



Equipment and Calibration List

Ocean Science Data	Parameter	Equipment Name	Model/ Type	Equipment Photo	Calibration Frequency	Calibration Standard Method	Certificate Reference
Oceanographic data	Seawater Temperature	INFINITY-CLW	ACTW-CAD		Biannually	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.	PDF Page 2
Oceanographic data	Chlorophyll -A Concentration	INFINITY-CLW	ACLW2-CAD		Biannually	Calibration equation is determined from linear regression of samples of the reference concentration against A/D values. Samples are taken at approximately 0, 25, 50, 100, and 200 ppb. Fluorescence intensity is expressed in terms of the uranine concentration.	PDF Page 3
Oceanographic data	Turbidity	INFINITY-CLW	ACLW2-CAD		Biannually	Calibration equation is determined from third order regression of samples of the reference turbidity against A/D values. Samples are taken at approximately 0, 20, 40, 60, 80, 100, 200, 400, 600, 800, and 1000 FTU. 1 FTU standard solution used for the calibration is made by diluting 5 ml of the Formazine standard solution 400 FTU.	PDF Page 4
Oceanographic data	Saturation of Dissolved Oxygen (DO)	RINKO II W	AROW2-CAD		Biannually	Calibration is performed with the nitrogen gas (zero) and the oxygen saturated water (span) kept by air bubbling.	PDF Page 5
Meteorological data	Air Temperature Relative Humidity Atmospheric Pressure Wind Speed Wind Direction	MaxiMet Compact Weather Station	GMX551		Biannually	Wind sensor (Wind speed and Wind direction) generic calibration is traceable to the University of Southampton wind tunnel and air temperature, relative humidity and atmospheric pressure are done against reference UKAS traceable instruments.	PDF Page 6-7

Disclaimer:

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Source: PTTEP Ocean Data Platform: <https://oceandata.pttep.com/>

Temperature Calibration Certificate

Model : ACTW-CAD
 Serial No. : 0681
 Date : November 04, 2022
 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

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

2. Coefficients

A = -7.346412e+00 D = +3.274107e-13
 B = +1.144861e-03 E = -4.074187e-18
 C = -1.377010e-08 F = +2.945153e-23

3. Calibration results

Reference temperature [°C]	A/D value	Instrument temperature [°C]	Residual error [°C]	Acceptance [°C]	OK/NG
0.100	7004.1	0.100	0.000	±0.005	OK
5.081	12197.6	5.081	0.000	±0.005	OK
10.022	17644.2	10.021	-0.001	±0.005	OK
15.100	23419.6	15.101	0.001	±0.005	OK
20.019	29041.3	20.018	-0.001	±0.005	OK
25.016	34658.2	25.017	0.001	±0.005	OK
29.987	40032.7	29.987	0.000	±0.005	OK
34.935	45082.9	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
12.636	12.635	-0.001	±0.008	Passed

Examined

T. Souma

Approved

M. Ujinaki

JFE Advantech Co., Ltd.

Chlorophyll Calibration Certificate

Model : ACLW2-CAD
 Serial No. : 0439
 Date : October 31, 2022
 Location : Production Section
 Method : Calibration equation is determined from linear regression of samples of the reference concentration against A/D values. Samples are taken at approximately 0, 25, 50, 100, and 200 ppb. Fluorescence intensity is expressed in terms of the uranine concentration.

1. Equation Instrument uranine concentration[ppb] = A+B × N N: A/D value

2. Coefficients A = -4.961640e+00 B = +7.563475e-03

3. Calibration results

Acceptance: ±1% of full scale

Reference concentration [ppb]	A/D value	Instrument concentration [ppb]	Residual error [ppb]	Acceptance [ppb]	OK/NG
0.00	656	0.00	0.00	±4.00	OK
26.80	4325	27.75	0.95	±4.00	OK
51.30	7648	52.88	1.58	±4.00	OK
102.48	14423	104.13	1.65	±4.00	OK
203.80	27418	202.41	-1.39	±4.00	OK

4. Verification

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

Acceptance: ±1% of full scale

Reference concentration [ppb]	Instrument concentration [ppb]	Residual error [ppb]	Acceptance [ppb]	Judgement
77.81	79.76	1.95	±4.00	Passed

Examined M. FUJITA

Approved M. Ujinaki

JFE Advantech Co., Ltd.

Medium Turbidity Calibration Certificate

Model : ACLW2-CAD
 Serial No. : 0439
 Date : November 01, 2022
 Location : Production Section
 Method : Calibration equation is determined from third order regression of samples of the reference turbidity against A/D values. Samples are taken at approximately 0, 20, 40, 60, 80, 100, 200, 400, 600, 800, and 1000 FTU. 1 FTU standard solution used for the calibration is made by diluting 5 ml of the Formazine standard solution 400 FTU.

1. Equation Instrument turbidity[FTU] = $A+B \times N+C \times N^2+D \times N^3$ N: A/D value

2. Coefficients

A = -9.293333e+00
 B = +1.407908e-02
 C = +1.007360e-07
 D = -3.697305e-13

3. Calibration results

Acceptance: $\pm 1.5\%$ of reference value

Reference turbidity [FTU]	A/D value	Instrument turbidity [FTU]	Residual error [FTU]	Acceptance [FTU]	OK/NG
0.00	657	0.00	0.00	± 0.00	OK
20.31	2083	20.47	0.16	± 0.30	OK
42.77	3615	42.90	0.13	± 0.64	OK
60.65	4826	60.96	0.31	± 0.91	OK
80.86	6149	81.00	0.14	± 1.21	OK
100.02	7383	99.99	-0.03	± 1.50	OK
203.45	13811	203.39	-0.06	± 3.05	OK
418.31	25978	417.95	-0.36	± 6.27	OK
601.75	35549	601.90	0.15	± 9.03	OK
803.32	45427	803.50	0.18	± 12.05	OK
993.83	54332	993.72	-0.11	± 14.91	OK

4. Verification

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

Acceptance: $\pm 1.8\%$ of reference value

Reference turbidity [FTU]	Instrument turbidity [FTU]	Residual error [FTU]	Acceptance [FTU]	Judgement
150.97	151.00	0.03	± 2.72	Passed

Examined M. FUJITA

Approved M. Ujinaki

JFE Advantech Co., Ltd.

Dissolved Oxygen Calibration Certificate

Model : AROW2-CAD
 Serial No. : 0229
 Date : November 01, 2022
 Location : Production Section
 Method : Calibration is performed with the nitrogen gas (zero) and the oxygen saturated water (span) kept by air bubbling.
 Film No. : 220348BC

1. Equation

$$DO[\%] = G + H \times P'$$

Here, P'[%] consists of the coefficients A-F determined by the initial calibration.

2. Coefficients

A = -4.673949e+01 E = +4.100000e-03
 B = +2.559416e+06 F = +5.800000e-05
 C = -7.206813e+03 G = +0.000000e+00
 D = +1.002400e-02 H = +1.000000e+00

3. Verification

Criteria of judgement : Residual error of the instrument DO at arbitrary point is within the acceptance value. The test is performed 3 times.

Acceptance: $\pm 0.5\%$ of full scale

Test for DO 0 %

	Test condition		Instrument DO [%]	Residual error [%]	Acceptance [%]	Judgement
	Atm. pressure [hPa]	Reference DO [%]				
1st	1017.5	0.00	-0.11	-0.11	± 1.00	Passed
2nd	1017.4	0.00	-0.15	-0.15	± 1.00	Passed
3rd	1017.3	0.00	-0.17	-0.17	± 1.00	Passed

Test for DO 100 %

	Test condition			Instrument DO [%]	Residual error [%]	Acceptance [%]	Judgement
	Water T. [°C]	Atm. pressure [hPa]	Reference DO [%]				
1st	25.0	1018.1	100.49	100.47	-0.02	± 1.00	Passed
2nd	25.0	1018.1	100.49	100.44	-0.05	± 1.00	Passed
3rd	25.0	1018.1	100.49	100.45	-0.04	± 1.00	Passed

Examined M. FUJITA

Approved M. Ujinaki

JFE Advantech Co., Ltd.



Gill Instruments Limited

Certificate of Conformance

This is to certify that:

Product: **1957-0551-60-000** **MAXIMET GMX551**

Serial Number: **22480095**

Has been manufactured within Gill Instruments Limited Quality Management System, approved to the requirements of BS EN ISO 9001.

The instrument has been tested and calibrated with equipment having full traceability to national standards where applicable and meets the requirements of the Operating Manual Specification and Electrical Conformity, UKCA, CE and FCC.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

The instrument comes with a warranty against defective materials or workmanship, providing it has not been tampered with and has been returned through an authorised route to Gill Instruments Limited.

Date created: 23/11/2022

Signed by: 

Les Rann
Quality Engineer

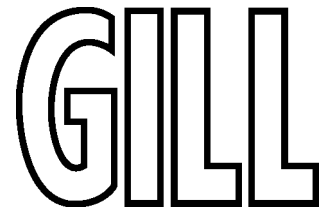
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View our current Anemometer range here:

Product Test Report



Product Tested: GMX551

Part Number: 1957-0551-60-000

Serial Number: 22480095

Test Date: 23/11/2022

Location: Gill Instruments Ltd

GILL ensures that quality is inherent in all aspects of their activities and ensures that compliance with BS EN ISO9001: 2015 is maintained.

This report certifies that the above instrument has been tested in accordance with Gill internal procedures

Results

<u>Test</u>	<u>Limits</u>	<u>Result</u>
Firmware Test (Current Version Loaded)	Pass/Fail	Pass
Data Formats Test (Functional Test)	Pass/Fail	Pass

Other tests done to ISO 9001:2015 standards or (where applicable) more highly regarded international standards.

Wind sensor generic calibration is traceable to the University of Southampton wind tunnel and Gill instrumentation is maintained in accordance with UKAS.

Comparisons for Temperature, Humidity and Pressure are done against reference UKAS traceable instruments. The reference system numbers of these instruments are listed above.

All tests have been successfully completed

Les Rann - Quality Control