# EL-21CFR-2-LCD

## EasyLog 21CFR Compatible Temperature, Humidity & Dew Point Data Logger with LCD Screen

- -35 to +80°C (-31 to +176°F) and 0 to 100%RH measurement range
- Stores over 16,000 readings for both temperature and humidity
- EasyLog 21CFR software available as a free download
- High contrast LCD, with two and a half digit temperature and humidity display function
- Logging rates between 10 seconds and 12 hours
- Immediate, delayed and push-to-start logging
- User-programmable alarm thresholds for both temperature and humidity
- Use as part of a 21CFR Part 11 compliant system




This standalone data logger measures and stores over 16,000 temperature and humidity readings from -35 to +80°C (-31 to +176°F) and 0 to 100%RH range at a resolution of 0.5°C (1°F) and 0.5%RH.

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 free EasyLog 21CFR software. Data, including calculated dew point, can then be graphed, printed and exported to other applications for detailed analysis. The encrypted data has full audit tracking to comply with the requirements of 21CFR Part 11.

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 with a lithium metal battery, giving up to 2 years' logging life. The logger is protected against ingress from water and dust to IP67 standard when the cap is fitted.

### SPECIFICATIONS

| | | |
|---|---|---|
| **Temperature** | **Measurement range** | -35°C to 80°C (-31°F to 176°F) |
| | **Internal resolution** | 0.5°C (1°F) |
| | **Accuracy (overall error)*** | 0.55°C (1.04°F) typical (5 to 60°C) |
| | **Long term stability** | <0.02°C (0.04°F) / year |
| **Relative Humidity** | **Measurement range** | 0 to 100%RH |
| | **Internal resolution** | 0.5%RH |
| | **Accuracy (overall error)*** | 2.25%RH typical (20 to 80%RH) |
| | **Long term stability** | <0.25%RH / year |
| **Dew Point** | **Accuracy (overall error)*** | 1.7°C typical (-35 to 80°C, 40 to 100%RH) |
| **Logging rate** | | User selectable between 10 seconds & 12 hours |
| **Operating temperature range** | | -35 to +80°C (-31 to +176°F) |
| **Battery life** | | 2 years (at 25°C and 1 minute logging rate, LCD on) |
| **Readings** | | 16,382 temperature, 16,382 relative humidity |
| **Dimensions** | | 126 x 25 x 22mm (4.96 x 0.98 x 0.86") |

* The overall error takes in to account the sensor accuracy (as shown on page 5) and the resolution of the data logger

### ACCESSORIES

| | |
|---|---|
| **BAT 3V6 1/2AA** | Replacement battery |

### INCLUDED IN THE BOX

| | |
|---|---|
| **BAT 3V6 1/2AA** | Battery |
| **EL-LCD WALL BRACKET** | Mounting Bracket |

### CALIBRATION CERTIFICATES NOW AVAILABLE

Lascar now offers a Traceable Calibration Certificate Service on Temperature Data Loggers. Using reference equipment which has been calibrated by a UKAS/NIST accredited laboratory and using apparatus traceable to national or international standards. For more information, please see **www.lascarelectronics.com**.

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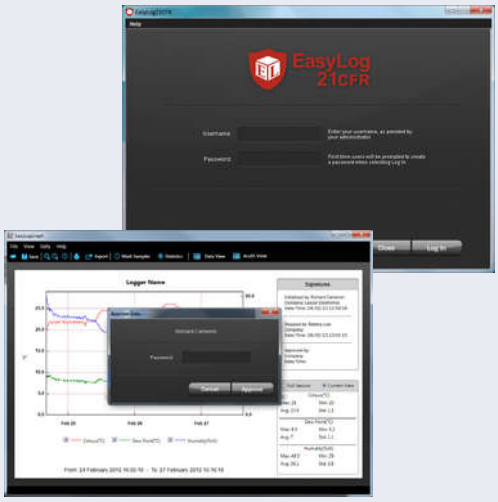
## STORE DATA IN COMPLIANCE WITH THE REGULATIONS OF 21CFR PART 11

Easy to install and use, Lascar's **EasyLog 21CFR software** is compatible with all latest versions of Windows (7, 8 & 10 - both 32-bit & 64-bit) and is available as a free download from **www.EasyLog21CFR.com**. All data collected from the logger and associated audit trails are stored in an encrypted format which cannot be edited.

### CONTROL YOUR LOGGER

Users can configure their loggers with the following parameters:

- Logger name
- Temperature measurement parameter (°C or °F)
- Logging rate (user selectable between 10 seconds and 12 hours)
- High and low alarms for both temperature and humidity
- Immediate and delayed logging start



Once users have recorded data, the built-in graphing software allows them to graph and annotate their data, or export it to Excel, PDF or jpeg formats.

### CONTROL YOUR DATA

EasyLog 21CFR software ensures digital security and compliance:

- Assign individual users with specific permissions
- Full software & session data audit trails
- Receive email alerts for failed log in attempts
- Digital signatures added to all reports
- Add comments to specific readings

For more information, and to download the latest version of the software free of charge, visit **www.EasyLog21CFR.com**

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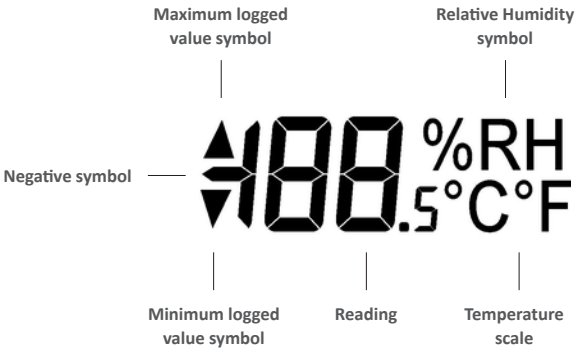
### DISPLAY STATUS INDICATION

The EL-21CFR-2-LCD features a high contrast LCD which 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.




| Display | Logger Status | Explanation |
|---|---|---|
| dS | Delayed Start | This is shown when the logger is set to start at a specific date and time. 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 |
| PS | Push to Start | This is shown when the logger is setup for 'Push to Start' logging |
| log | 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 |

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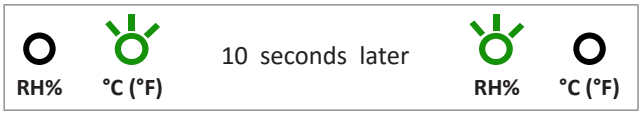
### LED STATUS INDICATION

The EL-21CFR-2-LCD features two green/red LEDs, one to represent temperature measurement and the other to represent humidity measurement. 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 channel and 10 seconds later you will see the status of the RH channel and so on.




In normal operation the green LED will flash, but will change to red if an alarm condition has been triggered. Using the EasyLog software it is possible to set the alarm to remain active even if the reading has returned to normal, in which case the alarm LED will continue to flash red. This 'Hold' feature in the software ensures the user is notified that at some point an alarm level has been exceeded, without needing to download the data.

| | |
|---|---|
|  | **Green double flash**<br>The data logger is not currently logging, but is primed to start at a later date and time (delayed start) |
|  | **Green single flash**<br>The data logger is currently logging. No alarm on the channel |
|  | **Red single flash**<br>The data logger is currently logging. Low alarm on the channel |
|  | **Red double flash**<br>The data logger is currently logging. High alarm on the channel |
|  | **Green triple flash**<br>The data logger is full and has stopped logging. No alarm on the channel |
|  | **Red triple flash**<br>The data logger is full and has stopped logging. Alarm (high, low or both) on the channel |
|  | **No LEDs flash**<br>The data logger is stopped, the battery is empty or there is no battery |
|  | **Dual Red flash (every 60 seconds)**<br>The data logger battery is running low as it's voltage has dropped below 2.9V |

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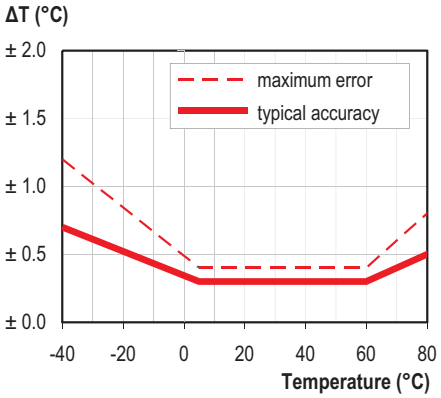
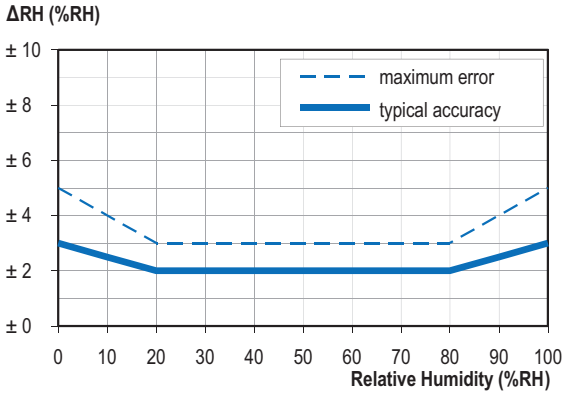
### SENSOR ACCURACY & INFORMATION

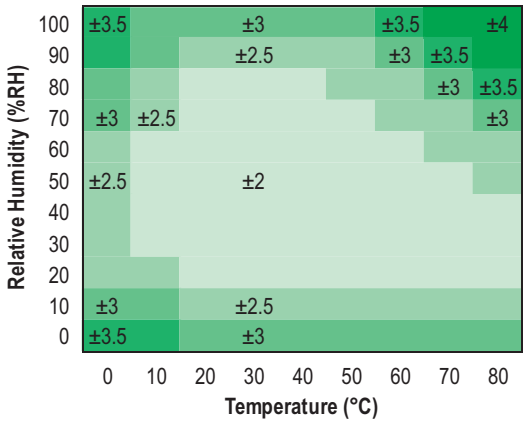
Typical and maximal tolerance for temperature sensor in °C.



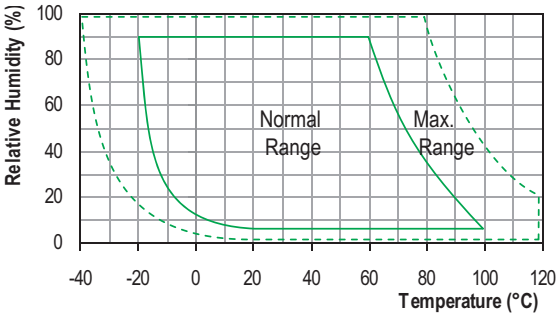

Typical and maximal tolerance at 25°C for relative humidity.




Typical accuracy of relative humidity measurements given in %RH for temperatures 0 to 80°C.




Operating conditions




Long term exposure 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 will slowly return towards calibration state.

When tracking changes in ambient conditions, the response time of the humidity sensor in your data logger is approximately 20 minutes to reach 90% of the reading. However, if you are measuring step changes in humidity (for example if calibrating the product) it is advised that you leave the unit for up to four hours to ensure that it has enough time to settle at the new level.

It is worth remembering that the value of relative humidity is of course sensitive to temperature variation. As an example, at a relative humidity of ~90%RH at ambient temperature, a variation in temperature of 1°C will result in a change of up to -5%RH. Therefore when comparing multiple devices or calibrating them, any temperature variations must be considered.

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### SENSOR ACCURACY & INFORMATION

The humidity measuring element in the humidity data loggers can be contaminated through exposure to a variety of compounds. These products should not be kept in proximity to volatile chemicals such as solvents and other organic compounds. Generally speaking, if a material or compound emits a strong odour you should not keep your humidity data logger in close proximity to it. If you would like more information, please contact your local Lascar Electronics office.

Exposure to extreme conditions or chemical vapours will require the following reconditioning procedure to bring the internal sensor back to calibration state:

***Baking*** 80°C (176°F) at < 5%RH for 36 hours.
***Re-hydration*** 20 to 30°C (70 to 90°F) at > 74%RH for 48 hours.

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

### BATTERY INFORMATION

**Replacement**
We recommend that you replace the battery annually, or prior to logging critical data. Only use 3.6V ½AA lithium metal batteries. The data logger does not lose its stored readings when the battery is discharged or replaced; however, the data logging process will stop and will not resume until the battery is replaced and the logger restarted by the EasyLog 21CFR software.

Before replacing the battery, remove the data logger from the PC. Please note that leaving the data logger plugged into the USB port for extended periods will cause some of the battery capacity to be lost.

**Passivation**
If left unused for extended periods of time lithium metal batteries, including those used in the EasyLog range of data loggers, naturally form a non-conductive internal layer preventing them from self-discharge and effectively increasing their shelf life. When first installed in the data logger, this may cause a momentary drop in the battery voltage (the Transient Minimum Voltage) as the internal layer is broken down, resulting in the data logger resetting. Inserting the batteries in the data logger and leaving it connected to a PC for about 30 seconds will remove this layer. After this, remove and re-install the batteries to reset the data logger. Overall battery life will not be affected.

### WARNING

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