# USB-502-PLUS High–Accuracy RH/Temp Data Logger

The USB-502-PLUS data logger measures and stores up to 16,382 relative humidity and 16,382 temperature readings over 0 to 100% RH, and -35 to +80 °C (-31 to +176 °F) ranges. The user can easily set up the logging rate and start-time, download the stored data by plugging the module straight into a PC's USB port, and run the purpose-designed software under Windows 2000/XP/Vista (32-bit). Relative humidity, temperature, and dew point (the temperature at which water vapor in the air begins to condense) data can then be graphed, printed and exported to Excel. The data logger is supplied complete with a long-life lithium battery, which will last for up to a full year. Logger status is indicated by two flashing green/red LEDs. The data logger is protected against dust/moisture ingress to IP67 when the protective cap is fitted.

## Control Software

The easy-to-install and use USB-500 Series Data Logger Application software runs in Windows 2000/XP/Vista (Home and Professional Editions). It allows the user to configure the USB-502-PLUS logger and download and display the data graphically in a powerful strip chart. The software also provides an easy export to Excel™.

The latest version of the application software may be downloaded from www.mccdaq.com

## Setup Options

- Logger name
- °C or °F
- Logging rate intervals (10s, 30s,1m, 5m, 15m,30m, 1hr, 2hr, 6hr, 12hr)
- High and low alarm thresholds for RH and temperature
- Start date and start time
- Data rollover (allows unlimited logging periods by overwriting the oldest data when memory is full)

## Features

- Higher accuracy than standard USB-502
- 0 to 100 % relative humidity range
- -35 to +80 °C (-31 to +176 °F) range
- Dew point calculated with application software
- USB interface for set-up and data download
- User-programmable alarm thresholds for RH & T
- Bright green/red LED status indication
- Replaceable long-life lithium battery
- IP67 protection

## Ordering Information

| Part Number | Description |
|---|---|
| USB-502-PLUS | Hi-Accuracy RH/Temp Logger (Logger unit, software CD, battery) |

## USB-502-PLUS Specifications

| Specification | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Relative Humidity | Measurement range | 0 | | 100 | %RH |
| | Repeatability (short term) | | ±0.1 | | %RH |
| | Accuracy (overall error)* | | ±2.0 | ±4.0 | %RH |
| | Internal Resolution | | 0.5 | | %RH |
| | Long term stability | | 0.5 | | %RH/yr |
| Temperature | Measurement range | -35 (-31) | | +80 (176) | °C (°F) |
| | Repeatability | | ±0.1 (±0.2) | | °C (°F) |
| | Accuracy (overall error) | | ±0.3 (±0.6) | ±1.5 (±3) | °C (°F) |
| | Internal Resolution | | 0.5 (1) | | °C (°F) |
| Dew Point | Accuracy (overall error)** | | ±1.1 (±2) | | °C (°F) |
| Operating temperature range | | -35 (-31) | | +80 (176) | °C (°F) |
| 1/2AA 3.6V lithium battery life | | | 1*** | | Year |

\* This specifies the overall error in the logged readings, for relative humidity measurements between 20 and 80%RH.
\** This specifies the overall error in the calculated dew point, for relative humidity measurements between 40 and 100%RH at 25°C.
\*** Depending on sample rate, ambient temperature and use of alarm LEDs

## Dimensions   All dimensions in mm (inches)
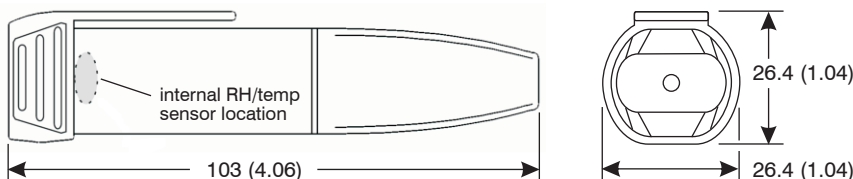
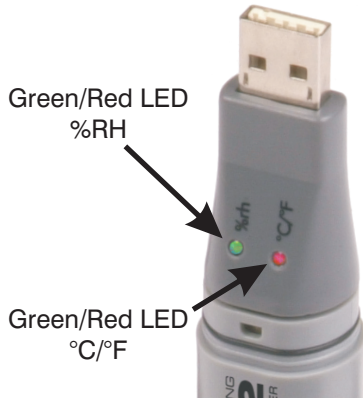internal RH/temp sensor location

103 (4.06)

26.4 (1.04)

26.4 (1.04)

# USB-502-PLUS  High-Accuracy RH/Temp Data Logger

## LED Flashing Modes

The USB-502-PLUS features 2 bi-color LEDs

Green/Red LED %RH

Green/Red LED °C/°F

One LED is for temperature measurement, the other is for RH. Each is clearly marked on the logger. To save power, the status indication alternates between the two channels every 10 seconds. So first you will see the status of the temperature logging; 10 seconds later you will see the status of the RH logging and so on.

### Key

| | | |
|---|---|---|
| ● | Single flash | The channel is logging, no alarm |
| ◉ | Double flash | Delayed start |
| ◎ | Triple flash | Logger full, no alarm |
| ● | Single flash | The channel is logging, low alarm |
| ◉ | Double flash | The channel is logging, high alarm |
| ◎ | Triple flash | Logger full, alarm |
| ◄─► | Alternating indicator | |

**%RH    °C/°F**

**No LEDs flash**
- No logging started. Start logging.
or
- Battery fitted but completely discharged. Replace battery.
or
- No battery fitted. Fit battery, start logging.
Plug the data logger into the PC and run the control software to find out which condition applies.

**Alternating green single flash every 10 seconds**
- Logger operating.
- Last stored Humidity and Temperature readings within set alarm levels.
(if latching is enabled, then a flashing Green LED indicates that no alarm condition has ever been logged)

**Alternating green double flash every 10 seconds**
- Logger configured for delayed start. No action needed, logger will start at a later date and time.

**Alternating between green and red single flash every 10 seconds**
- The green LED indicates the parameter that is within set alarm levels.
- The red LED indicates the parameter for which the Low Alarm level has been exceeded.
(if latching is enabled, then the alarm condition may have been triggered a while ago)

**Alternating between green single and red double flash every 10 seconds**
- The green LED indicates the parameter that is within set alarm levels.
- The red LED indicates the parameter for which the High Alarm level has been exceeded.
(if latching is enabled, then the alarm condition may have been triggered a while ago)

**Alternating between green or red triple flash every 10 seconds**
- **Warning**: Logger memory is full. Download data.
In this condition, latching is automatically enabled, and a flashing Green LED indicates that no alarm condition has been logged.

**Simultaneous red single flash every 60 seconds**
- **Warning**: Battery is nearly discharged. No alarm conditions are indicated. Fit new battery and download data.
 Once the battery is exhausted, no LEDs will flash.

## Battery Replacement

Measurement Computing recommends that the battery be replaced every 12 months, or prior to logging critical data.

The USB-502-PLUS does not lose its stored readings when the battery is depleted or when it is replaced; the data logging process will however be stopped and cannot be restarted until the battery has been replaced and the logged data has been downloaded to PC.

Use only 3.6V 1/2AA lithium batteries. Check with the supplier that the battery is 'press fit' and is not fitted with solder tabs. Before replacing the battery, remove the USB-502-PLUS from the PC.

**Note:** Leaving the USB-502-PLUS plugged into the USB port for longer than necessary will cause some of the battery capacity to be lost.
 WARNING: Handle lithium batteries carefully, observing warnings on battery casing. Dispose of in accordance with local regulations.

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