

WiFi-500 Sensor Series

Low-Cost WiFi Data Logging Sensors



Features - WiFi-502

- Wireless temperature and humidity data logging sensor
- Set up sensor and transmit logged data wirelessly to host computer
- Software-selectable sample rate, data transmission rate, temperature units, and high and low alarms
- Integrated LCD screen displays current readings, min/max readings, high and low alarm occurrences, WiFi signal strength, and battery charge status
- Supports bandwidths up to 11 Mbps (complies with IEEE 802.11b WiFi specification)
- Logs more than 500,000 samples
- Measurement range from -20 °C to 60 °C (-4 °F to 140 °F)
- Sensor memory logs and stores data even if WiFi is temporarily disconnected
- Internal lithium polymer battery (rechargeable using included microUSB cable)
- IP55 protection from dust and moisture
- Supported Operating Systems: Windows® 7/Vista®/XP SP2, 32-bit or 64-bit

Software

- EL-WiFi software available as free download
- Easy sensor set up using software screens
- View and analyze data from multiple WiFi-500 sensors, including immediate graphing of logged data
- Save logged data to comma-delimited text file
- Export logged data for immediate graphing in Microsoft® Excel®
- Audible temperature/humidity alarm feature



Users of WiFi-500 Sensor Series wireless data loggers can set up a logger and transmit logged data to a host computer over a WiFi network. The WiFi-502 is shown above.

Overview

The WiFi-500 Sensor Series of wireless data loggers includes the WiFi-502, which measures temperature and humidity, and uses an existing WiFi network to transmit logged data to a host computer.

This ability to set up a sensor and log data over WiFi minimizes the need to physically collect sensors and connect them to your computer.

WiFi Network Connectivity

All WiFi-500 Sensor Series devices comply with the IEEE 802.11b WiFi specification, and supports bandwidths up to 11 Mbps.

During initial setup, the sensor is connected to the host computer by the included microUSB cable and searches for an existing WiFi network. Once the sensor connects to the network, it can then be placed anywhere within range of the network.

If the sensor temporarily loses network connectivity, it continues to log readings until it regains communication with the WiFi application. For example, after losing its WiFi connection, the WiFi-502 continues logging temperature and humidity data for up to 60 days with a 10 second sample rate setting.

To increase the range of the sensor, use WiFi extenders.

Rechargeable Over USB Connection

WiFi-500 Sensor Series devices include a low-powered, rechargeable battery. When set up to use typical sampling rates – such as once every 60 seconds – the sensor operates for over one year. The battery can be recharged using the included USB lead connecting it to a computer or to a USB 5 V wall adapter.

The battery is safely charged when the unit is operating between 0 °C to 40 °C (32 °F to 104 °F). It is protected against charging outside this temperature range. Sensor readings may be inaccurate during battery charging.

WiFi-500 Sensor Series

General Information



Sleep Mode for Battery Optimization

WiFi-500 Sensor Series devices include a sleep mode feature to optimize battery performance. Connected sensors automatically go into sleep mode when the WiFi software is not running. Each sensor turns off its transmitter, then *wakes up* every 15 minutes to check if the EL-WiFi software is running again.

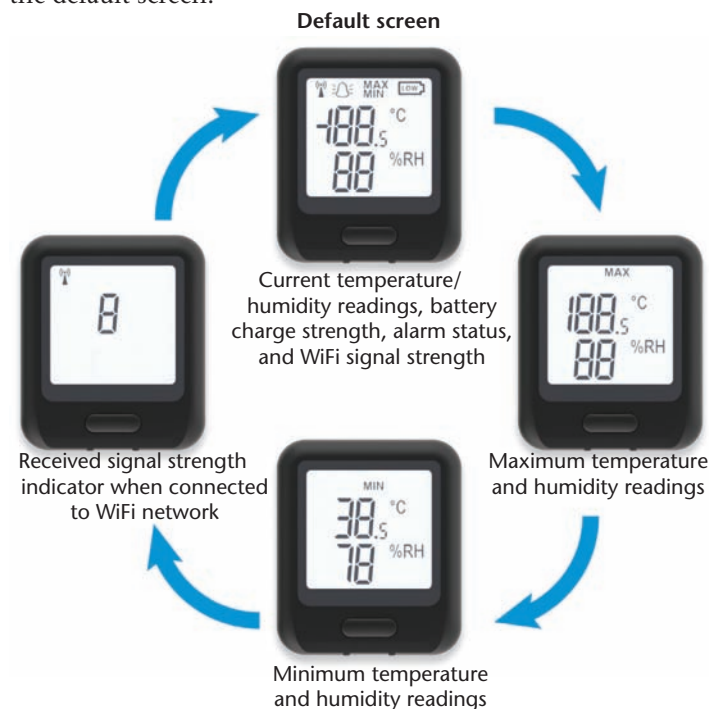
Each sensor continues to log data to its onboard memory while in sleep mode. When they detect that the software is running again, sensors reconnect and transmit all data stored in their memory to the computer.

Real-Time LCD Screen

WiFi-500 Sensor Series devices feature a built-in high-contrast LCD screen for real-time display of data. Users can press the button on the sensor to cycle through four different screens that display:

- current temperature and humidity readings, battery charge strength, alarm status, and WiFi signal strength (default screen)
- maximum temperature and humidity readings
- minimum temperature and humidity readings
- received signal strength indicator (RSSI) for an active WiFi connection

The next time the button is pressed, the display cycles back to the default screen.



Users can press the button on a WiFi-500 sensor to cycle through different information screens (WiFi-502 screens are shown above).

EL-WiFi Software

The EL-WiFi software for use with WiFi-500 Sensor Series devices is available as a free download. This easy-to-use software application allows users to set up a WiFi connection, set the sampling rate and WiFi data transmission rate, and set alarms and temperature scale.

Sampling and Transmission Rates

Use the EL-WiFi software to configure a WiFi-500 Sensor Series device with sampling rates ranging from 10 seconds to 12 hours, depending on the application and length of data collection needed. The sample rate controls the rate at which data is acquired and stored on the sensor.

Users can also set how many samples the sensor transmits to the host computer. Transmission rates range from 1 reading to 100 readings.

The sample rate and transmission rate settings work together to determine how often data is transmitted to the host computer. For example, if the sample rate is set to 10 seconds and the sample transmission frequency is set to 6 readings, the sensor transmits 6 readings to the computer every minute (10 seconds × 6 readings = 60 seconds).

Viewing Sensor Data

Users can select from among all connected WiFi-500 Sensor Series devices in order to view sensor settings and graph logged data from a specific sensor. Once a sensor is selected, users can select a logging session to display on the graph.



Users can select the WiFi-500 Sensor Series data to display using the EL-WiFi software (WiFi-502 data graph shown above).

WiFi-500 Sensor Series

General Information, Specifications & Ordering



The graph includes options to display:

- temperature readings
- relative humidity readings
- high and low temperature alarm readings
- high relative humidity alarm readings
- dew point

Once a graph is displayed, users can zoom in and out to view select data segments. Whole data log sessions or segments of a session can be saved to comma-delimited text file (.txt). Data can also be exported for immediate display in Microsoft Excel.

Specifications

All specifications are subject to change without notice.
Typical for 25 °C unless otherwise specified.

WiFi-502

WiFi Temperature/Humidity Sensor with LCD

Microcontroller

Advanced RISC Machines

Temperature

Measurement Range: -20 °C to 60 °C (-4 °F to 140 °F)
Temperature Accuracy (Overall Error Between -10°C and 60°C): ±1.0 °C typ
Internal Resolution: ±0.5 °C (±1 °F) typ
Alarm Threshold Range (Software-Selectable): -20 °C to 70 °C, -4 °F to 158 °F (high and low alarms)

Relative Humidity

Measurement Range: 0 %RH to 100 %RH
Accuracy (Overall Error Between 20 %RH and 80 %RH): ±3.0 %RH typ
Alarm Threshold Range: 0 % RH to 100 %RH (high and low alarms)

Data Sampling

Sampling Rate (Software-Selectable): 10 s, 30 s, 1 min, 5 min, 30 min, 1 hr, 6 hr, 12 hr
Combined Temperature and Humidity Samples: More than 500,000 max
Temperature Units: °C or °F

Wireless Data Transmission

Sample Transmission Frequency Range (Software-Selectable): 1 reading to 100 readings
For example, if the sample rate is set to 10 seconds and the sample transmission frequency is set to 6 readings, the sensor transmits 6 readings to the computer every minute (10 seconds x 6 readings = 60 seconds).

USB Specifications

USB Device Type: USB 2.0 (full speed)
Device Compatibility: USB 1.1, USB 2.0
microUSB Type B Connector (Bottom of Unit): Connects sensor to computer using included 25 in. microUSB cable

LCD Status Indicators

The high-contrast LCD screen cycles through different information displays when the user presses the button on the front of the device.
Default Screen: Screen displays current temperature and humidity readings, battery charge strength, alarm status, and WiFi signal strength.
First Button Press: Screen displays maximum temperature and humidity readings
Second Button Press: Screen displays minimum temperature and humidity readings
Third Button Press: If the sensor is connected to a WiFi network, the screen displays the RSSI for the WiFi connection (two dashes display if there is no WiFi connection)
The next time the button is pressed, the display cycles back to the default screen.

Restart and Factory Reset Mode.

To restart a sensor, press and hold the button for 10 seconds and release the button when **LOW** flashes in the top right corner of the screen. The sensor retains its settings but loses any data that has not been transmitted to the computer.
To reset the sensor to its factory settings, press and hold the button for 20 seconds and release the button when the factory reset symbol displays on the screen.



Power

USB Supply Voltage: 4.5 V to 5.5 V
Power Source: Internal lithium polymer battery rechargeable over USB connection
Battery Lifespan: More than 1 year typ
Note: Battery lifespan depends on how often the sensor transmits data to the computer using WiFi. The more frequent the transmission, the shorter the battery life.

Environmental

Operating Temperature Range: -20 °C to 60 °C (-4 °F to 140 °F) **Note:** At temperatures below -20 °C (-4 °F), the LCD may exhibit slower response time of approximately 10 seconds

Mechanical

Dimensions (L x W x H): 97.3 x 71.3 x 26.4 mm (3.8 x 2.8 x 1.0 in.)

Ordering Information

Description	Part No.
Rechargeable battery-powered WiFi Temperature/Humidity Sensor with LCD. Includes 25 in. microUSB cable and wall mounting bracket	WiFi-502



Each WiFi-500 Sensor Series data logger ships with a microUSB cable and a wall mounting bracket.