

**DEPARTMENT OF FACTORIES & BOILERS****No. DFB/11026/2022-A3**

“SURAKSHA BHAVAN”  
OFFICE OF THE DIRECTOR OF  
FACTORIES AND BOILERS,  
MEDICAL COLLEGE P.O,  
THIRUVANANTHAPURAM,  
DATED:22-08-2024

PHONE: 0471- 2441597,2440974.

Website:www.fabkerala.gov.in

email: [director@fabkerala.gov.in](mailto:director@fabkerala.gov.in)**E- TENDER NOTICE**

E-tenders in two cover system are invited from the manufactures or their authorized dealers for the **Supply, Installation, Testing and Commissioning of (Two Numbers) 15 m height Automated Weather Station/Metrological tower** as per the specifications and quantity **(Annexure-I)** of this department. The tender is to be submitted as e-tenders through <https://etenders.kerala.gov.in>. Since this is an e-tender, only those bidders who have enrolled in the above portal with their own Digital Signature Certificate (DSC) can participate in the tender.

E-Tender document and other details can be obtained from the above e-portal.

The tender has two parts

1. Technical bid
2. Financial bid (BOQ)

<b>Tender No. with PAC</b>	<b>:</b>	<b><u>F&amp;B-E-TENDER NO:01/2024-25</u></b> <b>23 lakh</b>		
<b>Document sale start date and time</b>	<b>:</b>	<b>17-08-2024</b>	<b>-</b>	<b>04.00PM</b>
<b>Bid Submission start date and time</b>	<b>:</b>	<b>30-08-2024</b>	<b>-</b>	<b>05.00PM</b>
<b>Closing date of e-tender</b>	<b>:</b>	<b>18-09-2024</b>	<b>-</b>	<b>04.00PM</b>
<b>Date of pre bid meeting(through Google meet)</b> <b>(Google meet link: <a href="https://meet.google.com/vne-ckwb-kjw">meet.google.com/ vne-ckwb-kjw</a>)</b>	<b>:</b>	<b>30-08-2024</b>	<b>-</b>	<b>03.00PM</b>
<b>Last date &amp; time of receipt of e-Tender</b>	<b>:</b>	<b>18-09-2024</b>	<b>-</b>	<b>04.00PM</b>
<b>Date&amp; Time of opening of e-Tender</b>	<b>:</b>			
<b>1. Technical bid</b>	<b>:</b>	<b>23-09-2024-12.00 PM</b>		
<b>2. Financial bid</b>	<b>:</b>	<b>26-09-2024-02.00 PM</b> (The date may change depending on the completion of technical evaluation)		
<b>Cost of e-Tender (online submission)</b>	<b>:</b>	<b>Rs.3500/-+18%GST</b> (GST shall be paid by the bidder through GST payment methods in reverse charge basis)		
<b>Date up to which the rates are to remain firm for acceptance</b>		<b>31.03.2025</b>		

<b>E.M.D</b>		<b>1% of PAC in online payment</b>
<b>Security Deposit</b>		<b>5% of total contract amount. (To be furnished as Account Payee Demand Draft or Bank guarantee of a nationalized or scheduled commercial bank by the successful bidder )</b>
<b>Period of Supply and Completion of work</b>		<b>Within 45 days from the date of supply order.</b>

The bidder desiring to take part in the bid shall log into <https://etenders.kerala.gov.in> and then select tender and make the payment. Bidders will be directed to the payment gateway page of the State Bank of India. There are two options - State Bank of India Net banking payment, payment through MOPS from other banks to the payment gateway of SBI. For obtaining Digital Signature Certificate (DSC) and necessary portal enrolment bidders can visit the website <https://etenders.kerala.gov.in>. Tenders will be opened online in the presence of such tenderers or their authorized representatives who have logged in before the prescribed time of opening of technical & financial bids. If the date fixed for opening happens to be a holiday / due to internet failure, the tender will be opened in the next working day, at the same time.

The price of the e-tender form shall be received only through online payment SB/SBI MOPS. The cost should be quoted in Indian currency only.

**The tender has two covers**

- Technical cover
- financial cover.
- **The first cover ie: the Technical cover shall be uploaded with the following documents.**

**1. Scanned copy of Departmental Technical specification of the product intended to supply duly signed and stamped by the bidder.**

- The Bidder should sign, stamp and upload the Departmental Technical Specification as such, along with the tender. Uploading the Duly signed and stamped Departmental Technical Specification will be treated as the applicant is ready to supply and install the product as per the Departmental Technical Specification and quantity without any deviation.
- In case of any deviation from the Departmental Technical Specification, the bidder shall fill and upload specification compliance statement in the following Performa clearly marking the details of deviation. The committee will check the admissibility of the deviation mentioned by the bidder and the tender will be admitted only if the deviation proposed by the bidder is acceptable for the

Departmental Technical Committee. Deviations, if any shall be strictly marked in the Specification Compliance Statement itself. If the applicant uploaded the Specification Compliance Statement and no marking is made in the column provided for marking deviation in the statement, it will be treated as the applicant is ready to supply the product as per the Departmental Technical Specification without any deviation.

**Specification Compliance Statement for Supply, Installation, Testing and Commissioning of 15 m height Automated Weather Station/Metrological tower**

Sl. No	Detail of Departmental Technical Specification	Detail of the product offered	Deviation from Departmental Technical Specification, if any
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2. **Details of Tender fee payment, Paid Receipt of the GST of Tender Fee (GST shall be paid by the bidder through payment methods in reverse charge basis). In case of Tender fee exemption in payment, provide such details**
3. **Scanned copy of the agreement in the prescribed format (Attached) in Kerala Stamp paper worth Rs. 200/-**
4. **Scanned copy of the declaration by the bidder on Kerala Stamp Paper worth Rs.200/- to the effect that no Vigilance Case has been charge sheeted and pending trial at Court against him/his partner/s or any of his directors in connection with fabrication/supply of similar product made earlier to this Department.**

*I, ... (Name, Address, firm), do hereby declare that no Vigilance Case have been charge sheeted and pending trial at Court against me, any of my partner/s or any of my directors, in connection with fabrication/supply of similar product made earlier to Kerala Factories and Boilers Department/Government of Kerala and none of us or our firm is blacklisted by any Government agencies/ PSUs in Kerala.*

5. **Brochures or relevant literature for Maintaining the System (In English).**
  6. **AMC cost for 3 years post warranty and Cost for spares for 5 years maintenance.**
- **Pre bid meeting:** A pre bid meeting will be held through **Google meet (Google meet link: [meet.google.com/ vne-ckwb-kjw](https://meet.google.com/vne-ckwb-kjw))** on the date and time as mentioned above. Bidders can participate in the pre bid meeting and clarify their doubts, if any. They can clarify their doubts by sending an email to "safetycellekm@fabkerala.gov.in/directorate.fab@kerala.gov.in and by contacting The Nodal officer (ROCERS), in phone number 09446744884.
  - **Tender Opening and evaluation**

a) Soon after the opening of the tender, the tenderers are requested to come to Surakshabhavan, Directorate of Factories and Boilers, Kumarapuram, Thiruvananthapuram with documents and presentations on all the technical aspects of the equipment and accessories for the full understanding of the Technical Committee members on the date specified.

b) There will not be any further communications about the opening of the technical and financial bids separately. Soon on opening the technical bid of e-tenders, the committee constituted to evaluate the technical aspects, will meet and scrutinize the technical specification of equipment submitted with the e-tender.

c) Technical expert of Bidder should be available for explaining all the aspects of the item, during the time of presentation and evaluation.

d) During evaluation, the tenders will be first evaluated for the compliance of Departmental Technical Specification. Only those tenders which comply the Departmental Technical Specifications will be considered for subsequent financial evaluation.

e) The financial bid belonging to those dealers/suppliers who qualified in the technical bid of the equipment as required above by Kerala Factories and Boilers Department alone will be considered.

f) On finalization of technical evaluation, the second cover i.e. the financial bid of the concerned competent firm will be evaluated by the Finance Committee (Finance) for consideration.

g) The originals of all the required documents like Technical specification compliance statement of the product, Agreement in stamp paper worth Rs. 200/-, Brouchers/Photograph of the item intended to supply, OEM Authorization Letter and other required documents shall be produced before the undersigned soon after financial bid opening.

h) After opening the financial bid, financial evaluation will be done and the details will be uploaded in the financial evaluation field of the e-tender site only after consultation with the DPC. The decision of the DPC shall be final on the admissibility of the tender and thereafter awarding of the contract.

i) The right of acceptance or rejection of e-tender or cancelling the tender without assigning any reason, at any stage of tendering, is solemnly vested with the Director of Factories and Boilers, Kerala or a committee appointed by him.

- **Payment Condition:** 100% payment only after the completion of the work and acceptance by the Nodal officer (ROCERS).
- **Location of Supply and Work:** The firm has to supply and install the items at the location specified as per direction from the Nodal officer of ROCERS project/ undersigned At Ernakulam District.
- **The supplier should confirm the repair and service facilities, availability of spare parts etc. of the items supplied by them for a**

**period of 5 years. The selected bidders should attend the repair of machinery and equipment within a time of 48 hours of registration of complaints.**

- **One complete AWS system (not necessarily with tower/tripod) should be demonstrated in front of the technical evaluation committee to check its accuracy, data reliability and transmission capability (Two way communication with data logger through 4G/3G/GSM/GPRS modem shall be demonstrated. One integrated AWS system should be kept for a period for 4 days at Factories and Boilers Office/ site for the purpose of monitoring the performance of the system. The technical committee will arrive at a final decision on the success of the technical bids after evaluation of the performance of the AWS. Only firms certified by the technical committee as successful in technical bidding will be considered for financial bid evaluation.**

- The rules and regulations prescribed for e-tenders by the Government of Kerala/ Store Purchase Manual, Government of Kerala shall be applicable to this e-tender also.

If any tenderer wants any clarification on any aspect of the tender, he/she can send email to "safetycellekm@fabkerala.gov.in/directorate.fab@kerala.gov.in, and by contacting The Nodal officer (ROCERS), in phone number 09446744884.

Details with respect to the e-tender and the details of specifications of the item to be purchase can be obtained from the e-tender website <https://etenderskerala.gov.in>.

DIRECTOR OF FACTORIES & BOILES

**(Annexure-I)**

**Specification for 15 m height Automated Weather Station/  
Metrological tower for ROCERS**

Supply, Installation, Commissioning of 15 m height Automated Weather Station/ Metrological tower comprising of sensors for Wind speed, Wind Direction, Air temperature, Relative Humidity, Atmospheric pressure, Rainfall, Solar Radiation, Data logger, power supply unit, software for operation and data archival, Solar panel, battery, GPRS communication

**Quantity required: 2 no.s**

1	Tower height :	15.0 m (Triangular Tower)
2	Tower support – Accessories / Assembly	Triangular stand/base plate with tower sections and anchor fastening nuts and bolts for Guy wire support.

		<p>Corrosion resistant construction with fireproofing of 2 hours rating.</p> <p><b>Stable Foundation for the tower shall be provided.</b></p> <p><b>Verticality of tower should be ensured.</b></p> <p><b>Adequate lightning protection shall be provided for the tower with earth pit and required cabling.</b></p> <p><b>The design, construction &amp; installation of the tower shall take into consideration following standards</b></p> <p><b>IS 800 : 2007</b></p> <p><b>IS 875 Part3:2015</b></p> <p><b>IS 456 : 2000</b></p> <p><b>IS 1161 : 1998</b></p>
3	Tower stability	Maximum Safe wind speed unguyed: 50 Km/h (13.88 m/s)
4	Sensor mounting boom levels & boom stability and Enclosure	<p>Temperature, Humidity sensor at 2m, 10m, height above ground level</p> <p>Wind speed and wind direction sensor at height 8m, 15 m above ground level.</p> <p>Sensors shall be provided with mounting hardware kit.</p> <p>Pressure sensor at 2 m height above ground level</p> <p>Rain water gauge at 1.5 m height AGL.</p> <p>Solar radiation sensor at 3m height AGL</p>
5	Sensors	
	<p>Temperature –</p> <p><b>Temperature sensor at 2m and temperature sensor at 10 m levels with cables 17 ft and 40 ft or sufficient length to connect to data logger :</b></p> <p>Quantity : 2 nos.</p>	<p><b>Range : 0, deg C to 60 deg C</b></p> <p><b>Accuracy 0.4 deg C over the range of 0 to 60 deg C</b></p> <p><b>Resolution : 0.1 deg C</b></p> <p><b>Housing classification : IP 67</b></p> <p><b>Output : compatible with data logger</b></p>
	<p>Relative Humidity – 2m , 10 m levels with 17 ft and 40 ft sensor cables or sufficient length to connect to data logger :</p> <p>Quantity : 2 nos.</p>	<p><b>Range 0 to 100 % RH</b></p> <p><b>Accuracy = +/- 3% for RH 80% to 100%, or better</b></p> <p><b>Accuracy = +/- 0.8% for RH 0% to 80%. or better</b></p> <p><b>Housing classification : IP 67</b></p> <p><b>Output : compatible with data logger</b></p> <p><b>Naturally aspirated radiation shield should be provided with the sensor</b></p>
	<p>Wind speed at 8 m level and 15 meters with cables 17 ft and 40 ft or sufficient length to connect to data logger :</p> <p>Quantity : 2 nos.</p>	<p><b>Type : Cup Anemometer</b></p> <p>Range 0 to 50 m/s</p> <p>Accuracy +/- 0.5 m/s</p> <p><b>Threshold 0.5 m/s</b></p> <p><b>Output : compatible with data logger</b></p>
	<p>Wind direction speed at 8 m level and 15 meters with cables 17 ft a</p>	<p>Range Mechanical : 0 – 360 deg</p> <p>Accuracy +/- 5% or better</p> <p><b>Output : compatible with data logger</b></p>

	nd 40 ft or sufficient length to connect to data logger : Quantity : 2 nos.	
	Atmospheric pressure 2 level Quantity : 1 no.	Range 600 hpa – 1100 hpa Accuracy +/- 0.5 hpa <b>Output : compatible with data logger</b>
	Solar radiation SW sensor with 17 ft cable, Quantity : 1 no.	Spectral range : 400 to 1100 nm <b>Sensitivity : 0.2 mV/W/m<sup>2</sup></b> Calibration factor : 5 w/m <sup>2</sup> mv Long term stability : < 2% per year Operating temperature range : -40 deg C to +70 deg C RH range 0 to 100 % Range 0- 2000 w/m <sup>2</sup> Accuracy : +/- 5% for daily total radiation <b>Output : compatible with data logger</b>
	Rain gauge	Tipping bucket rain gauge/magnetic reed switch Material : Anodised Aluminium or Stainless Steel. Locking Snap Material : SS Resolution 0.1 mm per tip Accuracy : 1% upto 50mm/ Hr <b>Volume per tip : 4.73 ml / tip</b> <b>Output : compatible with data logger</b>
6	Data logging system	Measurement and control industrial grade data logging system consisting of sensor signal conditioner modules, with application software Analog -6 channel, Pulse counter 6 channels, and Digital i/o 7 channels <b>or more.</b> Communication port : RS 232 and USB Input analog voltage – 100 mv to + 2500 mV Power 10-32 V DC Minimum scan rate of 1 HZ Analog Resolution : 0.30 micro voltage Idle current drain : average 1.5 mA(@12 V DC) <b>Active current drain: average 5 mA@12 V DC for 1 HZ</b> Temperature range -40 deg C to 70 deg C Real time clock accuracy : +/-1 minute per month Communication protocols : FTP, PakBus, Modbus DNP3, SDI-12, TCP, UDP Embedded web page for direct connection via web browser Data storage for 4 years with 1 minute duration.
7	Communications hardware	GPRS Modem with Antenna GSM module should seamlessly work with more than one mobile network at site

		<p>Network Technology: 4 G LTE WAN, Compatible with data loggers with i/o Communication port DB9 Male Rs232 serial port, DB9 female connection option Data should be accessible from any location using the world wide web (internet) on a desk top or laptop running the latest windows /linux system using compatible software. Inbuilt GPRS modem in data logger is not acceptable Smartphone application should be provided to have facility to retrieve old data, view real time data and upload the program files At the receiving station, the software should facilitate real time data display in graphical and digital mode</p>
8	Power supply Unit	<p>Solar panel of not less than 100 watts, 12 Volts, with mount 10 feet lead Sealed SMF battery not less than 75 AH Power supply charge controller Regulator, 12 V-24 V DC Inbuilt Charge Regulator for charging the battery from Solar Panel UPS <b>The power supply system shall be adequate to supply continuous power to the system even in cloudy weather condition for a period of 30 days.</b> <b>Power supply provision shall be provided with 230 V AC to 12 V DC adaptor complete with surge current protection system to work in event of failure of the Battery UPS system.</b></p>
9	Data formats	<p><b>The data shall be supplied in the required format supplied with fixed number of total characters, decimal places as per the sample data sheet, output in .csv format.</b> <b>The data transfer through FTP shall be made real time at an interval of less than or equal to 1 minute or better with facility to change the time interval of data transfer remotely.</b> <b>Standard deviation data for wind speed at two levels shall be provided along with the data.</b></p>
10	Mounting hardware / enclosure / shelter box	<p>Enclosure : Weather resistant enclosure for data logger including mounting device – enclosure minimum of 10 X 12 inch size should be provided to data logger and power supply unit. Water proof enclosure for battery with lock provision.</p>
11	Terms and conditions	<p>The system is to be delivered, installed, and commissioned at the field location indicated by the indenting firm at the time of installation Training to be provided in operations, control and maintenance of the AWS tower to the required staff</p>



		<p>Real time data transmission to the receiving computers and data archival has to be demonstrated</p> <p>Complete user manual/instruction manual with installation drawings describing the operation and control of data processing to be provided</p> <p>Acceptance of the item will be based on the performance of the entire system with respect to the specifications mentioned</p> <p>If there is any deviation in quality and technical details of the items, the whole set of offer will not be considered.</p>
12	Instruction manual	Hard copy of all documents shall be provided.
13	Additional information	<p>a. Instruction manuals data sheets, installation drawings, training, wiring, conduit, installation, equipment or <b>labour</b>, certification, calibration certificates, validation, warranty, certificate of calibration and after sales service as applicable shall be included in quotation.</p> <p>b. Taxes, duties, shipping costs etc. are to be included. Prices shall be in Indian Rupees.</p> <p>c. Separate payment terms shall be submitted along with quotation.</p> <p>d. All material required for the project shall be transported to the site and all safety and statutory regulations shall be met in carrying out the work.</p> <p>e. The entire work shall be carried out adhering to all relevant standards, regulations and the best engineering practices, utilizing new best quality materials and best quality workmanship. The absence of specification on any aspect implies that the best engineering practices shall prevail.</p>
14	Warranty	<p>2 years onsite warranty for all components including solar panel and battery, including inspection and calibration at site once in 3 months. AMC cost for 3 years post warranty should be specified.</p> <p>Cost for spares for 5 years maintenance should be furnished.</p>

Director of Factories & Boilers

### **Meteorological Data Format for Automated Weather Station.**

#### **Transmitted data file**

The data file in .csv format may be sent one record at a time every 10 minutes for 24 hours duration with same file name. This file would overwrite itself in the destination folder for each day.

#### **Archived data file.**

The archive file for each day at the specified interval of 1minute for the met data may be stored in the data logger in remotely downloadable form in the same format with data appending in consecutive lines to the same file for each day.

The format shall be as follows :

**Sample data:**

00001111,NA,NA,2024.01.17,13:18:21,1006.0,33.2,32.0,62.4,64.7,01.5,01.1,236.2,217.7,0800.0,0000.0

**Description of fields:**

Station id , latitude, longitude,date in yyyy.mm.dd, time in hh:mm:ss, pressure hpa, temperature deg C sensor 1, temperature deg C sensor 2, RH sensor 1, RH sensor 2, wind speed sensor 1, wind speed sensor2, wind direction sensor 1, wind directions sensor 2, solar radiation, rain fall (total number of characters in each record shall be same).

**File name for transmitted data :**file name .csv

Parameter	Type, Field width
StationID	Character , 8
Latitude[deg]	Character, 2
Longitude[deg]	Character, 2
Date[yyyy.mm.dd]	Date, (10 characters)
Time[HH:MM:SS]	Time,(10 characters)
PRESSURE[HPA]	Real 5.1 (6 characters)
TEMPERATURE1[DEGC]	Real, F3.1 4 characters including decimal point
TEMPERATURE2[DEGC]	Real, F3.1 4 characters
HUMIDITY1[%]	Real, F3.1 4 characters
HUMIDITY2[%]	Real, F3.1 4 characters
WINDSPEED1[m/s]	Real, F3.1 4 characters
WINDSPEED2[m/s]	Real, F3.1 4 characters

WINDDIR1[DEG]	Real, F4.1 5 characters
WINDDIR2[DEG]	Real, F4.1 5 characters
SOLARRAD[W/M2]	Real 5.1 6 characters
RAINFALL[MM]	Real F5.1 6 characters

Director of Factories & Boilers