-20 to +60°C)	°C
TH+ Temperature Accuracy (0 to 60°C)		±0.2 (+5 to +60°C)	±0.8 (-20 to +60°C)	°C
Humidity Measurement Range	0		100	RH%
TH Humidity Resolution		1		RH%
TH+ Humidity Resolution		0.1		RH%
TH Humidity Accuracy (@ +25°C)		±2.5 (20 -80%)	±5 (0 -100%)	%RH
TH+ Humidity Accuracy (@ +25°C)		±2.5 (20 -80%)	±4 (0 -100%)	%RH
Logging Rate (configurable)	every 10 seconds	every 30 seconds	every 12 hours	Transmission Rate
Operating Temperature Range	-20 (-4)		+60 (+140)	°C (°F)
Number of Loggers per PC			253	Loggers
Supported Security Standards	WEP 64 bit; WEP 128 bit; WPA-PSK; WPA2-PSK			

*Typical between charging cycles, but could be less if frequent transmissions.

WARNING: Do not exceed operating temperatures.

RL-WiFi-TH and RL-WiFi-TH+ Ordering Information

Description	Order NumberR
RL-WiFi-TH Data Logger Includes data logger, mounting bracket, USB cable (1 meter), and software (downloadable).	RL-WiFi-TH
RL-WiFi-TH+ Data Logger Includes data logger, mounting bracket, USB cable (1 meter), and software (downloadable).	RL-WiFi-TH+
Optional Accessories	
101085 Power supply adapter (USB to AC) to power and charge the data logger's battery via a standard outlet. Without this the data logger can only be powered and charged from a PC's USB port. Includes US adapter (international adapters available below).	101085
101017-RPE European Adapter for power supply 101085.	101017-RPE
101017-RPK UK Adapter for power supply 101085.	101017-RPK
101017-RPS Australian Adapter for power supply 101085.	101017-RPS
101017-RPA SPARE US Adapter for power supply 101085 (one already ships with 101085).	101017-RPA

Included



**RL-WiFi-TH or -TH+
Data Logger**



**Mounting
Bracket**



**Software
(Via Download)**



**USB Cable
(1 meter)**

Optional



101085



101017-RPS



101017-RPK



101017-RPE



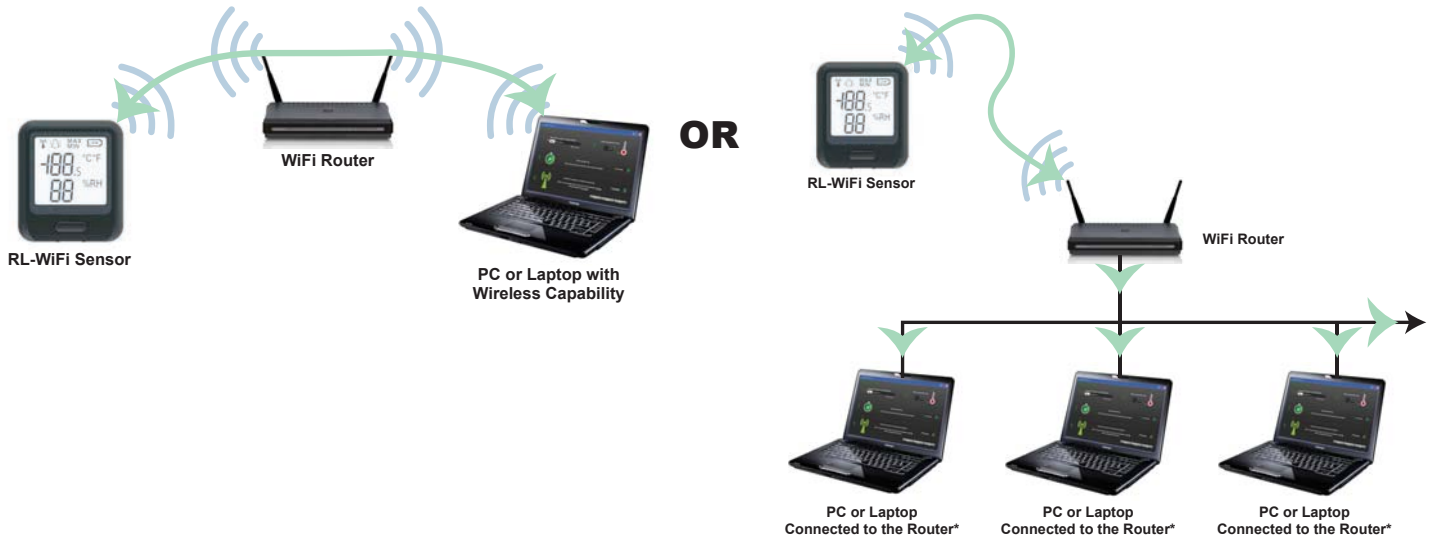
101017-RPA*

*USA adapter is included with purchase of 101085

Typical RL-WiFi Deployment Options and Built-in Failsafe

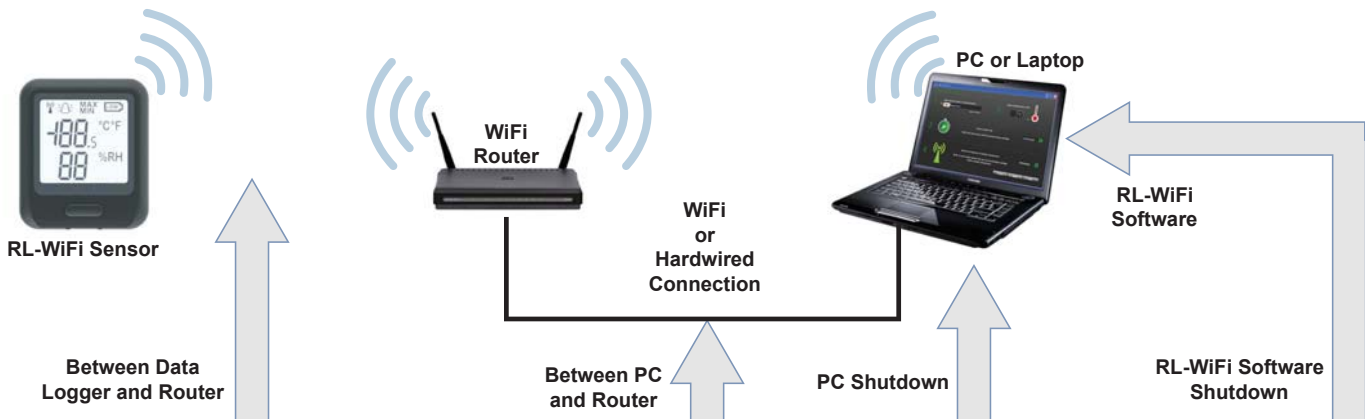
RL-WiFi data loggers automatically detect and allow you to connect to any WiFi source that supports the 802.11b standard. Various connection options are supported, as well as a failsafe backup system to ensure that on-going recording and historical values are preserved and automatically uploaded to a host PC whenever it becomes available.

RL-WiFi Deployment Options



* Software may be installed on multiple PCs at the same time, but only one may access any given data logger at a time.

RL-WiFi Failsafe Ensures Continuous, Uninterrupted Recording



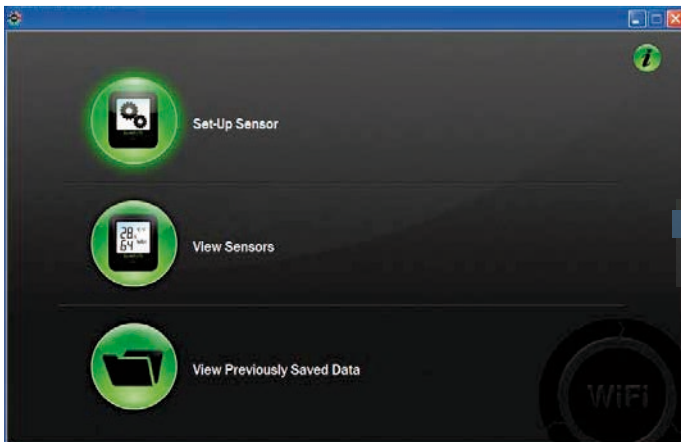
RL-WiFi products support a failsafe operation feature that ensures retained readings and data logging continuity in the event of failure at one or more communication junctions: between the data logger and the WiFi router; between the WiFi router and PC; PC shut down; RL-WiFi software shutdown.

In its failsafe mode, the data logger will attempt to transmit stored data at the interval set during configuration (every 1 to 100 readings.) If it cannot connect it will attempt to send data over the course of approximately the next minute. If that attempt fails, the data logger will wait for 15 minutes and try again, and in 15-minute epochs thereafter until connection is established and data is uploaded. During this time, the data logger continues to acquire data to its internal memory, so measurements are never lost. With a memory depth of 500,000 readings, the data logger must fail to connect for over 57 days at the fastest sample interval before data is lost.

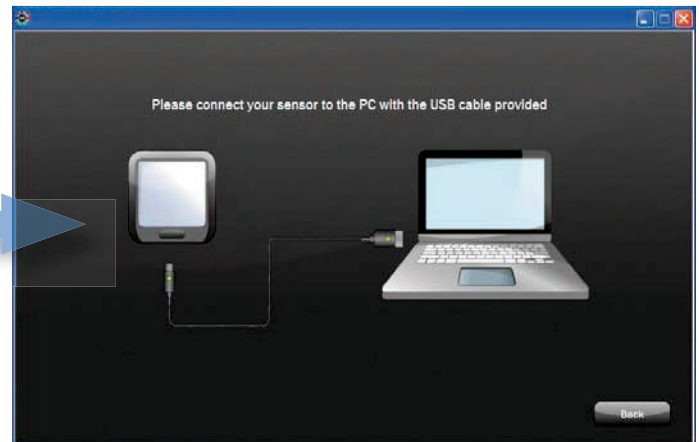
Finally, you may manually force the data logger to test for a connection by pressing its control button until the WiFi signal strength screen appears, where the data logger will instantly wake up, connect (if possible), and upload data from its memory.

A Typical RL-WiFi Data Logger Configuration with Included Software

Start Software



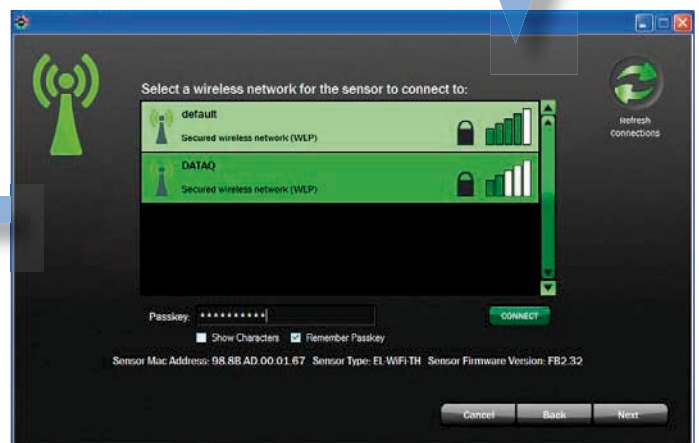
Connect the Data Logger to the USB port



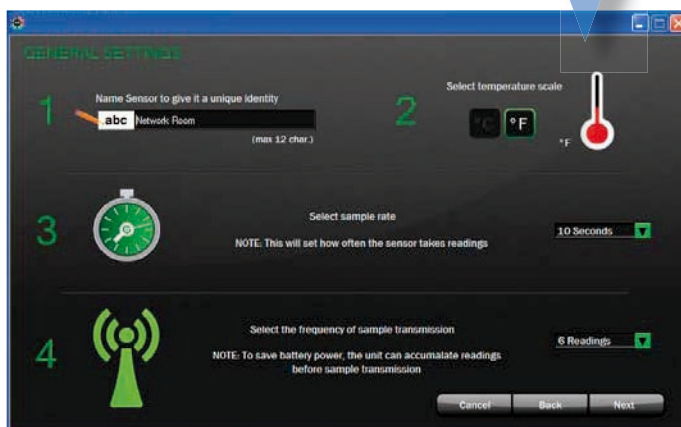
Configure Alarms



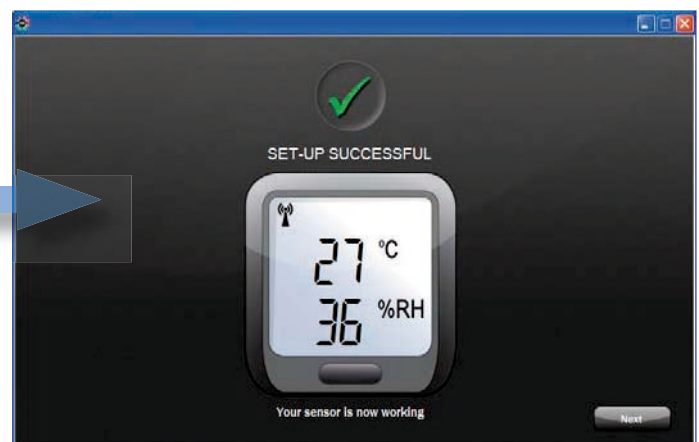
Select WiFi Gateway



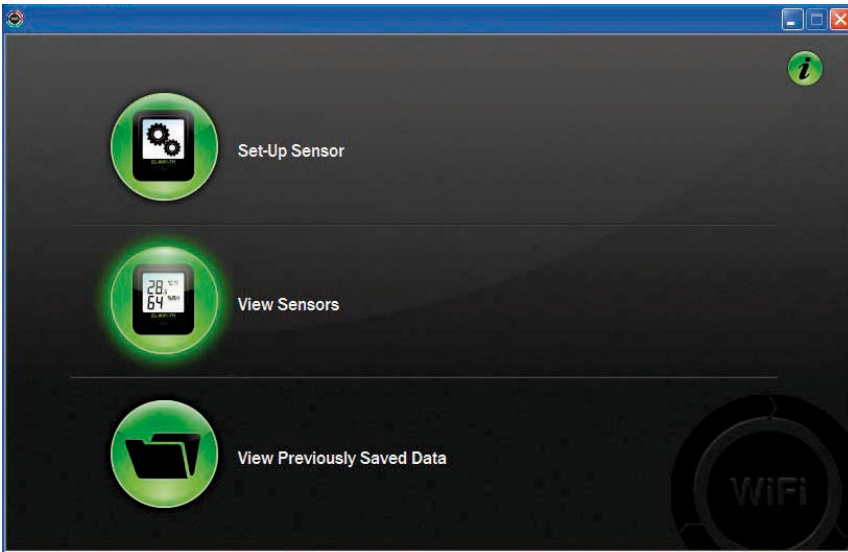
Configure General Settings



Setup Successful!



Working with WiFi Data Loggers



View Sensors

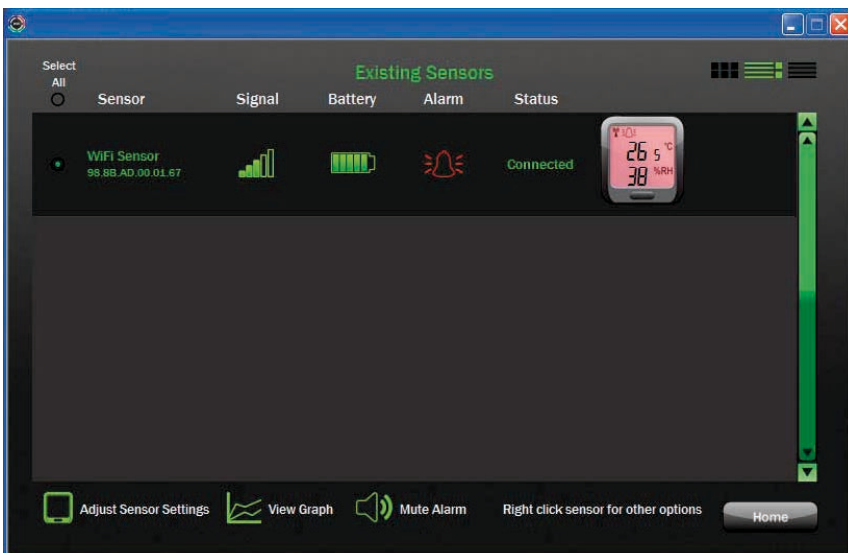
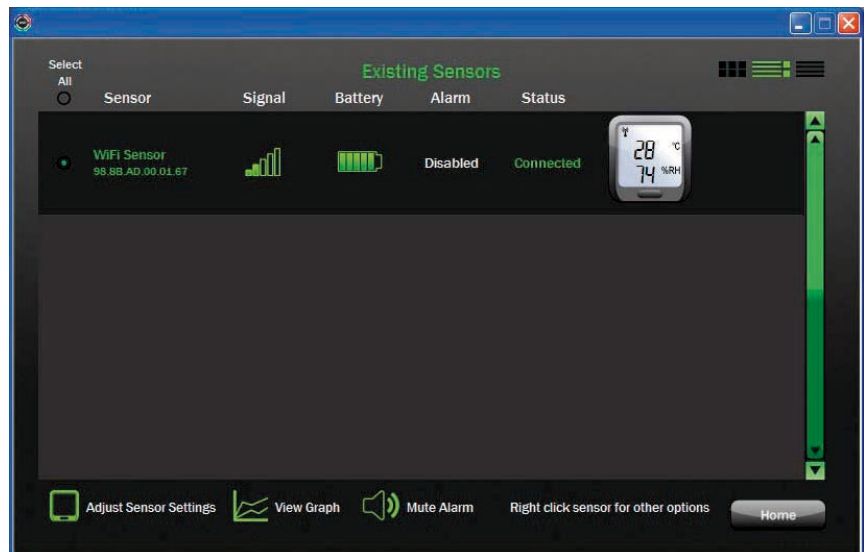
Click on the View Sensors Icon in the configuration software to view connected data loggers.

Overview of connected data loggers

This screen lists all the data loggers on the PC's network, and provides information about each:

- Data logger name and MAC address
- WiFi signal strength as detected by the sensor
- Data logger battery status
- Data logger alarm status (see below)
- The data logger's WiFi connection status (Connected, Waiting for sensor, Disconnected)
- A virtual real time picture of the data logger's display that updates as new data is transmitted.

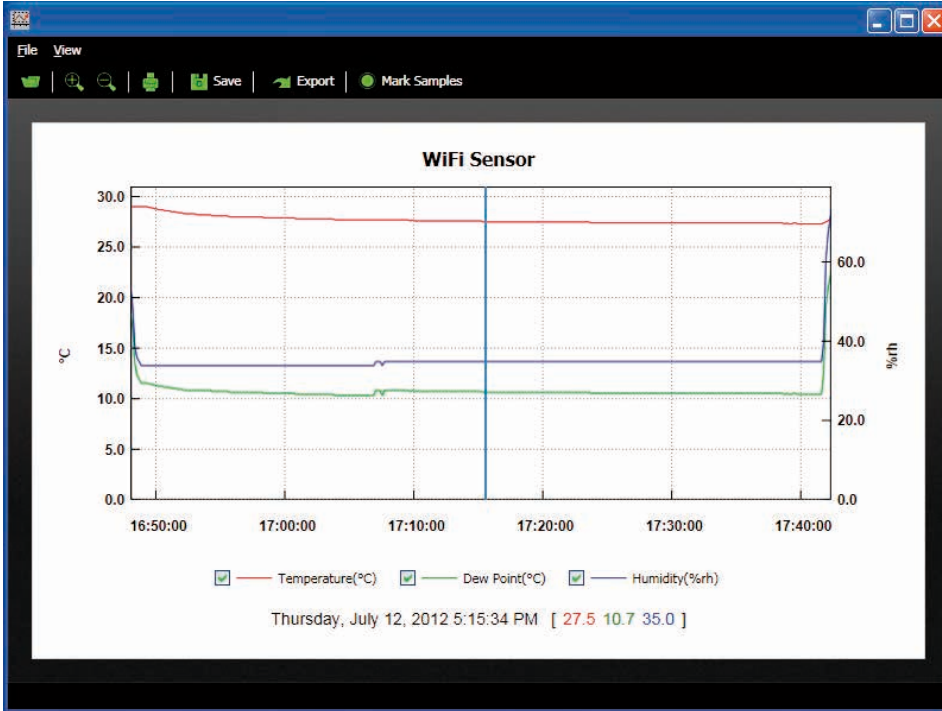
Near the bottom of this display you can wirelessly adjust data logger settings; view a graph of sensor-acquired data; and mute the PC's audible alarm if any sensor is in the alarm state.



A typical alarm condition

When an RL-WiFi data logger enters an alarm state, that condition is clearly indicated on its status display with a red-flashing icon of an alarm bell. If the PC's internal speaker is enabled, a ringing alarm sounds as an audible indication of a detected alarm state.

Working With RL-WiFi Data Logger Data



A fast, graphical review of acquired data

Information acquired by any RL-WiFi data logger may be instantly reviewed, even while the sensor continues to acquire data. That's because it buffers a virtually unlimited amount of data in its non-volatile memory until the application can respond to retrieve it. This performance gives you the freedom to review acquired data whenever and for as long as you like.

The graphing utility allows a cursor to be pulled across acquired data to display values correlated with date and time of acquisition. Even programmed alarm limits are clearly defined. Tools that are accessible in a mouse-click allow you to save data, magnify and compress it for viewing, print the chart, and instantly export it to Microsoft Excel® (see below).

File Export Facility

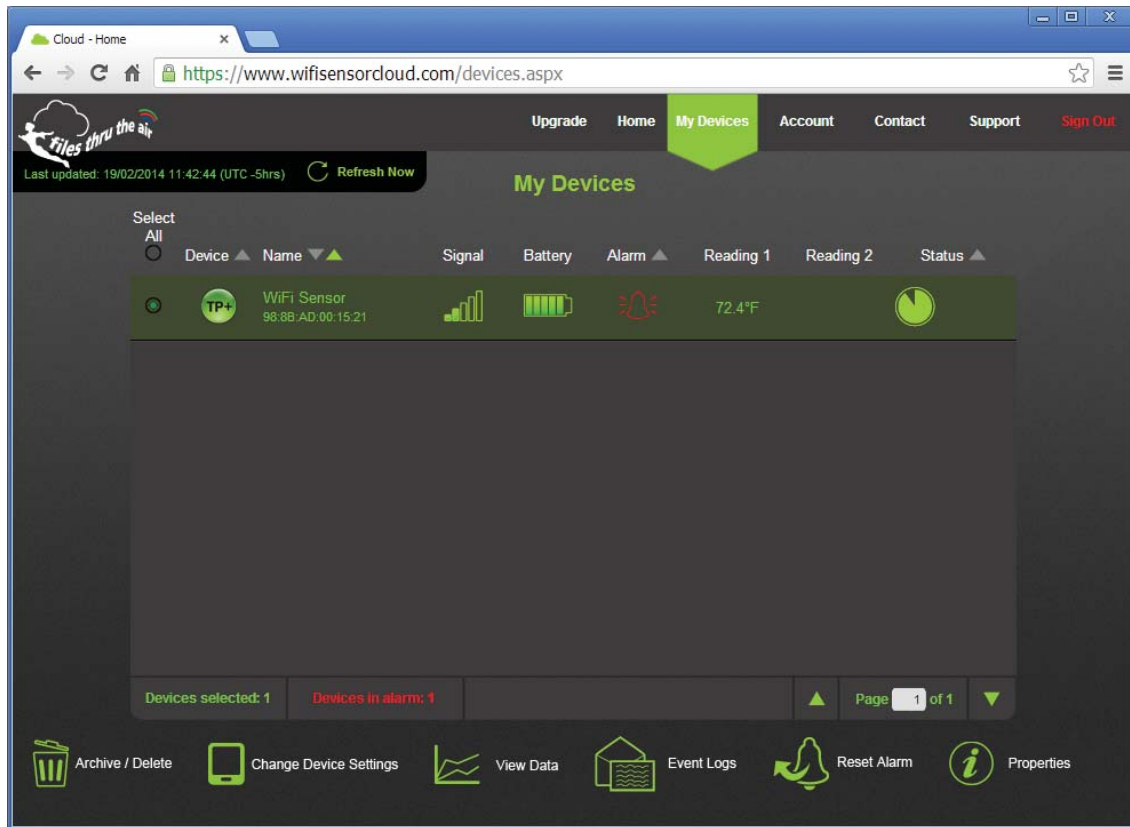
Microsoft Excel is generally one of the more common analysis utilities for acquired data. This popularity is embraced by the EL-WiFi Data Viewer. A single mouse-click instantly exports data into an Excel spreadsheet, ready for detailed analysis. This approach avoids annoying intermediate files and the need for Excel to convert them into compatible values. Of course, the data is also available as ASCII-delimited CSV (comma-separated values) for general-purpose use.

The screenshot shows a Microsoft Excel spreadsheet with the following data:

1	WiFi Sensor Time	Temperature(°C)	Low Alarm	Humidity(%rh)	Dew Point(°C)
2	1 13/07/2012 15:31:54	27.3	69.5	36	10.9
3	2 13/07/2012 15:32:04	27.3	69.5	36	10.9
4	3 13/07/2012 15:32:14	27.3	69.5	37	11.3
5	4 13/07/2012 15:32:24	27.3	69.5	37	11.3
6	5 13/07/2012 15:32:34	27.3	69.5	37	11.3
7	6 13/07/2012 15:32:44	27.3	69.5	37	11.3
8	7 13/07/2012 15:32:54	27.3	69.5	42	13.3
9	8 13/07/2012 15:33:04	27.3	69.5	39	12.1
10	9 13/07/2012 15:33:14	27.3	69.5	38	11.7
11	10 13/07/2012 15:33:24	27.3	69.5	37	11.3
12	11 13/07/2012 15:33:34	27.3	69.5	36	10.9
13	12 13/07/2012 15:33:44	27.4	69.5	36	11
14	13 13/07/2012 15:33:54	27.4	69.5	36	11
15	14 13/07/2012 15:34:04	27.4	69.5	36	11
16	15 13/07/2012 15:34:14	27.4	69.5	36	11
17	16 13/07/2012 15:34:24	27.4	69.5	36	11
18	17 13/07/2012 15:34:34	27.3	69.5	36	10.9
19	18 13/07/2012 15:34:44	27.3	69.5	36	10.9
20	19 13/07/2012 15:34:54	27.3	69.5	36	10.9
21	20 13/07/2012 15:35:04	27.3	69.5	36	10.9
22	21 13/07/2012 15:35:14	27.3	69.5	36	10.9
23	22 13/07/2012 15:35:24	27.3	69.5	36	10.9
24	23 13/07/2012 15:35:34	27.3	69.5	36	10.9
25	24 13/07/2012 15:35:44	27.3	69.5	36	10.9
26	25 13/07/2012 15:35:54	27.3	69.5	36	10.9
27	26 13/07/2012 15:36:04	27.3	69.5	36	10.9

Cloud-based Device Management

When you setup any RL-WiFi product you have the option of managing the data logger locally from a PC running a Windows OS and located on the same subnet as the logger (as described above), or to perform management via a cloud server using *Files Thru The Air™* technology. Cloud server management with *Files Thru The Air™* offers the flexibility of managing and monitoring any number of devices from any location in the world with your smart phone, tablet, laptop, or desktop running any operating system and using only a web browser.



Files Thru The Air™ Cloud Management Features

Files Thru The Air™ technology puts you in control of your data. Local management is out, and remote management is in – from any location using any device that has a web browser:

- ✓ Accessible from any location, local or remote from the data logger's LAN
- ✓ Password-protected access using SSL sessions for security
- ✓ Supports all operating systems (all you need is a web browser)
- ✓ Supports all smart phones, tablets, laptops, and desktop computers
- ✓ Remote management, including all device settings:
 - Device name
 - Temperature scale
 - Sampling interval
 - Transmission period
 - Alarm Settings
- ✓ Instant email alerts to as many as 100 addresses:
 - When acquired data breaches definable limits
 - When there's an AC power outage
 - When a device's battery is low
 - When the device loses connection with the Cloud
 - When there's a device-specific problem
- ✓ Data storage in the cloud
- ✓ Cloud-based graphical and tabular data displays with date and time
- ✓ Optional services:
 - Audit trail export to provide a documentary record of changes
 - Multiple user access
 - Individual time zones per user
 - Recorded data printing and export
 - Unlimited data storage
 - Unlimited devices

RL-WiFi-Alert



Features

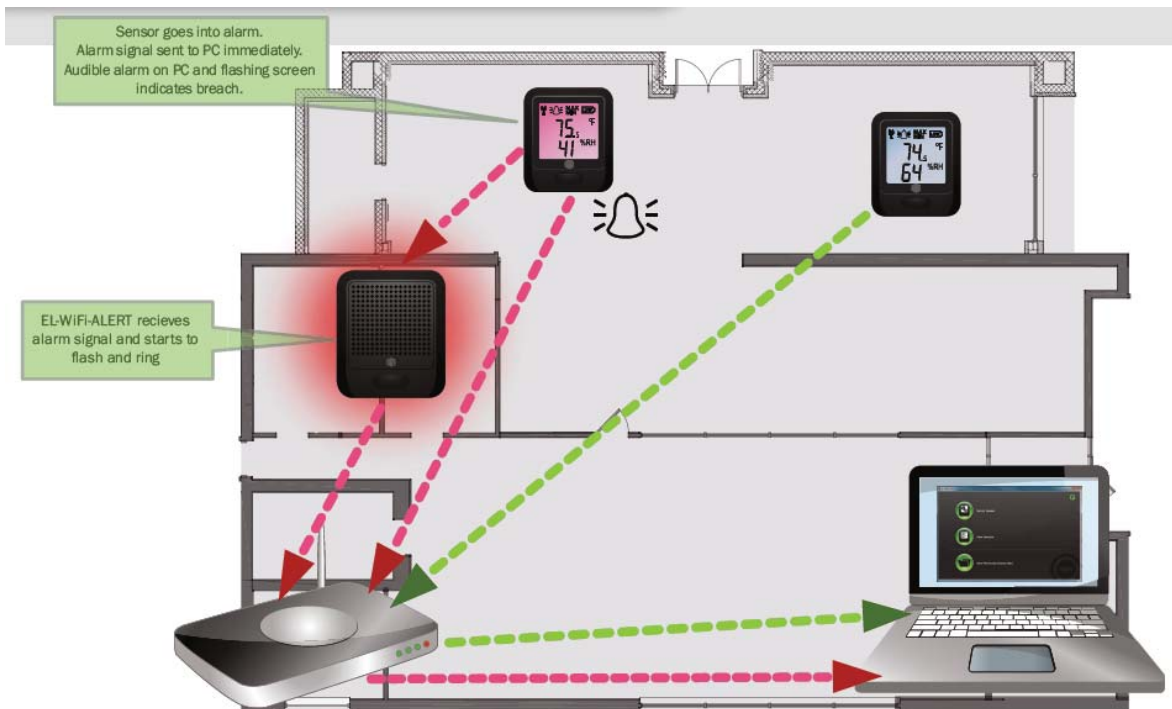
- Detects alarm conditions from any number of RL-WiFi data loggers
- Emits an audible alarm at one of 10 user-defined volume levels
- Includes nine unique alarm sounds
- Flashing red LEDs provide a visual alarm indicator
- A built-in, rechargeable battery keeps the unit functioning in the event of a power failure
- Includes free, downloadable configuration software
- 802.11b compliant

The RL-WiFi-Alert is a stand-alone hardware add-on for RL-WiFi series data loggers. The sole purpose of the RL-WiFi-Alert is to provide an audio/visual notification when one or more of your RL-WiFi series data loggers (installed on the same wireless network) indicates an alarm state.

Using the downloadable RL-WiFi-WIN software, you can choose from nine unique alarm tones and 10 volume levels. In addition to the audible alarm, a flashing LED indicator, housed under the translucent rear cover, provides a striking visual cue. The audible and LED alarm indicators can be enabled/disabled independently, and can be muted after a user-defined period of time, from 30 seconds to one hour.

The RL-WiFi-Alert is great complement to the built-in alarm indicators on all RL-WiFi series data loggers and in the PC based WiFi Sensor software. RL-WiFi-Alert units can be placed in secondary locations, out of sight of the RL-WiFi loggers themselves. When the RL-WiFi-Alert conveys an alarm, you can view the PC-based software to determine which unit(s) are in an alarm state. This added flexibility allows you to identify and respond to alarms that might otherwise go unnoticed.

Typical Deployment



RL-WiFi Data Logger Series

RL-Wifi Data Logger series products are a line of low cost, compact, battery-operated data loggers with with wireless connectivity and an LED display. Each product in the line offers a specific measurement function and range.

Temperature Data Loggers -20 to +60°C (-4 to +140°F)

RL-WiFi-T
[Learn More](#)



Temperature and Humidity Data Loggers -20 to +60°C (-4 to +140°F) and 0 to 100% RH

RL-WiFi-TH
[Learn More](#)



RL-WiFi-T+
(Higher Accuracy)
[Learn More](#)



RL-WiFi-TH+
(Higher Accuracy)
[Learn More](#)



Temperature Data Loggers with Probe -40 to +125°C (-40 to +257°F)

RL-WiFi-TP
[Learn More](#)



RL-WiFi-TP+
(Higher Accuracy)
[Learn More](#)



Thermocouple Temperature Data Logger -270 to +1300°C (-454 to +2372°F)

RL-WiFi-TC
[Learn More](#)



Data Logger Product Lines

RL-USB Data Loggers



model RL-USB series products are a line of low cost, compact, battery-operated data loggers with built-in memory and a USB interface for easy setup and data download. Each product in the line offers a specific measurement function (including temperature, voltage, process current, and more).

RL-GFX Data Loggers



The RL-GFX line of data loggers is the latest release from Lascar Electronics with similar functionality of the EL-USB series with an added graphic display for data.

RL-WiFi Data Loggers



RL-Wifi Data Logger series products are low cost, compact, battery-operated data loggers with wireless connectivity to any PC over a WiFi router. Each product in the line features a large, easy-to-read display of current measurements, and is purchased for specific measurement functions.