USB-500/600 Series

Stand-Alone, Low-Cost Data Loggers and Accessories

Logicbus

USB-500/600 Series data loggers offer low-cost, stand-alone data collection for temperature, humidity, voltage, current, or event/state change.

Overview

The USB-500/600 Series of stand-alone data loggers record several types of environmental readings. Users can easily set up the logging interval and start-time, log data, and then download the data over USB to the computer.

Logged data can then be graphed, printed, and exported to Excel. Each data logger is powered by a long-life lithium battery which lasts for up to a full year.

Several models are available with different measurement input types, sampling intervals, and amount of built-in memory.

Features

- **Stand-alone remote data loggers and portable logger assistant**
- **Measure temperature, humidity, voltage, current, or event/state change**
- **1 or 2 channels**
- **Low cost, small size**
- **Battery powered**
- **Start/stop logging directly from device on USB-600 Series loggers**

Software

- **Includes easy-to-use software to set sampling interval, alarms, start time, and other options**
- **Easily display, graph, and save data in formats such as .csv to import into Microsoft® Excel®**
- **Supported Operating Systems: Windows® 8/7/Vista®/XP, 32-/64-bit**

USB-500/600 Series Comparison Chart						
Model	Channels	Measurement Type	Temperature Measurement Range	Sampling Interval	Memory	Features
USB-501-LT*	1	Temperature	-10 °C to 50 °C	15 min to 2 h	4 K readings	—
USB-501*	1	Temperature	-35 °C to 80 °C	10 s to 12 h	16 K readings	—
USB-501-LCD*	1	Temperature	-35 °C to 80 °C	1 s to 12 h	16 K readings	Built-in LCD Display
USB-501-PRO*	1	Temperature	-40 °C to 125 °C	1 s to 12 h	32 K readings	Extended Temperature Range
USB-501-RCG*	1	Temperature	-20 °C to 60 °C	1 s to 12 h	32 K readings	Rechargeable Battery
USB-501-TC*	1	Thermocouple	Thermocouple-dependent	1 s to 12 h	32 K readings	—
USB-501-TC-LCD*	1	Thermocouple	Thermocouple-dependent	1 s to 12 h	32 K readings	Built-in LCD Display
USB-502*	2	Temperature, Humidity	-35 °C to 80 °C	10 s to 12 h	16 K readings	—
USB-502-LCD*	2	Temperature, Humidity	-35 °C to 80 °C	10 s to 12 h	16 K readings	Built-in LCD Display
USB-502-PLUS*	2	Temperature, Humidity	-35 °C to 80 °C	10 s to 12 h	16 K readings	Increased Accuracy
USB-503	1	0 VDC to 30 VDC	—	1 s to 12 h	32 K readings	—
USB-504	1	4 mA to 20 mA	—	1 s to 12 h	32 K readings	—
USB-505	1	Event/State Change	—	10 s to 30 m	32 K readings	—
USB-601	1	Temperature	-30 °C to 80 °C	10 s to 2 h	250 K readings	Graphic Display, Stores Multiple Logging Sessions
USB-602	2	Temperature, Humidity	-30 °C to 80 °C	10 s to 2 h	250 K readings	
USB-603	2	Thermocouple	Thermocouple-dependent	2 s to 2 h	250 K readings	

* Compatible with USB-525 Logger Assistant

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USB-500/600 Series

General Information

Analog Input

One or two channels are available on USB-500/600 Series data loggers. Devices are available with temperature, thermocouple, humidity, voltage, current, or event inputs.

Sampling Interval

Loggers can be programmed with sampling intervals from 1 second to as long as 12 hours, depending on your data collection needs and the logger you are using. The logger stores the data and then uploads it to a computer through USB when collection is complete.

Logger Start Modes

Depending on the USB-500/600 Series logger being used, users can configure a device to start logging in one of the following ways:

- start immediately
- start when logger button pressed (loggers with LCDs only)
- start at selected date and time
- start based on temperature or humidity condition (USB-600 loggers only)

Alarms

All USB-500/600 Series data loggers except for the USB-505 provide high alarm and low alarm options that can be set through software. Users can also enable a *hold* on each alarm so that an alarm status continues even if the logged value is no longer in an alarm condition. The hold option allows users to be notified of an alarm condition without having to download data from the logger.

Alarms are indicated by LED blink patterns. USB-600 Series data loggers also have LCD and audible alarm indicators.

Status LEDs

Each USB-500/600 Series data logger includes one or two LEDs which indicate logging status and alarm conditions.

Some loggers also have LED indicators for battery and memory status.

Real-Time LCD Display

The following USB-500/600 Series data loggers feature a built-in LCD for real-time text display of data:

- USB-501-LCD
- USB-501-TC-LCD
- USB-502-LCD
- USB-601
- USB-602
- USB-603

The LCD on all of these loggers can display current and maximum/minimum stored temperature and humidity values.

The LCD on the USB-601, USB-602, and USB-603 also display the following information:

- graphical display of temperature/humidity
- logging start mode (if logging does not start immediately)
- alarm indicators
- animated icon indicating device is logging
- *locked* mode indicator when start/stop logging button is disabled

The USB-601, USB-602, and USB-603 are the newest additions to the USB-500/600 Series of data loggers. USB-600 Series loggers offer device controls to start and stop logging, LCD and audible alarm indicators, the ability to store multiple logging sessions between downloads, and graphical data displays.

Multiple Logging Sessions (USB-600 Series Only)

Users can start and stop logging on the USB-600 Series data loggers either through software or using the buttons on the logger. This feature allows for storing of multiple logging sessions in between downloads.

USB-500/600 Series

Software

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MEASUREMENT COMPUTING.

USB-500/600 Series Data Logger Software

Each USB-500/600 Series data logger includes an easy-to-use software application which allows users to configure the following settings:

- sampling interval
- high/low alarm options
- temperature scale
- logger start mode
- buffer management
- LED and LCD power saving options

Settings vary depending on the data logger you are using.

Use the included software to download, display, and save data to a file. The loggers also record maximum and minimum values. Logged temperature, humidity, dew point, voltage, and current data can also be exported to *comma-separated values* (`.csv`) and text formats for display and analysis in popular spreadsheet programs such as Microsoft Excel.
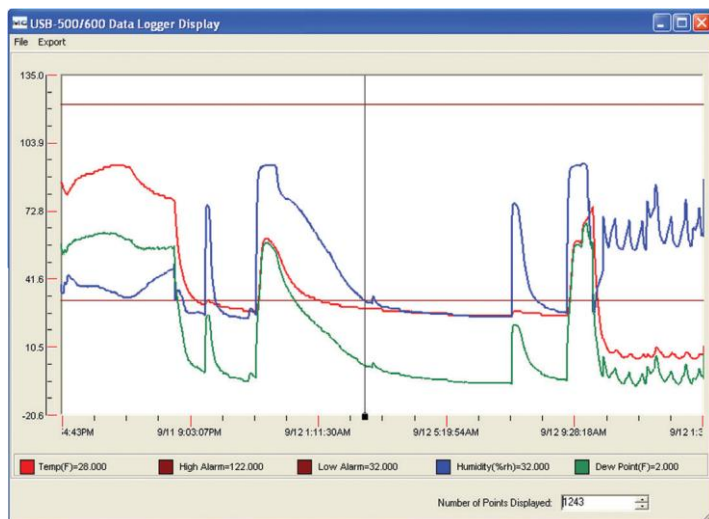
The included USB-500/600 Data Logger software displays recorded measurements in an easy-to-read chart. Movable markers isolate data values along with a time stamp. Temperature, humidity, dew point, voltage, or current measurements are displayed. In addition, high and low alarms are also shown.

USB-525 Logger Assistant

The ultra-portable USB-525 Logger Assistant allows the user to conveniently program compatible USB-500 model loggers and view the data on a high-resolution screen.

The USB-525 is compatible with the following temperature/humidity data loggers:

- USB-501-LT
- USB-501
- USB-501-LCD
- USB-501-PRO
- USB-501-RCG
- USB-501-TC
- USB-501-TC-LCD
- USB-502
- USB-502-LCD
- USB-502-PLUS

Connect a data logger directly to the USB port on the USB-525, and follow the instructions on the touch-screen display to set up a compatible logger, download data, view data, and export data for use in a spreadsheet application. Logger setup and data display can be done on site without the need of a computer, reducing interruptions in data collection and decreasing travel by users between sites.

Logged data can also be transferred to a computer over the included micro-USB cable for display using the USB-500/600 Data Logger software.

Specifications

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

USB-501-LT

Lowest Cost Temperature Logger

Temperature
Measurement range: −10 °C to 50 °C (14 °F to 122 °F)
Internal resolution: 1 °C (2 °F) typ
Accuracy (overall error): ±2.5 °C (±4.5 °F) max

Data Sampling
Sampling intervals (software-selectable): 15 min, 30 min, 1 h, 2 h
Max temperature samples: 4,080
Units: °C or °F

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: CR1620 lithium button cell
Battery life: 1 month

Environmental
Operating temperature range: −10 °C to 50 °C (14 °F to 122 °F)

Mechanical
Dimensions (L × W × H): 2.67 × 0.72 × 0.72 in. (68 × 18.5 × 18.5 mm)

USB-500/600 Series

USB-501

Temperature Logger

Temperature
Measurement range: −35 °C to 80 °C (−31 °F to 176 °F)
Internal resolution: 0.5 °C (1 °F) typ
Accuracy (overall error): ±1 °C (±2 °F) typ

Data Sampling
Sampling intervals (software-selectable): 10 s, 30 s, 1 min, 5 min, 15 min, 30 min, 1 h, 2 h, 6 h, 12 h
Max temperature samples: 16,382
Units: °C or °F

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: 1/2AA 3.6 V lithium battery
Battery life: 3 years @ 25 °C and 1 min logging rate

Environmental
Moisture and dust protection: Protective cap installed, IP67
Operating temperature range: −35 °C to 80 °C (−31 °F to 176 °F)

Mechanical
Dimensions (L × W × H): 99 × 25 × 23 mm (3.89 × 0.98 × 0.90 in.)

USB-501-LCD

Temperature Logger with LCD

Temperature
Measurement range: -35 °C to 80 °C (-31 °F to 176 °F)
Internal resolution: 0.5 °C (1.0 °F) typ
Accuracy (overall error): ±0.5 °C (±1.0 °F) typ, ±1.5 °C (±3.0 °F) max, when operating between 0 °C and 40 °C

Data Sampling
Sampling intervals (software-selectable): 1 s, 2 s, 5 s, 10 s, 30 s, 1 min, 5 min, 15 min, 30 min, 1 h, 2 h, 6 h, 12 h
Temperature samples: 16,379
Units: °C or °F
Data rollover (software-selectable): Allows unlimited logging periods by overwriting the oldest data when the memory is full

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: 1/2AA 3.6 V lithium battery
Battery life: 1 year max @ 1 min logging rate,

Environmental
Operating temperature range: −35 °C to 80 °C (−31 °F to 176 °F)
Moisture and dust protection: Protective cap installed, IP67

Mechanical
Dimensions (L × W × H): 120 × 25 × 22 mm (4.72 × 0.98 × 0.86 in.)

USB-501-PRO

Temperature Logger with Rugged Enclosure

Temperature
Measurement range: −40 °C to 125 °C (−40 °F to 257 °F)
Internal resolution: 0.1 °C (0.2 °F) typ
Accuracy (overall error): ±0.2 °C (±0.4 °F) typ, ±0.5 °C (±1.0 °F) max, when operating between 0 °C and 40 °C

Data Sampling
Sampling intervals (software-selectable): 1 s, 2 s, 5 s, 10 s, 30 s, 1 min, 5 min, 15 min, 30 min, 1 h, 2 h, 6 h, 12 h
Temperature samples: 32,510
Units: °C or °F
Data rollover (software-selectable): Allows unlimited logging periods by overwriting the oldest data when the memory is full

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: 2/3AA 3.6 V lithium battery
Battery life: 2 years at 80ºC and 10 s logging rate

Environmental
Operating temperature range: −40 °C to 125 °C (−40 °F to 257 °F)
Moisture and dust protection: Protective cap installed, IP67
Corrosion protection: Stainless steel housing, 316 grade

Mechanical
Dimensions (L × W × H): 110 × 18 mm (4.33 × 0.70 in.)

USB-501-RCG

Temperature Logger with Rechargeable Battery

Temperature
Measurement range: −20 °C to 60 °C (−4 °F to 140 °F)
Internal resolution: 0.1 °C (0.2 °F) typ
Accuracy (overall error): ±1 °C (±2 °F) typ

Data Sampling
Sampling intervals (software-selectable): 1 s, 2 s, 5 s, 10 s, 30 s, 1 min, 5 min, 15 min, 30 min, 1 h, 2 h, 6 h, 12 h
Temperature samples: 32,510
Units: °C or °F
Data rollover (software-selectable): Allows unlimited logging periods by overwriting the oldest data when the memory is full

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: Rechargeable lithium battery
Battery life: 4 weeks at 20 ºC and 1 min logging rate
Recharging time: 5 hr

Environmental
Operating temperature range: −20 °C to 60 °C (−4 °F to 140 °F)
Moisture and dust protection: Protective cap installed, IP67
Corrosion protection: Protective cap installed, stainless steel housing, 316 grade

Mechanical
Dimensions (L × W × H): 3.66 × 0.78 in. (93 × 20 mm)

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USB-500/600 Series

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USB-501-TC

Thermocouple Logger

Temperature
Probe measurement range
K-type thermocouple: −200 °C to 1350 °C
(−328 °F to 2462 °F)
J-type thermocouple: −200 °C to 1190 °C
(−328 °F to 2174 °F)
T-type thermocouple: −200 °C to 390 °C
(−328 °F to 734 °F)
Internal resolution: 0.5 °C (1 °F) typ
Accuracy (overall error): ±1 °C (±2 °F) typ

Included Thermocouple Probe
Type: K
Measurement range: 0 ºC to 200 ºC (32 ºF to 392 ºF)
Accuracy: ±2.5 ºC (±4.5 ºF)
Connector type: Mini-thermocouple
Cable length: 1.5 m
Stainless steel probe length: 100 mm

Data Sampling
Sampling intervals (software-selectable): 1 s, 2 s, 5 s, 10 s, 30 s, 1 min, 5 min, 15 min, 30 min, 1 h, 2 h, 6 h, 12 h
Max temperature samples: 32,510
Units: °C or °F

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: 1/2AA 3.6 V lithium battery
Battery life: 2 years at 25ºC and 1 min logging rate

Environmental
Operating temperature range (data logger only): −10 °C to 40 °C (14 °F to 104 °F)

Mechanical
Dimensions (L × W × H): 118 × 27 × 27 mm (4.64 × 1.06 × 1.06 in.)

USB-501-TC-LCD

Thermocouple Logger with LCD

Temperature
Probe measurement range
K-type thermocouple: −200 °C to 1350 °C
(−328 °F to 2462 °F)
J-type thermocouple: −200 °C to 1190 °C
(−328 °F to 2174 °F)
T-type thermocouple: −200 °C to 390 °C
(−328 °F to 734 °F)
Internal resolution: 0.5 °C (1 °F) typ
Accuracy (overall error): ±1 °C (±2 °F) typ

Included Thermocouple Probe
Type: K
Measurement range: 0 ºC to 200 ºC (32 ºF to 392 ºF)
Accuracy: ±2.5 ºC (±4.5 ºF)
Connector type: Mini-thermocouple
Cable length: 1.5 m
Stainless steel probe length: 100 mm

Data Sampling
Sampling intervals (software-selectable): 1 s, 2 s, 5 s, 10 s, 30 s, 1 min, 5 min, 15 min, 30 min, 1 h, 2 h, 6 h, 12 h
Temperature samples: 32,510 max
Units: °C or °F
Data rollover (software-selectable): Allows unlimited logging periods by overwriting the oldest data when the memory is full.

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: 1/2AA 3.6 V lithium battery
Battery life: 2 years at 25ºC and 1 min logging rate

Environmental
**Operating temperature range:** −10 °C to 40 °C (14 °F to 104 °F)

LCD Status Indicators
The high-contrast LCD shows temperature data and information regarding the logger status.
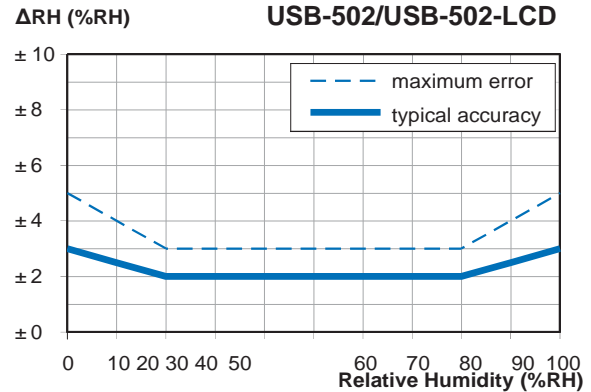**Temperature (°C/°F):** Current temperature, stored max, and stored min values
LCD mode (software-selectable): Always on; on for 30 seconds after the LCD button is pressed; always off

Mechanical
Dimensions (L × W × H): 135 × 24 × 21 mm (5.31 × 0.94 × 0.82 in.)

USB-502

Temperature & Humidity Logger

Temperature
Measurement range: −35 °C to 80 °C (−31 °F to 176)
Internal resolution: 0.5 °C (1 °F) typ
Accuracy (overall error)*: ±0.55 °C (±1.04 °F) typ (5 °C to 60 °C)
Long term stability: <0.02 °C (0.04 °F) per year
Alarm threshold range (software-selectable): −35 °C to 79.5 °C (−31 °F to 175 °F), high and low alarms

Relative Humidity (%RH)
Measurement range: 0% to 100%
Accuracy (overall error)*: ±3.0 typ
Internal resolution: 0.5% RH
Long term stability: <0.25% RH / year
Alarm threshold range: 0% to 99.5% (high and low alarms)

Dew Point
Accuracy (overall error)*: ±1.7 °C typ (−35 °C to 80 °C, 40% RH to 100% RH)

Data Sampling
Sampling intervals (software-selectable): 10 s, 30 s, 1 min, 5 min, 15 min, 30 min, 1 h, 2 h, 6 h, 12 h
Temperature samples: 16,382 max
Relative humidity samples: 16,382 max
Temperature units: °C or °F
Logging modes: Immediate and delayed start

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: 1/2AA 3.6 V lithium battery
Battery life: 3 years at 25ºC and 1 min logging rate

Environmental
Operating temperature range: −35 °C to 80 °C (−31 °F to 176 °F)
Ingress protection: Meets IP67 Standard with protective cap installed

Mechanical
Dimensions (L × W × H): 108 × 25 × 22 mm (4.25 × 0.98 × 0.86 in.)

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USB-502-LCD

Temperature and Humidity Logg
with LCD

Temperature
Measurement range: −35 ˚C to 80 ˚C
   (−31 ˚F to 176 ˚F)
Accuracy (overall error)*: ±0.5 ˚C typ,
   max; ±1 ˚F typ, ±4 ˚F max
Internal resolution: 0.5 ˚C, 1 ˚F typ
Alarm threshold range (software
   −35 ˚C to 79.5 ˚C (−31 ˚F to 175 ˚F,
   high and low alarms

Relative Humidity (%RH)
Measurement range: 0% to 100%
Accuracy (overall error)*: 2.25% RH typical (20% RH to 80% RH)
Internal resolution: 0.5% RH typ
Long term stability: <0.25% RH/year
Alarm threshold range: 0% to 99.5% (high and low alarms)

Dew Point
Accuracy (overall error)*: ±1.7 ˚C typ (−35 ˚C to 80 ˚C, 40% RH to 100% RH)
   The overall error takes into account the sensor accuracy and the resolution of
   the data logger

Data Sampling
Sampling interval (software-selectable): 10 s, 30 s, 1 min, 5 min, 15 min,
   30 min, 1 h, 2 h, 6 h, 12 h
Temperature samples: 16,379 max
Relative humidity samples: 16,379 max
Temperature units: ˚C or ˚F
Logging modes: Immediate, delayed start, and push to start (through the LCD
   button on the device)
Data rollover (software-selectable): Allows unlimited logging periods by overwrit-
   ing the oldest data when memory is filled

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

LCD Status Indicators
The high-contrast LCD shows temperature data and information regarding the
   logger status.
Temperature (˚C/˚F): Current temperature, stored max, and stored min values
Relative humidity (%RH): Current relative humidity, stored max, and stored
   min values
LCD mode (software-selectable): Always on; on for 30 seconds after the LCD
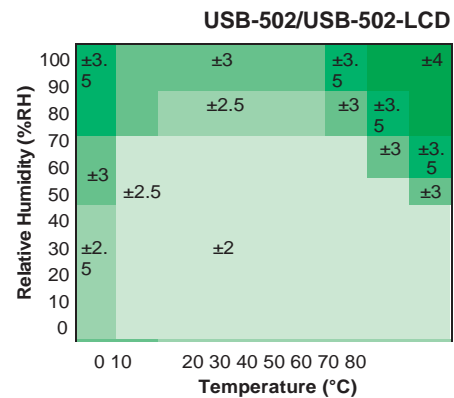   button is pressed; always off

ΔT (°C) **USB-502/USB-502-LCD**
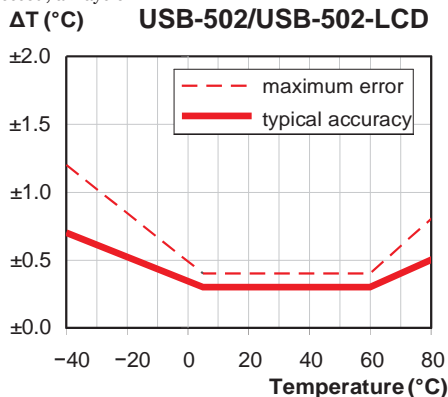
*Typical and maximum tolerance for USB-502/USB-502-LCD tem-
perature sensor in °C.*

ΔRH (%RH) **USB-502/USB-502-LCD**

*Typical and maximum tolerance for USB-502/USB-502-LCD at 25 °C
for relative humidity.*

USB-502/USB-502-LCD

*Typical accuracy of relative humidity measurements for USB-502/
USB-502-LCD given in %RH for temperatures 0 °C to 80 °C.*
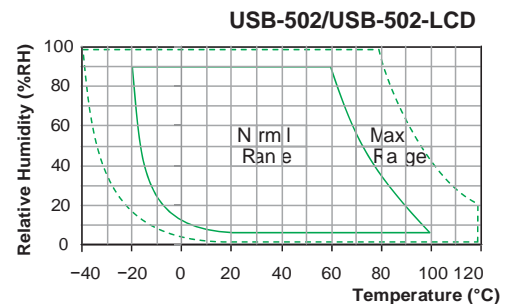
USB-502/USB-502-LCD

*Long-term exposure of the USB-502/USB-502-LCD to humidity levels
outside of the "normal" range may temporarily offset RH measurements
(±3 %RH after 60 hours). Once returned to less extreme conditions,
the device slowly returns toward calibration state.*

Power
Power source: 1/2AA 3.6 V lithium battery
Battery life: 2 years at 25ºC and 1 min logging rate, LCD on

Environmental
Operating temperature range: −35 ˚C to 80 ˚C (−31 ˚F to 176 ˚F)
   Note: At temperatures below −20 ˚C (−4 ˚F), the LCD may exhibit slower response
   time of approximately 10 seconds

Mechanical
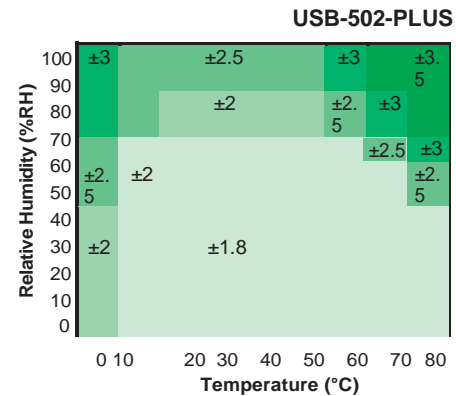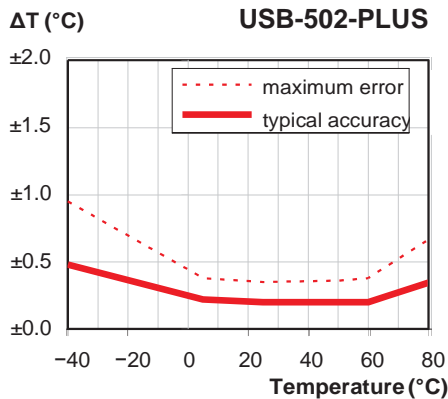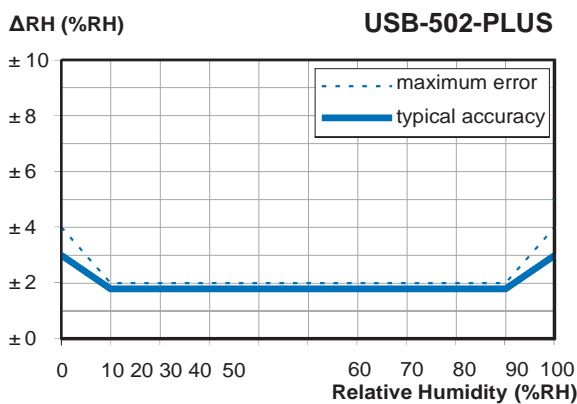**Dimensions (L × W × H):** 126 × 25 × 22 mm (4.96 × 0.98 × 0.86 in.)

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* The overall error takes into account the sensor accuracy and the data logger
   resolution. Refer to the USB-502/USB-502-LCD accuracy tables on this page.

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USB-500/600 Series

Specifications

USB-502-PLUS

Temperature and Humidity Logger with Increased Accuracy

Temperature
Measurement range: −35 ˚C to 80 ˚C (−31 ˚F to 176 ˚F)
Accuracy (overall error)*: 0.45 ˚C (0.86 ˚F) typ (5 ˚C to 60 ˚C)
Internal resolution: 0.5 ˚C (1 ˚F) typ
Long term stability: <0.02 ˚C (0.86 ˚F) typ (5 ˚C to 60 ˚C)
Alarm threshold range (software-selectable): −35 ˚C to 79.5 ˚C (−30 ˚F to 175 ˚F) (high and low alarms)

Relative Humidity (%RH)
Measurement range: 0% to 100%
Accuracy (overall error)*: ±2.0 typ, ±4.0 max
Specifies the overall error in the logged readings for relative humidity measurements between 10% and 90% RH
Internal resolution: 0.5% RH typ
Long term stability: <0.25 %RH/year
Alarm threshold range: 0% to 99.5% (high and low alarms)

Dew Point*
Accuracy (overall error): 1.5°C typical (−35 to 80°C, 40% RH to 100% RH)

Typical and maximum tolerance for USB-502-PLUS temperature sensor in °C.

Typical and maximum tolerance for USB-502-PLUS at 25 °C for relative humidity.

Typical accuracy of relative humidity measurements for USB-502-PLUS given in %RH for temperatures 0 °C to 80 °C.
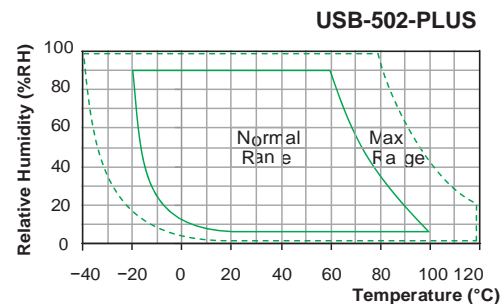
Long-term exposure of the USB-502-PLUS to humidity levels outside of the "normal" range may temporarily offset RH measurements (±3 %RH after 60 hours). Once returned to less extreme conditions, the device slowly returns toward calibration state.

Data Sampling
Sample rate (software-selectable): 10 s, 30 s, 1 min, 5 min, 15 min, 30 min, 1 h, 2 h, 6 h, 12 h
Temperature samples: 16,382 max
Relative humidity samples: 16,382 max
Temperature units: ˚C or ˚F
Logging modes: Immediate and delayed start
Data rollover (software-selectable): Allows unlimited logging periods by overwriting the oldest data when the memory is full.

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: 1/2AA 3.6 V lithium battery
Battery life: 3 years at 25°C and 1 min logging rate

Environmental
Operating temperature range: −35 ˚C to 80 ˚C (−31 ˚F to 176 ˚F)
Ingress protection: Meets IP67 Standard with protective cap installed

Mechanical
Dimensions (L × W × H): 4.25 × 0.98 × 0.86 in. (108 × 25 × 22 mm)

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USB-500/600 Series

Specifications

USB-503

Voltage Logger

Voltage
Measurement range: 0 VDC to 30 VDC
Internal resolution: 50 mVDC
Accuracy (overall error): ±1% typ

Data Sampling
Sampling intervals (software-selectable): 1 s, 2 s, 5 s, 10 s, 30 s, 1 min, 5 min, 15 min, 30 min, 1 h, 2 h, 6 h, 12 h
Max voltage samples: 32,510
Units: VDC

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: 1/2AA 3.6 V lithium battery
Battery life: 1 year typ

Environmental
Operating temperature range: −35 ˚C to 80 ˚C (−31 ˚F to 176 ˚F)

Mechanical
Dimensions (L × W × H): 98.0 × 26.8 × 26.8 mm (3.86 × 1.05 × 1.05 in.)

USB-504

4-20 mA Current Logger

Current
Measurement range: 4 mA DC to 20 mA DC typ
Internal resolution: ±0.05 mA DC
Accuracy (overall error): ±1%

Data Sampling
Sampling intervals (software-selectable): 1 s, 2 s, 5 s, 10 s, 30 s, 1 min, 5 min, 15 min, 30 min, 1 h, 2 h, 6 h, 12 h
Max current samples: 32,510
Units: mA DC

USB Specifications
USB device type: USB 2.0 (Full-speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: 1/2AA 3.6 V lithium battery
Battery life: 2 years at 25 ºC and 2 s logging rate

Environmental
Operating temperature range: −35 ˚C to 80 ˚C (−31 ˚F to 176 ˚F)

Mechanical
Dimensions (L × W × H): 98.0 × 26.8 × 26.8 mm (3.86 × 1.05 × 1.05 in.)

USB-505

Counter, Event and State Logger

Counter, Event and State
Event/state change frequency: 2 Hz max
Time in state: 100 ms min
Resolution event/state mode: 100 ms (depending on operating mode)
Count/count per frequency: 100 Hz max (40 Hz max when event LED is enabled)

Voltage
Input range: 3 VDC to 28 VDC
Volt free contacts voltage resolution: 50 mVDC

Current
Volt free contacts current: 35 µA typ

Data Sampling
Max event or state change samples: 32,510
Timing accuracy: ±3 s per day at 20 ºC
Sampling intervals (software-selectable): 10 s, 30 s, 1 min, 5 min, 15 min, 30 min
Max event samples: 32,510

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: 1/2AA 3.6 V lithium battery
Battery life: 1 year typ (depends on operating mode)

Environmental
Operating temperature range: −35 ˚C to 80 ˚C (−31 ˚F to 176 ˚F)

Mechanical
Dimensions (L × W × H): 98.0 × 26.8 × 26.8 mm (3.86 × 1.05 × 1.05 in.)

USB-525 Logger Assistant

Portable Device for USB-500 Model Logger Setup and Data Viewing

Compatible Data Loggers

- USB-501-LT
- USB-501
- USB-501-LCD
- USB-501-PRO
- USB-501-RCG
- USB-501-TC
- USB-501-TC-LCD
- USB-502
- USB-502-LCD
- USB-502-PLUS

Memory
Internal flash memory: Stores over 8,500,000 temperature/humidity samples

LCD
240 × 320 pixels, 2.8" thin film transistor with touch-screen
Time out (software-selectable): Backlight turns off after 10 s, 20 s, 30 s, or 1 min of inactivity

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0
USB type a socket (top of device): Connects to compatible USB-500 Series data logger
Micro-USB socket (bottom of device): Connects device to computer using 1 m (3.28 ft) USB cable (included)

Power
Power source: Lithium polymer battery, rechargeable using micro-USB connection
Battery life: 8 hours max (intermittent use), 5 hours min (constant use)
Power down: Device powers down after 5 minutes of inactivity

Environmental
Operating temperature range: 0 ˚C to 50 ˚C (32 ˚F to 122 ˚F)

Mechanical
Dimensions (L × W × H): 107 × 68 × 19 mm (4.2 × 2.7 × 0.7 in.)

USB-500/600 Series

Specifications

USB-601

Temperature Logger with Graphic LCD Screen

Temperature

Measurement range: −30 ˚C to 80 ˚C (−22 ˚F to
Internal resolution: 0.1 ˚C (0.1 ˚F) typ
Accuracy (overall error)*: 0.35 ˚C (0.59 ˚F) typ
(5 ˚C to 60 ˚C)

Data Sampling

Sampling intervals (software-selectable): 10 s,
15 s, 20 s, 30 s, 1 min, 2 min, 5 min, 10 min,
15 min, 20 min, 30 min, 1 h, 2 h
Max temperature samples: 252,928
Units: ˚C or ˚F

USB Specifications

USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power

Power source: Two 1/2AA 3.6 V lithium batteries
Battery life: 4 months typ

Environmental

Moisture and dust protection: IP67
Operating temperature range: −30 ˚C to 80 ˚C (−22 ˚F to 176 ˚F)

Mechanical

Dimensions (L × W × H): 3.46 × 1.90 × 1.20 in. (88 × 48.5 × 30.5 mm)

Temperature error for USB-601 temperature sensor in °C.

USB-602

Temperature/Humidity Logger with Graphic
LCD Screen

Temperature

Measurement range: −30 ˚C to 80 ˚C (−22 ˚F to 176
Internal resolution: 0.1 ˚C (0.1 ˚F) typ
Accuracy (overall error): ±0.5 ˚C (±1.0 ˚F) typ, ±2.0 ˚C
(±4.0 ˚F) max

Relative Humidity (%RH)

Measurement range: 0% to 100%
Accuracy (overall error)*: ±2.0 typ, ±4.0 max
Note: Specifies the overall error in the logged read-
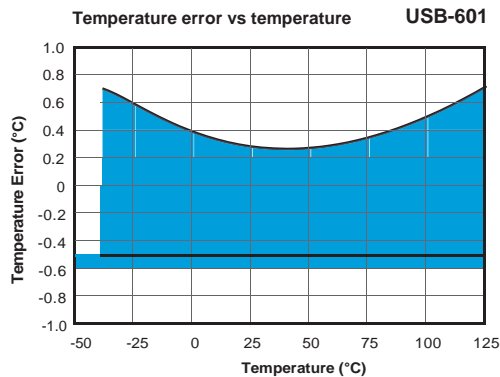ings for relative humidity measurements between
20% and 80% RH
Internal resolution: ±0.1 %RH typ
Long term stability: 0.5 typ (%RH per year)
Alarm threshold range: 0% to 99.5% (high and low alarms)

Dew Point

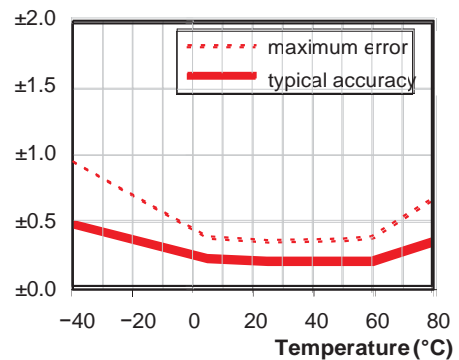**Accuracy (overall error)*:** ±1.1 ˚C (±2.0 ˚F) typ

Typical and maximum tolerance for USB-602 temperature sensor in °C.
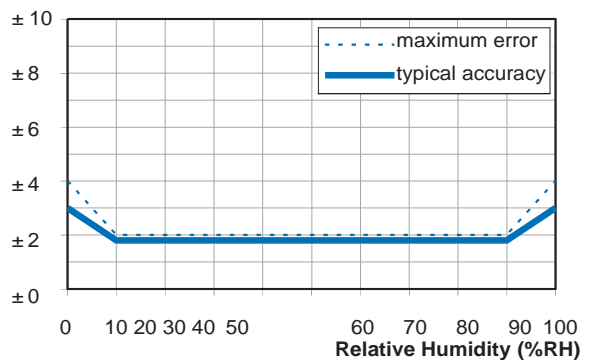
*Typical and maximum tolerance for USB-602 at 25 °C for relative
humidity.*

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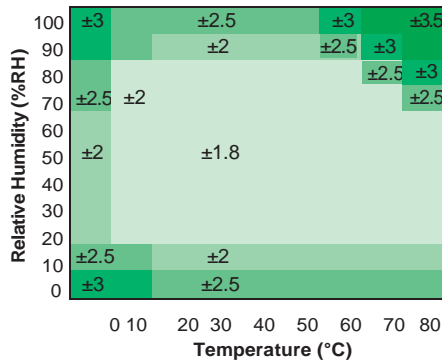
USB-602

Typical and maximum accuracy of relative humidity measurements for USB-602 given in %RH for temperatures 0 °C to 80 °C.

USB-602
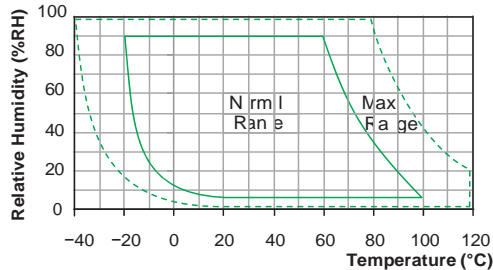
Long-term exposure of the USB-602 to humidity levels outside of the "normal" range may temporarily offset RH measurements (±3 %RH after 60 hours). Once returned to less extreme conditions, the device slowly returns toward calibration state.

Data Sampling
Sampling intervals (software-selectable): 10 s, 15 s, 20 s, 30 s, 1 min, 2 min, 5 min, 10 min, 15 min, 20 min, 30 min, 1 h, 2 h
Max temperature samples: 252,928
Units: °C or °F

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: Two 1/2AA 3.6 V lithium batteries
Battery life: 4 months typ at 25 °C and 10 minute logging rate with no audible alarm or alarm LEDs and minimal LCD use

Environmental
Moisture and dust protection: IP67
Operating temperature range: −30 °C to 80 °C (−22 °F to 176 °F)
At temperatures below -5 ºC the LCD exhibits slower response times. The LCD is disabled at temperatures below -20 ºC and above 70 ºC.

Mechanical
Dimensions (L × W × H): 3.46 × 1.90 × 1.20 in. (88 × 48.5 × 30.5 mm)

USB-603

Two-Channel Thermocouple Logger with Graphic LCD Screen

Temperature
Measurement ranges
K-type thermocouple: −200 °C to 1350 °C (−328 °F to 2462 °F)
J-type thermocouple: −200 °C to 1190 °C (−328 °F to 2174 °F)
T-type thermocouple: −200 °C to 390 °C (−328 °F to 734 °F)
Internal resolution: 0.1 °C (0.1 °F) typ
Above 999.9 °C/°F display becomes 1 °C. Internal resolution remains at 0.1 °C/°F.
Accuracy (overall error): ±0.5 °C (±0.9 °F) typ
Quoted accuracy is for the data logger only when measuring within the specified operating temperature. Thermocouple error is not included and should also be taken into consideration.

Included Thermocouple Probes
Type: K
Measurement range: 0 ºC to 400 ºC (32 ºF to 752 ºF)
Accuracy: ±2.5 ºC (±4.5 ºF)
Connector type: Mini-thermocouple
Cable length: 1.5 m
Stainless steel probe length: 100 mm
To improve response time, the thermocouple probes supplied with the USB-603 are not electrically isolated from the thermocouple junction.
Depending upon the application, it may be necessary to use electrically-isolated thermocouple probes to avoid ground loops, and/or situations where the probes may come into contact with conductors that are at different electrical potentials. If unsure of the application needs, Measurement Computing recommends using electrically-isolated probes.

Data Sampling
Sampling intervals (software-selectable): 2 s, 5 s, 10 s, 15 s, 20 s, 30 s, 1 min, 2 min, 5 min, 10 min, 15 min, 20 min, 30 min, 1 h, 2 h
Max temperature samples: 252,928
Units: °C or °F

USB Specifications
USB device type: USB 2.0 (full speed)
Device compatibility: USB 1.1, USB 2.0

Power
Power source: Two 1/2AA 3.6 V lithium batteries
Battery life: 4 months typ at 25 °C and 10 minute logging rate with no audible alarm or alarm LEDs and minimal LCD use

Environmental
Operating temperature range: −10 °C to 40 °C (−14 °F to 104 °F)
Applies to the data logger module only. Refer the probe manufacturer for operating temperature of thermocouple.

Mechanical
Dimensions (L × W × H): 4.01 × 1.90 × 1.20 in. (102.0 × 48.5 × 30.5 mm)

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USB-500/600 Series

Ordering Information

Order Information

Part No.	Description
USB-501-LT	Lowest-cost temperature logger temperature logger measures and stores over 4,000 temperature readings.
USB-501	Battery-powered remote temperature logger measures and stores up to 16,382 temperature readings.
USB-501-LCD	Battery-powered remote temperature logger with LCD measures and stores up to 16,379 temperature readings.
USB-501-PRO	Temperature logger with rugged enclosure and extended temperature range (−40 ˚C to 125 ˚C) measures and stores over 32,000 temperature readings.
USB-501-RCG	Temperature logger with rechargeable battery measures and stores over 32,000 temperature readings.
USB-501-TC	Thermocouple data logger measures and stores over 32,000 temperature readings. One K-type thermocouple included.
USB-501-TC-LCD	Thermocouple data logger with LCD measures and stores over 32,000 temperature readings. One K-type thermocouple included.
USB-502	Temperature and humidity logger measures and stores over 16,000 readings.
USB-502-LCD	Temperature and humidity logger with LCD measures and stores over 16,000 readings.

Part No.	Description
USB-502-PLUS	Temperature and humidity logger with increased accuracy (±0.45 ˚C typical, ±2.05 %RH typical) measures and stores over 16,000 readings.
USB-503	Voltage data logger measures and stores over 32,000 readings.
USB-504	Current loop data logger measures and stores over 32,000 readings
USB-505	Event, state change, and event count logger measures and stores over 32,000 readings.
USB-525	Portable Logger Assistant for logger setup and data viewing from compatible USB-500 model data loggers.
USB-601	Temperature logger with graphic LCD screen, device controls, and multi-session logging measures and stores over 250,000 readings.
USB-602	Temperature/humidity logger with graphic LCD screen, device controls, and multi-session logging measures and stores over 250,000 readings.
USB-603	Two-channel thermocouple logger with graphic LCD screen, device controls, and multi-session logging measures and stores over 250,000 readings. Two K-type thermocouples included.

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