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C-Star Calibration

Date 12.8.16 S/N# CST-854DR Pathlength 25 cm

	Analog output
V_d	0.058 V
V_{air}	4.757 V
V_{ref}	4.657 V

Factory M = 21.7440
B = -1.2610

Temperature of calibration water	20.9 ℃
Ambient temperature during calibration	21.9 ℃

Relationship of transmittance (Tr) to beam attenuation coefficient (c), and pathlength (x, in meters): $\mathbf{Tr = e^{-cx}}$

To determine beam transmittance: $\mathbf{Tr = (V_{sig} - V_{dark}) / (V_{ref} - V_{dark})}$

To determine beam attenuation coefficient: $\mathbf{c = -1/x * \ln (Tr)}$

V_d Meter output with the beam blocked. This is the offset.
V_{air} Meter output in air with a clear beam path.
V_{ref} Meter output with clean water in the path.
Temperature of calibration water: temperature of clean water used to obtain V_{ref}.
Ambient temperature: meter temperature in air during the calibration.
V_{sig} Measured signal output of meter.

In use AT39-06:
DI water recal:

Field recalibration 25 march 2018

Vd = .05617
Vair = 4.66370
Vref = 4.57875

$M = \left(\frac{Tw}{W_0 - Y_0}\right) * \frac{A_0 - Y_0}{A_1 - Y_1}$

$M = \frac{100}{4.57875 - .05617} * \frac{4.66370 - .05617}{4.66370 - .05617}$

$M = \frac{100}{4.52258} * \frac{4.60753}{4.60753}$

$M = 22.11127 * 1$

M = 22.11127

$B = -M * Y1$
$B = -22.11127 * .05617$
7/26/11

B = -1.2413

Air recal: $M = \left(\frac{Tw}{W_0 - Y_0}\right) * \frac{A_0 - Y_0}{A_1 - Y_1}$

$M = \left(\frac{100}{4.657 - .058}\right) * \frac{4.757 - .058}{4.66370 - .05617}$

$M = \frac{100}{4.599} * \frac{4.699}{4.60753}$

$M = 21.743857 * 1.01985$

M = 22.1755

Revision M

$B = -M * Y1$
$B = -22.1755 * .05617$
B = -1.2456