



CALIBRATION CERTIFICATE

NAME : CT sensor set for VMP250

MODEL : CT-VMP250

SERIAL No. : 0111

Parameter : Temperature
Conductivity



JFE Advantech Co., Ltd.

Temperature Calibration Certificate

Model : CT-VMP250
Serial No. : 0111
Date : December 13, 2023
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

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

2. Coefficients

A = -5.374671e+00 D = +2.972119e-13
B = +1.071351e-03 E = -3.668006e-18
C = -1.273152e-08 F = +2.659499e-23

3. Calibration results

Reference temperature [°C]	A/D value	Instrument temperature [°C]	Residual error [°C]	Acceptance [°C]	OK/NG
0.009	5322.9	0.009	0.000	±0.010	OK
4.997	10751.4	4.996	-0.001	±0.010	OK
9.958	16531.1	9.958	0.000	±0.010	OK
15.025	22673.6	15.026	0.001	±0.010	OK
19.953	28712.3	19.952	-0.001	±0.010	OK
24.957	34758.7	24.959	0.002	±0.010	OK
29.939	40537.0	29.938	-0.001	±0.010	OK
34.888	45933.4	34.888	0.000	±0.010	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
12.552	12.551	-0.001	±0.010	Passed

Examined M. TAKEISHI

Approved M. Ujinaki

JFE Advantech Co., Ltd.

Conductivity Calibration Certificate

Model : CT-VMP250
 Serial No. : 0111
 Date : December 13, 2023
 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

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

2. Coefficients

A = +3.354113e-02
 B = +3.705950e+01
 C = +1.013017e-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]					
0.009	29.054	0.782863	29.052	-0.002	±0.010	OK
4.997	33.461	0.901810	33.462	0.001	±0.010	OK
9.958	38.060	1.025813	38.060	0.000	±0.010	OK
15.025	42.955	1.157799	42.955	0.000	±0.010	OK
19.953	47.884	1.290705	47.883	-0.001	±0.010	OK
24.957	53.040	1.429766	53.041	0.001	±0.010	OK
29.939	58.305	1.571669	58.304	-0.001	±0.010	OK
34.888	63.644	1.715653	63.645	0.001	±0.010	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]				
12.552	40.540	40.542	0.002	±0.010	Passed

Examined M. TAKEISHI

Approved M. Ujinaki

JFE Advantech Co., Ltd.