

**Bharat Heavy Electricals Limited**

(A Government of India Undertaking)

Electronics Division

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**Tender document for the supply of 3 PHASE PROGRAMMABLE
VOLT –CURRENT SOURCE**

R F Q Number : TRSM900007

Tender Qty : Five Numbers

Tender Due Date and Time : 18.01.2008 13.00 Hrs

Tender Opening Date and Time : 18.01.2008 13.30 Hrs

Place of opening of Tender : SA – MM Conference hall

Scope: Supply, installation and commissioning of 3 Phase Programmable Voltage - Current Source with Measurement

1. Two part Bid - Tender shall be submitted in two parts :

- a. Part I – Techno commercial bid without prices.
- b. Part II – Price bid

2. Earnest Money Deposit : EMD of Rs 80,000/- (rupees eighty thousand only) shall be submitted in the form of DD along with the bid. EMD in the form of DD / Pay order only is acceptable & any other form is not acceptable and the bid is liable for rejection. EMD amount doesn't carry any interest. The same will be converted as Security Deposit for the successful bidders and for unsuccessful bidders the same will be refunded after finalization of the order. For successful bidders EMD will be refunded after submission of PBG.

3. Delivery Period: Equipment shall be delivered, within 4 months from the date of placement of technically & commercially clear purchase order.

4. Terms and conditions:

1. All the Bidders shall meet the **pre-qualification criteria** and Comply with **Technical Specification** mentioned in this specific tender.
2. Indian Bidders are required to comply with the **general terms and conditions** as per SA – 01 (Annexure –I)
3. Foreign Bidders are required to comply with the **general terms and conditions** as per SA – 02. (Annexure –II)



REF: 384/SKP/FR3/PQ01
Pre Qualification Criteria

01. The vendor shall be an Original Equipment Manufacturer (OEM). Only the OEM or their authorized dealers in India along with an authorization letter can submit offers. An authorized Representative/Dealer in India, cannot quote for the same equipment from more than one OEM.
02. The offer shall be only for Standard Catalog Items from the manufacturer and not custom-made one. All the specifications should be supported by Standard Catalogs and Data Sheets of the manufacturer.
03. Offer shall be for a new equipment and not for any refurbished / used equipment. All the parts used in the machine shall also be new and not used / refurbished ones. A declaration to the above effect to be furnished.
04. Foreign OEM shall have Authorized Indian dealer(s) / representative(s) for After-sales service and support. The authorization letter for the dealer/ representative shall be provided.
05. The vendor should have already supplied and installed 3 nos. of similar machines in India during the past 5 years and these must be operating satisfactorily for at least past one year. The details of the customers with contact details, machines installed, date of installations etc. to be provided.
06. The vendor or their authorized service representatives shall have trained engineers in India for commissioning & service for the offered equipment and shall be in a position to provide prompt after sales service and spares support for our installations.
07. The vendor shall be in a position to undertake AMC or provide service support for the equipment supplied, after the expiry of the warranty/ guarantee period either directly or through a service representative.
08. If required by BHEL, the vendor shall arrange for a demonstration of the machine or a similar system operating in India.
09. The vendor shall furnish a comprehensive warranty for at least 12 months from the date of commissioning.

NOTE:

1. Pre qualification will be carried out based on the details furnished by the vendor / feedback from their customers / inspection of the company / product if required by BHEL and at its sole discretion.

2. The Pre qualification criteria are mandatory requirements and the technical bids will be evaluated only when the Pre Qualification criteria are met.



REF: SAT-SKP-VFS-01		
Specification for 3PH Programmable Vol-Current Source with Measurement		
	<p>Note: 01. All Quotes by Vendors shall include Compliance Statement to the Specifications here-in. Deviations, if any should be brought out.</p> <p>02. The Specifications should be supported by Standard Catalogs and Data Sheets of the Suppliers / Manufacturers.</p>	
1.00	Operation & Control	
1.01	Single & 3-Phase Operation	The Equipment should be configurable for Single Phase or 3-Phase 4500VA Operation.
1.02	Front Panel Controls	Shall be capable of full Standalone operation from Front Panel Controls
1.03	Independent Programmability for each Phase	Three separate arbitrary waveform generators to enable create independent, complex waveforms on all three phases simultaneously.
1.04	Standard Waveforms: (pre-shipped with Equipment)	Sine, Square, Triangle wave, <ul style="list-style-type: none"> • Clipped sine waves • Sine waves with spikes • Fractional dropouts
1.05	User Defined Waveforms:	Up to 20 user created Waveforms shall be stored in nonvolatile Memory. All wave shape parameters shall be definable. The User Defined Waveforms shall be accessible from the front panel for selection.
1.06	Simulation Facility	Cycle drop out, distortion, Surge, Ramp up
1.07	Remote Interface	<ul style="list-style-type: none"> • IEEE-488.2 interface • SCPI protocol
2.00	Input Power:	400VL-L, 3ph $\pm 10\%$ @ 50Hz ± 3 Hz
3.00	Output Ratings:	
3.10	Power: Maximum Power/PH - Single Phase / 3-PH	4500VA(Sing Ph. Op.), 1500VA/Ph (3 Ph. Op.)
3.20	Voltage Range(L-N), 3PH	0 to 300V Ph to Neutral
3.21	Vol Accuracy:	$\leq \pm 0.5V$ from 5V to 300V, upto 1KHz
3.22	Vol Resolution:	0.05% of full scale
3.23	Line Regulation	$\leq \pm 0.05\%$ FS for $\pm 10\%$ Line Change
3.24	Load Regulation	$\leq \pm 0.05\%$ FS from no load to full load, upto 1KHz
3.30	Output Current (per phase)	≥ 5 Amps per phase(3ph. Op) @ 300V ≥ 12 Amps per phase(3ph. Op) @ 110V



3.40	Frequency Range	DC, AC: 40Hz to 1000Hz
3.41	Frequency Accuracy	±0.025%
3.42	Frequency Resolution	≤ 0.01Hz upto 99Hz ≤ 0.1Hz from 100Hz to 999Hz
3.50	Phase Angle Programming	0 to 359 degrees in 0.1deg resolution.
3.51	Phase Accuracy & Resolution: (Phase-to-Phase Balanced Linear Resistive Load)	Accuracy ±1°, 40 Hz to 1 kHz Resolution: ±0.1°
4.00	Protection and Safety	Overcurrent, Short Circuit, Overtemperature, and Adjustable Current Limit Trip.
5.00	Measurement: Shall support measurement of the indicated parameters.	<ul style="list-style-type: none"> • Phase to Neutral RMS Output Voltages • Phase to Phase Voltages • 1Ø to 3Ø RMS Output Currents • Peak Current • Output Frequency • 1Ø to 3Ø Power • 1Ø to 3Ø VA • Power Factor of 1Ø or 3Ø Loads • Output Phase Angles Relative to Phase A <p>Measurement Capability: 4.5 Digit.</p>
6.00	General Specifications:	
6.01	Operating temperature:	0 deg to 45deg C
6.02	Operating Humidity:	85% at 25°C
6.03	Power:	400VL-L, 3ph ± 10% @ 50Hz ± 3Hz
7.00	Supply, Terms & Conditions:	
7.01	Acceptance Criteria	Test report & Factory Calibration certificate. Functional test after receipt at BHEL EDN
7.02	Accessories:	Std. Accessories, Power Cord, Spare Fuses
7.03	Manuals(mandatory)	Operation, Service, Calibration
7.04	Warranty Certificate:	Comprehensive. One year from the date of Commissioning.