EL-USB-2+

High Accuracy Humidity, Temperature and Dew Point Data Logger

This standalone 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) 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 vapour present in the air begins to condense) data can then be graphed, printed and exported to other applications.
The data logger is supplied complete with a long-life lithium battery, which can typically allow logging for 1 year.

FEATURES

- Higher accuracy sensor when compared with the EL-USB-2
- 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 and temperature
- Status indication via red and green LEDs
- Environmental protection to IP67
- Immediate and delayed logging
- Supplied complete with replaceable internal lithium battery and Windows control software

WINDOWS CONTROL SOFTWARE

Easy to install and use, the control software runs under Windows 2000, XP (Home and Professional Editions) and Vista (32-bit). It allows the user to set up and download data from any EL-USB product. The latest version of the control software may be downloaded from *www.lascarelectronics.com*

DATA LOGGER SETUP VARIABLES

- Logger name
- °C, °F
- Logging rate (10s, 1m, 5m, 30m, 1hr, 6hr, 12hr)
- High and low alarms
- Immediate and delayed logging
- Data rollover (Allows unlimited logging periods by overwriting the oldest data when the memory is full)

ORDERING INFORMATION

	Stock Number
Standard Data Logger (Data Logger, Software on CD and Battery)	**EL-USB-2+**
Replacement Battery	**BAT 3V6**

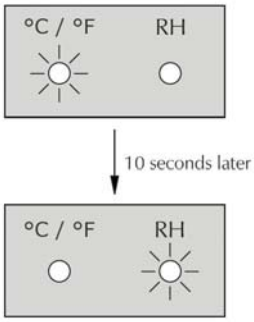
SPECIFICATIONS

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)
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 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 and ambient temperature

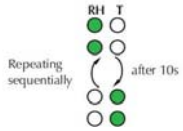
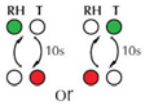
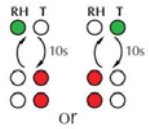
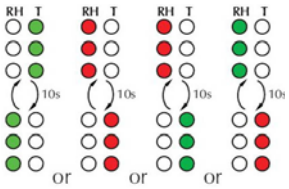
LED FLASHING INDICATORS

EL-USB-2+ features two bi-colour LEDs. One LED represents temperature measurement (marked by °C / °F) and the other represents relative humidity (marked by %RH). To save power, the status indication alternates between the two channels every 10 seconds i.e. The temperature channel flashes and 10 seconds later the relative humidity channel flashes, repeating for the duration of logging activity.

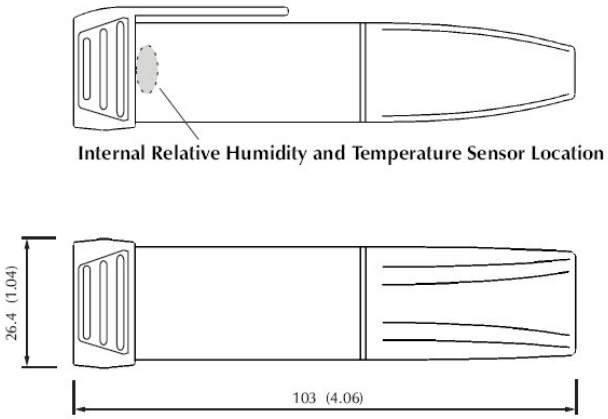


<u>The number of flashes and colours indicate:</u>

/	(Single LED, Single Flash)	The channel is logging, no alarm
//	(Single LED, Double flash)	Delayed start
///	(Single LED, Triple flash)	Logger full, no alarm
/	(Single LED, Single Flash)	The channel is logging, low alarm
//	(Single LED, Double flash)	The channel is logging, high alarm
///	(Single LED, Triple flash)	Logger full, alarm

LEDs	Meaning	Action
	**No LEDs flash** - No logging started. or - Battery fitted buy completely discharged. or - No battery fitted. Plug the data logger into the PC and run the control software to find out which condition applied.	Start logging. Replace battery. Fit battery, start logging.
	**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 greens single flash every 10 seconds** - Logger operating. - Last stored Humidity and Temperature readings within set alarm levels. (If hold is enabled, then a flashing Green LED indicates that no alarm condition has ever been logged).	None.
	**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 hold is enabled, then the alarm condition may have been triggered at any point during the current logging session).	
	**Alternating between single green and double red 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 hold is enabled, then the alarm condition may have been triggered at any point during the current logging session).	
	**Alternating between green or red triple flash every 10 seconds** **Warning :** Logger memory is full. In this condition, hold is automatically enabled, and a flashing Green LED indicates that no alarm condition has ever been logged. A Red LED indicates that an alarm condition has been logger.	Download Data.
	**Simultaneous red single flash every 60 seconds** **Warning** : Battery is nearly discharged. No alarm conditions are indicated. Once the battery is exhausted, no LEDs will flash.	Fit new battery and download data.

DIMENSIONS All Dimensions in mm



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.