Tender Fee: Rs. 200/-

GOVERNMENT OF PAKISTAN
MINISTRY OF SCIENCE AND TECHNOLOGY
PAKISTAN COUNCIL OF RESEARCH IN WATER RESOURCES

Tender Document for Purchase of Automatic Weather Station and IT Equipment

Opening Date: January 12, 2022

Khayaban-e-Johar, Near Edhi Homes, H-8/1, Islamabad
Ph: 051-9101282- Fax: 051-9101278 & 9101280,
E-mail: pcrwr@comstats.net.pk

PART - I

TERMS AND CONDITIONS

1. GENERAL

The bids are required from the firms/companies, registered with FBR/Income Tax, for the supply of Automatic Weather Station and IT Equipment to Pakistan Council of Research in Water Resources (PCRWR) as per following terms and conditions:

i. The bids are required from the registered firms with earnest money equal to 2% of the total amount of bid(s) in the form of demand draft/pay order to be issued by a Pakistani scheduled Bank or branch of a Foreign Bank operating in Pakistan in favor of the Chairman PCRWR. Tenders without earnest money would be rejected out-rightly. In case of alternate prices, earnest money will be based on the maximum quoted price of the same item(s). The Earnest Money will be forfeited if a bidder(s) withdraws his bid(s) during the period of his bid(s) validity. The earnest money of unsuccessful bidder(s) will be returned to them after evaluation of bids.
ii. The bidder must be a registered firm with FBR (as per Sale & Income Tax laws) and must include in active tax payer list. Evidence of both should be attached with the tender documents.
iii. Conditional/incomplete tenders or those having overwriting will not be accepted.
iv. Quoted price must be valid for at least 90 days from the date of tender opening.
v. Last date of submission of offers is 12th January, 2022 by 2:00 PM. The tenders would be opened at 02:30 PM on the same day in the office PCRWR Head Office, Khyaban e Johar, H-8/1, Islamabad.
vi. The quoted prices must be inclusive of all taxes, trainings, services during warranty period, duties and delivery costs etc. The bidder should make sure that the bid is complete in all respects including consumables/non-consumables for complete execution of the task at the specified location.

2. SCOPE OF SUPPLY

i. The bidder shall supply and commission all items as per specification given in “Schedule B”.

ii. The tentative quantity of items given in this document may vary depending upon the requirements and availability of the funds. Any item of work or its quantity may be omitted, added, or varied. Therefore, the payment will be made as per approved rates, if any, according to the quantity of work or items actually accomplished and as per supply order.

3. BID PRICE AND QUOTING

i. The supplier is required to quote his bid/charges for the supply of each item.

ii. The bidder shall indicate, in his offer the unit prices inclusive of all taxes, duties, transportation; and total bid prices of the goods/services. Payment of

any Taxes, duties etc. levied before opening of bids by the Government shall be the full responsibility of the bidder(s) subject to prevailing regulations. The prices shall be quoted in Pakistan Rupees only. The person signing the bid shall initial all the pages of the bid(s) where entries are made. No bid received after the prescribed deadline date would be entertained and will be rejected without caring the reasons for delayed receipt in PCRWR Head Office, Islamabad due to negligence of the bidder or the postal/courier services etc.

iii. The tenderer shall certify that the prices being quoted are not higher than those quoted for any Govt. Department or Institution or any organization and that if during the years at any time the tenderer has quoted rates lower than those quoted against this tender, the PCRWR would be given the benefit of lower rates by the tenderer. The relevant documents should be enclosed with technical bid.

4. PURCHASER'S RIGHTS

PCRWR reserves the right to reduce/increase the specification and number of items to be supplied; there by evolving no financial liability whatsoever or any other obligation on the part of PCRWR from the side of bidders. No other sub-office (outfit) of PCRWR is authorized to collect bid(s), only **PCRWR Head Office located at Khayaban-e-Johar H-8/1, Islamabad** is authorized to do so.

5. CONVERSING

Unsolicited advice/clarification and any personal contact at any stage of evaluation of bids are strictly prohibited and may lead to disqualification.

6. PERFORMANCE GUARANTEE

The supplier will be responsible for complete supply and commissioning of the items and for its free repair services, if required, during the **performance guarantee period of one year**, starting from the date of completion of full commissioning of the systems. The successful bidder(s) is/are required to furnish a performance guarantee, equivalent to 10% of the total contract amount within ten days of issuance of supply order/award of contract; otherwise equivalent amount will be retained from payment for performance period as compensation for any loss resulting from the supplier's failure to complete its obligation. Performance guarantee/security will be forfeited in case of failure to successfully complete the performance period of the equipment. The withheld performance security will be returned after successful completion of the guarantee period.

7. DELIVERY, INSTALLATION AND COMPLETION PERIOD

The bidder shall supply the items **within 30 days** from the date of issuance of work order by the Pakistan Council of Research in Water Resources, Islamabad. A penalty @ 0.01% of the quoted price per day may be charged after expiry of delivery period till the supply of item. Supply order can be canceled after an extended period of 30 days and earnest money will be forfeited.

8. MODE OF PAYMENT

i. No advance payment will be made to any firm against any supply order in any case. No such demand will be entertained and failure to execute work against supply order will lead to forfeiture of the earnest money. Payment shall be made in the form of cross-cheque, which shall be issued, after receipt of inspection report as per following:

   a. The payment i.e. 90% will be released on completion of the work and acceptance of inspection report.
   b. 10% payment after completion of one year.

9. TRAINING

Supplier will arrange on-site necessary operation and maintenance training to the beneficiaries. The training package should be included as a part of the bid.

10. EVALUATION CRITERIA

The bids would be evaluated based upon their technical soundness with the Terms and Conditions set forth in this document. The lowest quoted bid for each individual item will be selected. The detailed evaluation criterion is as follows;

A. Technical soundness 50% weightage
   - Soundness of firm and previous related experience (20 marks)
   - Technical specification of the bid matching with the tender requisite specifications (80 marks)

B. Financial aspects 50% weightage
   - Lowest bidder (100 marks)
   - Second lowest bidder (90 marks)
   - Third lowest bidder (80 marks)
   - Further lowest bidders will be ranked with 10 less marks in descending order

11. GUARANTEE/WARRANTY

The warrantee period is one year which should be provided on proper legally recognized document. In case of failure, the same will be arranged from the performance security amount. It will be the responsibility of supplier to arrange any spare part, or repair in case of damage, for the period of one year.

The procuring agency may cancel the tender as per PPRA rules. PPRA rules and other prevailing government rules shall be applicable.

The representative of PCRWR may examine any item, equipment, material, supplies and/or services to be provided under this contract, at any time prior to expiry of this contract. He may reject or require alteration thereto or replacements thereof as a condition of acceptance and its findings shall be conclusive except in regard to defects or fraud which may appear later.

PART –II

GENERAL INFORMATION ABOUT THE FIRM/COMPANY

Name of the Firm: _____

Main Line or Business: _____

Type of Organization: _____

Phone No(s): _____

Mailing Address: _____

Fax No: _____

E-mail: _____

Contact Person: _____

National Tax Number, Income tax and sales tax numbers: _____

SIGNATURE & SEAL OF FIRM

Annexure-I

The tender document contains items with specifications as under:

Sr. No.	Item Name	Description	Unit	Rate (Rs./Unit)
1	**Automatic Weather Station** (1 each to be installed at in Tandojam (Hyderabad), Multan and Bahawalpur)		**3**	
i)	**Measurement and Control Datalogger**	Operating Temperature Range: -25° to +50°C (standard) -55° to +85°C (extended) *Non-condensing environment* Analog Inputs: 16 single-ended or 8 differential (individually configured) Pulse Counters: 2 Voltage Excitation Terminals: 3 (VX1 to VX3) Communications Ports: CS I/O RS-232 Parallel peripheral Switched 12 Volt: 1 terminal Digital I/: Certain digital ports can be used to count switch closures. 8 I/Os or 4 RS-232 COM I/O ports can be paired as transmit and receive for measuring smart serial sensors. Input Limits: ±5 Vdc Analog Voltage Accuracy: ±(0.06% of reading + offset) at 0° to 40°C ADC: 13-bit Power Requirements: 9.6 to 16 Vdc Real-Time Clock Accuracy: ±3 min. per year (Correction via GPS optional.) Internet Protocols: FTP, HTTP, XML, POP3, SMTP, Telnet, NTCIP, NTP Communication Protocols: Pak Bus, Modbus, DNP3, SDI-12, SDM Warranty: 3 years Battery-backed SRAM for CPU Usage & Final Storage: 4 MB Idle Current Drain, Average: < 1mA (@ 12 Vdc) Active Current Drain, Average: 1 mA (1 Hz sample rate @ 12 Vdc without RS-232 communication) 16 mA (100 Hz sample rate @ 12 Vdc without RS-232 communication) 28 mA (100 Hz sample rate @ 12 Vdc with RS-232 communication) Dimensions: 23.8 x 10.1 x 5.4 cm (9.4 x 4.0 x 2.1 in.) 25.2 x 10.2 x 7.1 cm (9.9 x 4.0 x 2.8 in.) with CFM100 or NL116 attached Weight: 1.0 kg (2.1 lb)		
ii)	**4G LTE CAT1 Cellular Module**	Specifications Certifications 10224A-201611EC21A Host Interface CS I/O communications port DB9 male USB version 2.0 with micro-B connector RS-232 serial port DB9 female RF Connectors 2 SMA antenna connectors (primary and diversity) Operating Temperature Range -40° to +80°C Supports SIMs that require 1.8 or 3 Vdc. Dimensions 13.46 x 8.1 x 2.86 cm (5.3 x 3.19 x 1.13 in.) Weight 215.5 g (7.6 oz)		

<table>
<tr><td></td><td></td><td>Cellular WAN Network Technology 4G LTE CAT-1 (with automatic fallback to 3G and 2G)
Data Speeds LTE Max 5 Mbps (upload) Max 10 Mbps (download)
WCDMA Max 384 Kbps (download) Max 384 Kbps (upload)
GSM EDGE Max 296 Kbps (download) Max 236.8 Kbps (upload)
GSM GPRS Max 85.6 Kbps (upload) Max 107 Kbps (download)
RS-232 or CS I/O 9600 bps to 460.8 kps
Power Consumption Low Power Mode 300 µA Idle 14 mA Active 39 mA Radio Output and Sensitivity Output Power 27 dBm on EDGE 24 dBm on UMTS 33 dBm on GSM 23 dBm on LTE
Sensitivity Range -99.5 to 110.5 dBm (10 M)</td><td></td><td></td></tr>
<tr><td>iii)</td><td>Barometric Pressure Sensor</td><td>Setra’s Setraceram capacitive sensor and IC analog circuit to measure barometric pressure
Includes a 0.76 m (2.5 ft) cable and a terminal strip for data logger power and signal connections
Encased in a stainless-steel and polyester case fitted with an 1/8 in. barbed fitting for pressure connection
Internal switching circuit that allows the data logger to power the barometer only during measurement, which reduces power usage
Barometric pressure Signal Type/Output Analog voltage
1 hPa = 1 mBar
Pressure Range 600 to 1100 hPa
Long-Term Stability ±0.1 hPa per year
Response Time < 100 ms
Resolution ±0.01 hPa
Excitation 9.5 to 28 Vdc
Standard Barometer Resides inside a weather-proof enclosure
Elevation ~609.6 m (2,000 ft) below sea level (as in a mine) to 3,657.6 m (12,000 ft) above sea level Accuracy ±1.5 hPa (@ -20° to +50°C) ±2.0 hPa (@ -40° to +60°C) Accuracy refers to the root sum squared (RSS) of end point nonlinearity, hysteresis, repeatability, and calibration uncertainty. ±0.5 hPa (@ +20°C) ±1.0 hPa (@ 0° to 40°C) Linearity ±0.4 hPa Hysteresis ±0.05 hPa Repeatability ±0.03 hPa Signal Output 0 to 2.5 Vdc Warm-up Time < 1 s External Trigger Voltage 3 to 28 Vdc (operating mode) 0 Vdc (sleep mode) Current Consumption < 3 mA (active) < 1 µA (sleep mode) Temperature Range -40° to +60°C Cable Diameter 0.8 cm (0.3 in.) Cable Length 0.8 m (2.5 ft) Dimensions 9.1 x 6.1 x 2.5 cm (3.6 x 2.4 x 1.0 in.) Weight 135 g (4.8 oz)</td><td></td><td></td></tr>
<tr><td>iv)</td><td>Weather-Resistant Enclosure, 10 x 12 inches</td><td>Backplate is pre-punched with half-inch-on-center holes suitable for attaching a data logger, power supply, and a communications or measurement and control peripheral.
Supply kit that consists of desiccant, a humidity indicator card, cable ties, wire tie tabs, putty, grommets, screws, and PVC coupling.
<table>
<tr><td>Color</td><td>White (Reflects solar radiation, reducing temperature gradients inside the enclosure without using a separate radiation shield.)</td></tr>
<tr><td>Construction</td><td>Fiberglass-reinforced polyester enclosure with door gasket, external grounding lug, stainless-steel hinge, and lockable hasps</td></tr>
<tr><td>Enclosure Classification</td><td>NEMA 4X</td></tr>
<tr><td>Number of Cable-Entry Seals</td><td>1 medium, 2 small</td></tr>
<tr><td>Dimensions</td><td>30.5 x 25.4 x 11.4 cm (12 x 10 x 4.5 in.) internal
34.06 x 29.03 x 13.23 cm (13.41 x 11.43 x 5.21 in.) external</td></tr>
<tr><td>Weight</td><td>4.1 kg (9.0 lb)</td></tr>
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v)	**Wind Sentry Set (Wind Speed & Direction Sensor)**			

Range:	0-50 m/s (112 mph), Azimuth: 360° mechanical, 352° electrical (8° open)
Accuracy:	Wind Speed: ±0.5 m/s (1.1 mph), Wind Direction: ±5°
Threshold: *	Anemometer: 1.1 m/s (2.5 mph), Vane: 1.3 m/s (2.9 mph) at 10°
Dynamic Response: *	Cup wheel distance constant (63% recovery) 2.3 m (7.5 ft), Vane delay distance (50% recovery) 0.5 m (1.6 ft), Damping ratio: 0.2
Signal Output:	Wind Speed: magnetically induced AC voltage, 1 pulse per rev. 1800 rpm (30 Hz) = 22.8 m/s (51.0 mph), Wind Direction: DC voltage from conductive plastic potentiometer – resistance 10K Ω, linearity 1%, life expectancy: 50 million revolutions.
Power Requirement:	Potentiometer excitation: 15 VDC max
Operating Temperature:	-50 to 50° C
Dimensions:	Overall height: 32 cm (12.6 in), Cross-arm length: 28 cm (11.0 in) between instrument centers, Vane length: 22 cm (8.7 in), Cup wheel diameter: 12 cm (4.7 in), Cross-arm mounting: 34 mm (1.34 in) diameter (standard 1 inch pipe)
*	Nominal values, determined in accordance with ASTM standard procedures.

vi)	**Digital Temperature and Relative Humidity Sensor**			

Sensing Element	SHT35 derivative (specially coated for reliability)
Calibration Traceability	NIST and NPL standards
Supply Voltage	7 to 28 Vdc
Warm-up Time	Sensor is normally powered all the time. If power is switched off, allow 1.8 s for sensor to power up.
Main Housing Material	White PET-P
Housing Classification	IP67 (electronics housing)
Sensor Protection	Outer glass-filled polypropylene cap fitted with a stainless-steel mesh dust filter with nominal pore size of < 30 µm. The sensor element is fitted with a PTFE protective film with a filtration efficiency of > 99.99% for particles of 200 nm or larger size.
EMC Compliance	Tested and conforms to IEC61326:2013
Calibration	The sensor element is individually calibrated during manufacture.
Field-Replaceable Chip or Recalibrate	Field-replaceable chip
Diameter	12.5 mm (0.49 in) at sensor tip, maximum 16 mm (0.63 in) at the cable end
Length	115 mm (4.52 in) sensor only, without cable
Maximum Current Drain	
Quiescent	50 µA typical
During Measurement	0.6 mA (takes 0.5 s) typical
Air Temperature	
Measurement Range	-40 to +70°C
Accuracy	±0.4°C (over the range -40 to +70°C) ±0.3°C (over the range 20 to 60°C)
Long-Term Drift	< ±0.03°C per year
Reported Resolution	0.001°C
Repeatability	0.04°C Values are 3 standard deviations of 25 measurements at constant temperature.
Response Time	130 s (63% response time in air moving at 1 m/s)

		Units	Degrees Celsius		
		Relative Humidity			
		Measurement Range	0 to 100% RH		
		Accuracy	±1.8% (at 25°C, over the range 0 to 80% RH) ±3% (at 25°C, over the range 80 to 100% RH)		
		Additional Errors at Other Temperatures	< ±1% RH (over -40 to +60°C)		
		Short-Term Hysteresis	< ±1% RH		
		Long-Term Stability	±0.5% per year (maximum drift in clean air conditions)		
		Reported Resolution	0.001% RH		
		Repeatibility	0.05% RH Values are 3 standard deviations of 25 measurements at constant humidity.		
		Response Time with Filter	8 s (63% response time in air moving at 1 m/s at 25°C)		
vii)	**Rain Gage with 6 in. Orifice**	Sensor Type	Tipping bucket with magnetic reed switch		
		Material	Anodized aluminum		
		Operating Temperature Range	0° to 50°C		
		Resolution	1 tip		
		Volume per Tip	4.73 ml/tip (0.16 fl. oz/tip)		
		Rainfall per Tip	0.254 mm (0.01 in.)		
		Accuracy	1.0% up to 50 mm/h (2 in./h)		
		Cable Type	2-conductor shielded		
		Orifice Diameter	15.4 cm (6.06 in.)		
		Height	24.1 cm (9.5 in.)		
		Cable Weight	0.1 kg (0.2 lb) per 3.05 m (10 ft) length		
		Tipping Bucket Weight	0.9 kg (2.0 lb)		
viii)	**Solar Radiation Sensor for Sunshine Count with mounting plate Thermopile Class C Pyranometer**	Sensitivity (variable from sensor to sensor, typical values listed)	0.045 mV per W m^{-2}		
		Calibration Factor (reciprocal of sensitivity) (variable from sensor to sensor, typical values listed)	22 W m^{-2} per mV		
		Input Voltage Requirement	5.5 to 24 V		
		Calibration Uncertainty at 1000 W m-2	Less than 3 %		
		Output Range	0 to 90 mV		
		Measurement Range	0 to 2000 W m^{-2} (net shortwave radiation)		
		Measurement Repeatability	Less than 1 %		
		Long-term Drift	Less than 2 % per year		
		Non-linearity	Less than 1 %		
		Detector Response Time	0.5 s		
		Field of View	180°		
		Spectral Range (50 % points)	385 nm to 2105 nm		
		Directional (Cosine) Response	Less than 30 W m^{-2} at 80° solar zenith		
		Temperature Response	Less than 5 % from -15 to 45 C		
		Zero Offset A	Less than 2 W m^{-2}; Less than 10 W m^{-2} (heated)		
		Zero Offset B	Less than 5 W m^{-2}		
		Uncertainty with Daily Total	Less than 5 %		
		Operating Environment	-50 to 80 C; 0 to 100% relative humidity		
		Heater	780 Ω, 15.4 mA current draw and 185 mW power requirement at 12 V DC		
		Dimensions	23.5 mm diameter, 28.7 mm height		
		Cable	5 m of four conductor, shielded, twisted-pair wire; TPR jacket (high water resistance, high UV stability, flexibility in cold conditions); pigtail		

		lead wires Warranty: 4 years against defects in materials and workmanship		
ix)	**Accessories**	50 Watt Solar Panel, Charge Controller & 40AH Battery Panel (good quality which support AWS) Enclosure for Battery Local Fabrication 10 Meter Triangular GI Mast 1" GI Pipe, 1 Foot each side 3 sides guy wires Local Fabrication Any other missing part which is required to install above AWS. **Installation, Software, Configuration, Programming & Training** **Data transmission frequency will be decided during programming**		
2	**Smart Phones for farmers**	Minimum required specifications: OS: Android 8.0 and above Frequency: 4G band LTE Processor: Octa-core 32GB Built-in, 2GB RAM Wi-Fi 802.11 b/g/n, hotspot v5.0 with A2DP, LE A-GPS support GPRS, Edge, 3G (HSPA 21.1/5.76 Mbps), 4G (LTE Cat4 150/50 Mbps) Battery: (Li-Po Non removable), 5000 mAh Only Pakistan Telecommunication Authority (PTA) approved devices	45	
3	**Smart Phone for database and monitoring**	Technology: GSM / CDMA / HSPA / EVDO / LTE / 5G Single SIM (Nano-SIM and/or eSIM) or Dual SIM (Nano-SIM/eSIM, dual stand-by) IP68 dust/water resistant (up to 6m for 30 mins Type: Super Retina XDR OLED, 120Hz, HDR10, Dolby Vision, 1000 nits (HBM), 1200 nits (peak) Size: 6.7 inches, 109.8 cm^2 (~87.4% screen-to-body ratio) Resolution: 1284 x 2778 pixels, 19.5:9 ratio (~458 ppi density) Protection: Scratch-resistant ceramic glass, oleophobic coating Platform: OS iOS 15, upgradable to iOS 15.2 CPU: Hexa-core (2x3.22 GHz Avalanche + 4xX.X GHz Blizzard) Memory Internal: 256GB 6GB RAM WLAN: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, hotspot Bluetooth: 5.0, A2DP, LE GPS: Yes, with A-GPS, GLONASS, GALILEO, BDS, QZSS NFC: Yes USB: Lightning, USB 2.0 Sensors: Face ID, accelerometer, gyro, proximity, compass, barometer Siri natural language commands and dictation Ultra Wideband (UWB) support Battery Type: Li-Ion 4352 mAh, non-removable (16.75 Wh) Charging: Fast charging (27W, unofficial rating), 50% in 30 min USB Power Delivery 2.0 MagSafe wireless charging 15W Qi magnetic fast wireless charging 7.5W Only Pakistan Telecommunication Authority (PTA) approved Devices	2	