

## REQUEST FOR QUOTATION



BHARAT HEAVY ELECTRICALS LIMITED  
Electronics Division  
PB No. 2606, Mysore Road Bangalore - 560026  
INDIA

RFQ NUMBER:  
JAYCAP0004



MMI:PU:RF:003

(address for communication) :

(for all correspondence)  
Purchase Executive : Jayanthi  
Phone : 080 26998097  
Fax :  
E-mail: jayanthip@bhel.in

SI No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	KA9012610532 Multifunction Calibrator with Amplifier * HSN/SAC : 9030 Test Certificate Multifunction Calibrator with Amplifier and Software	1	NO	1	16.12.2026

Total Number of Items - 1

- 1.
- 2.

**NOTES:**

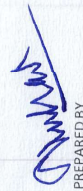
1. This RFQ is governed by:
    - a) INSTRUCTIONS TO BIDDERS/SELLERS and GENERAL CONDITIONS OF CONTRACT FOR PURCHASE available at <http://edn.bhel.com> (**RFQ-PO Terms & Conditions**)
    - b) Any other specific Terms and Conditions mentioned.
  2. Bidders / Representatives who would like to be present during opening of offers are required to furnish authorization letter for the same.
- \* The HSN/SAC no mentioned against the line items in the RFQ are indicative only.


For and On behalf of BHEL.


Jayanthi  
Common Purchase

**PQR FOR MULTIFUNCTION CALBRATOR WITH AMPLIFIER AND SOFTWARE**

Clause No	DESCRIPTION /SPECS REQUIREMENT	To Confirm/ Indicate value by Vendor
1.0	<b>QUALIFYING CONDITIONS</b>	
1.1	Vendor should be original equipment manufacturer (OEM) or authorized dealer/distributor of OEM. In case of dealer/distributor, they should furnish the details of OEM and valid authorization certificate from OEM.	Vendor to confirm & furnish details.
1.2	Vendor must have well functioning service center in India. Details to be submitted.	Vendor to confirm & furnish details.
1.3	Overview about OEM (When established, Product Range, market etc) to be submitted.	Vendor to confirm & furnish details.
1.4	Only those vendors shall quote, who or their principal have supplied and commissioned at least one number of equipment with same or similar model number, either directly or through their authorised dealers, within last 5 years and which is presently working satisfactorily. Following documents shall be furnished along with technical bid to support this qualification criteria:	Vendor to confirm & furnish details.
1.5	A list of customers to whom same or similar model of complete system is supplied in past.	Vendor to confirm & furnish details.
1.6	Minimum one number of unpriced copy of Purchase order of complete system supplied mentioned in clause 1.4	Vendor to confirm & furnish details.
1.7	Make & Model number	To confirm & furnish details.
1.8	Quantity	To confirm & furnish details.
2.0	Month & Year of Supply	To confirm & furnish details.
2.1	Customer Name	To confirm & furnish details.
2.2	Customer Address	To confirm & furnish details.
2.3	Customer Contact Person	To confirm & furnish details.
2.4	Customer Contact Nos/ Email	To confirm & furnish details.
2.5	BHEL reserves the right to verify the information / performance certificate provided by vendor. If the information provided by vendor is found to be false/ incorrect at any point of time, the offer shall be rejected.	To confirm & furnish details.
3.0	<b>GENERAL REQUIREMENTS</b>	
3.1	The offer shall be submitted in two bids (Techno-commercial and Price Bid).	Vendor to Confirm
3.2	Unit prices of the main system along with required accessories shall be indicated in the price bid.	Vendor to Confirm
3.3	The vendor shall furnish unpriced copy of Price Bid along with technical Bid.	Vendor to Confirm
3.4	The vendor shall furnish itemwise scope of supply along with technical bid.	Vendor to Confirm
3.5	The bidder's technical representative shall visit BHEL EDN Bangalore for technical discussions and on the spot finalization of technical issues, if needed, within two weeks after technical bid opening. Exact date will be confirmed to vendor by BHEL.	Vendor to Confirm
3.6	The system offered shall be complete in all respects. It shall contain all necessary hardware / accessories/ software or any other item required for satisfactory operation of the equipment as per requirement of this specification. Any additional hardware/accessories/software or any other item required for satisfactory operation of the equipment and identified during commissioning shall be supplied by vendor without any price implication.	Vendor to Confirm
3.7	Approx. Wicth / Height / Depth of equipment	Vendor to Furnish
3.8	Approx. Weight of the equipment	Vendor to Furnish

  
 PREPARED BY  
 P.VEERA VENKAT KUMAR, SR MGR QS

  
 REVIEWED BY  
 K. RAJU RAJASEKHAR, SR DGM QSAL, MANAGER/QUALITY SERVICES  
 BHEL-EDN, MYSURU ROAD, BENGALURU-560026

  
 ಸತ್ಯ ಬ್ರಾಟಾ ಬ್ಯಾಂಕ್, ಅಧ್ಯಕ್ಷರು  
 ಸತ್ಯ ಬ್ರಾಟಾ ಬ್ಯಾಂಕ್, ಅಧ್ಯಕ್ಷರು  
 APPROVED BY  
 SATYA BRAATA BANK, ADDL. GENERAL MANAGER & HDQ/QUALITY SERVICES  
 BHEL-EDN, MYSURU ROAD, BENGALURU-560026

## TECHNICAL SPECIFICATIONS FOR MULTIFUNCTION CALIBRATOR WITH AMPLIFIER AND SOFTWARE

Clause No	DESCRIPTION /SPECS REQUIREMENT	To Confirm/ Indicate value by Vendor
1.0	<b>APPLICATION</b>	
1.1	Multi Function calibrator is required for for calibration of 5.5-digit and 6.5-digit digital multimeters (DMMs), 7.5 Digit and 8.5 Digit multimeters of different makes.. These DMMs also feature additional measurement capabilities, such as capacitance, temperature, and inductance, requiring a high-precision, multi-product calibrator that meets the test uncertainty ratio (TUR) standards specified by ISO/IEC 17025	Vendor to Confirm, Specify quoted equipment, make and model no.
2.0	<b>COMPLIANCE</b>	
2.1	<b>Standards :</b> i) Safety : IEC 61010-1: CAT II, 300 V Pollution Degree 2, ii) EMC: IEC 61326-1: (Controlled EM Environment)	Vendor to Confirm
2.2	<b>Temperature :</b> i) Storage : 0 to 50 ° C ii) Operating : 15 ° to 35 ° C	Vendor to Specify
	<b>Multi Function calibrator</b>	
3.0	<b>DC VOLTAGE</b>	
3.1	<b>Range :</b> 0v to +/- 1100 V or better	Vendor to Specify
3.2	<b>Resolution:</b> 8 Digit resolution ( 10nV in 220mV Range ) or better	Vendor to Specify
3.3	<b>Accuracy (1 year, 95% Confidence):</b> Equal to or better than ±10 PPM across the range	Vendor to Specify
3.4	<b>Accuracy at 10V DC(1 year, 95% Confidence) :</b> ±4 ppm or better	Vendor to Specify
4.0	<b>DC CURENT</b>	
4.1	<b>Range :</b> 0 to 22 mA	Vendor to Specify
4.2	<b>Resolution:</b> 8 Digit resolution (10nA at 22mA Range) or better.	Vendor to Specify
4.3	<b>Accuracy(1 year, 95% Confidence):</b> Equal to or better than 42 PPM across the range	Vendor to Specify
4.4	<b>Range :</b> 220 mA to 2.2 A	Vendor to Specify
4.5	<b>Resolution:</b> 8 Digit resolution (0.1µA at 220mA Range) or better.	Vendor to Specify
4.6	<b>Accuracy(1 year, 95% Confidence):</b> Equal to or better than 84 PPM across the range	Vendor to Specify
4.7	<b>Range :</b> 0 to 11A (with amplifier)	Vendor to Specify
4.8	<b>Resolution:</b> (10nA at 11A Range) or better.	Vendor to Specify
4.9	<b>Accuracy(1 year, 95% Confidence):</b> Equal to or better than 400 PPM across the range	Vendor to Specify
5.0	<b>AC VOLTAGE (10 Hz to 1 KHz)</b>	
5.1	<b>Range :</b> 2.2 mV to 220V or better	Vendor to Specify
5.2	<b>Resolution:</b> 8 Digit resolution (1nV at 2.2mV Range) or better.	Vendor to Specify
5.3	<b>Accuracy(1 year, 95% Confidence):</b> Equal to or better than 250 PPM across the range	Vendor to Specify
5.4	<b>Range :</b> 220 V to 1100 V	Vendor to Specify
5.5	<b>Resolution:</b> 8 Digit resolution or better.	Vendor to Specify
5.6	<b>Accuracy(1 year, 95% Confidence):</b> Equal to or better than 320 PPM across the range	Vendor to Specify
5.7	<b>Range :</b> 750V& 1100V (Frequency Range: 50Hz-1KHz) (With amplifier)	Vendor to Specify
5.8	<b>Resolution:</b> 1mv	Vendor to Specify

Prepared by: *[Signature]*

P. VEERABHARATHAN KUMAR, SR. MANAGER/QS  
BHEL-EDN, MYSURU ROAD, BENGALURU-560026

Prepared by: *[Signature]*  
K. RAJASHEKHAR SR. DEPUTY GENERAL MANAGER/QUALITY SERVICES  
BHEL-EDN, MYSURU ROAD, BENGALURU-560026

APPROVED BY: *[Signature]*  
SARVA BRATA BANIK, AGM(HOD) QS  
BHEL-EDN, MYSURU ROAD, BENGALURU-560026


Clause No	DESCRIPTION /SPECS REQUIREMENT	To Confirm/ Indicate value by Vendor
5.9	Accuracy(1 year, 95% Confidence): Equal to or better than 2300 PPM across the range	Vendor to Specify
6.0	<b>AC CURRENT (Frequency range : 10 Hz to 10 KHz)</b>	
6.1	<b>Range : 220 µA to 22 mA or better</b>	Vendor to Specify
6.2	<b>Resolution: 8 Digit resolution (1nA at 220µA Range for better.</b>	Vendor to Specify
6.3	Accuracy(1 year, 95% Confidence): Equal to or better than 1400 PPM across the range	Vendor to Specify
6.4	<b>Range : 220 mA to 2.2 A</b>	Vendor to Specify
6.5	<b>Resolution: 8 Digit resolution (1µA at 220mA Range) or better.</b>	Vendor to Specify
6.6	Accuracy(1 year, 95% Confidence): Equal to or better than 8000 PPM across the range	Vendor to Specify
6.7	<b>Range : Upto 11A (with amplifier)</b>	Vendor to Specify
6.8	<b>Resolution: 8 Digit resolution (100µA at 11A Range) or better.</b>	Vendor to Specify
6.9	Accuracy(1 year, 95% Confidence): Equal to or better than 4000 PPM across the range	Vendor to Specify
7.0	<b>Resistance</b>	
7.1	<b>Range : 1 Ω to 100 MΩ or better</b>	Vendor to Specify
7.2	<b>Resolution: 8 Digit resolution or better.</b>	Vendor to Specify
7.3	Accuracy(1 year, 95% Confidence): Equal to or better than 100 PPM across the range	Vendor to Specify
8.0	<b>Additional features</b>	
8.1	Instrument shall have touchscreen display	Vendor to Specify
8.2	Instrument shall have Visual connection management terminal guide to help the user for better connection.	Vendor to Specify
8.3	Instrument shall have the specifications published in both 99% and 95% confidence level for all the parameters.	Vendor to Specify
9.0	<b>DESKTOP PC</b>	
9.1	Desktop pc shall be provided with licensed version of Microsoft Windows operating system and also to be provided with licensed version of MS office and acrobat reader	Vendor to Confirm
9.2	Dektop pc shall be of latest configuration and possess following minimum (or better) specifications:Core i7 Processor, 64 Bit, 32 GB RAM, 1 TB SSD storage,Windows 11 Pro OS. along with McAfee or Equivalent Antivirus software .3 Years warranty should be provided for desktop pc	Vendor to Confirm
9.3	Make (IBM, Dell, HP or other reputed brand	Vendor to Specify
9.4	Free software upgrades and updates should be provided for a period of 1 year. Post the support period, minor software updates should continue to be provided.	Vendor to Confirm

ಶ್ರೀ. ಬಿ.ವೀರೇಂದ್ರ ಕುಮಾರ್ ಕಿರಿಯ ವ್ಯವಸ್ಥಾಪಕರು/ಗು.ಸಂ.  
 ಪಿ. ವೀರೇಂದ್ರ ಕುಮಾರ್, ಬರಿಸ್ತ ಪ್ರಬಂಧಕಾಗು.ಸಂ.  
 P. VEERA VENKATA KUMAR, SR. MANAGER/QS  
 PREPARED BY: SURI ROAD, BENGALURU-560026  
 BIPAVEERA VENKAT KUMAR SR MGR QS

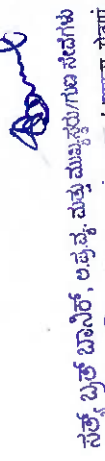
ಶ್ರೀ. ರಾಜಶೇಖರ್ ಕಿರಿಯ ಗಣಕ ತಂತ್ರಜ್ಞ ವ್ಯವಸ್ಥಾಪಕರು/ಗು.ಸಂ.  
 ಕೆ. ರಾಜಶೇಖರ್, ಬರಿಸ್ತ ತಪ್ಪು ಸಹಾಯಕತೆಗು.ಸಂ.  
 K. RAJASEKAR, SR. DEPUTY GENERAL MANAGER/QUALITY SERVICES  
 REVIEWED BY  
 BHEL EDN, MYSURU ROAD, BENGALURU-560026  
 K. RAJASEKAR SR DGM QS

ಸಂಸ್ಥೆ ಬೃಹತ್ ಬಾಲಿಷ್ಠ, ಅತ್ಯಂತ ಮಹತ್ವದ ಮೂಲಕ/ಗು.ಸಂ.  
 ಸಂಸ್ಥೆ ಬೃಹತ್ ಬಾಲಿಷ್ಠ, ಅ.ಸ.ಸ. ಸಂ. ಪ್ರಗತಿ / ಸಹಾಯಕತೆಗು.ಸಂ.  
 SATYA BRATA BANIK AGM/QS  
 BHEL-EDN, MYSURU ROAD, BENGALURU-560026

Clause No	DESCRIPTION /SPECS REQUIREMENT	To Confirm/ Indicate value by Vendor
10.0	Calibration software specifications : Automation software should have following features.	
10.1	Perform computer aided Automated calibration including closed case and closed loop calibrations	Vendor to confirm
10.2	Automatic calibration procedure for renowned brands like Fluke, Agilent, Keithley, Yokogawa, Tektronics, HP etc for DMMs, clamp meters, oscilloscope, etc..	Vendor to confirm
10.3	Tracking module to track the assets for its calibration history and other details like identification. Recall reports of UUTs due for calibration	Vendor to confirm
10.4	Store all parameters for every calibration test step for future reporting and analysis and a clear audit trail	Vendor to confirm
10.5	Create and print ad hoc reports and customized report s	Vendor to confirm
10.6	Software shall support calibration of DMM's, clamp meters, data loggers, etc	Vendor to confirm
10.7	Uncertainty calculation feature as per Guidelines of Uncertainty Measurement (GUM)	Vendor to confirm
10.8	Meets the requirements of quality standards like ISO 9000, ISO/IEC 17025.	Vendor to confirm
10.9	Simplified calibration procedure writing facility.	Vendor to confirm
10.9.1	Supports for Electro Technical Standards.	Vendor to confirm
10.9.2	Customized electrical automation system including calibration procedure writing training, USB to GPIB cable, standard calibration procedure, Asset management tool, customized report generation, service spares handling tools	Vendor to confirm
10.9.3	In the event of a PC crash or hardware failure, or Corruption of calibration software , the calibration software should be reinstalled either on the same PC after rectification or on an alternate PC by vendor and also the license will be reactivated (at no additional cost) by the vendor	Vendor to confirm
10.9.4	calibration software is compatible with antivirus applications.	Vendor to confirm
10.9.5	The calibration software should be compatible with Windows updates and will be able to continue to function with Windows updates.	Vendor to confirm
10.9.6	Life time software support should be provided for calibration software.	Vendor to confirm
10.9.6	For present List of Multimeters/other Equipments handled by BHEL calibration Lab vendor should provide procedures to test & automate the same as per BHEL requirements without any cost implication.	Vendor to confirm
11.0	<b>CALIBRATION</b>	
11.1	The equipment shall be calibrated in all ranges by any accredited competent calibration agency/NMIs (As per ISO 17025).	Vendor to Confirm
12.0	<b>POWER SUPPLY</b>	
12.1	The system shall work on following Power Supply available at BHEL: 240 VAC (+10% -15%), 50 Hz ± 3%, single phase.	Vendor to confirm
12.2	All type of cables, connectors, prefabricated communication cables etc. required for connecting different parts of the equipment shall be supplied by vendor, whether specifically mentioned or not.	Vendor to confirm
12.3	All electrical & electronic control cabinets & panels should be dust, vermin, rodent proof & earthed when being installed.	Vendor to confirm
12.4	All power supply related Protection devices shall be supplied along with the equipment.	Vendor to confirm

  
 P. VEERA VENKATARAJ KUMAR, SR. MANAGER/QS  
 P. VEERA VENKATARAJ KUMAR SR-MGR/QRU-560026  
 BHEL-EDN, MYSURU ROAD, BENGALURU-560026

  
 K. RAJASEKAR, SR. DEPUTY GENERAL MANAGER/QUALITY SERVICES  
 REVISED BY, MYSURU ROAD, BENGALURU-560026  
 K. RAJASEKAR SR DGM QS

  
 SATYA BRAJA BANIK, AGM (HQ/D) SERVICES  
 BHEL-EDN, MYSURU ROAD, BENGALURU-560026

ಸತ್ಯ ಬ್ರಜಾ ಬಾನಿಕ್, ಲಭ್ಯ ಮತ್ತು ಮುಖ್ಯಸ್ಥರುಗಳ ಸಹಾಯ  
 ಸತ್ಯ ಬ್ರಜಾ ಬಾನಿಕ್, ಆರ್.ಎ. ಉ. ಸರ್ವಿಸ್ ಇಂಟಿಗ್ರೇಷನ್  
 SATYA BRAJA BANIK, AGM (HQ/D) SERVICES  
 BHEL-EDN, MYSURU ROAD, BENGALURU-560026



Clause No	DESCRIPTION /SPECS REQUIREMENT	To Confirm/ Indicate value by Vendor
17.2	Complete commissioning & demonstration of all the features of machine/ equipment's to the entire satisfaction of BHEL Engineers is the sole responsibility of vendors at BHEL EDN Bangalore works. In case there is price implication the same shall be quoted as lumpsum price which shall be included in vendor's offer. Per day price will not be acceptable. If nothing will be quoted for installation & commissioning then it will be treated as free of cost. Complete commissioning, testing including all the test is in the scope of supplier.	Vendor to Confirm
17.3	Service requirement like electricity and test samples will be provided by BHEL at one point to be indicated by the supplier in advance. Connectivity of the system with power supply from that point shall be the responsibility of the supplier.	Vendor to Confirm
18.0	<b>FINAL ACCEPTANCE</b>	
18.1	Final acceptance of the equipment at BHEL will be given after verification and ensuring that all the clauses of this specification are duly complied and the required training has been provided to the BHEL personnel after Commissioning of Equipment	Vendor to Confirm
19.0	<b>GUARANTEE / WARRANTY:</b>	
19.1	The Equipment should be guaranteed with respect of design, material construction, operation and any manufacturing defects for a period of 12 months from the date of commissioning. Four copies of Guarantee certificates are to be furnished.	Vendor to Confirm
19.2	During guarantee period if any spares or part or computer or software of the complete system is found faulty then it has to be replaced without any price implications.	Vendor to Confirm
20.0	<b>PACKAGING</b>	
20.1	Rigid, seaworthy packing for all items of complete equipment, all accessories and other supplied items to avoid any damage / loss in transit shall be done.	Complies
21.0	<b>TRAINING</b>	
21.1	BHEL Persons shall be trained at BHEL immediately after installation in following areas: (a) Use of all the aspect of equipment i.e. operation, calibration process , & other features. (b) Electrical, Electronic, Mechanical & general maintenance for equipment & other supplied accessories. (c) Operation of the supplied accessories, if any. (d) Writing procedures for automatic calibration.	Vendor to Confirm
21.2	Competent, English speaking experts shall be arranged by the vendor during training for satisfactory & effective training of BHEL personnel without any price implication	Vendor to Confirm
21.3	Expenditure of training cost if any shall be quoted as total consolidated training cost (Inclusive of travel Lodging & boarding of Expert) which will be loaded to the vendor's offer. Per day charges are not acceptable. If nothing will be quoted for training expenses than it will be treated as free of cost.	Vendor to Confirm
21.4	Minimum 8 days training in 2 stages should be provided i) First stage during installation ii) second stage 3 month after installation	Vendor to Confirm
22.0	<b>LITERATURE WITH OFFER</b>	
22.1	Supplier shall enclose the leaflets/ catalogue/ brochure having detail specification, photograph, Model No & Manufacturers Name of offered equipment.	Vendor to furnish details.
23.0	<b>DOCUMENTATION TO BE SUPPLIED</b>	
23.1	Four sets of Operation & Maintenance Manual, which shall comprise of operating procedure, calibration procedure, circuit diagram (if possible), applicable calibration certificates, etc. have to be supplied (soft copy also to be supplied). All documents to be supplied must be in English.	Vendor to Confirm

ಪರಿಶೀಲಿಸಿದಂತೆ, ಹಿರಿಯ ವ್ಯವಸ್ಥಾಪಕರು/ಉಪ ನಿರ್ದೇಶಕರು  
 ಕೆ. ವೀರೇಂದ್ರ ಕುಮಾರ್, ವರದಿ ಪ್ರವರ್ಧಕ/ಉಪ ನಿರ್ದೇಶಕರು  
 PREPARED BY: ANKATA KUMAR, SR. MANAGER/QS  
 P.VEERA VENKAT KUMAR SR. MANAGER/QS  
 BHEL-EDN, MYSURU ROAD, BENGALURU-560026

ಪರಿಶೀಲಿಸಿದಂತೆ, ಹಿರಿಯ ವ್ಯವಸ್ಥಾಪಕರು/ಉಪ ನಿರ್ದೇಶಕರು  
 ಕೆ. ರಾಜೇಶ್, ವರದಿ ಪ್ರವರ್ಧಕ/ಉಪ ನಿರ್ದೇಶಕರು  
 K. RAJASEKAR SR. DGM QS  
 K. RAJASEKAR SR. DGM QS  
 BHEL-EDN, MYSURU ROAD, BENGALURU-560026

ಪರಿಶೀಲಿಸಿದಂತೆ, ಹಿರಿಯ ವ್ಯವಸ್ಥಾಪಕರು/ಉಪ ನಿರ್ದೇಶಕರು  
 ಸತ್ಯ ಭಟ್ ಭಾರ್ಗವ್, ವರದಿ ಪ್ರವರ್ಧಕ/ಉಪ ನಿರ್ದೇಶಕರು  
 ಸತ್ಯ ಭಟ್ ಭಾರ್ಗವ್, ವರದಿ ಪ್ರವರ್ಧಕ/ಉಪ ನಿರ್ದೇಶಕರು  
 SATYA BHARATA BHARGAV, ADDL GENERAL MANAGER/QS  
 SATYA BHARATA BHARGAV, ADDL GENERAL MANAGER/QS  
 BHEL-EDN, MYSURU ROAD, BENGALURU-560026