



Republic of the Philippines

DEPARTMENT OF SCIENCE AND TECHNOLOGY

**Philippine Atmospheric, Geophysical and Astronomical Services
Administration (PAGASA)**

TERMS OF REFERENCE

for

**Supply, Delivery and Testing of 80 UNITS Advanced
Remote Data Acquisition Unit and 245 Pairs LiPo Battery**

A. Overview

Hydromet Stations were installed from 2010-2017 through several DOST-GIA funded projects includes Automatic Weather Stations (AWS), Automated Rain Gauges (ARGs), Water Level Monitoring Stations (WLMS), Tandem Stations (Combination of ARG and WLMS) and Warning Stations. It is currently maintained by another DOST-GIA funded project "Optimization Project" that is currently being implemented by PAGASA.

The key component that is existing inside all of these stations is the Advanced Remote Data Acquisition Unit (ARQ) that serve as the overall controller and the data logger. The ARQs are powered by a pair of replaceable LiPo battery and is charged by the Solar Panel of the stations.

B. Approved Budget for the Contract

The Approved Budget for the said item is Three Million, Seven Hundred Seventy-One Thousand, One Hundred Pesos (PhP 3,771,100.00).

C. Qualifications of Bidder

The complete requirements for a prospective bidder to qualify may be referred to in Section II Instructions to Bidders; the Bid Data Sheet; and the Checklist of Eligibility and Technical Requirements of the Bidding Documents. Specific mentions herewith are the following:

1. Prospective bidders who are not manufacturers or producers and acting merely as suppliers, distributors and the like of the goods and services that is subject of this bidding must be duly authorized by the manufacturer or producer of the goods and services and must be able to show valid proof of such authorization during the opening of bids (See manufacturer's certificate form);
2. Prospective bidders shall have the technical and financial capability as well as qualified technical personnel necessary to deliver the goods and services required for the project, if awarded the contract.

—

D. Period and Place of Delivery

The winning bidder shall supply, deliver and test the components within the following schedule upon receipt of Notice to Proceed (NTP).

- 80 units of ARQ - maximum of 45 to 60 days
- 100 pairs of LiPo Batteries - maximum of 45 to 60 days
- 145 pairs of LiPo Batteries - maximum of 60 to 90 days

Delivery will be at 2nd floor, Planning and Project Management Office, PAGASA WFFC Bldg., BIR Rd., Diliman, Quezon City

E. Bid ProQosal Contents

The prospective bidder is expected to comply and respond accordingly to the specific instructions and submit all the documentary requirements under the Checklist of Eligibility, Technical and Financial Requirements. The submission of the requirements must be properly arranged in order and with label, using only the prescribe forms.

The prospective bidder shall respond paragraph by paragraph and shall clearly indicate compliance to all the required specifications (*Please see Section VII Compliance Matrix*) and shall specify the number of days or schedules within which to complete the delivery of all the goods required (*Please see Section VI Schedule of Requirements*).

It is likewise expected that the prospective bidders shall include in its submission the following documents:

1. The original descriptive literatures and unaltered brochures of all equipment/materials to be supplied.
2. Engineering Drawings and Diagrams submit detailed methodology of installation of the equipment with their corresponding system and network diagrams; and
3. List: The list of equipment to be supplied and breakdown of their corresponding prices using the required bidding forms (Please refer to Financial Component).

These details will enable the **PAGASA-Bids and Awards Committee** to fully evaluate and determine the bidder's compliance with the requirements of the project.

On the other hand, should there be any material and/or activities needed which were not specified or mentioned herein but are necessary to complete the project, the winning bidder shall immediately inform the end-user of the project for immediate action.

F. Technical Specifications

1. Advanced Remote Data Acquisition Unit (ARQ) - 80 UNITS

- I. Overall design will be provided by ASTI (available upon signing of Non-Disclosure Agreement)

II. Circuit boards

A. GDAT Main Board (Qty: 1 pc)

Specs:

- includes board fabrication and component assembly
- includes component sourcing based on BOM
- gerber and BOM files are available upon request
- quantity:
- must pass based on testing procedure submitted

PCB specs:

- Dimension: 82.22mm x 64.2mm
- Material: FR-4
- Silkscreen: White (Top and bottom)
- Solder Mask: Double
- LPI color: Black
- PCB Thickness: 1.64 mm
- Number of Electrical Layers : 2

B. GSM Module (Qty: 1 pc)

Specs:

- includes board fabrication and component assembly
- includes component sourcing based on BOM
- gerber and BOM files are available upon request
- quantity:
- must pass based on testing procedure submitted

PCB specs:

- Dimension: 37mm x 50mm
- Material: FR-4
- Silkscreen: White (Top and bottom)
- Solder Mask: Double
- LPI color: Blue
- PCB Thickness: 1.64 mm
- Number of Electrical Layers: 2

C. Power Board 1 and 2 (Qty: 1 pair)

Specs:

- includes board fabrication and component assembly
- includes component sourcing based on BOM
- gerber and BOM files are available upon request
- must pass based on testing procedure submitted
- PCB specs:
- Dimension: 24.4mm x 64.2mm
- Material: FR-4
- Silkscreen: White (Top and bottom)
- Solder Mask: Double
- LPI color: Green
- PCB Thickness: 1.64 mm
- Number of Electrical Layers: 4 and 2

Qty breakdown:

- 1 pair = 1 pc of Power Board 1 and 2

- 1 pair of Power Board 1 and 2 is assembled in the datalogger

D. Pressure Module (Qty: 1 pc.)

Specs:

- includes board fabrication and component assembly
- includes component sourcing based on BOM
- gerber and BOM files are available upon request
- must pass based on testing procedure submitted

PCB specs:

- Dimension: 20.32mm x 20.32mm
- Material: FR-4
- Silkscreen: White (Top and bottom)
- Solder Mask: Double
- LPI color: Blue
- PCB Thickness: 1.64 mm
- Number of Electrical Layers: 2
- Lead Time : 15 Days

III. Enclosure (Qty: 1 pc)

- fabrication of customized casing for the datalogger based on drawing design
- includes fabrication of saddle clamps and lock bars based on drawing design
- includes industrial design for the tooling
- materials: weatherproof and UV-resistant
- ingress protection: IP67

IV. Lithium Polymer Battery (1 pair)

Detailed Specs :

Type : Lithium Polymer (LiPo) with built-in protection circuit module (PCM)

Voltage (Nominal): 3.7 V

Capacity : 6800 mAh (Typical) 6500 mAh (Minimum)

Charge:

Max Current : 6800 mAh

Limited Voltage : 4.2 +/- 0.02 V

End-of-Current: 136 mA

Discharge:

Max Current : 13600 mA

End Voltage : 2.75 +/- 0.005

Operation Temp :

Charge : 0 - 45 deg C

Discharge: -20 - +60 deg C

Safety Characteristics :

Overcharged: No fire or explosion

Short Circuit: No fire or explosion (150 deg C max heat)

Heating: No fire or explosion

Acclimatization Characteristics :

High Temp and High Humidity: No deformation, no rust, no fire or explosion

Discharge Time >= 36 min

Vibration : No damnification, no leak, no fire or explosion

Battery Voltage ≥ 3.6 V
Drop : No leakage, no fire or explosion
Discharge Time : ≥ 36 min.
High Temp Discharge Capacity: 57 mins.
Low Temp Discharge Capacity : 4.25 hrs.
Overcharge protection:
Detection Voltage : 4.28 ± 0.05 V
Detection Delay Time : 0.96 - 1.4 secs.
Release Voltage: 4.175 ± 0.025 V
Overdischarge Protection :
Detection Voltage: 3 ± 0.1 V
Detection Delay Time : 115 - 173 ms
Release Voltage: 3.5 ± 0.05 V Over Current Protection
Detection Voltage: 0.1 ± 0.015 V
Detection Current : 2 - 6 A
Cycle Life : ≥ 300 cycles
Dimension: 9.8x51.5x120 mm (ThickxWidthxLength) max
Approx Weight: 136 g
Connector and wiring Specs :
Type : Connector, Housing
Body Orientation : Straight
Housing Material: Nylon 66
Max Current Rating : 3 A
Max Voltage : 250 V
Temp Rating: -25 deg C to 85 deg C
No. of contacts: 3 (positive, NTC, negative)
No. of Rows: 1
Pitch: 2 mm
Dimension: 2x8x5.8 mm (DepthxHeightxLength)
Wire Size : 22-28 AWG
Wire Length: 50mm ± 3.0
Packaging:
**High temp. adhesive tapes and wrapped with PVC material
** with external 1k carbon resistor connected to NTC connection

V. Connectors

1.) Waterlevel (Qty: 1 pc)
- Receptacle PART No. 09343111604

2.) Rain Gauge (Qty: 1 pcs)
- Receptacle PART No. 0934038603

VI. Assembly and Testing

- includes all assembly and integration of boards enclosure/mechanical fixtures, solar panels and sensors
- includes functional testing and must pass based on end-user's testing procedure (generate individual test report from test

2. LiPo Batteries - 245 Pairs

- spare batteries (specifications same as indicated above)

3. Notes

- End-user may request for a demonstration with the Least Calculated Bid (LCB) / Single Calculated Bid (SCB) during post-qualification.
- LCB / SCB must provide two (2) samples of actual unit for approval by the end-user as part of the post-qualification and prior to award. If approved by end-user, one (1) sample will be retained for reference of the units to be delivered.
- At least 2 years warranty of parts and services
- Must be licensed by ASTI
- Price is inclusive of government duties and taxes and other fees.
- Payment upon full delivery

G. Warranties/ After Sales Suimort

1. The winning bidder warrants that it shall strictly conform to all the Terms and Condition of the Contract, including this Terms of Reference (TOR).
2. All workmanship, materials and equipment shall be warranted by the supplier for a period of two (2) years commencing from the date of acceptance. The warranty shall include:
 - Technical assistance when summoned to by the end-user regarding the delivery items.
 - Immediate replacement of the defective item/s, in any case of malfunctions during the warranty period.
3. While the equipment is undergoing repair, a spare unit shall be made available to PAGASA to maintain the continuous operation of the system. Repair of the defective materials or equipment shall be permitted provided that the repaired item meets original specifications.

