

pressure sensor model: Digiquartz 43K-105
 sensor serial number: 39873
 installed in: CTD 93235-203

This pressure calibration is a check of the 'test' sensor against a stable reference pressure sensor. The reference pressure sensor is itself checked several times per year against a NIST-traceable pressure standard maintained at Paroscientific, Inc.. The circumstances of this pressure check introduce no more than 1.5 psia total error in 10,000 psi (0.015 %) in addition to the error resident in the Paroscientific site standard. The check offers a very high level certification of the health and proper operation of the 'test' sensor.

Input Pressure* [psia]	Sensor Output [hz]	Sensor Temperature [deg C]	Pressure Factory Coef [psia]	Pressure Corrected [psia]	Error [psia]
14.660	32009.97	20.9	15.022	14.986	0.326
614.837	32704.54	21.0	615.340	615.224	0.387
1214.980	33381.70	21.0	1215.479	1215.284	0.304
1814.996	34042.47	21.1	1815.381	1815.106	0.110
2414.915	34688.10	21.2	2415.306	2414.951	0.036
3014.933	35319.83	21.2	3015.641	3015.207	0.274
2414.893	34688.02	21.3	2415.141	2414.786	-0.107
1814.957	34042.04	21.4	1814.827	1814.552	-0.405
1214.923	33381.00	21.5	1214.628	1214.433	-0.490
614.782	32704.10	21.6	614.674	614.558	-0.224
14.654	32009.72	21.7	14.477	14.441	-0.213

Input pressure is generated with a Ruska model 5201 dead-weight tester, serial number 23330/380, and is determined by measurement with reference pressure sensor model Digiquartz 410K-105, serial number 73292.

Sensor Temperature: pressure sensor internal temperature.

Pressure Corrected: pressure computed with original factory coefficients and then corrected with a slope and offset to give the best linear agreement with the 'reference' Input pressure.

Error: Corrected pressure - Input pressure

A linear fit of this calibration data, between sensor pressure computed with factory coefficients and the Input pressure, yields correction coefficients:

$$\text{Corrected pressure} = \text{psi slope} * \text{Factory pressure} + \text{psi offset [psia]}$$

$$\text{psi slope} = 0.99987 \text{ and psi offset} = -0.03 \text{ [psia]}$$

These are converted to Slope and Offset for use in the SEASOFT programs by:

$$\text{Slope} = \text{psi slope} = 0.99987$$

$$\text{Offset} = 0.689476 * (\text{psi offset} - 14.7 * (1 - \text{psi slope})) = -0.0247 \text{ [dbars]}$$

Slope and Offset coefficients are entered into the pressure sensor calibration coefficient section of the <>.CON file using the program SEACON.

Digiquartz Coefficients:

C1 = -1.363432e+04
 C2 = -3.771817e-01
 C3 = 4.176420e-03
 D1 = 4.718300e-02
 D2 = 0.000000e+00
 T1 = 3.127025e+01
 T2 = -7.126337e-04
 T3 = 4.829570e-06
 T4 = 0.000000e+00

AD590 Pressure Temperature Coefficients:

AD590M = 0.012865
 AD590B = -9.614458

Calibration Correction:

Slope = 0.99987
 Offset = -0.0247