

# EL-USB-2-LCD+

## High Accuracy Humidity, Temperature and Dew Point Data Logger with LCD

### ORDERING INFORMATION

Standard Data Logger (Data Logger, Software on CD, Battery)	EL-USB-2-LCD+
Replacement Battery	BAT 3V6 1/2AA

### FEATURES

- Higher accuracy sensor when compared to the EL-USB-2-LCD
- 0 to 100%RH measurement range
- -35 to +80 °C (-31 to +176 °F) measurement range
- Dew point indication via Windows control software
- USB interface for set-up and data download
- User-programmable alarm thresholds for %RH & T
- Status indication via red and green LEDs
- High contrast LCD, with two and a half digit temperature and humidity display function
- Immediate, delayed and push-to-start logging
- Supplied with replaceable internal lithium battery and Windows control software
- Environmental protection to IP67



This standalone 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 data logger into a PC's USB port and using the supplied software. Relative humidity, temperature and dew point (the temperature at which water vapour 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 1 year. The data logger is protected against moisture to IP67 when the protective cap is correctly fitted.

Specifications		Minimum	Typical	Maximum	Unit
Relative Humidity	Measurement range	0		100	%RH
	Repeatability (short term)		±0.1		%RH
	Accuracy (overall error)		±2.0*	±4	%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)
Logging rate		every 10s		every 12hr	-
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 10 and 90%RH.

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

\*\*\* At temperatures below -20 °C (-4 °F) the LCD will exhibit slower response times of approximately 10 seconds.

† Depending on sample rate, ambient temperature and use of LCD.

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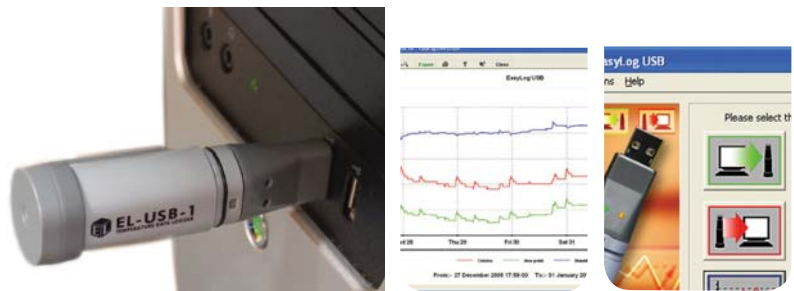
## EL-WIN-USB (CONTROL SOFTWARE)

Lascar’s EasyLog USB control software is supplied free of charge with each data logger. Easy to install and use, the control software runs under Windows 2000, XP, Vista & 7. The software is used to set-up the data logger as well as download, graph and export data to Excel.

The software allows the following parameters to be configured:

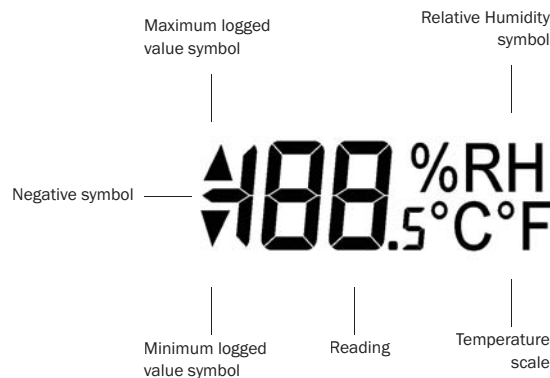
- Logger name
- °C, °F
- Logging rate (10s, 1m, 5m, 30m, 1hr, 6hr, 12hr)
- High and low alarms
- Immediate, delayed and push-to-start logging
- Display off, on for 30 seconds after button press, or permanently on
- Data rollover (allows unlimited logging periods by overwriting the oldest data when the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

The latest version of the control software may be downloaded free of charge from [www.lascarelectronics.com](http://www.lascarelectronics.com)



## DISPLAY AND STATUS FUNCTIONS

The EL-USB-2-LCD+ features a high contrast LCD and two bi-colour LEDs. The LCD shows logged temperature and humidity values using seven segment numbers, along with annunciators. The LCD can also show information regarding the logging status.



The LCD shows six different recorded readings, which can be cycled through using the built-in push button. The most recent logged value, maximum logged value and minimum logged value can be displayed separately for humidity and temperature. In addition, logging and alarm status is shown using two high intensity LEDs.

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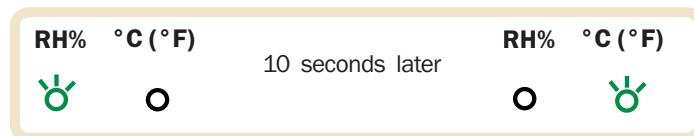
## LCD INDICATION


Display	Logger Status	Explanation
	Delayed Start	This is shown when the logger is set to start at a specific data and time*
	Push to Start	This is shown when the logger is setup for "Push to start" logging
	Logging	This is shown when the logger is running in "LCD off" mode, and the button is pressed. The display clears again after three seconds
	Stopped	If the logger has not been set to log and the button is pressed, three dashes are displayed for three seconds

\* If the logger is set to "LCD off" or "LCD on for 30 seconds" mode, then this will only be shown after the button is pressed. Otherwise the display will remain blank.

## LED FLASHING MODES

EL-USB-2-LCD+ features 2 bi-colour LEDs; one LED represents temperature measurement, the other represents RH. Each is clearly marked on the logger. To save power, the status indication alternates between the two channels every 10 seconds. First you will see the status of the temperature logging, and 10 seconds later you will see the status of the RH logging, and so on.





	<b>Green double flash</b> The data logger is not currently logging, but is primed to start at a later date and time (delayed start).
	<b>Green single flash</b> The data logger is currently logging. No alarm on the channel.
	<b>Red single flash</b> The data logger is currently logging. Low alarm on the channel.
	<b>Red double flash</b> The data logger is currently logging. High alarm on the channel.
	<b>Green triple flash</b> The data logger is full and has stopped logging. No alarm on the channel.
	<b>Red triple flash</b> The data logger is full and has stopped logging. Alarm (high, low or both).
	<b>No LEDs flash</b> The data logger is stopped, the battery is empty or there is no battery fitted.



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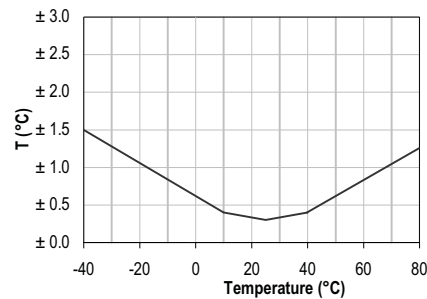
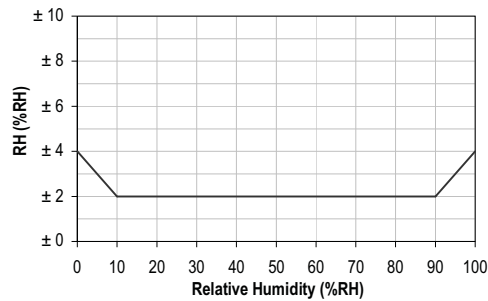
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## DIMENSIONS

All dimensions in mm (inches)



## MEASUREMENT ACCURACY



## BATTERY REPLACEMENT

We recommend that you replace the battery every 12 months, or prior to logging critical data.

The EL-USB-2-LCD+ does not lose its stored readings when the battery is discharged or when the battery is replaced; however, the data logging process will be stopped and cannot be re-started until the battery has been replaced and the logged data has been downloaded to a PC.

Only use 3.6V 1/2AA lithium batteries. Check with your supplier that the battery you are ordering is 'press fit' and is not fitted with solder tags. Before replacing the battery, remove the EL-USB-2-LCD+ from the PC.

### Note:

Leaving the EL-USB-2-LCD+ plugged into the USB port for longer than necessary will cause some of the battery capacity to be lost.

## WARNING

Handle lithium batteries carefully, observe warnings on battery casing. Dispose of in accordance with local regulations.

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### CAUTION

Exposure of the internal sensor to chemical vapours 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 slowly rectify itself; therefore ensure that the logger is used in a ventilated area, i.e. air exchange is allowed.

Exposure to extreme conditions or chemical vapours will require the following reconditioning procedure to bring the internal sensor back to calibration state. 80 °C (176 °F) at <5%RH for 36h (baking) followed by 20-30 °C (70-90 °F) at >74% RH for 48h (re-hydration).

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

### THE EASYLOG USB RANGE

Each EL-USB data logger features the direct-to-USB connection and easy-to-use functionality that the range is known for. The range comprises 14 data loggers as detailed in the following table:

Part No	Function	Range	Accuracy (overall error)		Readings	Battery	Battery Life*
			Typ.	Max.			
EL-USB-1	Temperature	-35 to +80 °C (-31 to +176 °F)	±1°C (±2°F)		16,382	3.6V ½AA	1 Year
EL-USB-1-PRO	High Temperature	-40 to +125 °C (-40 to +257 °F)	±0.2°C (±0.4°F)	±0.5°C (±1°F)	32,510	3.6V ¾AA	3 years
EL-USB-1-RCG	Temperature with rechargeable battery	-20 to +60 °C (-4 to +140 °F)	±1°C (±2°F)		32,510	Lithium Ion	1 month (rechargeable)
EL-USB-2	Temperature, humidity & dew point	-35 to +80 °C (-31 to +176 °F) 0 to 100%RH	±0.5°C (±1°F) ±3%RH	±2°C (±4°F) ±6.0%RH	16,382	3.6V ½AA	1 year
EL-USB-2+	Increased accuracy temperature, humidity & dew point	-35 to +80 °C (-31 to +176 °F) 0 to 100%RH	±0.3°C (±0.6°F) ±2.0%RH	±1.5°C (±3°F) ±4.0%RH	16,382	3.6V ½AA	1 year
EL-USB-2-LCD	Temperature, humidity & dew point with LCD	-35 to +80 °C (-31 to +176 °F) 0 to 100%RH	±0.5°C (±1°F) ±3.0%RH	±2°C (±4°F) ±6.0%RH	16,379	3.6V ½AA	1 year
EL-USB-2-LCD+	Increased accuracy temperature, humidity & dew point with LCD	-35 to +80 °C (-31 to +176 °F) 0 to 100%RH	±0.3°C (±0.6°F) ±2.0%RH	±1.5°C (±3°F) ±4.0%RH	16,379	3.6V ½AA	1 year
EL-USB-3	Voltage	0 to 30V d.c.	±1%		32,510	3.6V ½AA	1 year
EL-USB-4	Current loop	4 to 20mA	±1%		32,510	3.6V ½AA	1 year
EL-USB-5	Counter, Event & State	N/A		±3 secs/24 hrs	32,510	3.6V ½AA	1 year
EL-USB-TC	Thermocouple (J, K and T-type) K-type probe included	-200 to +1350°C (-328 to +2462°F) (K-type) -200 to +1190°C (-328 to +2174°F) (J-type) -200 to +390°C (-328 to +734°F) (T-type)	±1°C (±2°F)		32,510	3.6V ½AA	6 months
EL-USB-TC-LCD	Thermocouple with LCD (J, K and T-type) K-type probe included	-200 to +1350°C (-328 to +2462°F) (K-type) -200 to +1190°C (-328 to +2174°F) (J-type) -200 to +390°C (-328 to +734°F) (T-type)	±1°C (±2°F)		32,510	3.6V ½AA	6 months
EL-USB-CO	Carbon monoxide	0 to 1000ppm <b>NOT A LIFE SAVING DEVICE</b>	±6ppm		32,510	3.6V ½AA	3 months
EL-USB-CO300	Carbon monoxide	0 to 300ppm <b>NOT A LIFE SAVING DEVICE</b>	±4ppm		32,510	3.6V ½AA	3 months
EL-USB-LITE	Low cost temperature	-10 °C to +50 °C (+14 to +122 °F)	±1°C (±2°F)		4,080	CR1620 Lithium coin cell	1 month
EL-USB-RT	Real-time temperature & humidity monitor	-20 to +70 °C (-4 to +158 °F)	±1.5°C (±3°F) ±4.5%RH		7 days	N/A	N/A



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