Light Logger Calibration.

Simplified Theory of Operation.

The Light Logger sensor is coupled to an electronic circuit that produces a pulse output. The frequency of these pulses is proportional to the intensity of the light reaching the sensor. The higher the light intensity, the faster the integration and the more pulses per unit of time are generated. These pulses are measured by the logger and used to produce an output that can be deciphered by the software.

The User sets a 'Scan Rate' for the Logger on the 'Start Recorder' screen of the Odyssey software. Under normal daylight conditions this is typically 5 minutes. It can be made longer for low light conditions or shorter for higher intensity conditions.
When the scan time expires, the Logger reads the number of pulses that have been generated and stores the count in memory. The counter is reset to zero and the process repeats.

Under very dark conditions there will be near zero counts in a given period and under full midday sun it could be anything from 5000 to 15000 counts. This variation is normal due to the manufacturing tolerances of the photo sensor. The maximum count value is 65535 so if your readings are getting close to this value, reduce the scan time.

Calibration Procedure.

Put the logger under full sun or a light source with similar characteristics to sunlight and set it recording. Put a calibrated integrating light meter beside it to record the radiation for the reference data.
After 30 minutes to an hour, download the logger data and compare these readings with those from your reference meter. There will be a time stamp next to each reading.

Your results may be similar to those listed below:

Light Logger	Calibrated Meter	Unit
8249	1988	$\mu mol/m^2/s$
8572	2065	$\mu mol/m^2/s$
8834	2129	$\mu mol/m^2/s$
8694	2095	$\mu mol/m^2/s$
8312	2003	$\mu mol/m^2/s$

1. Select 'Set Calibration Data' from the 'Logger' menu in the Odyssey PC program.
2. Enter the Logger Serial Number.
3. Select 'Integrating Light' from the sensor type drop down menu.
4. Select the units you are using. (In our example ' $\mu mol/m^2/s$ ').
5. Leave the "Decimal Places' as 1.
6. Select the 'Linear Calibration' tab.

Using the example results above, enter the *highest readings* as shown below:

	Sensor Readings	Measured Values
First Reading	0	0
Second Reading	8834	2129

The program will calculate the slope and offset. Save the file by clicking 'Save Data' on the menu bar.

Important Note: *For accurate results the logger must be deployed using the same logging interval used during calibration.*

Whenever you download data from the logger these calibration settings will be applied and the data displayed accordingly. The program will use this scaling on all future data downloads.

The Odyssey Technical Handbook gives some conversions factors for different units of measurement.

Thank you for supporting Odyssey products.

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