



# CALIBRATION CERTIFICATE

NAME	: CTD OEM Sensor
MODEL	: ACTD-OEMU-Z105
SERIAL No.	: 0GPJ001
Parameter	: Temperature Conductivity



JFE Advantech Co., Ltd.

# Temperature Calibration Certificate

Model : ACTD-OEMU-Z105  
Serial No. : 0GPJ001  
Date : October 15, 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

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 = -6.939879e+00 D = +2.824875e-13  
B = +1.113391e-03 E = -3.289582e-18  
C = -1.248519e-08 F = +2.421651e-23

## 3. Calibration results

Reference temperature [°C]	A/D value	Instrument temperature [°C]	Residual error [°C]	Acceptance [°C]	OK/NG
0.018	6679.6	0.018	0.000	±0.005	OK
5.004	11951.1	5.004	0.000	±0.005	OK
9.970	17503.0	9.969	-0.001	±0.005	OK
15.041	23355.7	15.042	0.001	±0.005	OK
19.972	29073.6	19.972	0.000	±0.005	OK
24.976	34769.5	24.975	-0.001	±0.005	OK
29.972	40229.0	29.972	0.000	±0.005	OK
34.927	45323.7	34.927	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
12.567	12.564	-0.003	±0.008	Passed

Examined

T. Souma

Approved

M. Ujinaki

# Conductivity Calibration Certificate

Model : ACTD-OEMU-Z105  
Serial No. : 0GPJ001  
Date : October 15, 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 = -9.510513e-03  
B = +3.713274e+01  
C = +1.454779e-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]					
0.018	28.960	0.779930	28.960	0.000	±0.005	OK
5.004	33.355	0.898193	33.355	0.000	±0.005	OK
9.970	37.943	1.021618	37.941	-0.002	±0.005	OK
15.041	42.825	1.153066	42.826	0.001	±0.005	OK
19.972	47.745	1.285436	47.746	0.001	±0.005	OK
24.976	52.886	1.423655	52.884	-0.002	±0.005	OK
29.972	58.152	1.565354	58.152	0.000	±0.005	OK
34.927	63.484	1.708757	63.484	0.000	±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]				
12.567	40.420	40.420	0.000	±0.008	Passed

Examined

T. Souma

Approved

M. Ujinaki