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SEASOFT COEFFICIENTS
FOR THE BIOSPHERICAL PAR LIGHT SENSOR
S/N 70250

Your Sea-Bird Instrument has been configured to record light data from a BIOSPHERICAL Quantum sensor. The 0 – 5 volt output of this sensor corresponds on a logarithmic scale to light measurement over the measurement range.

Make the following entries in SEASOFT

M = 1
B = 0

From the Biospherical calibration sheet obtain:

C_w = Calibration Factor ($\mu\text{Einstein}/\text{cm}^2 \cdot \text{sec per volt}$)
= 5.14E-06
V = Average Dark Voltage (Volts)
= 0.0121

Calculate the following coefficients:

Calibration Constant = Seasoft Calibration Coefficient
= $10^5 / C_w$
= 1.9455E+10
Offset = $-(10^4 * C_w * 10^V)$ (V is the dark voltage)
= -0.052852206
Multiplier = 1

Set multiplier to 1 for output in $\mu\text{Einstein}/\text{m}^2\text{sec}$. See Application Note 11 General for information on output in units other than $\mu\text{Einstein}/\text{m}^2\text{sec}$. See Application Note 11QSP-L for information regarding this calibration sheet.

Job No.: R11789

Calibration Date: 01/17/14
Model Number: QCP2300
Serial Number: 70250
Operator: TPC
Standard Lamp: V-032(3/7/12)

Operating Voltage Range: 6 to 15 VDC (+)

Note: The QCP2300 output is a voltage that is proportional to the log of the incident irradiance. To calculate irradiance, use this formula:

$$\text{Irradiance} = \text{Calibration factor} * (10^{\wedge}\text{Light Signal Voltage} - 10^{\wedge}\text{Dark Voltage})$$

Dry Calibration Factor: 2.88E+12 quanta/cm²-sec per volt 4.78E-06 μ Einsteins/cm²-sec per volt
Wet Calibration Factor: 3.09E+12 quanta/cm²-sec per volt 5.14E-06 μ Einsteins/cm²-sec per volt

Sensor Test Data and Results²⁾

Sensor Supply Current (Dark): 3.4 mA
Supply Voltage: 6 Volts
Lamp Integrated PAR Irradiance: 9.26E+15 quanta/cm²-sec 0.01538 μ Einsteins/cm²sec
Immersion Coefficient: 0.931

Nominal Filter OD	Expected Transmission	Calibrated Trans.	Sensor Voltage	Expected Voltage	Voltage Error	Measured Trans.	Transmission Error (%)	Test Irrad. (quanta/cm ² -sec)
No Filter	100%	100.00%	3.507	3.507	0%	100.00%	0.0	9.26E+15
0.3	50%	36.10%	3.069	3.065	0%	36.40%	-0.8	3.37E+15
0.5	32%	27.60%	2.950	2.948	0%	27.68%	-0.3	2.56E+15
1	10%	9.27%	2.496	2.474	1%	9.70%	-4.5	8.99E+14
2	1%	1.11%	1.591	1.553	2%	1.18%	-6.0	1.09E+14
3	0.10%	0.05%	0.459	0.235	49%	0.06%	-7.1	5.41E+12
RG780	0.00%	0.00%	0.012	0.012	-1%	0.00%	-100.0	8.07E+10

Dark Before: 0.012 Volts
Light - No Filter Hldr.: 3.508 Volts
Dark After - NFH: 0.012 Volts
Average Dark 0.0121 Volts

Notes:

- 1. Annual calibration is recommended.
- 2) This section is for internal use and for more advanced analysis.