Technical Sales

(866) 531-6285
orders@ni.com

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For user manuals and dimensional drawings, visit the product page resources tab on ni.com.

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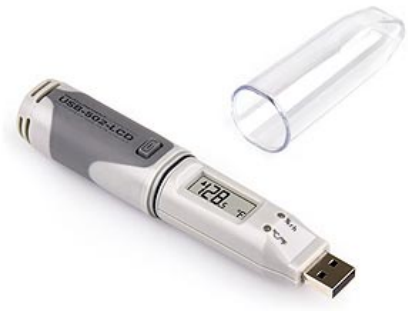
MCC USB-502-LCD

Low-Cost Temperature & Relative Humidity Data Logger with LCD



- 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
- High contrast LCD, with 2½ digit RH & T display

Overview

The USB-502-LCD data logger measures and stores up to 16,379 relative humidity and 16,379 temperature readings over 0 to 100%RH and -35 to +80°C (-31 to +176°F) measurement ranges. The user can easily set up the logger and view downloaded data by plugging the module into a PC's USB port and using the supplied software. Relative humidity, temperature and dew point (the temperature at which water vapor present in the air begins to condense) data can then be graphed, printed, and exported to other applications. The high contrast LCD can show a variety of temperature and humidity information. At the touch of a button, the user can cycle between the current temperature and humidity, along with the maximum and minimum stored values for temperature and humidity. The data logger is supplied complete with a long-life lithium battery, which can typically allow logging for up to one year.

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Requirements and Compatibility

OS Information

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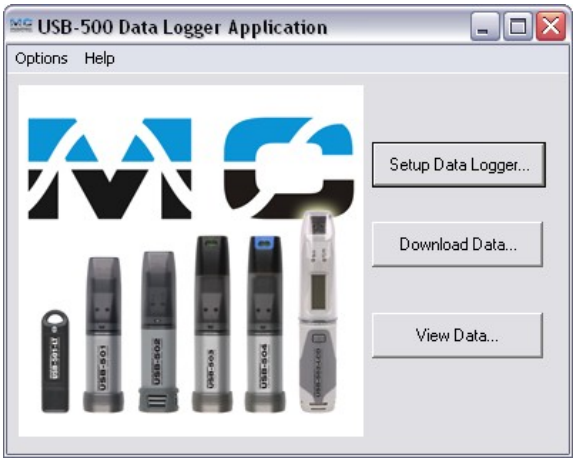
Application and Technology

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-LCD 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, °F
- Logging rate (10s, 30s, 1m, 5m, 15m, 30m, 1hr, 2hr, 6hr, 12hr)
- High and low alarms
- Immediate, delayed and push-to-start logging
- Display off, on for 30 seconds after button press, or permanently on
- Data rollover (allows unlimited logging periods by overwriting the oldest data when the memory is full)

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
MCC USB-502-LCD	781138-01	No accessories required.	

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Support and Services

Technical Support

Get answers to your technical questions using the following National Instruments resources.

- **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.
- **Discussion Forums** - Visit forums.ni.com for a diverse set of discussion boards on topics you care about.
- **Online Community** - Visit community.ni.com to find, contribute, or collaborate on customer-contributed technical content with users like you.

Repair

While you may never need your hardware repaired, NI understands that unexpected events may lead to necessary repairs. NI offers repair services performed by highly trained technicians who quickly return your device with the guarantee that it will perform to factory specifications. For more information, visit ni.com/repair.

Training and Certifications

The NI training and certification program delivers the fastest, most certain route to increased proficiency and productivity using NI software and hardware. Training builds the skills to more efficiently develop robust, maintainable applications, while certification validates your knowledge and ability.

- **Classroom training in cities worldwide** - the most comprehensive hands-on training taught by engineers.
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Extended Warranty

NI offers options for extending the standard product warranty to meet the life-cycle requirements of your project. In addition, because NI understands that your requirements may change, the extended warranty is flexible in length and easily renewed. For more information, visit ni.com/warranty.

OEM

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Detailed Specifications

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

Temperature	
Measurement range	–35–80 °C minimum, (–31 to 176 °F) maximum[1]
Repeatability (short term)	±0.1 °C, ±0.2 °F typical
Accuracy (overall error)	±0.5 °C typical, ±2 °C maximum ±1 °F typical, ±4 °F maximum
Internal resolution	±0.5 °C, 1 °F typical
Dew point accuracy (overall error)	±1.1 °C, ±2 °F typical[2]
Alarm threshold range	Software configurable: –35 to 79.5 °C, –31 to 175 °F (high and low alarms)
Relative Humidity	
Measurement range	0% RH minimum, 100% RH maximum.
Repeatability (short term)	±0.1% RH typical
Accuracy (overall error)	±3.0% RH typical, ±6.0% RH maximum[3]
Internal resolution	0.5% RH typical
Long-term stability	0.5% RH/yr typical
Alarm threshold range	0% RH to 99.5% RH (high and low alarms)
Data Sampling	
Sample rate	Software configurable: 10 s, 30 s, 1 min, 5 min, 15 min, 30 min, 1 h, 2 h, 6 h, 12 h
Temperature samples	16,379 maximum
Relative humidity samples	16,379 maximum
Temperature units	°C or °F
Logging modes	Immediate, delayed start, and push to start (via the device's LCD button)
Data rollover	Software configurable: Allows unlimited logging periods by overwriting 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
LED Status Indicators	
Two bicolor (red/green) LEDs display temperature (°C/°F) and relative humidity (%rh) logging status. All conditions listed below apply to both the % RH and °C/°F LED indicators.	
Green LED	
Single flash every 10 seconds	Currently logging, no alarm.

Double-flash every 10 seconds	Delayed start. Logging to start at the set date and time.
Triple-flash (alternating with red) every 10 seconds	Memory full, no alarms, *Hold* is enabled (no more readings are stored).
Red LED	
Single flash every 10 seconds	Currently logging, low alarm condition.[4]
Double-flash every 10 seconds	Currently logging, high alarm condition.[4]
Triple-flash (alternating with green) every 10 seconds	Memory full, high or low alarm condition, *Hold* is enabled (no more readings are stored).[4]
Both LEDs flash once every 60 seconds	Low battery. Alarm conditions are ignored.
No LEDs flash	Logger stopped or battery depleted.

LCD

The high-contrast LCD shows temperature data and information regarding the logger status.	
Temperature (°C/°F)	Current temperature, stored maximum, and stored minimum values
Relative humidity (%RH°)	Current relative humidity, stored maximum, and stored minimum values
LCD mode	Software configurable: - Always on - On for 30 s after the LCD button is pressed - Always off
Logger status indicators	
dS	Delayed start. Displayed for 3 seconds after the LCD button is pressed when the device is configured to start at a set date and time.
PS	Push to start. Flashes repeatedly when the logger is configured for "push to start" logging and the LCD button has not yet been pressed.
log	Logging. Displays for 3 seconds when the LCD mode is set to "Always off" and the LCD button is pressed.
---	Stopped. Displays for 3 seconds after the LCD button is pressed when the device is not configured to log data.

Power

Power source	1/2 AA 3.6 V Lithium Battery[5]
Battery lifespan	1 year typical

Environmental

Operating temperature range[6]	–35 °C to 80 °C (–31 °F to 176 °F)

Caution Exposure of the internal sensor to chemical vapors, such as those produced by some plastics and foamed materials, may interfere with the internal sensor and cause inaccurate readings to be logged. In a clean environment, this will rectify itself over time. Ensure that the USB-502-LCD is operated in a ventilated area in which air exchange is allowed.

Caution High levels of pollutants may cause permanent damage to the internal sensor.

Caution Exposure to extreme conditions or chemical vapors will require the following reconditioning procedure to restore the internal sensor to a calibration state: 80 °C (176 °F) at <5%RH for 36 hours baking, followed by 20–30 °C (70 to 90 °F) at >74%RH for 48 hours rehydration.

Mechanical

Dimensions	126.0 mm long × 24.1 mm wide × 25.3 mm high (4.96 in. long × .95 in. wide × 1.00 in. high)

[1] At temperatures below –20 °C (–4 °F), the LCD may exhibit slower response time of approximately 10 seconds.
[2] Specifies the overall error in the calculated dew point, for relative humidity measurements between 40 and 100% RH at 25 °C.
[3] Specifies the overall error in the logged readings for relative humidity measurements between 20 and 80% RH.
[4] If both alarms have *Hold* selected, the alarm condition may have been triggered at any point during the current logging session.
[5] Battery lifespan is dependent on the sample rate, ambient temperature, and use of the LCD screen.
[6] At temperatures below –20 °C (–4 °F), the LCD may exhibit slower response time of approximately 10 seconds.

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