

REQUEST FOR PROPOSAL (RFP) DOCUMENT

FOR

**Procurement of Portable Automatic Weather Stations for
Regional Training Centre (RTC), New Delhi – 2 Nos**

**Regional Training Centre
Information Communication & Instrumentation Training Centre
India Meteorological Department,
Ministry of Earth Sciences, Govt. of India,
Mausam Bhavan, Lodhi Road,
New Delhi – 110003.**



1. INTRODUCTION

India Meteorological Department owns and operates a network of over 1000 Automatic Weather Stations (AWS) and about 1400 Automatic Rain Gauge (ARG) stations across the country.

The networks are being maintained by the Meteorological Centres and Regional Meteorological Centres under the technical guidance of the Surface Instruments Division, O/o the Head, Climate Research and Services, India Meteorological Department, Pune.

The Regional Training Centre (RTC) for Information Communication and Instrumentation at IMD, HQ, New Delhi is the nodal office for human resource development to ensure capacity building and to keep abreast with the technological advancements in meteorological instruments which has always been one of the prime thrust areas of the India Meteorological Department.

This RFP is invitation to OEMs/Authorized representatives of the OEMs to participate and submit competitive bid for the supply, and commissioning of **complete Portable Automatic Weather Stations**.

2. SCOPE OF WORK

- a) The supplier shall be responsible to provide an **end-to-end solution** and implement the project on **turn-key basis**.
- b) Transportation/Delivery of consignment containing items mentioned in list of deliverables to respective Regional Training Centre (RTC), IMD HQ., New Delhi.
- c) Supply and commissioning of complete set of portable AWS meeting the technical specifications given in Para 3 and as per list of deliverables is given in Para 14 of this RFP Document.
- d) Data from portable AWS shall be disseminated only via FTP to two IP addresses and also two emails IDs in .csv format for uninterrupted transmission and reception of data at the central server of IMD at Pune. The details of IMD data format for transmission of data is given in **Annexure – 1**. In addition, the data shall also be displayed in a software locally at the PC in RTC, New Delhi for training purpose.
- e) The user shall be able to configure and program the Data logger for data transmission as per user defined time interval to desired destinations so as to ensure the timely data reception at Central Receiving Station, Pune and a PC at RTC, New Delhi.
- f) Training of IMD officials on configuration, programming, operation, maintenance and troubleshooting of complete AWS systems including software and programming of data logger to nodal officers designated by Head ISSD, IMD, New Delhi.
- g) The supplier shall supply two hard bound copies of operation and maintenance manuals, technical specifications details, calibration sheet of each sensors and soft copy of the same by an email to icitrg.centre@imd.gov.in.
- h) Warranty for complete portable AWS system for 5 years from the date of test and acceptance by the consignee.





3. TECHICAL SPECIFICATIONS OF AWS SYSTEMS

3.1. Specifications of data loggers

The data logger shall be a state of the art, rugged and well proven system suitable for meteorological applications and outdoor operations. The data logger should have been used for Meteorological applications for at last five years. The OEM shall support repair/spares of data logger for a period of at least 10 years.

Sr. No.	Feature	Requirement/ Specification
1	Processor and Design	32-bit with hardware FPU Data logger shall be modular in design to enable user to add additional input channels (both analog and digital) without requiring removal of system from field, configure the channels and ports as per user requirement and the Data logger should be CE Compliant.
2	ADC	Datalogger should have A/D converter with 24 bits or more
3	Scan rate	Datalogger should have 1000 Hz or better
4	Analog input	The data logger shall have Analog Data Inputs of 16 single ended and Input range. The data logger should have multiple input ranges along with "Auto Ranging" facility to measure the sensors accurately without any loss of accuracy. The data logger should have this input range: +/- 5000mV, +/- 1000mV, +/- 200mV: 0 to 5 V DC. The 4 to 20 mA signal should be provided with the logger.
5	Measurement Accuracy	The logger shall ensure accurate measurement even in noisy environments, maintaining data integrity. The logger shall minimize errors associated with voltage offset resulting in highly accurate readings. The logger shall have feature to calibrate individual channels to enhance measurement accuracy.
6	Digital I/O	The logger shall have 8 terminals configurable for digital input and output which shall include RS-232 (1 full duplex or 2 half duplex) RS-485/RS422 (One full duplex or two half duplex), SDI-12 (four independent SDI-12 ports) I2C etc.
7	Sampling and Scan rates	The logger shall have programmable sampling and logging rates ranging from milliseconds to hours providing flexibility to capture data at desired frequency. Even with rapid scan rate, the logger shall be capable of simultaneous data collection from multiple sensors.

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8	Excitation terminal	The data logger shall provide 4 voltage excitation terminals or more.
9	Communication ports	The data logger should have Ethernet, USB MicroB, RS-232, RS-422, RS-485 for the communication. The Data logger shall have a dedicated port (RS232/USB/Ethernet Port) to interface GPRS modem for transmission of data. One Ethernet Port shall be provided to make the data available on a Computer for display of local data and slave display Desktop computers. Data from Ethernet port to local computer shall be every one second. The data coming out of Ethernet port shall be in the CSV text format.
10	Data storage and memory	The data logger shall have sufficient memory to store data stream containing one min average of all sensors and battery voltage, health status for a period . Once the memory is exhausted, the oldest data record shall be erased, and new record shall be stored in the memory. The datalogger should have the expandable memory up to 16GB.
11	Switched Power Terminals	The logger shall provide two 12 V switched power terminals.
12	RTC	Battery backed while external power source is disconnected. Accuracy: 1 ms ±5 min per year with provision for GPS correction to ±10 µs
	Software	Software in data Logger shall be upgradable by transferring upgraded software to Data logger from a Laptop through USB and have the facility to display the real time data on the user screen.
	SMS and Mail facility	The alert facility over SMS and email shall be available in the data logger.
	Mobile application	Mobile application shall be provided for the real time viewing and downloading of the data.
13	Power requirements	10 – 14 VDC input
14	Programming and Software capabilities	The logger shall have the user-friendly programming language, empowering the end users for easy development of customized data acquisition programs so as to take control of individual channels of the logger, execute the multiple customized programs simultaneously in the logger and get the





		desired output without depending on the OEM/bidder.
15	Future ready features	It shall be possible to interface thermopile type pyranometer with millivolt output.
16	Telemetry Techniques	General Packet Radio Service (GPRS)

3.2. GPRS MODEM WITH SIM FACILITY

GPRS Modem (compatible with 3G and 4G, 5G, IOT SIM Machine to Machine communication) with SIM facility and also have provision of fast and reliable wireless data communications along with support for IP based access to the central server IP. The following technical specifications are indicative.

- Operating on standard SIM card.
- Suitable High gain (minimum 8 dB) GPRS Antenna for reliable communication and to connect to nearest mobile tower.
- Operate with 12V DC Power supply.
- Provision to configure to SIM Cards used and IP address and Port no of central Data receiving server. Should have facility for configuring at least TWO IP addresses and Ports of TWO no. of Servers.
- GPRS facility with fast and reliable wireless data communications.
- Remote dial-up facility.
- Shall support SMS, Email, FTP and TCP/IP.
- Ethernet/RS 232/RS 485/USB interface with Datalogger.
- Indication of network availability (signal strength).
- Controlled Power supply supplied is to taken from Data logger to GPRS modem.

3.3. SENSORS

a) Air Temperature Relative Humidity Sensors

Air Temperature and Relative Humidity sensors		
A.	Air Temperature	
	a) Sensor type	Pt 100 RTD
	b) Measurement Range	-40 °C to +60 °C or better
	c) Accuracy (with radiation shield)	± 0.10 °C or better for +20°C to +60 °C ± 0.20 °C or better for other temperature ranges
	d) Reported Resolution	0.03 °C
	e) Repeatability	0.05 °C
	f) Output	SDI-12 V1.4 or better
B.	Relative Humidity	
	a) Sensor type	Capacitive / solid state
	b) Measurement Range	0% to 100%

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	c) Accuracy (including linearity, hysteresis and repeatability)	non- and $\pm 1.5\%$ (over the range 0 to 80% RH) $\pm 2.0\%$ (over the range 80 to 100% RH)
	d) Reported Resolution	0.05 % RH
	e) Output	SDI-12 V1.4 or better
C.	General Specifications	
	a) Operating power supply	10 – 14 VDC or better
	b) Power consumption	Less than 0.1 mA Quiescent mode: 50 μ A
	c) Sensor protection	Outer glass-filled polypropylene cap fitted with a stainless-steel mesh dust filter with nominal pore size of < 30 μ m. The sensor element shall have a PTFE protective film with a filtration efficiency of > 99.99% for particles of 200 nm or larger size.
	d) Reverse polarity protection	Required
	e) Electronics Sealing	IP67
	f) Connector	Metallic M12, 4-pole A-coded with IP67 protection level for reliable performance in corrosive and water vapour environment.
	g) Recalibration	Field replaceable chip Calibration shall be possible by simply changing the sensor element chip. Each sensor element shall be individually calibrated so that further adjustments of the sensor is not required.
	h) Main housing material	UV stabilized Polyethylene terephthalate (PET-P)
	i) EMC Compliance	IEC61326:2013 or better
	j) Cable	Polyurethane sheathed, screened cable
	k) Calibration Traceability	NIST and NPL Calibration traceability is required over entire sensor range.
D.	Calibration and Traceability	
	Certificate	All sensors shall be traceable to NIST / NPL. A hard copy of certificate of calibration and traceability over entire range of sensor shall be enclosed with each sensor. A copy of such certificate shall be enclosed with the technical bid.
E.	Cable and Connector	
	Teflon cable	Polyurethane sheathed, screened cable.
F.	Radiation Shield	





	a) Type	UV-stabilized white Thermoplastic
	b) Louvered	Minimum 9 Nos.
	c) Ventilation	Natural
	d) Mounting Accessories	Aluminium Mounting bracket and Stainless-steel U Bolt clamp. Suitable nut and bolts for fitting the Temperature and Humidity sensors with radiation shield with boom.
G.	Warranty	2 years from the date of test and acceptance of the sensors.

b) Atmospheric Pressure Sensors

Sr. No.	Feature	Requirements/Specifications
A.	Pressure sensors	
	a) Sensor Type	Solid state digital pressure transducer (Temperature compensated at -40 °C to +60 °C)
	b) Range	500 to 1100 hPa or better
	c) Accuracy	Calibration uncertainty: ± 0.15 hPa Uncertainty: ± 0.3 hPa (at 20 °C) Total Uncertainty: 0.5 hPa (at -40 °C to +60 °C) Long term stability: ± 0.1 hPa yr ⁻¹ Measurement noise: 0.05 hPa (RMS)
	d) Resolution	0.1
	e) Output	SDI-12. The transducer shall be direct to digital sensor without any reconversion taking place in the barometer.
	f) Unit	hPa
	g) Operating power supply	10 – 15 VDC or better
	h) Reverse polarity protection	Required
	i) Recalibration	Pre-calibrated field replaceable sensor card. The end user shall be able to easily remove and replace the pre-calibrated sensor card without requiring unmounting of equipment in the enclosure or need to send the sensor back to OEM.
	j) Recalibration downtime	Zero
B.	Cable length	
	Cable	Teflon shielded cable of required cores (1 m length)
C.	Fixtures	
	Nut, Bolts etc.	Suitable nuts, bolts and fixtures etc for fitting the Pressure sensors on the Enclosure.
D.	Calibration and Traceability	
	Calibration and Traceability Certificate	All sensors shall be traceable to NIST / NPL. A hard copy of certificate of calibration over entire range of sensor and entire range of operating temperature shall

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Sr. No.	Feature	Requirements/Specifications
		be enclosed with each sensor. The traceability certificate shall also be enclosed with each sensor. A sample certificate shall be enclosed with the technical bid.
E.	Warranty	
	Warranty	2 years from the date of test and acceptance of the sensors.

c) Ultrasonic Wind Sensors

No	Features	Specifications	
		Wind Speed	Wind Direction
1	Sensor type	Ultrasonic	
2	Range	0 – 75 m/s or better	0° to 360°
3	Accuracy	±0.5 m/s or better up to 10 m/sec, 2% above 10m/sec or better	±5° or better
4	Resolution	0.1 m/s	1°
5	Starting threshold	0.01 m/s	-
6	Response time	0.25 Seconds or better	
7	Output	SDI-12 V1.3 or V1.4	
8	Ultrasonic output	4 Hz or better	
9	Baud rate	All standard baud rate shall be user selectable.	
10	Parameters	Polar - Speed and Direction UV - 2 axis, signed Speed	
11	Unit	m/s, knots, kmph (user selectable)	° (Degree)
12	Moisture protection	IP66	
13	Operating temperature	-35°C to +70°C	
14	Operating humidity	< 5 % to 100% RH	
15	Power requirement	10-15 VDC, 20 mA or better	
16	Mechanical	Shall be possible to mount over a 2-inch GI pole hence suitable mounting is also required.	
17	Sensor Body	LURAN S KR 2861/1C ASA/PC or other suitable for Outdoor operation and immune to Lightning surges.	
18	Connector and cable	Suitable connector with 15 m Teflon shielded cable of required cores	
19	Manufacturing standard	The sensor shall be manufactured within ISO 9001:2015 quality system	
20	MTBF	Minimum 10 Years	





No	Features	Specifications	
		Wind Speed	Wind Direction
21	Calibration Certificate	All sensors shall be traceable to NIST /DKD/ NPL/IMD. The calibration shall be done over entire range of the sensor and a hard copy of certificate of calibration shall be submitted with each sensor. A sample calibration certificate shall be enclosed with the technical bid.	
22	Warranty	2 years from the date of test and acceptance of the sensors.	

d) Tipping Bucket Rain Gauges

Sr. No.	Feature	Requirement/Specification
1	Resolution	0.5 mm per tip
2	Collector diameter	20 cm
3	Type	Tipping Bucket technique with dual magnetic reed switch for redundancy with varistor protection against surges.
4	Accuracy	0 to 250 mm per hour $\pm 2\%$ 250 to 500 mm per hour: $\pm 3\%$
5	Bucket	Teflon-impregnated ASA plastic UV-stabilized or stainless steel.
6	Pivot/Bucket mechanism	Stainless Steel axle resting on corrosion free sapphire pivots
7	Flow control	In order to ensure accuracy of rainfall during high intensity rain events, the rain water shall not freely fall in to the tipping buckets through the collector. Instead, rain gauge shall have a flow control/siphon mechanism to allow rain water to flow at a uniform rate into the bucket through nozzle.
8	Output	Voltage free pulse for every tip
9	Enclosure (Collector and Base) material	Anodized power coated aluminum or stainless steel
10	Debris protection filter	Stainless steel debris protection filter to ensure that collector remains unclogged when leaves, bird droppings, dust and other debris fall in the collector.
11	Water outlet	The base of the rain gauge shall have two outlets at the bottom allowing for draining the water.
12	Levelling	Suitable levelling adjustment screws and spirit level must be provided on the base of TBRG for levelling the Tipping bucket Rain Gauge.
Accessories of TBRG		
13	Fixtures and fasteners	Suitable stainless-steel nuts, bolts, washers, fixtures for fitting the TBRG on Base Plate.

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3.4. ENCLOSURES

- a) A pre-wired, weather resistant enclosure of at least 16-inch (W) X 18 inch (H) with connectors on the outside of the enclosure. It shall be possible to connect the sensors with appropriate connector on the outside of the enclosure.
- b) The enclosure shall have backplate to mount the components easily and securely.

Sr. No.	Parameter	Specification
1	Colour of Enclosure	White
2	Construction	Fiberglass-reinforced polyester enclosure with door gasket, external grounding lug, stainless steel hinge, and lockable hasps
3	Enclosure Classification	NEMA 4X
4	Dimension	Approx. 18 (H) X 16 (W) X 9 (D) inches
5	Accessories	Complete set of enclosure kit comprising of desiccant, humidity indicator card, cable ties, wire tie tabs, putty, grommets, screws and PVC couplings, connectors, communication ports, enclosure mounting brackets.

3.5. POWER SUPPLY SYSTEM

The switch with fuse is required for power supply to the Data logger.

a) Battery

Sr. No.	Feature	Specification/Requirement
1	Nominal Voltage	Approx. 12 V
2	Type of Battery	Lithium-Iron-Phosphate
3	Rated capacity	Approx. 47 A to 50 A
4	Energy	~ 640 Wh
5	Charging voltage	~ 14.4 V \pm 0.2 V
6	Maximum charging (discharging) current	50 A (50 A)
7	Charge (Discharge) cut-off voltage	14.6 V (10.0 V)
8	Operating temperature	-5 °C to +60 °C
4	Warranty	2 years

3.6. TRIPOD TYPE MAST

- a) A general-purpose portable tripod suitable for mounting sensors, solar panels, antennas, instruments enclosure constructed from galvanized steel with individually adjusted legs allowing installation over uneven terrain.
- b) Height of mast 2 to 3 m adjustable.
- c) The mounts for meteorological sensors, enclosure shall also be supplied.
- d) Lightning rods, grounding rods, grounding cables, clamps, UV resistant cable ties, shall be supplied.





- e) It shall be possible to mount the enclosure on the tripod legs as well as mast.
- f) All required mounting accessories shall be supplied for a turnkey solution.

3.7 Laptop

The laptop will be used to interface with the Automatic Weather Station to collect real-time weather data, including temperature, humidity, wind speed, precipitation, and other meteorological variables. Having a dedicated laptop ensures that data from the AWS is accurately and efficiently processed, analyzed, and stored. A laptop provides the flexibility to take the workstation to various locations, which is particularly useful for fieldwork, on-site troubleshooting, and real-time data collection.

Quantity: 1

Specification: Processor: i7, RAM: 16GB RAM, Storage: 1 TB SSD, OS: Windows; Resolution: Full HD, Integrated Graphic Card, WIFI Internet connectivity, Warranty: 3 years

4. COMPREHENSIVE WARRANTY

- a) The supplier/OEM shall provide warranty of **five years** after test and acceptance of complete AWS.
- b) If within warranty period, any component of AWS become defective, IMD will inform to same to the supplier. The supplier shall collect these defective items and/or accessories from RTC, New Delhi and repair them within thirty (30) days from the date on which the faults are communicated by IMD without any additional cost to the purchaser. The supplier shall be responsible for to and fro shipping charges if defective components and/or accessories are required to be sent to OEM for repair.
- c) If fault rectification is not possible then faulty components and/or accessories shall be replaced with new units by the supplier within thirty (30) days from the date on which the faults are communicated by IMD.
- d) If the faulty components and/or accessories are not repaired or replaced within thirty days as mentioned in clauses above then a penalty of Rs.500/- will be imposed on the supplier per day per faulty item from the date on which fault was reported by IMD to the supplier.
- e) The performance security deposit will be retained by IMD for a period of 2 months beyond warranty period i.e., for a period of 26 months from the date of test and acceptance and returned to the supplier after deducting penalty charges, if any.
- f) The bidders shall submit an undertaking in the technical bid that repair and replacement of faulty components as mentioned above will be provided during warranty period.

5. TERMS AND CONDITIONS

- a) The bidders may be asked to submit/demonstrate sample of AWS and/or accessories of the make and model offered in response to this tender enquiry



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for technical evaluation at IMD, New Delhi. The demonstration shall clearly establish communication of data in requisite format through FTP to IMD server. The demonstration shall be at No cost and No commitment basis as a part of Technical Evaluation at IMD, New Delhi, or ONLINE as per decision of the technical evaluation committee.

- b) If the bidder does not comply with the request of technical evaluation committee to submit the sample of AWS and/or accessories for technical evaluation or fails to successfully demonstrate the requisite features and functionality of the AWS and/or accessories then such technical bid shall not be considered further for evaluation and is liable to be rejected.
- c) The bidder shall also be able to demonstrate interfacing of the different sensors with standard output and its accessories to the data logger.
- d) **The bidders must explicitly mention make and model of various components and accessories of AWS being offered in response to this tender enquiry. Bids with vague offers without mention of make and model of data logger and GPRS modem being offered are liable to be rejected.**
- e) The supplier shall supply two hard bound copies of operation and maintenance manuals, technical specifications details , calibration sheet of each sensors and soft copy of the same by an email to icitrq.centre@imd.gov.in.
- f) The eligibility of bidders is determined based on the Make in India category, in accordance with Government of India GRF rules.

6. DELIVERY SCHEDULE

Delivery of complete AWS – 2 Nos shall be done at RTC, New Delhi through a single consignment within **120 days** of placement of supply order. The training and commissioning of all AWS shall be completed within **150 days** of placement of supply order.

7. COMMISSIONING/TEST AND ACCEPTANCE

The AWS will be tested at RTC, New Delhi. The test and acceptance shall be conducted by officers nominated by the **Head, ISSD, IMD, New Delhi**. If any system component and/or accessory is found to be defective or in deviation to technical specifications mentioned in this document, the supplier shall replace it immediately with new unit.

8. TRAINING

The successful bidder shall impart a comprehensive **1 days training** on configuration, programming, operation, integration, maintenance and troubleshooting of AWS and software features to IMD officers. Hard copy of training material and documentation in English language shall be provided to the trainees.

9. PAYMENT TERMS

100 % payment shall be made after supply, installation and commissioning of all the AWS at the sites and completion of other requirements such as training etc.

10. BIDDER QUALIFICATION CRITERIA

- The bidder must be OEM or authorized representative of the OEM. The authorized representative of OEM shall enclose "Manufacturer's authorization certificate" with the technical bid.
- During the last 5 years, the bidder/OEM must have sold at least 4 Nos. of AWS (of make and model being offered) for meteorological applications. Documentary evidence in support of this shall be enclosed by the bidder with the technical bid.

11. DOCUMENTS TO BE SUBMITTED BY THE SUPPLIER

A document containing make & model, serial number, date of manufacturing of various AWS components. This document shall be provided in the form of Microsoft word/ Microsoft Excel file.

12. COMPLIANCE STATEMENT

The tenderer shall submit a detailed item-wise compliance/ non-compliance statement referring para-wise/sub-para wise to the requirements given in the document, for quick evaluation of tender and for any future reference. The compliance statement shall be supported by original brochure(s) of the equipment or sub component from the manufacturer. In case the original brochure is silent on any part of tender specification, it shall be supported by an undertaking by the manufacturer along with user certificate* for that particular equipment/ sub-component, if claimed complied. The technical specifications and other requirements contained in this document are essentially required by the indenter. However, reasons for non-compliance, if any, for certain limited paras, or even sub-paras of the document may also be given by the tenderer. **Silence or inadequate information on any part of the technical specification, any conditional compliance or failure / omission to provide any such details will be treated as non-compliance.** All non-compliance of specifications, even of small nature, should be clearly brought out.

Sample format for Compliance (C)/ Non- Compliance (NC) statement:

Clause/Para/Su b-para no.	Item description as per IMD specification	Compliance (C)/ Non- Compliance (NC)	Remarks (if any)/ Supporting Documents (wherever required)
1	Introduction	Understood	
2	Scope of Work	C or NC	
2.1	Technical Specifications	C or NC	

13. LIST OF DELIVERABLES as Annexure II

Sample format for list of deliverables

S.No	Name of deliverable item/store	Qty.	Make	Model	Unit Cost			Total Cost
					Unit Cost	Applicable taxes and duties	Total Unit Cost	
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Annexure – I

Details of IMD data format for transmission of data

DATA FORMAT FOR GPRS BASED AWS**META DATA: -**

- 1) STATE
- 2) DISTRICT
- 3) STATION NAME
- 4) STATION ID (8 Digit Alphanumeric)
- 5) LATITUDE (Degree, minutes and seconds)
- 6) LONGITUDE (Degree, minutes and seconds)
- 7) ALTITUDE (Metre) (2 Decimal place e.g. 80.12 m)
- 8) TYPE FOR AWS/ ARG (2 Digit)
 - 00 - ARG
 - 01 - AWS
 - 02 - AWS for AGRO
 - 03 - AWS for Tourism
 - 04- AWS for Road
 - 05- AWS for Railways
- 9) NUMBERS OF SENSORS INSTALLED (2 Digits)
- 10) HEALTH STATUS OF EACH SENSOR (Working /Non-Working) – (1 Digit No.)

B) FILE NAME FORMAT: -

- 1) STATION ID (8 Digit E.g. ABCD1234)
 - 2) UNDERSCORE (_)
 - 3) DATE (YYYYMMDD)
 - 4) TIME (HHMMSS)
 - 5) UNDERSCORE (_)
 - 5) TYPE (2 Digits E.g. 01)
- E.g. ABCD1234_20190411010300_01.csv

C) DATA FORMAT: - Data Format should be comma separated value (CSV) – COLUMN: -

- 1) STATION ID (8 Digit E.g. ABCD1234)
- 2) STATION NAME
- 3) TYPE OF SYSTEM (2 Digit e.g. 01)
- 4) NOS OF SENSORS (2 Digit e.g. 00)
- 5) LATITUDE (4 Decimal Place e.g. 10.1234) (Degree, minutes and seconds)
- 6) LONGITUDE (4 Decimal Place e.g. 10.1234) (Degree, minutes and seconds)
- 7) ALTITUDE (2 Decimal Place e.g. 10.14)
- 8) DATE (YYYY-MM-DD)
- 9) TIME (MM)
- 10) TIME(HR)
- 11) BATTERY (Volts)
- 12) GPS (1 Digit e.g., L is locked i.e., OK or U is unlocked i.e., not OK)
- 13) GPRS SIGNAL STRENGTH (2 Digit e.g. 28)



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- 14) RAINFALL SENSOR HEALTH STATUS (1 Digit e.g., 1 is working i.e., OK or 0 is not-working., not OK)
- 15) RAINFALL SELECTED TIME INTERVAL (Millimetre)
- 16) RAINFALL DAILY CUMULATIVE (Millimetre) *
- 17) AT/RH SENSOR HEALTH STATUS (1 Digit e.g., 1 is working i.e., OK or 0 is not-working., not OK)
- 18) TEMPERATURE (Degree Centigrade)
- 19) TEMPERATURE MINIMUM SELECTED TIME INTERVAL (Degree Centigrade)
- 20) TEMPERATURE MAXIMUM SELECTED TIME INTERVAL (Degree Centigrade)
- 21) TEMPERATURE DAY MIN / MAX (Degree Centigrade) **
- 22) RELATIVE HUMIDITY (Percentage)
- 23) RELATIVE HUMIDITY MINIMUM SELECTED TIME INTERVAL (Percentage)
- 24) RELATIVE HUMIDITY MAXIMUM SELECTED TIME INTERVAL (Percentage)
- 25) RELATIVE HUMIDITY DAY MIN / MAX (Degree Centigrade) **
- 26) WIND SENSOR_1 HEALTH STATUS FOR 10 M HEIGHT (1 Digit e.g., 1 is working i.e., OK or 0 is not-working., not OK)
- 27) WIND DIRECTION_1 (Degree)
- 28) WIND SPEED_1 (meter/sec)
- 29) MAX WIND SPEED_1 SELECTED TIME INTERVAL (meter/sec)
- 30) WIND SPEED_1 DAY MAX (meter/sec) ****
- 31) PRESSURE SENSOR_1 HEALTH STATUS (1 Digit e.g., 1 is working i.e., OK or 0 is not-working., not OK)
- 32) STATION LEVEL PRESSURE (Hecto-Pascal hPa)
- 33) WIND SENSOR_2 HEALTH STATUS FOR 3 M HEIGHT (1 Digit e.g., 1 is working i.e., OK or 0 is not-working., not OK)
- 34) WIND DIRECTION_2 (Degree)
- 35) WIND SPEED_2 (meter/sec)
- 36) MAX WIND SPEED_2 SELECTED TIME INTERVAL (meter/sec)
- 37) WIND SPEED_2 DAY MAX (meter/sec) ****
- 38) SOLAR RADIATION SENSOR HEALTH STATUS (1 Digit e.g., 1 is working i.e., OK or 0 is not-working., not OK)
- 39) SUNSHINE DURATION (Minutes)
- 40) GLOBAL RADIATION (W/m2)
- 41) PHOTOSYNTHETICALLY ACTIVE RADIATION SENSOR HEALTH STATUS (1 Digit e.g., 1 is working i.e., OK or 0 is not-working., not OK)
- 42) PAR DATA
- 43) UV INDEX (VALUE)

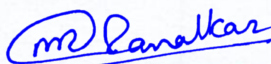




Annexure-II


List of Deliverables

S. No.	Item	Make & model Country of origin*	Qty. Nos.
1	2	3	4
	Sensors and hardware for portable AWS stations		
1.	Rain Gauge Sensor (TBRG) with mounting accessories (Calibration certificate of all sensors with validity certificate is required)		2
2.	Temperature and Humidity Sensor with mounting accessories (Calibration certificate of all sensors with validity certificate is required)		2
3.	Pressure sensor with mounting accessories (Calibration certificate of all sensors with validity certificate is required)		2
4.	Ultrasonic wind sensor with mounting accessories (Calibration certificate of all sensors with validity certificate is required)		2
5.	DAS with IP-67 compliant Enclosure with mounting accessories and USB pen drive (16 GB or more) for data retrieval		2
6.	GPRS modem with dual SIM slot (4G) (compatible with 3G or latest) facility with minimum 8 dBi antenna gain with mounting accessories		2
7.	Portable AWS Tripod Mast		2
8.	Suitable SMF BATTERY for 20 days backup without charging		2
9.	Suitable solar Panel for charging the SMF battery with mounting accessories on the mast.		2
10.	Installation, integration of sensors of AWS, masts erection, prototype of earthing for signal ground and lightning arrestor		2
11.	Toolkit for operational and maintenance of AWS		2
12.	Data loggers as per technical specification		2
13.	Laptop for data display and transfer purpose		1
14.	Hard copy and soft copy in USB drive (16 GB) of operation and maintenance manuals		2
15.	ONLINE AND OFFLINE Training & CAMC as per the RFP document		



Dr. Manish Ranalkar

(Chairman)



Dr. B Sudarsan Patro

(Member)



Ms Suman Gurjar

(Member Secretary)