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TENDER SPECIFICATION OF MULTI PRODUCT CALIBRATOR – COMSUB & COMNAV

1. **Name of the Equipment.** Multi Product Calibrator.
2. **Purpose.** The Multi Product Calibrator should be a precision instrument designed to calibrate a wide range of electrical test equipment in one compact unit. It should provide accurate sourcing of DC/ AC Voltage, DC/ AC Current, Resistance, Capacitance and Thermocouple signals, along with simulation of Pressure and Temperature sensors when paired with accessories. The device should also source oscilloscope calibration signals including fast edges and square waves which will make it suitable for both handheld meters and bench instruments. Its versatility reduces need for multiple dedicated calibrators, streamlining calibration labs.
3. **Quantity** : 02 (Two) Complete sets.
4. **Type** : To be mentioned.
5. **Brand** : To be mentioned.
6. **Model** : To be mentioned
7. **Manufacturing Country** : USA, UK, EU, Canada, Switzerland and Norway (Country to be mentioned).
8. **Country of Origin** : USA, UK, EU Canada, Switzerland and Norway (Country to be mentioned).
9. **Original Equipment Manufacturer (OEM)** : Name and full address with e-mail of OEM to be mentioned.
10. **Supplier/ Principal/ Bidder** : Name and full address with e-mail of Supplier/ Principal/ Bidder to be mentioned.
11. **Local agent** : Name & full address with e-mail of supplier/ local agent is to be mentioned.
12. **Year of Manufacturing** : 2025 or later.
13. **Qualification for Bidder.** Manufacturers of Multi Product Calibrator or their authorized distributor/ agent can submit quotations through their authorized local agent enlisted in DGDP. In case of offer from distributor/ agent, certificate of dealership/ agencyship from OEM is to be submitted with the offer. In this regard the following certificates are to be submitted with the offer (if not OEM):
 - a. Authorization Certificate from OEM.
 - b. Supply Assurance Certificate from OEM.
14. **Equipment Manufacturer and Reliability/ Requirement.** The items should be brand new, unused and of recent model, proven reliability in the field of operation. The supplier shall ensure the continuity of the operation and availability of necessary spares for at least 15 years each in case of obsolete model over time.
15. **User List.** List of users of the offered Multi Product Calibrator is to be mentioned with full address. The list shall provide the name of various navies/ coastguards with respective model and brand of offered Multi Product Calibrator. The Multi Product Calibrator should be widely used by various navies/ coastguards. The user list shall be used for the assessment of the offer.
16. **Condition for Acceptance of Quotation.** The quotation has to have supporting documents (booklets, leaflets, catalogues, brochures etc) with details about offered Multi Product Calibrator, If detailed information regarding specifications, manufacturer's manuals and catalogue for the quoted model of the Multi Product Calibrator, spare parts, accessories, scope of supply, etc are not provided the quotation will not be accepted.
17. **Acceptance/ Rejection of Bid.** DGDP/ BN reserves the right to accept or reject any bid or to terminate the bidding process and reject all bids at any time prior to the contract award (without thereby incurring any liability to the BIDDER).

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18. **Certification.** The offered item is to fulfill the requirement of ISO/ IEC/ CE (IEC 61010-1: Overvoltage Category II, Pollution Degree 2; IEC 61010-2-030). Moreover, Calibration Certificate from accredited Calibration lab must be provided along with the Equipment.
19. **Additional Features Offered by Bidder.** The bidder may suggest and offer additional features for the offered Multi Product Calibrator. In this case, Bidder is to explain the detailed advantage of that/ those features of the offered Multi Product Calibrator.
20. **Scope of Supply.**
- a. 02 x complete sets of Multi Product Calibrator with Essential Accessories.
 - b. Special Tools (If any).
 - c. Certification and Reports.
 - d. Manual/ Documentation.
 - e. Local Training.
 - f. Test, Trial and Acceptance.
21. **General Features.** The Multi Product Calibrator should have following features (but not limited to):
- a. Modern user interface with large color touch screen and visual connection management improve usability and reduce errors.
 - b. Easily calibrate devices that measure AC/ DC voltage, AC/ DC current, resistance, temperature and capacitance.
 - c. 30 A continuous current output that can be expanded for calibrating clamp meters with optional current coil.
 - d. Source and measure both DC and AC voltages.
 - e. Visual Connection Management Terminals.
 - f. Variable Resistance outputs.
 - g. Source variable capacitance.
 - h. Simulate and measure thermocouple and Resistance Temperature Detectors (RTDs).
 - j. Isolated Terminal Block.
 - k. Touch Screen Display.
 - l. Thermocouple Connector.
 - m. Operate and Standby Mode.
 - n. Calculator Keyboard.
 - p. Trigger.
 - q. Multiplier Keys.
 - r. Outputs Units.
22. **Environmental Condition.**
- a. Ambient Operating Temperature : 5°C to $+ 50^{\circ}\text{C}$.
 - b. Storage Temperature : To be mentioned.
 - c. Relative Humidity : Up to 95 % (Non condensing).

23. **Technical Specification.** The technical specification of Multi Product Calibrator is given below:

Ser	Description	Required Parameter
DC Voltage		
1.	Range	0V to ± 1020 V DC or better
2.	Resolution	10nV or better
3.	Max Burden	20 mA or better
4.	Best Uncertainty	$\pm 0.0024\%$ or better
AC Voltage		
5.	Range	1 mV to 1020V or more
6.	Resolution	10nV or better
7.	Frequency Range	3Hz to 500KHz or more
8.	Max Burden	20mA or better
9.	Best Uncertainty	$\pm 0.078\%$ or better
DC Current (Continuous)		
10.	Range	0 A to ± 30.2 A or better
11.	Resolution	0.1nA or better
12.	Max Burden	10V or better
13.	Best Uncertainty	$\pm 0.0085\%$ or better
AC Current (Continuous)		
14.	Range	10 μ A to ± 30.2 A or more
15.	Resolution	1nA or better
16.	Frequency Range	3Hz to 30KHz or better
17.	Max Burden	7V or better
18.	Best Uncertainty	$\pm 0.16\%$ or better
Resistance		
19.	Range	0 Ω to 1200 M Ω or better
20.	Resolution	0.0001 Ω or better
21.	Best Uncertainty	$\pm 0.005\%$ or better
Capacitance		
22.	Range	0pF to 120mF or better
23.	Resolution	0.1pF or better
24.	Max Allowable Voltage/ Current	10V/ 130mA peak or more
25.	Best Uncertainty	$\pm 0.19\%$ or better
AC and DC Power		
26.	Range	1mW to 30 KW or more
DC Voltage Dual Output		
27.	Range	0V to ± 7 V or more
AC Voltage Dual Output		
28.	Range	10mV to 5V, 45Hz to 10KHz or more
Other Function		
29.	Frequency Range	0.01 Hz to 2 MHz or more
30.	Frequency Accuracy	± 2.5 ppm or better
31.	RTD (Source) Range	-200 to 800°C or more
32.	RTD (Source) Type	Pt 100, Pt 200, Pt 500, Pt 1000, Cu 10, Cu 50, Cu 100, Ni120 or more
33.	Thermocouple Range (Source and Measure)	-250°C to 2300°C or more
34.	Thermocouple Type (Source and Measure)	B, C, E, J, K, L, N, R, S, T, U or more
35.	TC Connection	Multi Connector
36.	Display	Should have large color display with Touch Screen
37.	Visual Connection Management	Should have visual connection guidance to avoid connection mistakes
38.	Reverse Voltage Protection	Should have Reverse power protection feature for at least up to ± 250 V peak to have safety protection against common user errors
39.	Interface Port	Ethernet, RS-232, GPIB, USB etc (To be mentioned)
40.	Accessories	a. 02 x 50 Turn Current coil b. 02 Thermocouple Test Lead set with Case c. 02 x Set of standard DUT with Traceable Calibration software

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Ser	Description	Required Parameter
		d. 02 x Autocal Adapter
		e. 02 x Transport Case
		f. 02 x Power Cord and Adapters
		g. 02 x Calibration software

24. **Original Software & Backup Software.** Bidder shall provide all necessary original software (lifetime license version), Calibration Software along with backup software to BN and step by step procedure for installation. In case of software crash, BN personnel should be able to install the back-up software to restore the whole system using step by step procedure. Bidder shall provide backup copy of software in CDs/DVDs/portable drive along with instruction and password for installation during delivery.

25. **Standard Accessories.** Standard accessories which are essential to install and operate the Multi Product Calibrator (whether those are mentioned in the specification or not) also to be supplied. The price of standard accessories is to be included in FOB value. However, item wise price list of such standard accessories is to be provided with the offer for reference or future procurement.

26. **Optional Items/ Spares.** A list of OEM recommended Items/ Spares (if any) are to be quoted separately mentioning item-wise price. The buyer may select item/ items from the proposed list.

27. **Certificate and Reports.**

a. Following certificates and reports are to be provided in English for the offered item including associated equipment/ accessories **with the offer**:

- (1) Supply Assurance Certificate.
- (2) Guarantee and Warranty Certificates.
- (3) After Sales Service Support Certificate.

b. Following certificates and reports are to be provided in English for the offered item including associated equipment/ accessories **during delivery**:

- (1) 'Quality Assurance Certificates' for each item and their associated equipment and instruments from OEM is to be provided.
- (2) 'FAT Certificates'.
- (3) Certificate of Genuine Product and Brand-New Item.
- (4) Guarantee and Warranty Certificates.
- (5) After Sales Service Support Certificate.

28. **Manual/ Documentation.** 02 (Two) set of following documents and manuals in English are to be provided **at free of cost** at the time of delivery:

- a. Operating Manual.
- b. Technical Manual with Circuit Diagram (At lasts upto component level).
- c. Maintenance Manual.
- d. Parts Catalogue with parts Identification List (PIL).

29. **Brochures/ Booklet.** 01 (One) set of original Brochures/ Booklets in English having details technical information about the quoted of Multi Product Calibrator is to be provided along with the quotation for evaluation/ assessment.

30. **Factory Acceptance Test (FAT).** Following FAT is to be carryout in OEM premises for the offered Multi Product Calibrator:

- a. FAT will be carried out by 02 BN members for duration of 04 working days in OEM premises at the buyer's expense. Both way air fare, accommodation and food for the FAT team



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will be borne by BN. All types of movement/ transportation (air/sea/road) of the team within the manufacturer's country, reception and arrangement for entry into the country/ concerned area for the FAT are to be arranged by the supplier. The item-wise cost in this respect is to be quoted in the offer. The supplier should inform the buyer about the date of FAT (schedule) and FAT criteria at least 08 (Eight) weeks prior to the date of FAT. Moreover, FAT procedure shall be forwarded to the buyer 8 (Eight) weeks prior to the date of commencement of the FAT to the concerned directorate for approval of BN.

b. On return from the country of manufacturer, the FAT team will submit the report to concerned Directorate at Naval Headquarters. Naval Headquarters will, in turn, forward final decision along with FAT report, basing on which DGDP will render clearance for shipment of stores to the supplier concerned. The supplier will not make shipment of any item of the contract without clearance from DGDP.

c. The prime objective of FAT will be to check the capability of the system as the technical specification mentioned in the offer. Therefore, the capabilities of the quoted system which will be tested during FAT are to be separately mentioned in the offer. The FAT will be carried out at manufacture's factory premises. In this regard, the FAT protocol is to be submitted for approval by BN well in advance.

d. During FAT, various tests for checking performance are to be carried out and recorded. Substantially, the RF and GNSS frequency bands targeted by the proposed Multi Product Calibrator must be individually tested at frequencies that adhere to article 18 (1) during the FAT. After FAT, a joint test report will be prepared and signed by both the seller and buyer's representative.

e. **Location of FAT:** Details to be mentioned.

31. **Local Training.** A group of operators/ technicians (about 10 (Ten) BN personnel) has to be trained locally in Bangladesh for 05 (Five) working days by the Manufacturer/ Supplier's engineer/ representative on completion of installation and Test/ Trial of the offered equipment. The details of training contents/ syllabus are to be provided with the offer. Cost of air fare, accommodation, food and internal transportation (including to and from work site and hotel) of the Manufacturer/ Supplier's engineer/ representative will be borne by Bidder. The cost of local training is to be quoted within the main price and showing separately for future reference.

32. **Training Contents.** The objective of the training should include flowing but not limited to:

a. BN personnel should have comprehensive knowledge on system overview, operation and its features and limitations.

b. Maintainer should know which level of maintenance they can do, what kind of tools and skill needs to be used to carry out maintenance works as per OEM recommended maintenance system/schedule.

c. All BN personal should be completely aware of all hardware/ software including all kinds documentations related to the system.

d. There should be a standard operating procedure for a small ready response team to address problems.

e. BN maintainer group will be able to un-install, install, set to work, configure and minimum the whole system including all software used in the system.

f. BN maintainer group will be able to do alignment, calibration, testing, tuning and software-based system check etc of the offered Multi Product Calibrator.

g. Lectures and training should focus on the following:

- (1) System Overview and system configuration.
- (2) System operation covering all functions.
- (3) Details about System architecture.
- (4) Operational flow chart.

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- (5) Hardware and software and their function, troubleshooting, backup software, system restoration (if crashed) etc.
- (6) Familiarization of manuals, publications and document which are to be provided.
- (7) Signal/ Power flow diagram.
- (8) Working principle with step by step procedure.
- (9) Repair and maintenance.
- (10) Fault finding and understanding error message.

33. **Delivery.**

- a. **Delivery Time.** The items shall be delivered within **09 (Nine)** months after signing the contract.
- b. **Place of Delivery:** NSD Chattogram.
- c. Incase of CFR the supplier shall carry the items from sea port/ air port (as applicable) to NSD, Chattogram at the cost and risk of supplier.

34. **Shipment.**

- a. **Source of Supply.** The source of supply of the offered systems are to be mentioned. It should be from the country of manufacturer or country of origin.
- b. **Port of Shipment:** To be mentioned. The port of shipment is to be from the country of manufacturer or country of origin.
- c. **Consignee.** The supplied item shall be the following consignee:

The Commanding Officer Naval Stores Depot New Mooring, Chattogram, Bangladesh BIN-002349278-0503	or	Officer In Charge Naval Stores Sub Depot Dhaka Naval Unit Khilkhet Namapara, Dhaka-1229, Bangladesh
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- d. All items are to be brand new and to be delivered in seaworthy packing to ensure safe transit by sea. Certificates in this regard are to be provided during delivery.
- e. All packages are to have packing notes showing their contents in detail and all packages shall be marked with the name and address of the consignee and gross weight.

35. **Project Timeline.** The project timeline indication month-wise event is to be provided with the offer and another reviewed project time line with project implementation plan is to be submitted after 15 days of signing the contract.

36. **Warranty, Guarantee and After Sales Service.**

- a. **Warranty.**
 - (1) 12 (Twelve) months manufacturer's warranty for trouble free operation is to be provided for the item from the date of acceptance by the purchaser. If any component and submit of the supplied items becomes defective during the warranty period, the overall warranty shall be extended automatically for the period of subject component remains defective.
 - (2) For warranty repair/ replacement, the supplier shall collect the defective item from NSD, Chittagong/ NSD Khulna/ NSSD, Dhaka (as applicable) and re-supply the same to collecting place after warranty repair or for replacement within 90 (ninety) days from the date of defect at no cost to the purchaser.
- b. **Bank Guarantee (BG) for Warranty.** The BIDDER shall issue a Bank Guarantee (BG) during submission of last 20% payment for a value of **@ 05% (Five percent) of the total CFR value** from any scheduled bank in Bangladesh in favour of The Senior Finance Controller

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(Navy), Sailors Colony, Lalasarai, Mirpur-14, Dhaka-1206, representing Bangladesh Navy, Peoples Republic of Bangladesh, information to The Directorate General Defence Purchase, Ministry of Defence, Peoples Republic of Bangladesh. This BG shall remain valid until the warranty period of the Multi Product Calibrator and other items (not withstanding minor deficiencies which would be mutually settled and agreed between PURCHASER and BIDDER) in Bangladesh, and it shall expire on receipt of **Warranty Completion Certificate**. If the contractual obligation warrants the extension of the validity of the BG, the BIDDER shall remain liable to do so at its own cost. In case of material failure of the BIDDER to fulfill its contractual obligation as per the terms and conditions of the contract, the BG in full or part thereof may be forfeited at the discretion of the PURCHASER.

c. **Guarantee.** The supplier is to give guarantee of continued supply of spares for at least 10 (Ten) years at a reasonable price (not exceeding 3% per year). Certificate is to be submitted with the offer.

d. **After Sales Service.** After sale service should be available with the local agent of supplier and is to be provided as and when required for indefinite period or at least 15 years after the installation. If any system, equipment etc becomes obsolete or out of production during or after the installation period (at least upto 15 years), the supplier is to submit alternative of same/ improved version for selecting the suitable replacement.

37. **Technical Support.** Technical support is to be provided to solve any maintenance and operational problem arising with the item for a considerable period (To be mentioned). An assurance by the Bidder stating agreement in this respect is to be submitted with the offer.

38. **Test/ Trial and Acceptance.**

a. On completion of local training Site Acceptance Test (SAT) is to be conducted at COMSUB and COMNAV. BN may provide available facilities for the test. All consumables and special tools/ test equipment for the SAT is to be provided by the supplier.

b. On completion of satisfactory Test/ Trial and commissioning, an acceptance certificate will be issued by BN by COMSUB and COMNAV.

39. **Validity.** The offer shall remain valid till 30 June 2026.

40. **Terms of Payment.** Payment shall be made through an Irrevocable Letter of Credit (LC). LC shall be opened at the expense of the PURCHASER and **100% LC** value shall be made operative in favour of Supplier. CFR value being the value of the supplied goods, payment shall be made as under:

a. **1st Installment.** 80% of CFR value shall be paid **after shipment of hardware and software** and on submission of the following documents to the bank:

(1) Original Airway Bill (AWL)/ Bill of Landing (BL) must be issued by air lines/ shipping lines or authorized agent of shipping lines/ air lines against DGDP contract reference (after signing the contract). LC number, and Bangladesh bank registration number are to be mentioned in AWL/ BL. Freight amount must be shown separately otherwise only FCA value shall be paid. All documents to be submitted (01) original with at least (05) five copies other than bill of lading shall be (03) three original with (03) three copies. In addition to this, following shall also be considered:

(a) Name of the carrier must be indicated in AWL/ BL.

(b) Must be signed by carrier or a named agent for/ on behalf of the carrier.

(2) 'Supplier's Signed Commercial Invoice' for (freight/ services amount to be shown separately (if applicable)) representing 80% of CFR value as stated in the contract.

(3) 'Packing List' signed by the authorized representative of the shipping company or exporter.

(4) 'Certificate of Origin' signed by the Manufacturer's Authorized Person/Authorized Official of the exported country.

(5) 'Manufacturer's Certificate' Signed by the MANUFACTURER/ SUPPLIER. Certifying that product has been produced as per technical data/ analytical data and specification as per contract.



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(6) 'Manufacturer's Warranty Certificate' Signed by the MANUFACTURER/ SUPPLIER.

(7) "Factory Acceptance Test (FAT)/ Pre-Shipment Inspection (PSI) Completion Certificate" signed by the SUPPLIER.

(8) 'Quality Assurance Certificate' (QAC) signed by the SUPPLIER.

(9) 'Shipment Clearance Letter' Signed by DGDP (Directorate General Defense Purchase, Dhaka, Bangladesh) as PURCHASER.

b. **2nd Installment.** 20% of CFR value shall be paid **after successfully commissioning the system** and on submission of the following documents to the bank:

(1) 'Supplier's Signed Commercial Invoice' for representing 20% of CFR value as stated in the contract.

(2) 'Final Acceptance Certificate' issued by the PURCHASER after successful completion of installation, integration with related ship borne equipment, HAT, SAT and commissioning of system.

(3) The bidder shall submit the relevant document of 5% BG of CFR value, which shall be released on submission of warranty completion certificate.

c. **Installment of FAT, Training and Services.**

(1) **Factory Acceptance Test (FAT).** 100% cost of Factory Acceptance Test (FAT) shall be paid **after successful completion of Factory Acceptance Test (FAT)** and on submission of the following documents to the bank:

(a) 'Factory Acceptance Test (FAT)' signed by the PURCHASER for the successful completion of the Factory Acceptance Test (FAT) in OEM premises.

(b) 'Supplier's Signed Commercial Invoice' for representing 100% of Factory Acceptance Test (FAT) value as stated in the contract.

(2) **Local Training.** 100% cost of Local Training shall be paid **after successful completion of local training** and on submission of the following documents to the bank:

(a) 'Local Training Completion Certificate' Signed by the PURCHASER for the successful completion of the Local Training in Bangladesh.

(b) 'Supplier's Signed Commercial Invoice' for 100% of Local Training value as stated in the contract.

(4) **Installation, Supervision and Setting to Work (STW).** 100% cost of Installation, Supervision and Setting to Work (STW) shall be paid **after successful completion** of Installation, Supervision and Setting to Work (STW) and on submission of the following documents to the bank:

(a) Installation, Supervision and Setting to Work (STW) Signed by the PURCHASER for the successful completion of the Installation, Supervision and Setting to Work (STW) in Bangladesh.

(b) 'Supplier's Signed Commercial Invoice' for 100% of Installation, Supervision and Setting to Work (STW) value as stated in the contract.

(5) **Test/ Trial and Acceptance.** 100% cost of Test/ Trial and Acceptance shall be paid **after successful completion** of final Test/ Trial and Acceptance and on submission of the following documents to the bank:

(a) 'Final Test/ Trial and Acceptance' Signed by the PURCHASER for the successful completion of Final Test/ Trial and Acceptance in Bangladesh.

(b) 'Supplier's Signed Commercial Invoice' for 100% of Test/ Trial and Acceptance value as stated in the contract.



41. **Price.** Price of the item of the total offer is to be shown separately (e.g. price of the main equipment, additional accessories, Installation, local training, warranty/ guarantee etc) and then grand total of the foreign currency to be shown on the original offer submitted by the bidder. Moreover, if the item is imported against this tender, price to be quoted without import duties.

42. **Compliance Statement.** A clear and complete compliance statement of the tender supported by the product catalogue and Brochure with necessary specification and drawing/ diagram is to be submitted for evaluation of the quotation. Incomplete compliance statement will attribute to cancellation of the offer. If any clause of this specification does not commensurate with offered item practically, the deviation has to be spelt out clearly.

