

**Department of Ocean Engineering (DOE)**  
**Indian Institute of Technology Madras (IITM)**  
**Chennai 600 036, Tamil Nadu, India**

---

Ref: OED/2018/015 / Project / SASA

Date: 12<sup>th</sup> October 2018

**FIELD INSTRUMENT FOR SURVEYING**

**Due date:**

\* Submission of technical and commercial proposal: On or before **26<sup>th</sup> October 2018@14:30 hrs.**

\* Bid opening: **26<sup>th</sup> October 2018@15:00 hrs.**

1. Quotations are invited in duplicate for the item shown in enclosed list as **Annexure 1**.
2. The quotations must be submitted under two bid system indicating clearly technical bid and financial bid on the envelope. Both the bids should be closed in the single envelop in a sealed cover.
3. The Quotations duly sealed and super scribed on the envelope with the reference No. and due date, Should be addressed to the undersigned so as to reach him on or before the due date stipulated above.
4. The Quotations shall be valid for 90 days from the due date and the period of delivery, warranty terms etc. should also be clearly indicated. A minimum of one year warranty is required.
5. Brochure detailing technical specifications and performance, list of industrial and educational establishments where the items enquired have been supplied must be provided.
6. Compliancy certificate is to be provided indicating conformity to the technical specifications.
7. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples / machine/ equipment if called for should be submitted / demonstrated at free of charges, and collected back at the supplier's expenses.
8. Packing and delivery charges must be clearly indicated.
9. The rates of GST and other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for GST/General Taxes will be admitted at any stage and on any ground whatsoever.
10. IIT Madras is eligible for concessional GST. Relevant certificate will be issued. In case of Imports, the price should be quoted without custom duty. IIT Madras is exempted from levy of IGST on Imports and eligible for concessional custom duty. In case of import supply, the price should be quoted on **EX-WORXS** and **CIP** basis indicating the mode of shipment.
11. Goods should be supplied carriage paid and insured.
12. Goods shall not be supplied without an official supply order.
13. Payment: Every attempt will be made to make payment within 30 days from the date of receipt of bill/ acceptance of goods, whichever is later.
- 14. Acceptance and Rejection:** - IIT Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.

Yours faithfully,



## Annexure-1

Ref: DED/2018/015/project/SASA

### Real Time Kinematic Global Positioning System (RTK GPS)

One full Set of Real Time Kinematic Global Positioning System (RTK GPS) with Differential GPS (DGPS) and including all primary accessories. Find the specifications below:

**Specifications:**

The RTK GPS with DGPS enabled One Base and one Rover with identical and interchangeable along with the followings:	
Technical Specifications	Description
<b>Receiver &amp; Controller</b>	
Time of Initialization	8 s or less
RTK Range	Upto 30 km
Position Update Rate	0.05 sec (20Hz)
Data Recording Rate	Upto 20 Hz
Satellite tracking	Tracking of most of the presently available frequencies of globally existing GNSS constellations: <ul style="list-style-type: none"> <li>➤ GPS - L1, L2, L2C, L5</li> <li>➤ GLONASS - L1, L2</li> <li>➤ BeiDou - B1, B2</li> <li>➤ Galileo</li> <li>➤ SBAS - WAAS – EGNOS – MSAS – GAGAN– QZSS</li> <li>➤ IRNSS (Optional)</li> </ul>
No of Channels	400 channels or more
DGPS <ol style="list-style-type: none"> <li>1. Horizontal</li> <li>2. Vertical</li> </ol>	DGPS <ol style="list-style-type: none"> <li>1. <math>\pm 0.25\text{m}</math> to +1 ppm</li> <li>2. <math>\pm 0.50\text{m}</math> to +1 ppm</li> </ol>
Kinematic <ol style="list-style-type: none"> <li>1. Horizontal</li> <li>2. Vertical</li> <li>3. Initialization Time</li> </ol>	Kinematic <ol style="list-style-type: none"> <li>1. <math>\pm 8\text{ mm}</math> + 1 ppm</li> <li>2. <math>\pm 15\text{ mm}</math> + 1 ppm</li> <li>3. 10 sec upto 30 km or better</li> </ol>
Static & Fast Static <ol style="list-style-type: none"> <li>1. Horizontal</li> <li>2. Vertical</li> <li>3. GNSS Interface</li> </ol>	Static & Fast Static <ol style="list-style-type: none"> <li>1. <math>\pm 3\text{ mm}</math> + 0.5 ppm or better</li> <li>2. <math>\pm 5\text{ mm}</math> + 1 ppm or better</li> <li>3. Cable, Bluetooth, RS 232, USB &amp; Web UI</li> </ol>
Navigation	Full navigation information in position and stakeout displays, position, course, speed, bearing and distance to waypoint
Tilt compensation	With Tilt compensation $\pm 15$ deg.

Internal Memory	4GB or more
Removable Memory	4 GB or more
Temperature: 1. Operation 2. Storage	Temperature: 1. -40°C to 65°C or better 2. -40°C to 75°C or better
Water and Dust Proof	IP 66 or better
Humidity	95% or better
Shock	Shock proof of 2m pole drop should work
Vibration	Rugged Protective fiber coating
Power Supply / Management: a) Battery b) Battery Operation time c) Charger d) External Power supply e) Over Voltage Protection f) Power Consumption	a) Lithium ion Battery b) Minimum 5hours working or better c) External & Integrated optional d) Nominal voltage 12V DC e) Must be with over voltage protections f) 3.2 W or less
Communications: 1. Ports 2. Interface	1. 3 serial port RS232, 1 USB, 1 Bluetooth 2. Provision of Integrated UHF Radio Frequency Mode, SIM Card GSM Mode for RTK
LED status indicators	Bluetooth, Position, Logging, etc
GNSS Measurements	Fully independent code and phase measurements of all frequencies with phase tracking precision of 0.5 mm. L-band correction system
Field and Post Processing Software:	<ul style="list-style-type: none"> <li>• Planning GPS Survey</li> <li>• Post Processing for GPS (L1/L2), GLONASS, Galileo, QZSS, etc</li> <li>• Design and Network Adjustments</li> <li>• GIS and CAD Export options</li> <li>• RINEX Import and Export option</li> <li>• Transformation between WGS 84 to any coordinate system</li> <li>• Transformation between any projections.</li> <li>• View and Edit Options</li> </ul>
Operating System:	Windows 10 Operating System
Controller: a) Display b) Keyboard c) Graphical Display  d) Type	One Controller for One GPS a) Full Graphical with Touch Screen b) Separate Alphanumeric keys c) Show Point, Line, Polygon in field with Zoom, Pan Options, Satellite Tracking, etc d) 4.0 inches Portrait/Landscape VGA display, 640 x 480 pixels – Sunlight-readable color TFT with LED or better e) 5 MP auto focus or better Integrated speaker and

e) Camera	microphone
f) Communication	f) RS232 Communication by any Baud Rate Standard USB Port, Bluetooth
g) Processor	g) One GHZ processor
Accessories for Each GPS	<ol style="list-style-type: none"> <li>1. All Required and Mandatory items provided by the OEM for Operations must be supplied.</li> <li>2. Tripod:2nos</li> <li>3. Height Measuring Device:2nos</li> <li>4. Tribrach with optical Plummet: 2 nos</li> <li>5. Tribrach Adaptor or Carrier: 2 nos</li> <li>6. Charger: External - 1nos</li> <li>7. External Power Cable – As required</li> <li>8. External OEM Battery – 1 nos</li> <li>9. Data downloading cable (USB / Serial) – 1 nos</li> <li>10. RTK Rover set up including pole, Pole adapter to mount data controller – 1 nos</li> <li>11. Battery: For Receiver &amp; Controller – As per OEM</li> <li>12. One Controller Per GPS</li> </ol>
Application	Topographic Survey, Stakeout, Navigation Information, Point Management, etc by GSM, UHF, Static & RTK mode
<b>Complete Accessories:</b>	
Static Survey Kit	Receiver Kit for performing the static survey with suitable Tripod arrangement for base and rover units.
RTK Survey Kit	Rover Pole holder kit for RTK Survey
Office Software	GNSS Data processing and Post Processing Software
Training	On-Site training (shore / coast / hill, etc) for Installation, Data collection, Data processing and Post Processing of data using software.
Cover (water-proof)	For Tripod, Receiver and Antenna Box
Provide the optional accessories separately.	
The vendor has to do the Demonstration in front of the IIT Madras Committee Members, if required.	

## **2. Prerequisite**

The vendor has to submit proof of documents for similar **RTK GPS** supply in India. In addition, the proof of documents for successful completion of at least two supplies of same **RTK GPS** should be submitted.

## **3. Payment terms**

Please specify the payment terms. IIT Madras reserves the right to negotiate the terms of payment as acceptable to the purchase procedures prevalent from time to time.

## **4. Terms and conditions**

Please quote the rate with the following details.

1. Quotation validity minimum 90 days.
2. Submission of Methodology, Delivery and commissioning periods.  
Tax details.

## **5. Force Majeure**

Neither the Agency nor the owner shall be considered in default in performance of its obligations hereunder if such performance is prevented or delayed for any causes beyond the reasonable control of the party affected, such as war, hostilities, revolution, riots, civil commotion, epidemic, major fires, explosions, floods, earthquakes or because of any law, order, proclamatory regulations or ordinance of Government, provided notice in writing of such cause with necessary evidence that the obligation under the Contract is thereby affected or prevented or delayed, is given within 14 days from the happening of the event and in any case it is not possible to serve the notice within the said 14 days period, then within the shortest possible period without delay.

As soon as the cause of Force Majeure has been removed, the party whose ability to perform its obligation has been affected shall notify the other party the actual delay occurred on account of such activities.

Although the time for completion of work shall be suitably extended (not exceeding the period during which the work was stopped on account of Force Majeure clause), such extension shall not result in any financial claim by the Agency against the Owner on any account of such a delay for any other reason whatsoever.

- **Pre-bid meeting will be held on 22<sup>nd</sup> October 2018@4.00 pm**
- **Venue: 1<sup>st</sup> floor, Department of Ocean Engineering, IIT Madras.**

Proposal send to following Address:-

**Prof.S.A.Sannasiraj**  
**Dept. of Ocean engineering,**  
**IIT Madras, Chennai-600036**