

CSIR- NATIONAL PHYSICAL LABORATORY

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From: Director, CSIR-NPL

Ref No. 14-VI/VE(1177-OTE)2025-PB/T-99

Dated : 28.11.2025

CORRIGENDUM

With reference to NPL's Tender ID: **2025_CSIR_253845_1**, for the procurement of "System for Primary pH measurement", a Pre-Bid Conference (PBC) meeting was concluded on 18.11.2025. Consequent upon the outcome of PBC meeting, Some changes have been made to the specifications of the captioned tender. The tender submission and opening date will remain the unchanged. **Minutes of TSC is enclosed for your reference.**

Sd/-
Stores & Purchase Officer

Enclosed : TSC Minutes and Pre Bid Meeting Recommendations

FORM TO BE FILLED BY IO WHILE CONVENING PRE-BID MEETING OF TSC

File No.: 14-VI/VE(1177)25-PB/T-99

Date: 26-11-2025

Pre-bid Meeting (To be typed clearly by the I/O)

Name of Indentor: **Dr. V. Ezhilselvi**

Indent No.: **PR5031542025, date: 23-09-2025**

Item Description: **System for Primary pH measurement**

No. of Budgetary Quotes: **03 Nos.**

(1) A pre-bid meeting of TSC was held on **18-11-2025**.

(2) Following vendor participated in pre bid meeting

Name of the Firm	Queries Raised	Remarks, if any
1. M/s Fluke Technologies Pvt. Ltd., New Delhi, India	No Comments	
2. M/s Yantrika Instruments Pvt. Ltd., Gurugram, India	Technical Specification, Sr. No. 6.6 Frequency: Accuracy is 0. μ Hz, 1 Year	
3. M/s Bharat Instruments & Services, New Delhi-20, India	No Comments	
4. M/s Vijayanta Technologies Pvt. Lt., Roorkee, India	No Comments	

Indentor's recommendation

1. The comments, as received from bidders during PBC, and our response is as follows: Nil

Tender Specification and its number	Comment of bidder	Response of Indentor (Accepted/ Not accepted)	Revised specification (If any)	Justification for non-acceptance
M/s. Yantrika Instruments Pvt. Ltd., Gurugram, India				
Technical Specification, Sr. No. 6.6	Frequency: Accuracy is 0.5 μ Hz/Hz, 1Year	Accepted	In the revised specification, it has been included. The value 0.5 was missing earlier due to a typographical error.	-

Final recommended specifications are as attached at Annexure 1 and signed by I/O: As per attached sheet

Corrigendum to Tender may be issued/ ~~may not be issued~~.

Recommended Revised Date of Tender submission (if any) is ____ **11/12/2025 upto 3.00**

PM

The specifications are generic and broad based.

Submitted to TSC for necessary approvals.

(Indenting Officer)

FORM TO BE USED BY TSC FOR FINALISING PRE-BID MINUTES

File No.: 14-VI/VE(1177-OTE)25-PB/T-99

Date: 18-11-2025

TSC Minutes

Based on the Pre-bid meeting and recommendation of I/O, following changes have been made in the specifications:

Original Specifications	Final Specifications
As per attached sheet-Annexure-1 Sr. No. 6.6 Frequency: Accuracy is 0. μ Hz/Hz, 1 Year	As per attached sheet- Annexure-1 Sr. No. 6.6 Frequency: Accuracy is 0.5 μ Hz/Hz, 1 Year

The file is forwarded to Purchase Section for uploading the final specifications and TSC minutes on the website and CPPP Portal.

Declaration: We hereby declare that we have no conflict of interest with any of the bidder in this tender

ANNEXURE-1

Final Technical Specification of the “System for primary pH measurement”

1. High stability large access opening bath with Harned cell

- 1.1 Temperature range: 0 to 40°C or better
- 1.2 Stability: $\pm 0.001^{\circ}\text{C}$ at 25°C or better
- 1.3 Uniformity: $\pm 0.003^{\circ}\text{C}$ at 25°C or better
- 1.4 Set Point resolution: 0.001 or better in the given range
- 1.5 Access Opening: Min. 600 mm $\times$ 550 mm or higher
- 1.6 Depth: 300 mm or higher
- 1.7 Volume: Minimum 100 Litres or higher
- 1.8 Power: 230 VAC, ($\pm 10\%$), 50 Hz

2. High stability cold water bath with Harned cell

- 2.1 Temperature range: -5 to 90°C,
- 2.2 Stability: $\pm 0.001^{\circ}\text{C}$ at 25°C or better
- 2.3 Uniformity: $\pm 0.003^{\circ}\text{C}$ at 25°C or better
- 2.4 Set Point resolution: 0.005 or better in the given range
- 2.5 Access Opening: 300 mm $\times$ 150 mm or higher
- 2.6 Depth: 300 mm or higher
- 2.7 Volume: Minimum 35 Litres or higher
- 2.8 Power: 230 VAC ($\pm 10\%$), 50 Hz

The baths should have proper heating and cooling arrangement for maintaining temperature uniformity and stability within the working area and should accommodate 4 - 8 Nos. of Harned cells. Both baths must have facility for computer interfacing RS232/IEEE as complete automation is required. Harned Cell System: 14 Harned Cells made in Borosilicate glass or quartz have to be supplied. The cell has to be supplied with 10 Nos. Pt electrode and 10 Nos. Ag/AgCl electrode. Total 25 Coaxial connectors and electrode cable is required in the setup. Appropriate holders and racks as required have to be supplied to immerse the Harned cells inside highly stable water baths.

3 Primary Standard Platinum Resistance Thermometer (02 Nos.)

- 3.1 Temperature Range: -200 deg. C to 660 deg. C
- 3.2 Nominal Resistance@ (TPW): 25.5Ω ($\pm 0.5 \Omega$)
- 3.3 Temperature Co-efficient (α): $\geq 0.003925 \Omega/\Omega/^{\circ}\text{C}$
- 3.4 Resistance Ratio (W(302.9146K)): ≥ 1.11807
- 3.5 Stability/Drift $\leq 0.006^{\circ}\text{C}/\text{year}$ or better
- 3.6 Self-heating at TPW: $< 0.01^{\circ}\text{C}$ at 1 mA excitation
- 3.7 Current Rating: 1 mA typical measuring current
- 3.8 Sensor Materials: Coiled platinum wire embedded in high-purity ceramic or glass insulator. Sheath Diameter: 6 mm $\pm$ 0.5 mm, Length: 380 mm to 480mm
- 3.9 Sheath material: Quartz (fused silica)
- 3.10 Calibration: Calibrated at fixed points: TPHg, TPW, MPGa&FPIn, etc

4 Secondary PRT with Calibration Options (04 Nos.)

- 4.1 Temperature Range: -200 °C to 600 °C or better
- 4.2 Nominal Resistance: $100\ \Omega \pm 0.05\ \Omega$ at 0 °C
- 4.3 Self-heating (in 0°C bath): Not more than 50 mW/°C
- 4.4 Temperature Co-efficient (α): $\geq 0.003925\ \Omega/\Omega/^\circ\text{C}$
- 4.5 Accuracy: $\pm 0.025\ ^\circ\text{C}$ to $\pm 0.05\ ^\circ\text{C}$ at max temperature
- 4.6 Drift: $\pm 0.01\ ^\circ\text{C}$ at $0.01\ ^\circ\text{C}$ or better
- 4.7 Sensor Construction: Coiled platinum wire embedded in high-purity ceramic or glass insulator. Sheath Diameter: 6 mm $\pm$ 0.5 mm, Length: 380 mm to 480 mm
- 4.8 Sheath Materials: Stainless InconelTM 600,

5 SPRT/ PRT Readout Thermometer Device that can read minimum Six Sensors at a time.

- 5.1 Channel Capacity: Total Channels Six, 6 Resistance channels, 6 Alarm outputs
- 5.2 Input Protection: 50 V, Terminals and Ranges
- 5.3 Math Channels: Capable to perform all mathematical six Operations (Sum, Difference, Multiply, Divide, Polynomial, Power, Square root, Reciprocal, Exponential, Logarithm, Absolute value, Average, Maximum, Minimum)
- 5.4 Scan Rate: Six Channels per Second (0.1 seconds per channel)
- 5.5 Display Resolution: 6.5 Digits

Applicable for point 3 and 4

6 Long Scale High Accuracy 8.5 Digit DMM is required for measurement of pH electrode voltages and other general purposes.

- 6.1 Range: DC Voltage: 100mV to 300V or better
- 6.2 Accuracy : $2.7\ \mu\text{V/V}$ (95%) $3.5\ \mu\text{V}$ (99%) 1 Year or better
- 6.3 Resolution: 8.5 Digit
- 6.4 Resistance: 1 Ohm to 10GOhm or better
- 6.5 Capacitance: Range: 1nF to 100 mF
- 6.6 Frequency: Voltage, upto 10 MHz, Current, upto 100 kHz, Accuracy: $0.5\ \mu\text{Hz/Hz}$, 1 year

7. High Precision Barometer

- 7.1 High precision pressure measuring system with modular sensor of range upto 1.2 bar absolute or better is required for monitoring barometric pressure.
- 7.2 Normal operating range: 15 to 35
- 7.3 Resolution of 1ppm or better,
- 7.4 Accuracy 0.01% of reading or better.
- 7.5 Barometer must have a Quartz-based sensor for best long-term stability
- 7.6 Computer interfacing facility is necessary for complete automation.

8. Hygrometer with logging facility:

- 8.1 Temperature range: (0° C or lower) to (50°C or higher)
- 8.2 Temp. accuracy: $\pm 0.20^\circ\text{C}$ or better (from 16°C to 24°C)
- 8.3 Temp. resolution: 0.01% or higher

8.4 RH range: 0% RH to 100 % RH

8.5 RH Accuracy: $\pm 1.5\%$ RH or better from 20% RH to 70% RH

8.6 RH Resolution: 0.01% or higher

9. Data acquisition and storagesystem

Data acquisition, storage and analyzer system with printer and 5 KVA with UPS for 1 hour back up, with latest Window operating system along with customized software which includes with perpetual license and backup for all soft wares. 16GB RAM, SSD 500GB, original MS WIN 10 PROF, graphic card, 27" inch or more display. Interface with RS232and IEEE and data transferring software for all parameters to PCs. In case of any update in the operating system, customized software must be updated during the warranty period, if required.

Approval should be taken from indenter before finalizing the software.

10. Gas Manifold with associated tubing for purging high purity hydrogen, nitrogen, oxygen and Argon gases
11. Dome hood: Transparent dome hood, made of PET-G plastic, is designed to capture high dispersion contaminants. It can be attached directly on minihood made of materials like Aluminium, with min 50 mm Size
12. Lab Pure water system for generating pure water of resistivity 18 Mohm.cm at 25°C or better, flow rate of 1.5L/min or more
13. Steel storage racks in powder coating finish. 6ft× 3 ft × 1.5ft or more (L×B×H) (02 Nos.)
14. Complete system has to be manufactured and supplied for realization of pH system. All parts and equipment must be planned to interface seamlessly with each other to achieve required results. The system should work with Indian voltage of 230VAC/50Hz
15. Hydrogen cabinet has to be designed and fabricated with all tubing, manifolds and valves required to distribute hydrogen gas to the system as per requirement. Any additional fittings/valves needed have to be supplied during execution if necessary for project.
16. All additional accessories required for the successful installation of the system shall be provided by the supplier at the time of installation
17. Warranty: 2 years after installation
18. Training: Training on usage of system to be provided at CSIR-NPL, India or other suitable place at supplier cost.
19. Delivery of the item should be done in 6-8 Months after placing purchase order and 3 months for installation and commissioning and training of the system

Acceptance Criteria

20. After installation, vendor should demonstrate the measurement result with uncertainty budget.
21. The primary method should ensure measurements with at least four decimal places of precision at pH 4.0, 7.0, and 9.0, with high accuracy and reproducibility. The uncertainty budget should be comparable to that of National Metrology Institutes (NMIs) in developed countries.