



CALIBRATION CERTIFICATE

NAME : CTD OEM Sensor

MODEL : ACTD-OEMU-Z105

SERIAL No. : 0GPJ002

Parameter : Temperature
Conductivity



JFE Advantech Co., Ltd.

Temperature Calibration Certificate

Model : ACTD-OEMU-Z105
 Serial No. : 0GPJ002
 Date : October 17, 2024
 Location : Production Section
 Method : Calibration equation is determined from fifth order regression of samples of the reference temperature against A/D values. Samples are taken at approximately 0, 5, 10, 15, 20, 25, 30, and 35 °C.

1. Equation

$$\text{Instrument temperature}[^{\circ}\text{C}] = A + B \times N + C \times N^2 + D \times N^3 + E \times N^4 + F \times N^5 \quad N: \text{A/D value}$$

2. Coefficients

A = -7.640079e+00 D = +2.844354e-13
 B = +1.106640e-03 E = -3.382171e-18
 C = -1.244039e-08 F = +2.512329e-23

3. Calibration results

Reference temperature [°C]	A/D value	Instrument temperature [°C]	Residual error [°C]	Acceptance [°C]	OK/NG
0.028	7456.7	0.028	0.000	±0.005	OK
5.011	12810.9	5.011	0.000	±0.005	OK
9.971	18427.9	9.972	0.001	±0.005	OK
15.043	24326.0	15.043	0.000	±0.005	OK
19.975	30072.0	19.976	0.001	±0.005	OK
24.979	35769.3	24.979	0.000	±0.005	OK
29.976	41211.3	29.977	0.001	±0.005	OK
34.935	46272.8	34.935	0.000	±0.005	OK

4. Verification

Criteria of judgement : Residual error of the instrument temperature at arbitrary point is within the acceptance value.

Reference temperature [°C]	Instrument temperature [°C]	Residual error [°C]	Acceptance [°C]	Judgement
12.571	12.570	-0.001	±0.008	Passed

Examined

T. Souma

Approved

M. Ujinaki

Conductivity Calibration Certificate

Model : ACTD-OEMU-Z105
 Serial No. : 0GPJ002
 Date : October 17, 2024
 Location : Production Section
 Method : Calibration equation is determined from second order regression of samples of the reference conductivity against A/D values. Samples are taken at approximately 0, 5, 10, 15, 20, 25, 30, and 35 °C of the seawater (the salinity is approximately 35).

1. Equation

$$\text{Instrument conductivity [mS/cm]} = A + B \times N + C \times N^2 \quad N: \text{A/D value}$$

2. Coefficients

A = +2.463238e-03
 B = +3.723505e+01
 C = +2.992880e-02

3. Calibration results

Calibration condition		A/D value	Instrument conductivity [mS/cm]	Residual error [mS/cm]	Acceptance [mS/cm]	OK/NG
Temperature [°C]	Conductivity [mS/cm]					
0.028	29.019	0.778735	29.017	-0.002	±0.005	OK
5.011	33.420	0.896853	33.421	0.001	±0.005	OK
9.971	38.009	1.019936	38.011	0.002	±0.005	OK
15.043	42.900	1.151052	42.902	0.002	±0.005	OK
19.975	47.830	1.283132	47.829	-0.001	±0.005	OK
24.979	52.979	1.421077	52.977	-0.002	±0.005	OK
29.976	58.257	1.562492	58.255	-0.002	±0.005	OK
34.935	63.603	1.705796	63.605	0.002	±0.005	OK

4. Verification

Criteria of judgement : Residual error of the instrument conductivity at arbitrary point is within the acceptance value.

Test condition		Instrument conductivity [mS/cm]	Residual error [mS/cm]	Acceptance [mS/cm]	Judgement
Temperature [°C]	Conductivity [mS/cm]				
12.571	40.491	40.494	0.003	±0.008	Passed

Examined

T. Souma

Approved

M. Ujinaki