



TERMS OF REFERENCE

Supply and Delivery of Wind and Rain Meteorological Equipment

1.0 Overview

In PAGASA as official weather bureau, we have various weather stations all over the Philippines that takes daily weather observation and gives weather report. Different kind of Meteorological instruments are used to do the tasks. It measures temperature, humidity, atmospheric pressure, wind and rain.

In connection with the establishment of new PAGASA synoptic stations, it is necessary to purchase accurate and reliable weather instruments that meet the prescribed standard specifications and accuracy set by the WMO for meteorological instruments.

2.0 Approved Budget for the Contract (ABC)

The approved Budget for the Contract is **Four Million Five Hundred Thirty Thousand Pesos (Php 4,530,000.00)** inclusive of VAT and all applicable government taxes.

3.0 Qualifications of Manufacturer and Bidder

3.1 Bidder should at least have a minimum experience of three (3) years in the supply of meteorological instruments/equipment in the Philippines. They should submit proof of acceptance of similar completed projects.

3.2 Manufacturer should be ISO 9001:2015 Certified and should submit ISO Certificate as proof.

4.0 Bid Proposal Contents

Bidder shall respond paragraph by paragraph to all the specifications and shall clearly indicate compliance. The bidder should include in this proposal descriptive literature of the meteorological instruments/equipment to be supplied in original format. They should include brochures of the instrument, manual and others. These details shall permit PAGASA to fully evaluate the various meteorological instruments/equipment.

5.0 Bid Validity

The bid shall remain valid for a period of 120 days from the date of bid.



6.0 Place and Date of Delivery

6.1 Delivery Schedule

The winning bidder shall supply and deliver wind and rain meteorological equipment to the PAGASA Central Office within ninety (90) calendar days upon receipt of the notice to proceed.

6.2 System Documentation

The successful bidder must supply manuals on installation, operation, maintenance of meteorological instruments/equipment. These manuals shall include factory test and calibration data results. All documentation shall be written in English.

6.3 Acceptance Test

- All sets/units of instrument/equipment shall be tested and calibrated at the Calibration Unit of PAGASA. Instruments/equipment found with accuracy not within what is set forth in the specification shall be replaced.
- The winning bidder shall provide documentary proof of calibration from the PAGASA Instrument Calibration Laboratory on the delivered sensors.

7.0 Warranty

All workmanship, materials and meteorological instruments/equipment shall be warranted by the winning bidder for two (2) years upon acceptance. The whole set of units that fail to provide satisfactory performance during this warranty period shall be replaced within 15 calendar days at the winning bidder's expense.

8.0 Training

Training shall be conducted the installation, operation, repair, maintenance and calibration of the wind and rain instruments/equipment. The training shall be conducted within 3 days, 8:00 am to 5:00pm at the PAGASA Central Office and on-site assistance for actual installation upon request to any proposed location of PAGASA Station at the winning bidder's expense. The participants will consists of 10 PAGASA technicians who will work on the installation, operation, repair, maintenance and calibration. Training expenses including materials shall also be provided by the winning bidder.



9.0 Technical Specifications

Instrument	Specification	Quantity
Wind speed and direction sensor	<p>Range: wind speed: 2 to 90m/sec., wind direction: 0 to 360°</p> <p>Accuracy: ± 0.5 for wind speed and $\pm 5^\circ$ m/s wind direction</p> <p>Power: 12 ± 2 VDC supplied from the indicator</p> <p>With 30 meters cable each to connect sensor and digital indicator</p> <p>Suitable for calibration</p>	5 sets
Digital wind speed and direction indicator with alarm	<p>Range: 0 to 360° for wind direction and 0 to 99.9 m/s for wind speed</p> <p>Display content: Instantaneous or mean wind direction in 16 azimuths by red LED</p> <p>Instantaneous and mean wind speed in digital figures</p> <p>Power: 220 VAC, 50 or 60 HZ</p> <p>Alarm: 3 normally-open dry contacts</p> <p>Components: Digital indicator with alarm, 2 fuse front and rear panels with English indicator and instruction manual</p> <p>With one unit each of uninterruptible power supply (UPS) back up for long time</p> <p>Suitable for calibration</p> <p>Note: Training included and on-site assistance upon request</p>	
Tipping bucket rainfall sensor	<p>Dimension: $\phi 220 \times 450$(H)</p> <p>Orifice: $\phi 200$ mm</p> <p>Output: 0.5mm amount of rainfall per tip</p> <p>Contact: Reed switch</p> <p>Contact time: 0.1 second</p> <p>Contact capacity: 1 ADC, 200 VDC max.</p> <p>Accuracy: ± 0.5mm</p> <p>With 30 meters cable each to connect sensor and digital indicator</p> <p>Suitable for calibration</p>	5 sets
Digital rainfall indicator with alarm	<p>Display: 7-segment red LED, 4 digits</p> <p>Display range: 0.0 to 999.5 m/s</p> <p>Input signal: Non-voltage make contact</p> <p>One tip of rainfall amount: 0.5mm</p> <p>Contact time: 0.1 secs</p> <p>Max. no. of pulses: 10 pulses /min</p>	



	<p>Display content: Instant (upper) and Mean (lower)</p> <p>Alarm output: Time rainfall: 1 to 999mm</p> <p>Power requirement: 100 VAC \pm10% 50/60 Hz approx. 15 VA</p> <p>Built-in battery: Last 4 hours during blackouts, charged whenever connected with AC power</p> <p>Dimensions: 200(W)x110 (H)x200(D) mm</p> <p>Weight: min: 3.0 kg , max. 4.0 kg</p> <p>Accessories: 3m power cable, fuse</p> <p>Note: Training included and on-site assistance upon request</p>	
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