

**GOVERNMENT OF PAKISTAN  
PAKISTAN METEOROLOGICAL DEPARTMENT  
REGIONAL METEOROLOGICAL CENTRE  
KHYBER ROAD, PESHAWAR**



(Bidding Documents)

No. AS5-3(26)IV/18/

**AUTOMATIC WEATHER STATIONS**

March, 2019

Director  
Regional Meteorological Centre  
Khyber Road, Peshawar  
Phone No. 091-9210190  
Fax No. 091-9210223

## **TENDER NOTICE**

No. AS 5-3(26)/IV/2018/  
**GOVERNMENT OF PAKISTAN**  
**PAKISTAN METEOROLOGICAL DEPARTMENT**  
**REGIONAL METEOROLOGICAL CENTRE**  
**KHYBER ROAD, PESHAWAR**

**TENDER NOTICE**

Pakistan Meteorological Department, Regional Meteorological Centre, Khyber Road, Peshawar invites sealed bids for the purchase of Automatic Weather Stations (AWSs) from the registered suppliers and are on Active Taxpayers List of the Federal Board of Revenue:

<b>S. No</b>	<b>Instruments name</b>	<b>Qty</b>
1	<p><b>Automatic Weather Stations:</b> Complete Automatic Weather Station with following sensors: i) Data Loggers having Meteorological data Transmission capability to Central Station Computer. IP65 stainless steel housing containing Data Logger, with input compatible with Sensors:  ii) Power supply system including solar panel, battery, regulator, and all necessary cabling iii) Separate Wind Speed and Direction Sensors to decrease turbulence and mutual influence during measuring (Option of Ultrasonic wind speed and wind direction sensor should also be added) iv) Combined Air Temperature and Humidity Sensor v) Atmospheric Pressure Sensor vi) Precipitation Sensor (Tipping Bucket mechanism Pluvio) vii) Solar Radiation Sensor viii) Soil temperature and moisture sensor ix) Mast for AWS installation</p> <p><b>Note: Detailed specifications of Data logger and sensors are given at the end</b></p>	04

2. Bidding documents, containing detailed terms and conditions, etc. are available at the Regional Meteorological Centre, Khyber Road, Peshawar. Bidding documents can also be downloaded from [www.pmd.gov.pk](http://www.pmd.gov.pk).

3. The bids, prepared in accordance with the instructions in the bidding documents, must reach at the office of Director, Regional Meteorological Centre, Khyber Road, Peshawar on or before 15-04-2019 at 10:30 AM. Bids will be opened the same day at 11:00 AM. This advertisement is also available on PPRA website at [www.ppra.org.pk](http://www.ppra.org.pk).

Director  
Regional Meteorological Centre  
Khyber Road, Peshawar  
091-9210190

**TERMS & CONDITIONS:**

## **Terms & Conditions:**

1. Tender under sealed cover should be submitted on or before 15-04-2019 at 10:30 AM and will be opened on the same day at 11:00 AM in the presence of Bidder's Representatives.
2. Offer must be accompanied with a call deposit@ 2% of Tender amount/quoted price (including all taxes) as Earnest Money (refundable) in the form of Pay Order/Bank Draft in favour of the Director, Regional Meteorological Centre, Khyber Road, Peshawar from any recognized scheduled Bank failing which offer will not be entertained. Further, insufficient earnest money will not be acceptable.
3. As per PPRA 2004 rule 36 (b), Single Stage - Two Envelope Bidding Procedure shall be followed as given below:
  - (i) the bid shall be a single stage comprising two envelopes, containing separately the financial and the technical proposals;
  - (ii) the envelopes shall be marked as "Financial Proposal" and "Technical Proposal";
  - (iii) initially, the "Technical Proposal" shall be opened and the envelope marked as "Financial Proposal" shall be retained in the custody of the procuring agency without being opened;
  - (iv) the procuring agency shall evaluate the technical proposal in the manner prescribed in advance, without reference to the price and shall reject any proposal which does not conform to the requirements specified;
  - (v) during the technical evaluation no amendments in the technical proposal shall be permitted;
  - (vi) after the evaluation and approval of the technical proposals, the procuring agency shall open the financial proposals of the technically accepted bids, publically at a time, date and venue announced and communicated to the Bidder(s) in advance, within the bid validity period;
  - (vii) the financial proposal of bids found technically nonresponsive shall be returned un-opened to the respective Bidder(s); and
  - (viii) the bid found to be the lowest evaluated bid shall be accepted and Bidder(s) shall be awarded the Contract.
4. Bidders should not be involved in any litigation with Government departments and not blacklisted by any Government Organizations.

5. Bidders will have to mention IT / GST Registration Number along with Vendor Number allotted by AGPR, Sub Office, Peshawar.
6. Suppliers should have the reputable performance of supplying the goods.
7. Postal/Conditional Tender or Tender received after due date & time will not be entertained.
8. The purchase order will be issued on the approval of the tenders by the Competent Authority.
9. Supply must be completed within 15 days after issuing of the work order.
10. Offers must include all taxes / duties which will be deducted as per Govt. Rates. Rates quoted should be valid for 3 months (90 days) from the date of opening of tender.
11. The Department reserves the right to accept or reject any item or complete tender in light of PPRA rules.
12. Payment will be made on successful completion of the supply and confirmation by the inspection committee of Regional Meteorological Centre, Peshawar office.

Director  
Regional Meteorological Centre  
Khyber Road, Peshawar  
091-9210190

# AWS TECHNICAL PROPOSAL

## SPECIFICATION OF DATA LOGGER AND SENSORS:

S. No	Requirement
1	<p><b>A. <u>DATA LOGGER:</u></b></p> <p>A fast, reliable and all in one data logger, with which all sensors attached. Perform all necessary actions (instant read sensor data, record, analyze and show the output on main screen of data logger as well as to main control computer through communication interface).</p> <p>The data should be recorded and saved in the internal memory for 24 hours and after that may be shifted to external memory.</p> <p>Recording/ measurement type: Inst, average, min, max  Recording Cycle : 10 minutes, 60 minutes, 24 hours.  Ports: Communication port, LAN, Rs-232, Rs-485</p> <p><b>Configuration</b></p> <p>Configuration should be user-friendly and can be modified by user</p> <p style="padding-left: 40px;"><b>Communication Ports</b> (For pc connection):</p> <ul style="list-style-type: none"> <li>▪ RS-232    2 No</li> <li>▪ RS-485    1 No</li> <li>▪ LAN</li> <li>▪ Simultaneous communication on all ports.</li> </ul> <p style="padding-left: 40px;"><b>Storage:</b></p> <ul style="list-style-type: none"> <li>▪ Program Memory            1mb or more</li> <li>▪ Flash Card Memory        2 GB or more</li> <li>▪ Should be able to store all data</li> </ul> <p style="padding-left: 40px;"><b>LCD Display:</b>  Alphanumeric Display for live and archived data.</p> <p><b>Watchdog Timer:</b> System reset upon microprocessor failure  <b>Connectors:</b> All exposed connectors must be rugged industrial grade plastic twist lock multi pole type; so that they are corrosion and climate/environment proof.</p> <p><b><u>Software:</u></b>  The system must be supplied with the following software's:</p> <ul style="list-style-type: none"> <li>• Data Base software to store all downloaded data.</li> <li>• PC based - configuration software to configure and install each sensor.</li> <li>• PC based - set up program to set how measurements are to be done by sensor and how data is to be stored.</li> <li>• PC based – Presentation and Display software to display instantaneous and stored data in suitable tabular and graphic format.</li> </ul>

	<p><b><u>CASING FOR LOGGER:</u></b> The logger must be housed in a Rugged; Water and Dust Proof sealed polyethylene housing with pad locks that can stand direct exposure to harsh environment. The casing should be mountable on the triangular steel tower.</p> <p><b>B. <u>SOLAR PANEL:</u></b></p> <ul style="list-style-type: none"> <li>▪ Photo voltaic solar panel; to charge batteries from solar energy, 12Volt and 60-Watts power.</li> <li>▪ Capable of keeping the battery afloat for 365 days.</li> </ul> <p><b>i) <u>CHARGE REGULATOR:</u></b> Smart Charge regulator to charge 12Volt, 60 AH or more battery from power supplied by solar panel with intelligent charge control.</p> <p><b>ii) <u>STORAGE BATTERY:</u></b> Sealed maintenance free lead acid battery; 12Volt, 60 AH or more with high quality instrumentation class terminals and # 16 gauge stranded copper connection cable RED+BLACK.</p> <p><b>iii) <u>BATTERY STORAGE CASING:</u></b> The battery must be housed in a weather proof vented outdoor housing (installed adjacent to the logger housing) and connected to the logger housing using environment proof plastic twist connectors.</p> <p><b>iv) <u>Power:</u></b></p> <ul style="list-style-type: none"> <li>• Self Powered (Solar).</li> <li>• Backup time 72 hrs (without charging).</li> <li>• AC -220 volts.</li> </ul>	
2	<b>SENSORS – Calibrated</b>	
2.1	<p><b><u>Wind Speed and Direction Sensor:</u></b></p> <p><b>a). <u>Wind Speed Sensor:</u></b></p> <p>The required wind speed sensors should have dirt and water resistant construction and corrosion resistant materials with the following specifications and requisite mounting hardware and cable.</p> <ul style="list-style-type: none"> <li>• Type of sensor: Cup type</li> <li>• Range: 0.2 to 50 m/s</li> <li>• Accuracy: ±0.2 m/s</li> </ul> <p><b>b). <u>Wind Direction Sensor:</u></b></p> <p>The required wind direction sensors should have dirt and water resistant construction and corrosion resistant materials with the following specifications and requisite mounting hardware and cable:</p> <ul style="list-style-type: none"> <li>• Type of sensor: Potentiometer</li> <li>• Range: 0 to 360 Degree</li> <li>• Accuracy : ±0.2 deg</li> <li>• Resolution: 1 Deg</li> </ul>	



2.2	<p><b><u>Combined Air Temperature and Humidity Sensor with multiplate Free Flowing shield:</u></b></p> <p><b>a) <u>Temperature Sensor:</u></b>  The required temperature sensors should have dirt and water resistant construction and corrosion resistant materials with the following specifications and requisite mounting hardware and cable</p> <ul style="list-style-type: none"> <li>• Temperature sensor Type: Pt100 Resistive Platinum Sensor</li> <li>• Temp Range : -30 to +60°C</li> <li>• Accuracy: ±0.1°C</li> </ul> <p><b>b) <u>Humidity Sensor</u></b></p> <ul style="list-style-type: none"> <li>• Humidity Sensor Type: Capacitive Polymer sensor</li> <li>• Humidity Range: 0 to 100 % RH</li> <li>• Accuracy: ±2%</li> </ul>	
2.3	<p><b><u>Atmospheric Pressure Sensor:</u></b></p> <ul style="list-style-type: none"> <li>• Range: 500 to 1100 hPa</li> <li>• Accuracy : ± 0.5 hPa</li> </ul>	
2.4	<p><b><u>Rain Gauge:</u></b></p> <ul style="list-style-type: none"> <li>▪ Type of Sensor: Tipping bucket / reed switch.</li> <li>▪ The bucket tips for each 0.2 mm of precipitation empties and operates the output switch.</li> <li>▪ <b>Switch:</b> Rugged Magnetic Proximity Switch</li> <li>▪ <b>Accuracy:</b> ± 0.5% at 0.5 in./hr (1.27 cm/hr.) ±2% at 2 in./hr (5.08 cm/hr) to 60mm/hr</li> <li>▪ Mounting with three mounting legs; with requisite cable.</li> <li>▪ Stainless Steel Housing</li> <li>▪ Stainless steel fasteners.</li> <li>▪ Sensitivity :0.2mm</li> <li>▪ Switch closer time: &lt;10 millisecond.</li> </ul>	
2.5	<p><b><i>CNR4 Net Radiometer</i></b></p> <p><b>Spectral range (50% points)</b> 0.3 to 2.8 μm = 300 to 2800 (short wave) nm</p> <p><b>Spectral range (50% points)</b> 4.5 to 42 μm = 4500 to 42000 (long wave) nm</p> <p><b>Sensitivity</b> 5 to 20 μV/W/m<sup>2</sup></p> <p><b>Temperature dependence of sensitivity (-10 °C to +40 °C)</b> &lt; 4 %</p> <p><b>Response time</b> &lt; 18 s</p> <p><b>Non-linearity</b> &lt; 1 %</p> <p><b>Operating temperature</b> -40 to 80 °C</p> <p><b>Ventilation power</b> (of the optional CNF4 ventilation unit) 10 W</p>	

2.6	<p><b><u>Soil Moisture Sensors (05, 10 &amp; 20 cm depth):</u></b></p> <p>Dielectric Probe Soil Moisture Sensor for cultivated and stony soil. Quote separately for cultivated soil and stony soils.</p> <ul style="list-style-type: none"> <li>▪ Sensor type Pt-100 type RTD element</li> <li>▪ Measurement range: -50...+70°C</li> <li>▪ Accuracy: 0,15° (at 0°C)</li> <li>▪ soil moisture measurement:- TDR method</li> <li>▪ Moisture measurement range: 0-100%</li> <li>▪ Moisture accuracy: &lt;40%: 1%, &gt;40%: 2%</li> <li>▪ Temperature measurement range : -15...+50°C</li> <li>▪ Temperature accuracy: 0,2°C</li> <li>▪ Output : 2x0-1 V</li> <li>▪ Power supply. 12 V</li> <li>▪ Probe : Waterproof Sealed PVC (IP68)</li> </ul>	
3.	<p><b><u>Certification Required for Sensors:</u></b></p> <p><i>The sensors provided should come calibrated from the factory with Certificates of Calibration.</i> Manufacturer should perform comparative measurements with known well-calibrated sensors to ensure that all sensors are working during the installation phase. All sensors should be supplied with cables that are UV proof to ensure good performance for years. All sensors should have military style connectors specially keyed for each sensor to ensure proper connection between the sensor and the DCP. The sensors should be high-quality professional instruments.</p> <p>All support arms holding sensors should be manufactured from anodized aluminum or galvanized steel and fitted to the tower-scaffold by means of stainless steel and/or hot galvanized clamps and stock of screws. Consideration should be taken to avoid vibrations due to high winds. All sensors connected to the RTU should be easily identifiable with labels for each cable. The RTU should be properly earthed.</p>	
4.	<p><b><u>Communication System:</u></b></p> <p>a). Internal Transfer of data from RTU to Comsat Offices via email at pre-programmed intervals. Communication Package should be housed in weather proof housing (same as the data logger) Power to be supplied by common system battery.</p> <p>b). <b><u>GSM / GPRS COMMUNICATOR:</u></b>  GSM based packet communication modem system; using any of the Pakistani GSM networks (that may have service in the area of installation) using SMS and GPRS service. Complete end-to-end system, to transmit data from remote loggers to the Comsat control office in Islamabad at pre-programmed</p>	

	intervals, or alternately respond to Polls from Comsat control station. Self contained requiring only DB-9 (RS-232C) interface with main logger. Should be housed in weather proof housing (Same as the data logger). Power to be supplied by the common system battery.	
5.	<p><b><u>Training (OPTIONAL):</u></b>  Training to staff should be provided. The Training should include:</p> <ol style="list-style-type: none"> <li>a) Operation</li> <li>b) Configuration Programming</li> <li>c) Installation</li> <li>d) Preventive maintenance</li> <li>e) Trouble Shooting</li> <li>f) Data Communication</li> <li>g) Data Analysis</li> </ol>	
6.	<p><b><u>Documentation:</u></b>  The supplier should supply 2 sets of operational and technical manuals in English language which should include description of working of the system, schematics preventive maintenance and trouble shooting.</p>	
7.	<p><b><u>Warranty:</u></b></p> <ul style="list-style-type: none"> <li>• All materials (equipment only) should have a warranty of 24 months or 2 years from the date of installation.</li> <li>• Company / Supplier should give surety regarding availability of spares after 5 years of installation of the system.</li> <li>• Cost of spare parts required for 2 years after the warranty with the list of spares.</li> <li>• Cost of tools and test equipment required for maintenance with list of tools and equipments.</li> </ul>	
8	<p><b><u>Availability of Spare Parts:</u></b>  Manufacturer should guarantee that all spare parts will be available for a period of 10 years. In the event that a part is no longer available, Manufacturer should identify a substitute item that is identical in function, and similar in form and fit.</p>	

**FORM OF TENDER FOR THE SUPPLY OF "AUTOMATIC WEATHER STATION"**

S. No.	Item	Technical Specification	Brand	Unit Price (Rs.)	General Sales Tax (Rs.)	Quantity	Total Price (Rs.)
1	<b>Automatic</b>	Complete Automatic				4	

	<b>Weather Stations:</b>	<p>Weather Station with following sensors:</p> <ul style="list-style-type: none"> <li>i.Data Loggers having Meteorological data Transmission capability to Central Station Computer. IP65 stainless steel housing containing Data Logger, with input compatible with Sensors:</li> <li>ii.Power supply system including solar panel, battery, regulator, and all necessary cabling</li> <li>iii.Separate Wind Speed and Direction Sensors to decrease turbulence and mutual influence during measuring (Option of Ultrasonic wind speed and wind direction sensor should also be added)</li> <li>iv.Combined Air Temperature and Humidity Sensor</li> <li>v.Atmospheric Pressure Sensor</li> <li>vi.Precipitation Sensor (Tipping Bucket mechanism Pluvio)</li> <li>vii.Solar Radiation Sensor</li> <li>viii.Soil temperature and moisture sensor</li> <li>ix.Mast for AWS installation.</li> </ul>					
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