



**KERALA UNIVERSITY OF FISHERIES & OCEAN STUDIES**  
**കേരള ഫിഷറീസ്-സമുദ്രപഠന സർവ്വകലാശാല**

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No. GA7/6975/2022  
 10.2022

Panangad, Dated .

**e- TENDER NOTICE**

E- tenders are invited for the Supply of “ Data Logger for Salinity, temperature, pH, DO, chlorophyll and its installation under INCOIS project, KUFOS, Panangad.

The Tender should be submitted as e- tender in the e- procurement portal of Kerala Government with detailed specification, Tender fee of Rs.2300/- and EMD of Rs.15,000/-, by means of e- Payment. The GST amount of the tender fee @18% should be remitted to the GST department directly by the bidder. More details will be available in the Office of Dr. Suresh Kumar,PI & Dean Faculty of Ocean Science and Technology, KUFOS Panangad, on all working days with the permission of undersigned. Our GST Regn. No. is: 32AAAGK0031Q1ZL.

All the terms and conditions applicable to University/Government quotations/Tenders are applicable to this Tender also. Right to accept the Tender in full or in part or to reject without assigning any reason is reserved to the undersigned.

**REGISTRAR**

To

Firms

Copy to: Dr. Suresh Kumar,PI & Dean Faculty of Ocean Science and Technology / Programmer  
 to Publish on the Website

**Specifications - Data Logger for Salinity, temperature, pH, DO, chlorophyll and its installation:-**

- The water Quality logger should be a portable testing instrument for temperature, conductivity, dissolved oxygen, pH, ORP and Chlorophyll. The logger should have a facility for a minimum of 4 smart sensor ports that permit interchangeability and/ or replacement by the users in the field.
- The outer material of the instrument should be anti -corrosive to marine water, and it should be made up of titanium.
- The equipment should be provided with an unattached continuous data logging and monitor system.
- The Water Quality instrument shall allow users to add additional Smart Sensors. Additional





Sensors like chloride, nitrate, ammonium, phycocyanin (BGA-PC) phyco erythrin (BGA - PE), rhodamine WT, FDOM, Crude oil, Fluorescein WT etc. if required in the future.

- The water Quality equipment can be used for Spot Checking and long term monitoring and should have ports/ connectivity like Modbus, RS485 and SDI-12 and Bluetooth.
- The water quality instrument must include tools for easy replacement or change of sensors under normal operating conditions and to prevent premature damage of sensors under normal operating conditions.
- Onboard Battery : A low power consumption device with a built in Battery should be provided for uninterrupted data collection.
- GPS should be integrated for precise time synchronization and local information.
- Water quality Equipment should measure Barometric pressure and Ambient Temperature.
- ENVIRONMENTAL RATING : IP 68 with all sensors and cable attached.
- Cable Length - 10 Meters.
- CABLE OPTIONS : Vented or non vented polyurethane or vented Tefzel.
- CERTIFICATIONS : CE, FCC, WEEE, RoHS Compliant.

## INSTRUMENT FRAME ASSEMBLY

- The instrument should be supplied with an Instrument frame assembly Made up of SS316 and fitted in the boat for continuous data Monitoring.
- It is the scope of the Supplier to Integrate , Installation and commissioning of the Frame in a Boat.
- The instrument should measure and log the moving boat/Ship data
- **CERTIFICATIONS** : CE, FCC, WEEE, RoHS Compliant
- Failure to meet these minimum criteria will result in bid or proposal rejection at the sole discretion of this agency/ organization or using the department's discretion thereof.

### **Power**

### **Requirement**

The water quality instrument must be powered using a powered communication device. The water quality instrument must also can utilize an external power supply from each of the following sources : SDI-12 , AC ( through adapter, 16 V maximum) DC, solar, and other sources.

### Sensor Description :

#### **Barometric Sensor**

- Barometric Sensor shall use silicon strain gauge methodology
- Sensor range shall be 300-1100 m Bars
- Accuracy of  $\pm 0.5$  m Bar
- Resolution 0.1 m Bar

#### **Dissolve Oxygen (Optical ) Sensor**

- The optical RDO Sensor shall comply with EPA- approved outdoor operations: Methods : 1002-8-2009, 1003-8-2009 and 1004-8-2009.
- The Dissolved Oxygen (DO) Sensor on the probe must meet the accuracy requirements of :



- $\pm 0.1$  mg/L from 0 to 20mg/L
- $\pm 2\%$  of reading from 20 to 60mg/L
- Automatic compensation of DO readings for salinity, temperature and barometric pressure must be available from the water quality instrument's conductivity, temperature sensor & barometric pressure sensor.
- Optical Dissolved Oxygen sensor must utilize frequency domain / lifetime -based measurement methodology.

### Conductivity Sensor

- Conductivity sensor shall comply with Standard Method 2510/2520A and EPA 120.1
- The conductivity sensor on the probe must have a range of 0-350,000 $\mu$ S/cm
- The conductivity sensor on the probe must meet accuracy requirements of :
  - $\pm 0.5\%$  of reading plus 1 $\mu$ S/cm from 0 to 100,000 $\mu$ S/cm ;  $\pm 1.0\%$  of reading from 100,000 to 200,000 $\mu$ S/cm;  $\pm 2.0\%$  of reading from 200, 000 $\mu$ S/cm to 350, 000 $\mu$ S/cm.
- Conductivity sensor must be of a graphite four electrode design (two drive and two sensing electrodes)
- The conductivity sensor must report measurements as : actual conductivity, specific conductivity salinity, total dissolved solids (TDS), resistivity and density.
- Conductivity sensors must include a thermistor for temperature measurement.

### Level / Depth /Pressure Sensor

- The level / depth / pressure sensor shall use piezoresistive ceramic methodology.
- The level / depth / pressure sensor shall be available for use with both absolute(non- vented) or gauged (vented) Cable System.
- The sensor accuracy shall be  $\pm 0.1$  % full scale from  $-5^0\text{C}$  to  $50^0\text{C}$ .
- The following ranges shall be available :
  - 100.0m (325ft.) (Burst : 200m; 650ft.)

### pH /ORP Sensor

- ORP sensor shall comply with Standard Methods 2580.
- The oxidation-reduction potential (ORP) sensor on the probe must meet accuracy requirements of :
  - $\pm 5.0$ mV
- The pH sensor on the probe must meet accuracy requirements of :
  - $\pm 0.1$ pH unit
- The pH/ORP electrode sensor reference will be refillable and have a replaceable junction to allow for longer sensor life.
- The minimum pH range must be 0 to 14 pH units.
- The minimum ORP range must be  $\pm 1400$ mV.

### Temperature Sensor



- Temperature sensor shall comply with EPA method 170.1.
- The temperature sensor must be made of titanium material to prevent corrosion or equivalent.
- Sensor range shall be -5<sup>0</sup>C to 50<sup>0</sup>C (23<sup>0</sup>F to 122<sup>0</sup>F)
- Sensor accuracy shall be ±0.1<sup>0</sup>C.

**Chlorophyll A Sensor**

- Linearity -R2>0.999 for serial dilutions of Chl a in MeOH across full range

Range - 0-100RFU 0-1,000µg/L Resolution -0-100 RFU 0-1,000µg/L

- **Cable length** - 10 Meters

**Warranty & AMC**

- **2 Years** for equipment. Warranty after 1 Year Annual Maintenance contract should be provided.
- **2 Year** RDO and sensor cap, temperature/ conductivity , the temperature only, Chlorophyll A
- **1 Year** -pH /ORP and other accessories.

**Data Logger**

Analog (0-5V, 0-1 V, 0-20mV, 4-20mA) digital and serial inputs (RS232,RS485,MODBUS)  
 Data Logger Storage Memory of 8GB.

**Calibration Standards**

1.	RDO- Disolved Oxygen	Na2SO3 Calibration Kit	(Sodium Sulfite)	for	DO	CAL.500ml
2.	Conductivity	Calibration standards	58.670µS/cm,	1 Liter	DI water, ½ Liter	Na2SO3 500ML
3.	pH		4,7,10-	1		Liter
4.	pH	Storage	Zobell	Solution	-	500MI
5.				Solution		-500MI

**Eligibility Criteria**

1. A manufacture authorization letter should be provided.
2. The bidder should have supplied a minimum of 2Nos of such equipment anywhere in India and a satisfactory installation report should be submitted from government Customers.
3. GST Regn Certificate should be submitted