

# THE UNIVERSITY OF BURDWAN

*Dr. Deb Kumar Panja*

Registrar



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## Notice Inviting Tender (3<sup>rd</sup> CALL)

Tender Ref. No BU/ AICTE-RPS/ 01/ 3rd Call

Date: 15/03/2018

E-tenders are hereby invited for the item as per detailed specifications from the Original Equipment Manufacturer (OEM) or their authorized representatives in India for supply and installation of "GNSS Station with Antenna and Software" for AICTE-RPS Project No. No 8-10/ RIFD/ RPS/ Policy-1/ 2016-17 dt 02 August, 2017, entitled "Development of Cost Effective, Compact GNSS receiver for sub meter Accuracy using Low-cost hardware and Open Source GNSS package for location based Application Development" under Dr. Anindya BOSE, Principal Investigator (PI) and Scientific officer (Selection Grade), Department of Physics, The University of Burdwan.

The tender must be submitted through **on line only and must be addressed to-**

Dr Anindya Bose, PI, AICTE-RPS Project  
Department of Physics, The University of Burdwan  
Golapbag, Burdwan 713 104, INDIA

1. For e-filing, intending bidder may download the e-tender documents from the website <https://wbtenders.gov.in> directly with the help of Digital Signature Certificate.
2. Bid shall remain valid for a period not less than 60 (*sixty*) days from the last date of submission of Financial Bid.
3. All the prices must be quoted in Foreign Currency (for imported items) & INR for local items.
4. Both **Technical Bid** and **Financial Bid** are to be submitted concurrently duly digitally signed in the website <https://wbtenders.gov.in> within the closing date of online submission.
5. The **FINANCIAL OFFER** of the prospective bidder will be considered only if the specification of the bidder is found qualified by the Project Purchase Committee. The decision of the Project Purchase Committee will be final and absolute in this respect.
  - a) Terms & Conditions like, Insurance, Mode of payment, Validity period, Warranty and Delivery period must be mentioned and to be submitted on firm's letter head mentioning the following :
    - i) Name and address of the Company including Telephone no., FAX no.
    - ii) Contact person - Name, mobile number, email address
    - iii) Banker's name and address in details
  - b) Detailed Technical specifications
  - c) Full Specifications, Make, Model, Brochure/Leaflets/Technical Information of the item(s) should be given while quoting the rates in the bid.
  - d) In case of authorized dealers, OEM authorization mentioning the NIT no to be submitted by the dealer.
  - e) The OEM must have experience of manufacturing DGPS/ GNSS for at least last 15 years or more which should be given as undertaking from the OEM in writing and is to be submitted alongwith the tender documents

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- f) The accessories quoted by every bidder should be OEM make and not locally sourced; if found so during supply then order will be cancelled
  - g) Experience and credential documents including copies of Orders towards supply of DGPS/ GNSS Stations in Govt /Govt undertaking organizations/ agencies are to be submitted along with the technical bid
  - h) Any other relevant document
6. The **Financial proposal** should contain the Bill of quantities (BOQ) in one folder. The bidder has to download the BOQ and quote the rate online in the space marked for quoting rate in the BOQ and upload the document virus scanned & Digitally Signed by the bidder.
  7. The Project Purchase Committee reserves the right to accept or reject any bid and to cancel the Bidding processes and reject all Bids at any time prior to the award of Contract without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the ground for Purchase Committee's action.
  8. The Bidder whose bid would be accepted will be notified.
  9. The final price of the instrument /equipment must include the other charges like packaging, forwarding, freight, transportation charges etc (whenever the prices are quoted on Ex-Work/FOB/FCA basis).
  10. Name and address of the Foreign Principal (OEM) and their Email and Fax No. must be clearly mentioned in the offer. The purchase order will be placed to the OEM only.
  11. The material should be dispatched duly insured against theft, loss or breakage during transit and the rates chargeable for insurance may invariably be quoted separately. The insurance shall be for an amount equal to 110% of the CIF value or CIP value of the contract from within "warehouse to warehouse (final destination)" on all risk basis including strikes, riots, and civil commotion.
  12. The University of Burdwan is registered with Department of Scientific and Industrial Research (DSIR) for the purposes availing Customs duty exemption in terms of Government Notification and Central Excise Duty Exemption in terms of Government Notification.
  13. Payment will be made on bill basis after the receipt of the item in good condition, its satisfactory installation and commissioning at out site by e-payment. In case of Import, payment shall be made through Letter of Credit (L/C) /Wire transfer/Foreign Demand Draft. The bidder has to follow the terms and conditions laid down in the L/C.
  14. The warranty shall remain valid for minimum twelve (12) months from the date of satisfactory installation and commissioning at our site or thirty months (30) after the date of shipment from the port or place of loading in the country of origin whichever period concludes earlier.
  15. Rate should be given both in words and figures clearly in the quotation. If there is any discrepancy between the words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to above.
  16. The shipment must be in the name of "The Registrar, The University of Burdwan, Rajbati, Burdwan, 713104, West Bengal, India".
  17. The last date and time for receiving complete bids shall be strictly adhered to and no offer received after the due date shall be considered. Delayed/Late Tenders will not be considered at all. The University of Burdwan will not be responsible for any loss in transit.

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18. The acceptance of quotation will rest with the Principal Investigator of the project who does not bind himself to accept the lowest quotation and reserves the right to reject, or partially accept any or all the quotations received without assigning any reason.

19. Date and Time Schedule :

Sl. No.	Particulars	Date and Time
1.	Date of uploading of N.I.T. & other Documents (On line) (Publishing Date)	16/03/2018 09:00 am
2.	Documents download start date (On line)	16/03/2018 09.00 a.m.
3.	Documents download end date (On line)	24/03/2018 02.00 p.m.
4.	Bid submission start date (On line)	16/03/2018 09:00 am.
5.	Bid Submission closing date (On line)	24/03/2018 02:00 p.m.
6.	Bid opening date for Technical Proposals (On line)	26/03/2018 02.00 p.m.
7.	Date of uploading list for Technically Qualified Bidder (On line)	To be notified later
8.	Date for opening of Financial Proposal (On line)	To be notified later

REGISTRAR,  
The University of Burdwan

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Tender Notice No: Tender Ref. No BU/ AICTE-RPS/ 01/ 3<sup>rd</sup> Call: **ANNEXURE I**

Sr No	Detailed Technical Specifications
<b>(1)</b>	<b>GNSS Permanent Station with Antenna, Accessories and Software comprising of the following:</b>
<b>(A)</b>	<b>GNSS RECEIVER:</b>
<b>i.</b>	Multi-frequency GNSS receiver with 500+ channels having internal slot for removable SD card memory of 32 GB which should be capable of storing minimum 180 or more days of data at 1 second sampling interval and also should have user selectable sampling rate in the range of 0.02 sec. – 300 sec. Receiver should be capable of receiving <b>GPS</b> L1, L2 and L5, <b>GLONASS</b> L1 and L2, <b>GALILEO</b> E5a, E5b and AltBOC signals, <b>BeiDou</b> , <b>IRNSS</b> L5, <b>SBAS</b> . [Should be future compatible to GLONASS L3 and L5 CDMA, Galileo E6]
<b>ii.</b>	The receiver should be equipped with onboard display for configuration of major parameters like network IP, DHCP and depict the status of satellites tracked, power, position and memory. The display should be visible in sunlight.
<b>iii.</b>	The receiver should be capable of recording data for 12 sampling sessions simultaneously with Velocity Control Displacement and Displacement Control Displacement logged into the receiver.
<b>iv.</b>	The receiver should be capable to accommodate met-package, met data are to be automatically stored as binary file, and produce separate met file upon RINEXING. The MET interface should be directly configurable either over Web Interface or Reference Station software. The receiver should have possibility to log the RINEX data directly to the receiver and perform an FTP push directly from the receiver. There should be no pre-requirement for any initialization strings to use Met sensor. The receiver should be capable to provide power external sensors attached to the ports.
<b>v.</b>	Power consumption: Less than 5 Watt (Receiver and Antenna, nominal) with external battery voltage in the range of 11-28 volts DC with provision to operate from car battery and also from 230V AC. The receiver should have internal removable battery slot of min 4.6 Ah. The battery should be removable in the field and capable of charging with internal or external charger.
<b>vi.</b>	Unsmoothed pseudorange should be recoverable from GPS receiver.
<b>vii.</b>	Power ports: External power port for facility to support two separate power supplies connected simultaneously with automatic switching facility, A.C. mains supply adaptability, over-voltage and polarity protection (D.C.). The power ports should not be connected internally. External power ports in range of 11-28V DC and 220V A.C. The receiver should have power output to power external devices from the receiver power supply.
<b>viii.</b>	Remote monitoring and online data down-loading capability directly through radio modem / telephone line /RS232 & Ethernet. The system should have a dedicated Ethernet port on board.
<b>ix.</b>	Data Ports: Minimum two RS232 ports, Ruggedized RJ45 Ethernet, USB client (PC or tablet) / USB 2.0 or higher host (ext. disk without external converter cable), External oscillator / Event input / PPS Out, WLAN integrated. All ports being IP67 complied on integration with receiver. The ports should power external devices from GPS power source. The system should have internal slot for attaching GSM/GPRS modem for data pooling through NTRIP. The system must also have facility to stream raw GNSS observations through inbuilt Ethernet port or through internal GSM/GPRS modem, any authorization required for this should be bundled with the receiver.
<b>X</b>	<b>FULL NTRIP CASTER:</b> Unlimited number of mount points, Server and client connections via one single port, Receive correction data in client mode for calculating an RTK fixed position and monitoring the antenna position while continuing to work as a GNSS reference server, Would be capable to serve as a stand-alone NRTIP caster (without PC)
<b>xi.</b>	Operating temperature range: -40 deg.C to +65 deg.C.
<b>xii.</b>	Precision in static mode: 3mm+0.5ppm horizontal, 5mm+0.5ppm vertical
<b>Xiii</b>	Should be waterproof (IP67), shockproof, humidity proof 100% and condensation proof.
<b>Xiv</b>	Automatically power-on and data logging after power failure, with same configuration (should not restore to factory defaults).

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<b>xv</b>	Should be able to track all available satellites to 0 degree elevation.
<b>xvi</b>	Should be capable of serving as base station for post processed kinematics and RTK rovers.
<b>xvii</b>	Should be able to monitor with controller or any PC with required software and also should be able to work on stand alone.
<b>xviii</b>	Vendors will be required to satisfy the following tests for verification purpose:-
<b>(a)</b>	Complete check of the supplied instrument, accessories and demonstration
<b>(b)</b>	Quality Control Statistics (10-90 degree)
	<b>(i)</b> Receiver must have (observations record / observations expected) > 99%
	<b>(ii)</b> MP1 (Multipath on L10 and MP2 values <0.8 m.
	<b>(iii)</b> Not more than 1 cycle slip per 20,000 observations on an average: (ie total obs / total slips)>20,000.
<b>(c)</b>	Functionality in short baseline processing:
	<b>(i)</b> L1,L2,L3 precision< 0.5 mm in N,E, 10mm in vertical.
<b>(B)</b>	<b>GPS ANTENNA:</b>
<b>i.</b>	Antenna should be separate from the receiver and be 3D choke ring design with Dorne Margolin element. It should be supplied with protection radome.
<b>ii.</b>	Repeatability of Antenna phase centre variation with elevation angle (10 – 90 degree), Should not be greater then 0.2 mm horizontal and 0.5 mm vertical (ref: NGS Report)
<b>iii.</b>	Multi-path reduction capability mechanism such that MP1 and MP2 values are less then 0.8 m for 10 -90 degree elevation angle (ref:TEQC software).
<b>iv.</b>	Geodetic grade, high gain on all bands.
<b>v.</b>	Operating temp range: -40 deg. C to +65 deg. C.
<b>vi.</b>	Should be water proof (IP66), shock proof, dust proof, 100% humidity proof and condensation proof.
<b>vii.</b>	It should fulfill the IGS recommended specification
<b>viii.</b>	Antenna should be capable to track GPS, GLONASS and GALILEO GNSS system and log the raw data using all signals received from the receiver i.e. GPS: L1, L2 (including L2C), L5 GLONASS: L1, L2, L3 Galileo: E2-L1-E1, E5a, E5b, E5a+b (AltBOC), E6 BeiDou: B1, B2, B3 IRNSS: L5 SBAS (Specifically GAGAN)
<b>(2)</b>	<b>GNSS station ACCESSORIES</b>
<b>i.</b>	Antenna Cable operational without amplifier (length: 30 m as per the site requirement).
<b>ii.</b>	AC and DC power supply cables with batteries
<b>iii.</b>	Receiver box with mounting kit
<b>iv.</b>	Tribrach with Antenna adapter
<b>v.</b>	Calibrated height measurement stick
<b>vii.</b>	Forced-centering device for accurate centering over the station mark, with rust proof (high grade steel ).
<b>viii</b>	Industrial grade SD cards with operational temperature range -40 deg.C to 65 deg.C.
<b>ix</b>	<b>Surge and lightning protectors:</b>
	(a) DC – lightning arrestor. (b) EMP Protector /surge arrestor & capsule kit (GPS antenna)

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<b>(3)</b>	<b>GPS DATA LOGGING, PROCESSING AND ANALYSIS SOFTWARE for accommodating all the sites</b>
<b>i.</b>	Software to facilitate configure the receiver, downloading the raw data, RINEX conversion based upon the user defined sampling interval and file length and continuous logging of GPS data to any PC. At the same time the software should be able to store the data in proprietary format.
<b>ii.</b>	Base Station software: The software should be able to perform all necessary function of transferring data to card / external data logger / computer, remote communication, remote configuration, RINEXING raw data, Firmware upgrade of receiver. The software should run as windows OS service. Main module should start automatically with start up of Windows. The system configuration should be maintained in a single data base.
<b>iii.</b>	The software should create the RINEX products out of the raw data automatically which can be variable length from a single raw data. The length of products should be of upto 1 minute with downloads in same time limit.
<b>iv.</b>	The software should generate real time stream from the connected stations to be distribute a Radio or an IP communication. The supports for all common real time formats should be there.
<b>v.</b>	The software should be able to monitor the behaviour of stations and status messages should be depicted in a watch window embedded in the main module of the software.
<b>vi.</b>	The software should be capable of handling and configuring GNSS reference stations for GPS, GLONASS and GALILEO.
<b>vii.</b>	The software should graphically plot the SNR charts and depict the same as numerical values. The software should automatically generate the quality check reports for the stations. The status of the receiver should also be depicted in map display. It should be possible to use a Raster map in the background to display sites.
<b>viii.</b>	The software should graphically depict the raw data being received from the receiver and also depict the data gap in the receiving status.
<b>ix.</b>	The software should include key quality and quantity information, which should include data completeness, satellite tracking, cycle slip, multipath and receiver clock.
<b>x.</b>	Software should support connection to receiver of different vendors
<b>xi.</b>	In case of real time communication/real time data transfer failure, the software should be able to download the missing data automatically, once the communication is restored.
<b>xii.</b>	The software should be able to remotely monitor the GNSS reference stations over a TCP/IP and modem link. The software should be able to remotely view and download the data of the remote receivers and should be able to perform other functions like firmware upload, data download and configuration of the system. All the activities should be automated.
<b>xiii.</b>	The software should support RTCM 3.1 and passive RINEX. Also should support receiver status in Geographic map display and RINEX creation from downloaded raw files. There should be a file based quality check report on RINEX file.
<b>(4)</b>	<b>Extended Warranty for two (02) more years in continuation after the standard Warranty period</b>

■	Bidder should have to provide the complete setup.
■	Bidder should provide all operation, service and maintenance manuals (in English) along with necessary circuit diagrams.
■	The vendor must have to provide a demonstration of the instrument and software to confirm the above specifications. The Vendor should have to provide warranty of receiver, antenna and onsite service during warranty period.

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