Location : AQM1
Calibrated by : P.F.Yeung
Date : 09/12/2013

Sampler

 Model
 :
 TE-5170

 Serial Number
 :
 S/N 1253

Calibration Orfice and Standard Calibration Relationship

Serial Number : 2323

 Service Date
 :
 26 Dec 2012

 Slope (m)
 :
 2.09107

 Intercept (b)
 :
 -0.02838

 Correlation Coefficient(r)
 :
 0.99996

**Standard Condition** 

Pstd (hpa) : 1013 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1014 Ta(K) : 293

Resistance Plate		dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	12.8	3.610	1.740	52	52.47
2	13 holes	10.0	3.191	1.539	46	46.41
3	10 holes	7.4	2.745	1.326	39	39.35
4	7 holes	4.6	2.164	1.048	32	32.29
5	5 holes	2.9	1.718	0.835	25	25.22

 $Notes: Z = SQRT\{dH(Pa/Pstd)(Tstd/Ta)\}, \ X = Z/m-b, \ Y(Corrected\ Flow) = IC*\{SQRT(Pa/Pstd)(Tstd/Ta)\}\}$ 

#### Sampler Calibration Relationship (Linear Regression)

Slope(m):29.770 Intercept(b): 0.512 Correlation Coefficient(r): 0.9991

Location : ASR 1
Calibrated by : P.F.Yeung
Date : 09/12/2013

Sampler

Model : TE-5170 Serial Number : S/N 0146

Calibration Orfice and Standard Calibration Relationship

Serial Number : 2323

 Service Date
 :
 26 Dec 2012

 Slope (m)
 :
 2.09107

 Intercept (b)
 :
 -0.02838

 Correlation Coefficient(r)
 :
 0.99996

**Standard Condition** 

Pstd (hpa) : 1013 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1014 Ta(K) : 293

Resi	stance Plate	dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	13.0	3.638	1.753	53	53.48
2	13 holes	10.2	3.222	1.555	46	46.41
3	10 holes	7.4	2.745	1.326	40	40.36
4	7 holes	4.9	2.234	1.082	31	31.28
5	5 holes	3.0	1.748	0.849	24	24.22

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b, Y(Corrected Flow)=IC\*{SQRT(Pa/Pstd)(Tstd/Ta)}

#### Sampler Calibration Relationship (Linear Regression)

Slope(m): 32.296 Intercept(b): -3.257 Correlation Coefficient(r): 0.9990

Location : ASR 5
Calibrated by : P.F.Yeung
Date : 09/12/2013

Sampler

Model : TE-5170 Serial Number : S/N 0816

Calibration Orfice and Standard Calibration Relationship

 Serial Number
 : 2323

 Service Date
 : 26 Dec 2012

 Slope (m)
 : 2.09107

 Intercept (b)
 : -0.02838

 Correlation Coefficient(r)
 : 0.99996

**Standard Condition** 

Pstd (hpa) : 1013 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1014 Ta(K) : 293

Resistance Plate d		dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	12.4	3.553	1.713	53	53.48
2	13 holes	10.0	3.190	1.539	48	48.43
3	10 holes	7.4	2.745	1.326	42	42.38
4	7 holes	4.6	2.164	1.048	34	34.31
5	5 holes	2.8	1.688	0.821	26	26.23

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b, Y(Corrected Flow)=IC\*{SQRT(Pa/Pstd)(Tstd/Ta)}

#### Sampler Calibration Relationship (Linear Regression)

 $Slope(m): \underline{30.020} \quad Intercept(b): \underline{2.020} \quad Correlation \ Coefficient(r): \underline{0.9990}$ 

Location : ASR 6A
Calibrated by : P.F.Yeung
Date : 09/12/2013

Sampler

Model : TE-5170 Serial Number : S/N 3957

Calibration Orfice and Standard Calibration Relationship

Serial Number : 2323

 Service Date
 :
 26 Dec 2012

 Slope (m)
 :
 2.09107

 Intercept (b)
 :
 -0.02838

 Correlation Coefficient(r)
 :
 0.99996

**Standard Condition** 

Pstd (hpa) : 1013 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1014 Ta(K) : 293

Resistance Plate		dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	12.4	3.553	1.713	55	55.49
2	13 holes	9.7	3.142	1.516	49	49.44
3	10 holes	7.0	2.670	1.290	42	42.38
4	7 holes	4.5	2.140	1.037	34	34.31
5	5 holes	2.8	1.688	0.821	26	26.23

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b, Y(Corrected Flow)=IC\*{SQRT(Pa/Pstd)(Tstd/Ta)}

#### Sampler Calibration Relationship (Linear Regression)

Slope(m):32.563 Intercept(b): 0.037 Correlation Coefficient(r): 0.9993

Location : ASR 6
Calibrated by : P.F.Yeung
Date : 17/01/2014

Sampler

Model : TE-5170 Serial Number : S/N 3957

Calibration Orfice and Standard Calibration Relationship

Serial Number : 2454

 Service Date
 :
 12 Mar 2013

 Slope (m)
 :
 2.05818

 Intercept (b)
 :
 0.01929

 Correlation Coefficient(r)
 :
 0.99991

**Standard Condition** 

Pstd (hpa) : 1013 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1022 Ta(K) : 288

Resistance Plate		dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	12.4	3.599	1.739	56	57.22
2	13 holes	9.7	3.182	1.537	49	50.06
3	10 holes	7.1	2.722	1.313	43	43.93
4	7 holes	4.5	2.167	1.044	34	34.74
5	5 holes	2.9	1.740	0.836	27	27.59

 $Notes: Z = SQRT\{dH(Pa/Pstd)(Tstd/Ta)\}, \ X = Z/m-b \ , Y(Corrected \ Flow) = IC*\{SQRT(Pa/Pstd)(Tstd/Ta)\}$ 

### Sampler Calibration Relationship (Linear Regression)

Slope(m): 32.751 Intercept(b): 0.726 Correlation Coefficient(r): 0.9993

Location : ASR10A Calibrated by : P.F.Yeung Date : 09/12/2013

Sampler

Model : TE-5170 Serial Number : S/N 8162

Calibration Orfice and Standard Calibration Relationship

 Serial Number
 : 2323

 Service Date
 : 26 Dec 2012

 Slope (m)
 : 2.09107

 Intercept (b)
 : -0.02838

 Correlation Coefficient(r)
 : 0.99996

**Standard Condition** 

Pstd (hpa) : 1013 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1014 Ta(K) : 293

Resistance Plate		dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	12.8	3.610	1.740	62	62.56
2	13 holes	10.6	3.285	1.585	55	55.49
3	10 holes	7.8	2.818	1.361	45	45.40
4	7 holes	5.0	2.256	1.093	34	34.31
5	5 holes	3.1	1.777	0.863	22	22.20

 $Notes: Z = SQRT\{dH(Pa/Pstd)(Tstd/Ta)\}, \ X = Z/m-b, \ Y(Corrected\ Flow) = IC*\{SQRT(Pa/Pstd)(Tstd/Ta)\}\}$ 

#### Sampler Calibration Relationship (Linear Regression)

Slope(m): 45.377 Intercept(b): -16.281 Correlation Coefficient(r): 0.9991



## Certification of Quality

This product has been tested in accordance with procedures established through Global Water Instrumentation's Quality Management System. This product meets or exceeds its manufacturing acceptance criteria.

ITEM DESCRIPTION:

Wind Direction

MODEL NAME/ NUMBER:

WE570

PART NUMBER:

ED0000

SENSOR RANGE:

0-360°

SENSOR OUTPUT:

4.01-20.03 mA

ACCURACY:

1% of full scale

POWER REQUIRED

10-36 VDC

SERIAL NUMBER:

1337005143

CABLE LENGTH:

25 ft

CERTIFICATES:

**CE** Compliant

Technician:

Wright, Jess

Date: 9/12/2013

Global Water Instrumentation warrants that its products are free from defects in material & workmanship under normal use & service for a period of one year from date of original shipment from factory. Repaired components are warranted for a period of 90 days from shipment. Contact us for complete warranty details.



In the U.S. call toll free at 1-800-876-1172 International 1-979-690-5560 Our Service Address Fax 1-979-690-0440 Email globalw@globalw.com College Station, TX 77845

Visit our online catalog at www.globalw.com 151 Graham Rd



## Certification of Quality

This product has been tested in accordance with procedures established through Global Water Instrumentation's Quality Management System. This product meets or exceeds its manufacturing acceptance criteria.

ITEM DESCRIPTION:

Wind Speed Sensor

MODEL NAME/ NUMBER:

WE550

PART NUMBER:

EC0000

SENSOR RANGE:

0-110 MPH

SENSOR OUTPUT:

4.00-19.91 mA

ACCURACY:

.2 MPH over the range 11 to 55 MPH

POWER REQUIRED

10-36 VDC

SERIAL NUMBER:

1337005099

CABLE LENGTH:

25 ft

CERTIFICATES:

CE Compliant

Contact Global Water Water Leve Water Flow Water Samplers Water Qualit

Remote Monitoring

Technician:

Wright, Jess

Date: 9/10/2013

Global Water Instrumentation warrants that its products are free from defects in material & workmanship under normal use & service for a period of one year from date of original shipment from factory. Repaired components are warranted for a period of 90 days from shipment. Contact us for complete warranty details.



In the U.S. call toll free at 1-800-876-1172 International 1-979-690-5560 Our Service Address Fax 1-979-690-0440 Email globalw@globalw.com College Station, TX 77845

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# Performance Check of Turbidity Meter

Equipment Ref. No.

: ET/0505/010

Manufacturer

: HACH

Model No.

: 2100Q

Serial No.

: 11110 C 014260

Date of Calibration

: 08/102013 08/10/2013

Due Date

: 07/01/2014

Gelex Vial Std	Theoretical Value (NTU)	Measured Value (NTU)	Difference %
0-10 NTU	5	5.23	4.50
10-100 NTU	50	52.1	4.11
100-1000 NTU	550	566	2.87

Acceptance Criteria

Difference: -5 % to 5%

The turbidity meter complies \* / does not comply \* with the specified requirements and is deemed acceptable \* / unacceptable \* for use. Measurements are traceable to national standards.

Checked by: \_\_\_\_\_ Approved by:\_\_(



# Performance Check of Turbidity Meter

Equipment Ref. No. : ET/0505/010 Manufacturer : HACH

Serial No. : 11110 C 014260 Model No. : 2100Q

: 06/04/2014 Date of Calibration : 07/01/2014 Due Date

Theoretical Value of Turbidity Standard (NTU)	Measured Value (NTU)	Difference % *
20	19.2	-4.08
100	104	3.92
800	793	-0.88

(\*) Difference = (Measured Value – Theoretical Value) / Theoretical Value

Acceptance Criteria

Difference: -5 % to 5 %

The turbidity meter complies \* / does not comply \* with the specified requirements and is deemed acceptable \* / unacceptable \* for use. Measurements are traceable to national standards.

Checked by: Prepared by:



Equipment Ref. No.: ET/EW/007/003	Manufacturer : H.	ANNA
Model No. : HI 8314	Serial No. : 67	74469
Date of Calibration : 10/12/2013	*********	9/01/2014
Liquid Junction Error		
<b></b>		
Primary Standard Solution Used : Phosphate	e Ref No. of Prima	ary Solution: <u>003/5.2/001/1</u>
Temperature of Solution : 20.1		$\Delta pH_{\frac{1}{2}} = +0.08$
pH value of diluted buffer : 6.79		pH (S) = 6.881
$\triangle pH = pH(S) - pH \text{ of diluted buffer} = 0.091$	(Observed Deviation)	
Liquid Junction Error ( $\Delta pH_j$ ) = $\Delta pH$ - $\Delta pH_{\frac{1}{2}}$ = 0.0	011	
Shift on Stirring		
pH of buffer solution (with stirring), pH <sub>s</sub> =	6.89	
Shift on stirring, $\Delta pH_s = pH_s - pH(S) - \Delta pH_i =$	-0.002	
Manager specification and the state of the s		
Noise	0.04	
Noise, $\Delta pH_n$ = difference between max and min	reading: 0.01	
Verification of ATC	A STATE OF THE STA	
Ref. No. of reference thermometer used:	ET/0521/008	
Temperature record from the reference thermom		°C
Temperature record from the ATC (T <sub>ATC</sub> ):	19.9	°C
Temperature Difference, $ T_R - T_{ATC} $	0.3	°C
		and the statement of th
Acceptance Criteria		
Performance Characteristic	Acceptable I	
Liquid Junction Error △pHj	≤0.05 ≤0.02	
Shift on Stirring     ΔpHs       Noise     ΔpHn	≤0.02	
	re Difference ≤0.5°C	
IVeritication of ATC: Temperatu	re Difference Suita Suit	
Vernoution 6.7110		
The pH meter complies * / does not comply * unacceptable * for use. Measurements are trace		nd is deemed acceptable *

CPE/015/W



Internal Calibration	on & Performano	e Check o	of pH Mete	r
Equipment Ref. No. : ET/EW/007/003			HANNA	
Model No. : HI 8314	Serial No.		674469	***************************************
2/		Data	09/03/2014	
Date of Calibration : 10/02/2014	Calibration D	ue Date :	09/05/2014 	v)4
Liquid Junction Error				
Primary Standard Solution Used: Pho	sphate	Ref No. of P	rimary Solution	: 003/5.2/001/17
Temperature of Solution : 20.0	)		∆pH ½ =	=_+0.08
pH value of diluted buffer : 6.80	)		pH (S) =	6.881
$\Delta$ pH = pH(S) - pH of diluted buffer = 0.08	-	erved Deviation	)	
Liquid Junction Error ( $\Delta pH_i$ ) = $\Delta pH - \Delta pH_{1/2}$			<u>/-</u>	
Shift on Stirring				
pH of buffer solution (with stirring), $pH_s =$	6.87			
Shift on stirring, $\Delta pH_s = pH_s - pH(S) - \Delta pH_i$	= -0.012			
Noise				W. W. W. W.
Noise				
Noise, $\Delta pH_n$ = difference between max an	id min reading:	0.00		
Verification of ATC			\$ ( 1	
Ref. No. of reference thermometer used:	1	ET/0521/008		
Temperature record from the reference the	_	20.0		_o c
Temperature record from the ATC ( $T_{ATC}$ ):		19.9	***************************************	_ ° C
Temperature Difference, $ T_R - T_{ATC} $	<del>-</del>	D.1		_° C
Temperature Difference,   TR - TATC		J. 1		
Acceptance Criteria				
Performance Characte	ristic	Acceptal	ole Range	
Liquid Junction Error ΔpH			0.05	_
Shift on Stirring ΔpH			0.02	_
Noise $\Delta pH$			0.02	_
Verifcation of ATC Tem	perature Difference	≤0_	.5°C	
The pH meter complies * / does not co unacceptable * for use. Measurements ar * Delete as appropriate			s and is deem	ed acceptable * /
			of	***************************************
Calibrated by :	<u>-</u>	Checked by:		

CPE/015/W



Form E/CE/R/12 Issue 8 (1/2) [05/13]

### Internal Calibration Report of Dissolved Oxygen Meter

Equipment Ref. No.

ET/EW/008/005

Manufacturer

: YSI

Model No.

Pro 2030

Serial No.

12A 100353

Date of Calibration

29/10/2013

Calibration Due Date

28/01/2014

#### Temperature Verification

Ref. No. of Reference Thermometer:

ET/0521/008

Ref. No. of Water Bath:

---

	Temperature (°C)				
Reference Thermometer reading	Measured	20.3	Corrected	19.9	
DO Meter reading	Measured	19.8	Difference	0.1	

#### Standardization of sodium thiosulphate (Na 2S 2O 3) solution

Reagent No. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> titrant	CPE/012/4.5/001/7	Reagent No. of 0.025N K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	CPE/012/4.4/001/22	
		Trial 1	Trial 2	
Initial Vol. of $Na_2S_2O_3$ (ml)		1.00	12.00	
Final Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)		11.55	22.50	
Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> used (ml)		10.55	10.50	
Normality of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> solution (N)		0.02370	0.02381	
Average Normality (N) of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> s	rage Normality (N) of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> solution (N)			
Acceptance criteria, Deviation		Less than $\pm 0.001$ N		

Calculation:

Normality of  $Na_2S_2O_3$ , N = 0.25 / ml  $Na_2S_2O_3$  used

#### Lineality Checking

#### Determination of dissolved oxygen content by Winkler Titration \*

Purging Time (min)		2		5		0
Trial	1	2	1	2	1	2
Initial Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)	0.00	11.80	23.40	0.00	8.00	13.00
Final Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)	11.80	23.40	31.50	8.00	13.00	18.10
Vol. ( <b>V</b> ) of $Na_2S_2O_3$ used (ml)	11.80	11.60	8.10	8.00	5.00	5.10
Dissolved Oxygen (DO), mg/L	7.53	7.40	5.17	5.10	3.19	3.25
Acceptance criteria, Deviation	Less than + 0.3mg/L		Less than + 0.3mg/L		Less than + 0.3mg/L	

Calculation:

DO  $(mg/L) = V \times N \times 8000/298$ 

Purging time, min	DO meter reading, mg/L			Winkler Titration result *, mg/L			Difference (%) of DO
ruiging time, mini	1	2	Average	1	2	Average	Content
2	7.66	7.41	7.54	7.53	7.40	7.47	0.93
5	5.31	5.23	5.27	5.17	5.10	5.14	2.50
10	3.20	3.10	3.15	3.19	3.25	3.22	2.20
Linea	r regression	coefficient				0.9987	

Form E/CE/R/12 Issue 8 (2/2) [05/13]

### Internal Calibration Report of Dissolved Oxygen Meter

#### Zero Point Checking

DO (1.1)	0.00
DO meter reading, mg/L	0.00

#### Salinity Checking

	T		1
Reagent No. of NaCl (10ppt)	CPE/012/4.7/002/11	Reagent No. of NaCl (30ppt)	CPE/012/4.8/002/11
<u> </u>	Aug		

#### Determination of dissolved oxygen content by Winkler Titration \*\*

Salinity (ppt)	10	)	30		
Trial	1	2	1	2	
Initial Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)	0.00	12.40	24.50	35.80	
Final Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)	12.40	24.50	35.80	47.00	
Vol. (V) of $Na_2S_2O_3$ used (ml)	12.40	12.10	11.30	11.20	
Dissolved Oxygen (DO), mg/L	7.91	7.72	7.21	7.14	
Acceptance criteria, Deviation	Less than + 0.3mg/L		Less that	n + 0.3mg/L	

Calculation:

DO  $(mg/L) = V \times N \times 8000/298$ 

Salinity (ppt)	DO 1	meter reading,	mg/L	Winkler	Titration resu	ılt**, mg/L	Difference (%) of DO
Samily (ppt)	1	2	Average	1	2	Average	Content
10	7.82	7.63	7.73	7.91	7.72	7.82	1.16
30	7.22	7.16	7.19	7.21	7.14	7.18	0.14

#### Acceptance Criteria

- (1) Differenc between temperature readings from temperature sensor of DO probe and reference thermometer : < 0.5 °C
- (2) Linear regression coefficient: >0.99
- (3) Zero checking: 0.0mg/L
- (4) Difference (%) of DO content from the meter reading and by winkler titration : within  $\pm$  5%

The equipment complies # / does not comply # with the specified requirements and is deemed acceptable # / unacceptable # for use.

" Delete as appropriate

Calibrated by :

Approved by:

9

CEP/012/W



# Performance Check of Salinity Meter

Equipment Ref. No.	: ET/EW/008/005	Manufacturer	: YSI

Model No. : Pro 2030 Serial No. : 12A 100353

29/10/10/3

Date of Calibration : 29/08/2013 & 28/01/2014 : 28/01/2014

Ref. No. of Salinity Standard used (30ppt)	S/001/4
--	---------

Salinity Standard (ppt)	Measured Salinity (ppt)	Difference %
30.0	30.8	2.63

Acceptance Criteria

Difference: <10 %

The salinity meter complies \* / does not comply \* with the specified requirements and is deemed acceptable \* / unacceptable \* for use. Measurements are traceable to national standards.

Checked by: \_\_\_\_\_ Approved by:



Form E/CE/R/12 Issue 8 (1/2) [05/13]

### Internal Calibration Report of Dissolved Oxygen Meter

Equipment Ref. No.

ET/EW/008/005

Manufacturer

YSI

Model No.

Pro 2030

Serial No.

12A 100353

Date of Calibration

29/01/2014

Calibration Due Date

28/04/2014

#### Temperature Verification

Ref. No. of Reference Thermometer:

DO Meter

ET/0521/008

Ref. No. of Water Bath:

	-	Тетре	erature (°C)	
Reference Thermometer reading	Measured	20.2	Corrected	19.8
DO Meter reading	Measured	19.7	Difference	0.1

#### Standardization of sodium thiosulphate (Na $_2$ S $_2$ O $_3$ ) solution

Reagent No. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> titrant	CPE/012/4.5/001/8	Reagent No. of 0.025N K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	CPE/012/4.4/001/24
		Trial I	Trial 2
Initial Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)		0.00	10.50
Final Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)		10.50	20.95
Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> used (ml)		10.50	10.45
Normality of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> solution (N)		0.02381	0.02392
Average Normality (N) of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> s	olution (N)	0.02387	
Acceptance criteria, Deviation		Less than $\pm 0$ .	001N

Calculation:

Normality of  $Na_2S_2O_3$ , N = 0.25 / ml  $Na_2S_2O_3$  used

#### Lineality Checking

#### Determination of dissolved oxygen content by Winkler Titration \*

Purging Time (min)	2			5		10	
Trial	1	2	1	2	1	2	
Initial Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)	0.00	11.90	23.50	0.00	8.20	13.20	
Final Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)	11.90	23.50	31.90	8.20	13.20	17.90	
Vol. (V) of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> used (ml)	11.90	11.60	8.40	8.20	5.00	4.70	
Dissolved Oxygen (DO), mg/L	7.63	7.43	5.38	5.25	3.20	3.01	
Acceptance criteria, Deviation	Less than + 0.3mg/L		Less than + 0.3mg/L		Less than + 0.3mg/L		

Calculation:

DO  $(mg/L) = V \times N \times 8000/298$ 

	DO meter reading, mg/L			Winkler Titration result *, mg/L			Difference (%) of DO
Purging time, min	1	2	Average	1	2	Average	Content
2	7.65	7.41	7.53	7.63	7.43	7.53	0.00
5	5.38	5.21	5.30	5.38	5.25	5.32	0.38
10	3.22	3.09	3.16	3.20	3.01	3.11	1.59
Linear regression coefficient					0.9998		



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### Internal Calibration Report of Dissolved Oxygen Meter

Zero Point Checking

DO meter reading, mg/L	0.00

Salinity Checking

Reagent No. of NaCl (10ppt)	CPE/012/4.7/002/15	Reagent No. of NaCl (30ppt)	CPE/012/4.8/002/15

Determination of dissolved oxygen content by Winkler Titration \*\*

Salinity (ppt)	10		30	
Trial	1	2	1	2
Initial Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)	0.00	12.30	24.40	35.80
Final Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)	12.30	24.40	35.80	47.00
Vol. (V) of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> used (ml)	12.30	12.10	11.40	11.20
Dissolved Oxygen (DO), mg/L	7.88	7.75	7.31	7.18
Acceptance criteria, Deviation	Less than + 0.3mg/L		Less than + 0.3mg/L	

Calculation:

DO  $(mg/L) = V \times N \times 8000/298$ 

: \_\_\_\_\_\_\_

Salinity (ppt)	DO meter reading, mg/L		Winkler Titration result**, mg/L			Difference (%) of DO	
Saminty (ppt)	I	2	Average	1	2	Average	Content
10	7.88	7.65	7.77	7.88	7.75	7.82	0.64
30	7.23	7.14	7.19	7.31	7.18	7.25	0.83

#### Acceptance Criteria

- (1) Differenc between temperature readings from temperature sensor of DO probe and reference thermometer : < 0.5 °C
- (2) Linear regression coefficient: >0.99
- (3) Zero checking: 0.0mg/L
- (4) Difference (%) of DO content from the meter reading and by winkler titration : within  $\pm$  5%

The equipment complies # / does not comply # with the specified requirements and is deemed acceptable # / unacceptable # for use.

" Delete as appropriate

Calibrated by

Approved by:

9

CEP/012/W



# Performance Check of Salinity Meter

Equipment Ref. No. : ET/EW/008/005

Manufacturer

: YSI

Model No.

: Pro 2030

Serial No.

: 12A 100353

Date of Calibration

: 29/01/2014

Due Date

: 28/04/2014

Ref. No. of Salinity Standard used (30ppt)

S/001/5

Salinity Standard (ppt)	Measured Salinity (ppt)	Difference %
30.0	30.9	3.00

Acceptance Criteria

Difference: <10 %

The salinity meter complies \* / does not comply \* with the specified requirements and is deemed acceptable \* / unacceptable \* for use. Measurements are traceable to national standards.

Checked by: \_\_\_\_\_ Approved by: