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MCC USB-502

Low-Cost USB Temperature & Relative Humidity Data Logger



- 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 indication
- Replaceable long-life lithium battery
- IP67 protection

Overview

The USB-502 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) range. 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. 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.

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Requirements and Compatibility

OS Information

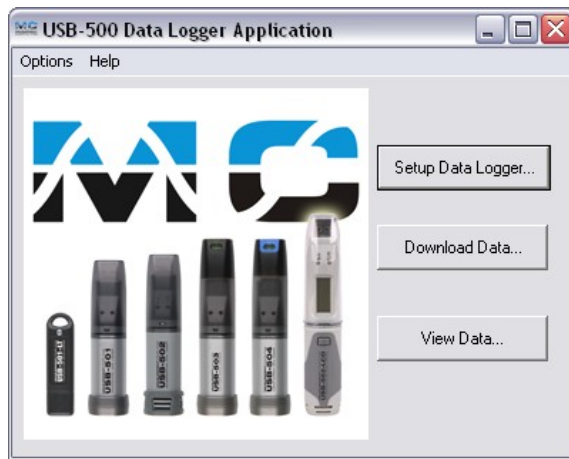
- Windows

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Application and Technology

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 logger and download and display the data graphically in a powerful strip chart. The software also provides an easy export to Excel™.



Setup Options

- Logger name
- °C or °F
- Logging rate intervals (10s, 1m, 5m, 30m, 1hr, 6hr, 12hr)
- High and low alarm thresholds for RH and temperature
- Start date and start time

Battery Replacement

National Instruments recommends that the battery be replaced every 12 months, or prior to logging critical data. The USB-501 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-501 from the PC.

Note: Leaving the USB-501 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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Ordering Information

For a complete list of accessories, visit the product page on ni.com.

Products	Part Number	Recommended Accessories	Part Number
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MCC USB-502	781133-01	No accessories required.	
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Support and Services

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- **Support** - Visit ni.com/support to access the NI KnowledgeBase, example programs, and tutorials or to contact our applications engineers who are located in NI sales offices around the world and speak the local language.
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Detailed Specifications

Typical for 25 °C unless otherwise specified. Specifications in *italic* text are guaranteed by design.

Temperature	
Measurement range	−35 °C (−31 °F) minimum, 80 °C (176 °F) maximum
Repeatability	±0.2 °C (±0.4 °F) typical
Accuracy (overall error)	±1 °C (±2 °F) typical, ±2.5 °C (±5 °F) maximum
Response time	20 s
Dew point Accuracy (overall error)	±2 °C (±4 °F) typical ¹
Relative Humidity	
Measurement range	0% RH minimum, 100% RH maximum.
Repeatability (short term)	±0.2% RH typical
Accuracy (overall error) (20%–80% RH)	±3.5% RH typical ²
Response time	5 s typical
Long-term stability	1% RH/Yr typical
Sampling	
Sampling intervals	10 s, 1 min, 5 min, 30 min, 1 h, 6 h, 12 h
Max temperature samples	16,382
Max relative humidity samples	16,382
Units	°C or °F
Alarms	
High temperature alarm range	−40 °C (−40 °F) minimum, 89.5 °C (188 °F) maximum
Low temperature alarm range	−40 °C (−40 °F) minimum, 89.5 °C (188 °F) maximum
Temperature resolution	0.5 °C (1 °F)
High relative humidity alarm range	0% minimum, 99.5% maximum
Low relative humidity alarm range	0% minimum, 99.5% maximum
Relative humidity resolution	0.5%
USB Specifications	
USB-device type	USB 2.0 (full-speed)
Device compatibility	USB 1.1, USB 2.0
Power	
1/2 AA 3.6V Lithium Battery Life	
@ 1 minute logging rate	1 year minimum
Environmental	

Moisture and dust protection	
Protective cap installed	IP67
Operating temperature range	–35 °C (–31 °F) minimum, 80 °C (176 °F) maximum
LED Flashing Modes	
Green LED	
Flashes once every 10 seconds	Currently logging, no alarm
Flashes twice every 10 seconds	Logging to start at set date and time
Triple-flash (alternating with red)	Memory full, no alarms, no more readings stored
Red LED	
Flashes once every 10 seconds	Currently logging, low alarm condition ³
Flashes twice every 10 seconds	Currently logging, high alarm condition ³
Triple-flash (alternating with green)	Memory full, high or low alarm condition, no more readings stored ³
Both LEDs flash red once every 60 seconds	Low battery, replace immediately. Alarm conditions ignored.
No LEDs flash	Logger stopped or battery depleted



Note All conditions listed above apply to both the % RH and °C/°F LED indicators.

Mechanical	
Dimensions	103 mm long × 26.4 mm wide × 26.4 mm high (4.06 in. long × 1.04 in. wide × 1.04 in. high)

¹ This specifies the overall error in the calculated dew point, for relative humidity measurements between 40 and 100% RH at 25 °C

² This specifies the overall error in the logged readings, for relative humidity measurements between 20% and 80% RH

³ If both alarms have Hold selected, the LED indicator only applies to the first alarm condition detected

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