



SBE 19P55083-6353

25-Jan-13

SEASOFT COEFFICIENTS  
 FOR THE BIOSPHERICAL PAR-LIGHT SENSOR  
 QCP-2300 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<sub>w</sub> = Calibration Factor (μEinsteins/cm<sup>2</sup> \* sec per volt)  
 = 5.17E-06

V = Average Dark Voltage (Volts)  
 = 0.0122

Calculate the following coefficients:

Calibration Constant = Seasoft Calibration Coefficient  
 = 10<sup>9</sup> / C<sub>w</sub>  
 = 1.9342E+10

Offset = -(10<sup>9</sup> \* C<sub>w</sub> \* 10<sup>V</sup>) ( V is the dark voltage )  
 = -0.053172924

Multiplier = 1

Set multiplier to 1 for output in μEinsteins/m<sup>2</sup>sec. See Application Note 11 General for information on output in units other than μEinsteins/m<sup>2</sup>sec. See Application Note 11QSP-L for information regarding this calibration sheet.

Calibration Date: 01/21/13

Model Number: QCP2300

Serial Number: 70250

Operator: TPC

Standard Lamp: V-030(3/7/12)

Operating Voltage Range: 6 to 15 VDC (+)

Job No.: R11522

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

**Irradiance = Calibration factor \* (10<sup>Δ</sup>Light Signal Voltage - 10<sup>Δ</sup>Dark Voltage)**

Dry Calibration Factor: 2.90E+12 quanta/cm<sup>2</sup>-sec per volt      4.82E-06 μEinsteins/cm<sup>2</sup>-sec per volt  
Wet Calibration Factor: 3.12E+12 quanta/cm<sup>2</sup>-sec per volt      5.17E-06 μEinsteins/cm<sup>2</sup>-sec per volt

Sensor Test Data and Results<sup>2)</sup>

Sensor Supply Current (Dark): 3.4 mA  
Supply Voltage: 6 Volts  
Lamp Integrated PAR Irradiance: 9.83E+15 quanta/cm<sup>2</sup>-sec      0.01632 μEinsteins/cm<sup>2</sup>-sec  
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 <sup>2</sup> -sec)
No Filter	100%	100.00%	3.530	3.530	0%	100.00%	0.0	9.83E+15
0.3	50%	36.10%	3.091	3.088	0%	36.37%	-0.7	3.57E+15
0.5	32%	27.60%	2.978	2.971	0%	28.02%	-1.5	2.75E+15
1	10%	9.27%	2.517	2.497	1%	9.68%	-4.2	9.51E+14
2	1%	1.11%	1.609	1.575	2%	1.17%	-5.1	1.15E+14
3	0.10%	0.05%	0.450	0.258	43%	0.05%	1.1	5.27E+12
RG780	0.00%	0.00%	0.012	0.012	1%	0.00%	-100.0	8.33E+10

Dark Before: 0.012 Volts  
Light - No Filter Hldr.: 3.530 Volts  
Dark After - NFH: 0.012 Volts  
Average Dark: 0.0122 Volts

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