

# MINI STD/CTD Calibration Certificate

Certificate no: **4791**

Instrument model: **SD204**

Serial number: **1262**

Owner: **AQUAGESTION**

Calibrated date: **2020-04-01** Certificate issued date: **2020-04-01** Env. temp (degr. C): **19**

Calibrated by: **Sensordata a.s and SAIV A/S** Bergen Norway

## Calibration procedure:

Conductivity and temperature are calibrated by setting the MINI STD/CTD instrument in raw data mode and keeping it in three 200 l stirred, temperature stabilised calibration baths. Raw conductivity and temperature data are recorded with bath temperature and bath conductivity as measured by reference temperature\* and conductivity\*\* instruments. Calibration coefficients A1, B1, C1 for temperature and A3, B3, C3, D3 for conductivity are calculated from least square equations included in the MINISOFT software packet. Output temperature and conductivity from calibrated instrument must correspond with reference readings within +/- 1/100 degr. C and +/- 1/100 mmho/cm. Pressure is calibrated by connecting to a reference DWT\*\*\* and successively generate 6 pressures from 1 bar to FS. Pressure coefficients A2, B2, C2, D2 are calculated from least squares equations included in the instruments software. Output CTD data must correspond to data from reference instruments within specified accuracy.

TEMPERATURE degr. C			CONDUCTIVITY mmho/cm			PRESSURE dbar		
Bef. cal.	After cal.	Reference	Bef. cal.	After cal.	Reference	Bef. cal.	After cal.	Reference
19.61	19.61	19.612	50.47	50.48	50.482	10.02		10.01
12.16	12.16	12.161	34.38	34.38	34.382	100.12		100.13
0.41	0.41	0.412	9.46	9.47	9.472	200.24		200.26
						400.53		400.52
						600.77		600.78
						1001.34		1001.30

All calibration coefficients are shown on attached calibration sheet

## Working references:

Temperature\* Falmouth Scientific Model OTM S-112 S/N 1377-09JUL96 Accuracy +/- 2/1000 deg.C  
Conductivity\*\* Falmouth Scientific Model OCM S-112 S/N 1354-09JUL96 Accuracy +/- 2/1000 mmho/cm  
Pressure\*\*\* Budenberg DWT Model 280L S/N 9050 Accuracy 0.008% FS (600 bar)

## Traceable references:

### Temperature:

#### Subreference 1:

General Oceanics ATB 1250 temp. bridge serial no 1235  
(Working ref. is controlled by subref.1 four times per year)  
(Subref.1 is controlled by subref.2 twice per year)

#### Subreference 2:

Distilled water tripple point cell at +0.010 degr.C  
Phenoxybenzene tripple point cell at +26.868 degr.C

### Conductivity:

#### Subreference 1:

Neil Brown Cond./Temp. transfer standard mod. CT-2 serial no.3  
(Working reference is controlled by subref.1 four times per year)  
(Subref.1 is controlled by subref.2 four times per year)  
(Subref.2 is controlled by subref.3 four times per year)

#### Subreference 2:

Guildline Portasal 8410 Portable Salinometer serial no.59

#### Subreference 3:

Ocean Scientific International Standard Seawater

### Pressure:

#### Subreference:

Pressure reference at FIMAS Coastal Base Calibration Center

Control frequency Calibration equipment: Once per year

Calibrated by  
Signature

**STEINAR LERSEN**  
.....  
**S. Lersen**  
.....

Date 20-04-01  
Time 12-00-29 GMT  
CALIBRATION SHEET SD204 Serial no.1262

Temperature (T) Deg.C:  
A1+1.4497410224E-03 B1+2.6491297056E-04  
C1+2.0638120754E-07

Pressure (P) decibar:  
A2-3.3852145239E-01 B2+1.0803185814E-04  
C2+9.7253989914E-12 D2-3.3457771533E-17  
E2+6.0335817044E-23 F2-5.3998091808E-29  
G2+1.8746918552E-35

Conductivity (C) mmho/cm:  
A3-5.5448504840E-02 B3+1.9036449385E-02  
C3+1.1609312327E-08 D3+0.0000000000E+00

Other sensor (0-2.5V)  
AO+0.0000000000E+00 BO+7.9597121988E-02  
CO+0.0000000000E+00 DO+0.0000000000E+00

Turbidity auto range  
AT-7.1622707765E-12 BT+2.5000000000E-02  
CT+6.9388939039E-18 DT-1.6940658945E-21

Oxygen (OX) in per cent:  
V +1.0131144422E+02

Pressure sensor mathem.comp.coeff.  
K0-4.15617600266E+01 K1+6.51587354373E-02  
K2-5.85347308335E-05 K3+1.75135968986E-08  
L0+1.20628879061E+01 L1-2.97711458337E-02  
L2+2.68817742029E-05 L3-8.08043505108E-09  
M0-8.22175152240E-01 M1+2.24198441154E-03  
M2-2.03129525987E-06 M3+6.11660434147E-10  
N0+2.31388802929E-02 N1-6.34363170133E-05  
N2+5.78188986575E-08 N3-1.75228009991E-11  
O0-3.17334683519E-04 O1+8.73253397955E-07  
O2-7.99087461898E-10 O3+2.43191448753E-13  
P0+2.12019397806E-06 P1-5.85462568168E-09  
P2+5.37655252697E-12 P3-1.64235690197E-15  
Q0-5.56770461698E-09 Q1+1.54291602104E-11  
Q2-1.42208937083E-14 Q3+4.36029441333E-18

X1-5.1031493280E-01 X2+1.0126653220E-04  
X3-2.8269081075E-12 X4+1.6659361448E-18  
S1+6.8730224667E-01 S2+4.0511419493E-03  
S3+2.6653110614E-11 S4+0.0000000000E+00  
S5+0.0000000000E+00 S6+0.0000000000E+00  
S7+0.0000000000E+00 Y4+1.9511874183E-02  
Y5+2.3768709260E-03 Y6-4.6133198023E-13  
Y7+5.1842455302E-18 PC+2.0000000000E-03

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Date: 01.04.2020

## VERIFICATION – RINKO III, SN0213

RINKO III, Model ARO-CAV-SA, Optical sensor, SN0213 is tested and we hereby confirm that SN0213 perform within the given specification, ref Calibration certificate dated April 01, 2020.

### RINKO III , Optical Oxygen sensor calibration (SD200W Software)

Reading before calibration	Reading after calibration	New coefficients
98,97	101,03	7,9597121988E-02

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