STANDARD OPERATING PROCEDURE	
Department: Quality Assurance	**SOP No.:**
Title: Procedure for Operation and Calibration of Conductivity/TDS Meter	**Effective Date:**
Supersedes: Nil	**Review Date:**
Issue Date:	**Page No.:**

1.0 OBJECTIVE:

To lay down a procedure for Operation and Calibration of Conductivity/TDS Meter.

2.0 SCOPE:

This SOP is applicable for Operation and Calibration of Conductivity/TDS Meter, Make: ESICO Model No. 1601 in IPQA at ……..

3.0 RESPONSIBILITY:

Officer/Executive IPQA: shall be responsible for Operation & Calibration of Conductivity/TDS Meter.

Head QA shall be responsible to implement and ensuring compliance with this SOP.

4.0 ACCOUNTABILITY:

Head-QA

5.0 DEFINITION:

CONDUCTIVITY:

An electrical conductivity meter (EC meter) measures the electrical conductivity in a solution. It is commonly used in hydroponics, aquaculture and freshwater systems to monitor the amount of nutrients, salts or impurities in the water.

TDS:

A TDS meter indicates the total dissolved solids (TDS) of a solution, i.e. the concentration of dissolved solid particles. Dissolved ionized solids, such as salts and minerals, increase the electrical conductivity (EC) of a solution. Because it is a volume measure of ionized solids, EC can be used to estimate TDS.

6.0 PROCEDURE:

6.1 Measurement of Conductivity:

Clean the Conductivity/TDS electrode with purified water.

Switch "ON" the main power supply.

6.1.1 Press "MODE" Key, the display will shows TDS/Conductivity and select measurement mode TDS/Conductivity.

SELECT		
EC	**TDS**	**TEMP**
12-09-20		**11:40:06**

6.1.2 Press Key and then "ENTER" Key to select the Conductivity mode.

SELECT	
READ	**SET**
PARAMETER	
12-09-20	**11:41:08**

6.1.3 Press Key and then "ENTER" Key to select the Read Mode

6.1.4 To continue the operation press ENTER.

6.1.5 Instrument get stabilize itself with message on the screen "Wait stabilizing" which shows the measurement Conductivity and temperature.

6.1.6 Select the temperature mode (manual) during measurement at 20ºC to 25ºC whichever select for manual temperature compensation, measure the solution temperature with external thermometer and then enter the correct value if necessary.

6.1.7 Place the electrode and temperature sensor in "Sample Solution".

6.1.8 Note down the reading direct from the display.

6.1.9 Lift the electrode with temperature sensor and rinse with purified water 2-3 times.

6.1.10 At the ends of shift "OFF" the instrument and main power supply.

6.2 Measurement of TDS:

SELECT

EC	TDS	TEMP
12-09-20		11:40:06

6.2.1 Press Key and then "ENTER" Key to select the TDS Mode

SELECT	
READ	SET PARAMETER
12-09-20	11:41:08

6.2.2 Press Key and then "ENTER" Key to select the Read Mode

6.2.3 To continue the operation press ENTERS.

6.2.4 Instrument get stabilize itself with message on the screen "Wait stabilizing" which shows the measurement Conductivity and temperature.

6.2.5 Select the temperature mode (manual) during measurement at 20°C to 25°C whichever select for manual temperature compensation, measure the solution temperature with external thermometer and then enter the correct value if necessary.

6.2.6 Place the electrode and temperature sensor in "Sample Solution".

6.2.7 Note down the reading direct from the display.

6.2.8 Lift the electrode with temperature sensor and rinse with purified water 2-3 times.

6.2.9 Conductivity Cell Constant Check.

6.3 Procedure for Cell Constant Check

6.3.1 Press Mode Key.

6.3.2 Select Conductivity Mode.

6.3.3 Enter cell constant 0.1.

6.3.4 Instrument will display Calibration: 1) Y 2) N and for calibration select 1.

6.3.5 Enter standard solution conductivity 84 µS.(Readymade solution)

6.3.6 Select Temp. Co-efficient value. (25ºC ± 2%)

6.3.7 Observed reading and press Enter if stable

6.3.8 If reading is within limit, the instrument will calibrate the electrode and display the conductivity.

6.3.9 Remove and wash the electrode with purified water and keep the electrode in purified water.

6.3.10 Enter the usage details of Conductivity/TDS Meter in **Annexure-I** titled "Conductivity /TDS Meter Usage Log"

6.4 Calibration of Conductivity meter and Conductivity Cell

6.4.1 **Procedure for Calibration (Calibration Frequency – Daily once before use)**

6.4.1.1 Standard Solution (Potassium Chloride) used for Calibration of Conductivity Meter shall be prepared by Quality Control lab and its preparation and consumption record shall be maintained by QC as per SOP.

6.4.1.2 Calibrate the instrument by standard solutions (Potassium Chloride) of 15 µS/cm and 84 µS/cm (at 25 ºC ± 1 ºC).

6.4.1.3 Acceptance criteria : 84 µS ± 5 µS & 15 µS ± 2 µS

6.4.1.4 Cleaned the conductivity electrode with purified water.

6.4.1.5 Place the electrode and temperature sensor in solution.

6.4.1.6 Press enter Key and instrument will display Conductivity.

6.4.1.7 Then Select "Set parameter" Option Key. Edit the "Cell constant" value of electrode by selecting the "Measure" option.

6.4.1.8 Finally check the value of standard solution and Note the reading of conductivity of the solution and Cell constant value of electrode.

6.4.1.9 Press "Store" button on instrument to store the calibration data.

6.4.1.10 Calibration Record of Conductivity/TDS Meter shall be maintained as per **Annexure-II** (Format No. SOP)

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7.0 ABBREVIATIONS :

SOP	:	Standard Operating Procedure
QA	:	Quality Assurance
QC	:	Quality Control
No.	:	Number
°C	:	Degree
TDS	:	Total Dissolved solid
µS	:	Micron Siemens
IH	:	In-house
ml	:	Milliliter
%	:	Percent
Pvt.	:	Private
Ltd.	:	Limited

8.0 ANNEXURES:

ANNEXURE	TITLE OF ANNEXURE	FORMAT No.
Annexure – I	Conductivity /TDS Meter Usage Log	
Annexure – II	Calibration Record Conductivity /TDS Meter	

9.0 REFERENCE:

IH

10.0 DISTRIBUTION:

- Controlled copy - Quality Assurance
- Master copy - Quality Assurance

11.0 REVISION HISTORY:

Revision No.	Change Control No.	Details of Changes	Reason of Changes	Effective Date	Done By
00		NA	New SOP		

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ANNEXURE-I

CONDUCTIVITY/TDS METER USAGE LOG

Location: **Instrument Identification No:**

S.No.	Date	Product/Material Name	Batch /AR No.	Stage	Analysis start time	Analysis end time	Result (µS)	Analyzed by	Instrument cleaning status	Remarks

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ANNEXURE-II

CALIBRATION RECORD CONDUCTIVITY/TDS METER

Instrument Name: Conductivity/TDS Meter	**Make: ESICO**
Model No.: 1601	**Instrument ID.:**
Location:	**Calibration Frequency: Daily once before use**

Reference Standard: B. No./Lot No.:

Date	Time	Cell constant adjustment	Limit 0.133 to 0.147	Reading of standard solutions at 25°C±1°C	Limit	Reading of standard solutions at 25°C±1°C	Limit	Done by	Checked by
		0.140		15 µS		84 µS			
			± 5%		± 2 µS		± 5 µS		
			± 5%		± 2 µS		± 5 µS		
			± 5%		± 2 µS		± 5 µS		
			± 5%		± 2 µS		± 5 µS		
			± 5%		± 2 µS		± 5 µS		