

Bharat Heavy Electricals Ltd
Electronics Division
Mysore Road, Bangalore – 560026

Tender Document for Design, Engg, Manufacturing,
Testing, Supply and E&C Support Services in India for
Electrical Lab Items-BOP

TSGENCO-Kothagudem (1X800 MW) STPP &
TSGENCO-Bhadradri (4X270 MW) TPP
RFQ REF: SAM0000154

Technical Bid Opening Date: 24th Aug, 2017 (Thursday), 13:30 Hrs

<u>Page No.</u>	<u>Content</u>
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51-92	Commercial Terms & Conditions Comprising of: i) Special Commercial Conditions of Contract ii) Instructions To Bidders and iii) General Commercial Conditions of Contract
93	E-Procurement Login Guidelines

Important Information:

Last Date and Time of Tender Submission in **EPS Portal**: 24/08/2017 upto 13:00:00 Hrs.

Date and Time of Tender Opening in **EPS Portal**: 24/08/2017, 13:30:00 Hrs.

Contact Person at BHEL EDN Bangalore:

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SL.NO	PROJECT	CUSTOMER
1	KOTHAGUDAM TPS STAGE-VII UNIT#12 (1x800 MW)	TELANGANA STATE POWER GENERATION CORPORATION LIMITED (TSGENCO)
2	BHADRADRI TPS (4X270MW)	TELANGANA STATE POWER GENERATION CORPORATION LIMITED (TSGENCO)

SECTION-A
GENERAL INSTRUCTION TO BIDDERS



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Introduction: Bidders are required to offer Laboratory Instruments (C&I Package) as per BHEL Technical Specifications (Ref : 1. CE/416/KOTH/LABI 2. CE/416/BHAD/LABI)

- 1.0 ALL REQUIRED DOCUMENTS AGAINST THIS TENDER/SPECIFICATION SHALL BE SUBMITTED IN ENGLISH ONLY.
- 2.0 In order to accept the Technical offers/ proposals from Bidders mentioned in BHEL Technical Specification, certain Pre-qualification criteria Requirements are to be met by Bidder.
- 3.0 Pre – qualification requirements (PQR) are clearly mentioned in Section-B of this Specification. Bidder to read the same carefully and submit the details required for BHEL's acceptance.
- 4.0 If a Bidder does not submit Complete PQR Documents or the Documents submitted by vendor does not meet the PQR Criteria mentioned , offer of such bidders will be summarily rejected and will not be considered for Further evaluation in the tender.
- 5.0 Technical Bid's of those bidders who meet the PQR Criteria shall be opened for Review and further consideration by BHEL.
- 6.0 i) BHEL has Provided Approved makes against each item, to be followed for the BOM items .However If a vendor in his technical bid , offers makes different from approved makes and if found technically acceptable by BHEL , such *makes* only will be forwarded to customer for approval , along with credentials (Po copies of Past supplies/ commissioning Reports(MoM)) which have to be submitted by vendor
ii) If the customer does not approve the makes submitted for approval or If BHEL finds that the credentials are not submitted/not satisfactory , the item will not be acceptable and supplier has to offer any other suitable make /model from approved makes ,without any financial implication to BHEL Else the vendor's offer will be Rejected technically .
- 7.0 Changes in technical specification scope/BOM , If any shall be informed to participating bidders only.
- 8.0 If a vendor does not quote for all the listed items, then his complete offer will be technically rejected. Please note that essence of this tender is packaging and hence all items within this project are to be offered so as to have one packaged vendor for this project/Projects.

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9.0 **Evaluation methodology:** BHEL shall initially open Bidder's Part1 (PQR documents) only as per Section B (Pre-qualification Requirements) of this specification for review acceptance. Only after acceptance of PQR evaluation, BHEL shall open Bidder's Technical offer(Part2) for evaluation.

10.0 Bidders are required to submit offers as detailed below:

aa. Documents pertaining to Pre-Qualification requirement shall be Uploaded in E-procurement system under attachment titled "PQR Documents " (Part1)

bb. Technical offers/proposals (Part2) for requirements mentioned in BHEL Technical Specifications shall be uploaded in E-procurement system as attachments

11.0 If Bidder is not Registered in BHEL-EDN or any other unit of BHEL For supply of Lab equipment package ,Submit duly- filled Source Request form (SRF), which shall be downloaded by Bidder from bhel website .<http://supplier.bhel.in/> and to be submitted along with offer.

12.0 Name & registered address of The Bidder with Organization chart, service team and contact details shall be submitted

13.0 Bidder shall be responsible for complete package supply, installation/commissioning and satisfactory demonstration to customer. Wherever OEM Representative to be deputed for commissioning bidder shall coordinate at his own cost and complete the work. Qualified technical persons shall only be deputed by the bidder for commissioning of the items in the package.

14.0 Whenever required during evaluation of PQR and Technical offers/bids, vendor is required to be present at BHEL Electronic Division, Bangalore, for discussions. Further in the event of order, during approval of the Vendor documents by End-users/Customers, Vendor shall accompany BHEL representative for discussions(If Required).

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SECTION-B

PRE-QUALIFICATION REQUIREMENTS



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AA.Pre-Qualification Requirements (PQR) bidders for Lab instruments (C& I Package) as Part of offer

- 1.0 Submit Reference List of Projects where Lab Instruments (C&I Lab Package) is supplied & commissioned along with the Year of Commissioning of the same. (List of projects with Bom's of each project to be submitted)
 - 2.0 The Bidder's Average Annual financial turnover during the last 3 financial year, ending 31st March 2017 should be at least 87 Lakhs INR per year. Certificate from bankers/chartered accountant/IT return in this regard should be submitted along with the offer.
 - 3.0 Bidder should have supplied and commissioned C& I Lab package instruments meeting either one of the following 3 conditions during last 7 years from RFQ Due date.
 - i).3 (Three)Supplied and Commissioned projects Containing C&I Lab package instruments, costing not less than Rs.1.16 Crores (For total of 3 projects)

Or

 - ii) 2 (Two) Supplied and Commissioned projects Containing C&I Lab package instruments costing not less than Rs.1.45 Crores (For total of 2 projects)

Or

 - iii) 1 (one) Supplied and Commissioned projects Containing C&I Lab package instruments , costing not less than Rs.2.32 Crores
- Note : Po Copies and commissioning Reports has to be submitted in proof of above Clause 3.0
- 5.0 Bidder has to submit letter of undertaking stating that they will take care of service Requirements till guarantee /warranty period/ commissioning & Demonstration and handing over whichever is later
 6. Bidder should have a Clean track Record , i.e the Bidder should not be under Hold or blacklist by any of the BHEL units/any Govt of india PSU/Govt of india as on bid submission date.To this effect a declaration should be given by the bidder.
 - 7.0 **Important note:** - In case Bidder does not submit clause wise details mentioned in above clauses or meet the requirements of Pre-qualification requirements, Offers will be summarily Rejected and Bidder's Technical offers/proposals will not be Evaluated. Please read carefully the General instructions in Section A of this specification.

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SL.NO	PROJECT	CUSTOMER
1	KOTHAGUDAM TPS STAGE-VII UNIT#12 (1x800 MW)	TELANGANA STATE POWER GENERATION CORPORATION LIMITED (TSGENCO)

LABORATORY INSTRUMENTS(C&I PACKAGE)

REVISION:00

APPROVED

K.C.RAMAKRISHNAN

PREPARED

K.RAJASEKAR

ISSUED

416

30.05.17



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S.No	Description	Reference
1.	SCOPE OF SUPPLY	CE/416/KOTH/LABI/SOS Rev 00, Pages 04
2.	TECHNICAL SPECIFICATIONS	CE/416/ KOTH /LABI/TS Rev 00, Pages 17



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SCOPE OF SUPPLY

The scope of supply consists of LABORATORY INSTRUMENTS (C&I) Package for the project mentioned

Although immense care has been taken to cover all the items applicable for the project, it is possible that some items may have been missed (which needs to be added) or some items have been already supplied which are not to be supplied now for these projects. Then in either case, unpriced impact (technical) and price impact will be taken from participating vendors. But please note that if a vendor has not participated in this RFQ and if the impact is applicable due to change in quantities or due to acceptance of deviations, non-participating vendor will not be sent intimation (under this RFQ) as the changes are very, very minimal keeping the non-participating vendor still debarred under this packaged RFQ. Hence, all vendors should actively participate offering all the items. If a vendor does not quote for all the listed items, then his complete offer will be technically rejected. Please note that essence of this tender is packaging and hence all items within this project are to be offered so as to have one packaged vendor for this project.

Please note that if any item requires battery, same should be rechargeable type of same item make or equivalent good make. Then the corresponding charger is also to be provided. Also, please note that computer interface is to be provided with relevant pre-fabricated cable of 2 or 3 meters length for connectivity to computer, Current Probe and High Voltage Probe as and where applicable for the individual instrument. If any application software is required due to this, same is also to be provided as and where applicable for that particular instrument.

If any deviations are accepted by bhel During evaluation stage and subsequently not accepted by end customer during datasheet submission stage ,then vendor has to replace the model without any financial implication to BHEL.

Project wise unit rates are to be offered taking care of applicable BOM for individual projects since the items are being enquired as a package for individual projects. Subsequently, after ordering, unit rates of each and every BOM item of project is to be provided to take care of any addition/deletion during detailed engineering stage. Erection supervision and commissioning is also to be offered with lump sum rates each project wise.

Please note that for any item offered by vendor BHEL reserves the Right to ask the vendor, any or all of these credentials (Po copies of Past supplies/ commissioning Reports(MoM).If the credentials are not submitted/not satisfactory , the item will not be acceptable and supplier has to offer any other suitable make /model without any impact to BHEL.

All the electronic M&C items shall be microprocessor based and shall have the data logging facility for keeping calibration/maintenance records with proper communication facility for downloading these data on the Lab PC. Wherever such facility is available in the Equipment offered

The calibration standards of all M&C equipments furnished under this sub-section shall be traceable to National Bureau of Standards, USA or NPL, India or to the applicable standards existing in the country where the equipment is manufactured.Dust proof carrying case and Rechargeable battery along with external charger shall be provided For the project site under this RFQ vendor has to offer following option:-

- 1.) Despatch of items as per standard package as done normally.

ERECTION SUPERVISION & COMMISSIONING:

Please note that Erection Supervision & Commissioning is to be offered each project wise and same will be considered while evaluating lowest commercial tender. The commissioning will involve demonstrating the healthiness and working of all the items within the project to the satisfaction of BHEL site office/end-user. This will necessitate maximum of 3 days stay at project site.



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TECHNICAL DOCUMENTS TO BE SUBMITTED ALONG WITH OFFER(MANDATORY):

- 1.) Technical bid should be having Desc, Qty, make, Model, Strictly as per the Template format given below (In Pdf and excel)
- 2.) Catalogues of all the items in soft copy

DOCUMENTS TO BE SUBMITTED AFTER PLACEMENT OF ORDER:

- a. Datasheets along with catalogs for each and every item properly indexed.
- b. Mounting details including necessary accessories (If applicable)
- c. Recommendations (if any) for installation/ storage etc
- d. Spare part list
- e. Consumable list
- f. Training details
- g. O&M Manual (After datasheet approval)
- h. Any other scheme, data, drawing, document, etc required to establish product quality and completeness of supply.

The above documentation shall be each project wise with around 8 copies or On as required for each project on an average. Apart from hard copies, soft copy in the form of CD/Pen drive should also be provided for each project.

TEMPLATE To be followed for technical bid (Example) :

Sno	Desc	Qty	make	model
1	Soldering Station	2	HAKKO	FR-810 Accessories : handpiece holder, FP pick-up (with pick-up wire SS), heat resistant pad, power cord,

IMPORTANT NOTE : Along with the price bid Break up of prices should be submitted in following format for the following items supplied along with the electronic test bench along with the main price bid

SLNO	DESC	Qty	Unit price	Total
1	Digital Oscilloscope	Nos		
2	Decade Resistance box	Nos		
3	Digital Multimeter	Nos		
4	Function Generator	Nos		
5	Chartless Recorder	Nos		
6	Variable DC stabilised Power Supply	Nos		
7	Variable AC power Supply	Nos		
8	Stepdown Transformer	Nos		
9	Continuity Tester	Nos		
10	Fixed Power supply	Set		
11	Electrically operated air Gun	Nos		
12	Digital LCR-Q Bridge	Nos		
13	Card IC tester	Nos		
14	Soldering and DE soldering Station	Nos		
15	Power meter with Harmonic Analysis	Nos		
16	Tool box with screwdriver set ,spanner, plie cutter etc..	Nos		

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GENERAL INSTRUCTIONS :

Testing instrument / devices offered shall be proven type and shall incorporate latest design. All instruments supplied under this package shall be in brand-new and unused condition.

The workmanship and design shall be proven and in accordance with the best engineering practice to meet the intended purpose. Bidder shall ensure satisfactory performance of testing instruments/devices even in the worst environmental condition. All instruments shall be supplied from reputed and proven manufacturer.

Testing instruments/devices shall be furnished with all necessary accessories and original instruction/operating and maintenance manuals.

All instruments offered, shall conform to the relevant International Standards.

The various instruments/devices, small tools, accessories, etc. shall be furnished (in applicable cases) with suitable and durable crates, kits or carry boxes of convenient size; complete with necessary packing etc. for safe storage when not in use.

Measuring/testing instruments, along with associated accessories shall be suitable for intended operation (both indoor and outdoor installations as applicable).

Bidder shall be responsible for proper functioning of supplied items and shall make any necessary additions/modifications, as required for proper maintenance and testing of the installed instruments and controls. Bidder shall also be responsible for erection and commissioning of the test equipment.

It is obligatory to Bidder to furnish a complete list of spare parts for these testing/calibrating, instruments/devices. Bidder shall render guarantee for easy availability of all the spare parts required, especially for the components, which are prone to failure.

Bidder shall repair or replace the defective instruments/ devices at no extra cost within the guaranteed period of each instrument/device.

Scope of service of the Bidder shall also include operational and service training of Owner's personnel at site. Calibration and test certificates, as applicable, shall not be more than one (1) year old.

CODES AND STANDARDS

The design, material, construction features, manufacture, inspection and testing of laboratory instruments shall comply with all currently applicable statutes, regulations and safety codes in the locality where the equipment will be installed. The equipment shall also conform to the latest applicable standards

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SL.NO	PROJECT	CUSTOMER
1	KOTHAGUDAM TPS STAGE-VII UNIT#12 (1x800 MW)	TELANGANA STATE POWER GENERATION CORPORATION LIMITED (TSGENCO)

TECHNICAL SPECIFICATIONS FOR LABORATORY INSTRUMENTS (C&I PACKAGE)

Note : Package is Common for total plant

REVISION:00

APPROVED

K.C.RAMAKRISHNAN

PREPARED

K.RAJASEKAR

ISSUED

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DATE

30.05.17



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BILL OF MATERIALS

Sl. No.	Item Description	UNIT	Qty
1	Portable Multifunction Calibrator (Microprocessor based)	Nos	3
2	Decade Resistance Box	Nos	2
3	AC Universal bridge	Nos	1
4	Signal Generator	Nos	2
5	Hand Tachometer	Nos	2
6	Insulation tester of Different Range	Nos	1
7	Dc Regulated power supply	Nos	4
8	Stop watch(Digital Type)	Nos	2
9	Continuity Tester	Nos	10
10	Tong Tester	Nos	3
11	High Range Tong Tester	Nos	1
12	Stabilised Power Supply	Nos	2
13	Stroboscope	Nos	1
14	Portable Trend Recorder	Nos	1
15*	Electronic Test bench with Computerized calibration system	Nos	2
16	Portable digital multimeter	Nos	10
17	Field Transmitter Calibrator	Nos	2
18	Soldering Iron With Solder sucker	Sets	8
19	DE soldering Station	set	1
20	VARIAC	Nos	1
21	Power Pack	Nos	2
22	Vibration Analyzer Balancer Instrument	Nos	2
23	Portable Meter Calibrator	Nos	2
24	Digital Cable Identification System	Nos	1
25	Dual Beam Portable Digital Storage Oscilloscope	Nos	2
26	Hand Held Thermocouple and PT-100 OHM Simulator and Indicator	Nos	1
27	Insertion And Extraction Tools For Various Pin Numbers 14,16 And 48	Nos	2
28	Rheostats	set	1
29	Desktop Digital Multimeter	Nos	2
30	Phase Sequence Meter	Nos	1
31	Frequency Meter	Nos	1
32	Mini scope Meter	Nos	1
33	Vibration / Sound Level Monitor	Nos	1
34	Portable PH Calibrator	Nos	2
35	Module Tester	Nos	1
36	Dc Regulated power Source	Nos	2
37	Auto Transformer	Nos	1
38	Nickel Cadmium Cell	set	1
39	Scanner	Nos	1
40	Torximitor	Nos	2
41	Laptop	Nos	2
42	Portable mA Calibrator	Nos	3
43	Table Mounted ma Calibrator	Nos	2
44	Portable mV Calibrator	Nos	2
45	Test RTD	Nos	2
46	Frequency Counter/Timer	Nos	1

*Note1 : One set of items mentioned specifically in section 1.6(Page 8 of 17) under Electronic test bench to be supplied with each Electronic test bench.

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1. PORTABLE MULTIFUNCTION CALIBRATOR – MICROPROCESSOR BASED -(3 NOS.)

Approved makes : 1. GE 2. FLUKE 3. Agilent (Keysight) 4. Yokogowa 5. Beamex 6. Wika/scandura 7. AOIP France 8. Time Electronics 9. Eurotron

Portable Multifunction Calibrator shall be supplied for testing and calibration of process instruments. The calibrator shall have facility for measurement and simulation of the following instruments and parameters :-

- a) Pressure and DP transmitters
- b) Electro-pneumatic converters.
- c) Thermocouples and RTD
- d) Electronic receivers and controllers
- e) DC voltage & current generation
- f) Frequency

The calibrator shall have large multiple digital indicator 4 to 5 digits. It can operate according to function and menu guided set up mode. The calibrator shall have storing facility of field calibration data together with set up information as per requirement.

The calibrator shall be microprocessor based with latest state of the art design and shall have LCD display simultaneously for both input and output signal, membrane type key pad with tactile sound, 230V AC mains supply, in built battery & battery charger, carrying case, test probes, fuse etc.. Preferred feature - IP-65 enclosure class.

Suitable pressure modules and pumps to meet the pressure range 1 to 2 bar, and 0 TO 70 bar and 0-350 bar to be supplied Pneumatic and hydraulic hose kit /test pumps also to be supplied along with any other accessories required.

2. DECADE RESISTANCE BOX - (2 NOS.)

Approved makes : 1.Toshniwal,2.Yokogowa, 3.Tinsley

Decade resistance box shall be supplied as per specification stated below :

A dial type resistance box shall be supplied. Range of resistance box shall typically be 0.01 ohm to 111.11111 K ohms. There shall be eight dials, each dial providing one decade of resistance value. The resistance coils should be made of manganin, non inductivity wound and aged resistors with low temperature coefficient and low contact resistance steps. The ends of the coils should be soldered to the terminal blocks with silver solder. The direct-reading accuracy of the resistance box shall be $\pm 2\%$ for 0.01 decade, $\pm 0.3\%$ for 0.1 decade, $\pm 0.05\%$ for 1,10,100,1K, 10K decades and $\pm 0.5\%$ for 100K decade . All resistors shall be temperature compensated. Resistance box shall be supplied with probes, leads, clips, connectors etc.

3.A.C. UNIVERSAL BRIDGE- (1 NO.)

Approved makes : 1.Fluke Amprobe, 2.wayne Kerr, 3.Agilent(Keysight),4. Yokogowa, 5.Tinsley 6. Exttech

A.C. bridge of the following specification shall be supplied together with probes, leads, clips, connectors, power supply cord, accessories etc.

R.L.C. bridge shall have a measuring frequency of 1 KHz/10 KHz. The bridge shall be suitable for 240V, 50 Hz supply.

- Resistance : 10 Ohms to 10 M Ohms in seven full scale ranges with least count 10 m Ohms in 10 Ohms range.
- Capacitance : 1000 PF to 1000 micro F in seven full scale ranges with least count of 1 PF in 1000 PF range
- Inductance : 1000 micro H to 1000 H in seven full scale ranges with least count of 1 micro H in 1000 micro H range

It shall also be possible to measure "D" dissipation factor for capacitors and "Q" quality factor for inductances.

4. SIGNAL GENERATOR – (2 NOS.)

Approved makes : 1.Fluke 2. Yokogowa 3. Tektronix 4. Agilent (Keysight)

Signal generator shall have frequency range of 0.01 c/s to 200 K c/s in at least four ranges . The signal generator shall have sine wave, square wave and saw tooth wave outputs.

The output frequency shall be continuously adjustable and frequency reading shall be displayed on a digital indicator. The voltage range of the generator shall be switchable between 1V & 10V and continuously controlled and shall be monitored on a built-in digital voltmeter. The signal generator shall have high frequency stability and low harmonic distortion. Harmonic distortion shall be less than 0.5 percent. Signal generator shall be suitable for 240V single phase, 50 Hz, supply and shall be complete with carrying case, probes, fuse and other accessories as required.



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5. HAND TACHOMETER - (2 NOS.)

Approved makes : 1. Fluke Amprobe 2. Extech 3. Line seiki

Bidder shall supply combined contact and photo type tachometer with latest state of the art design.

The tachometer shall have a range of 10-99999 RPM for optical type and 10-25000 RPM for contact type and 6-1000 meters for linear reading. The device shall have integral non contact photo electric pickup with adapter for contact pickup. Non contact pick up shall have a range of 1-25 inches from target. It shall have 5 digit LCD display and shall be battery operated. The tachometer shall have data display time of 1 minute after release of measurement and data memory time of 30 minutes The tachometer shall be rugged in construction and shall be complete with all accessories such as contact adapter, surface speed wheel, interchangeable tips-concave, convex, linear, reflective tape(100 strips), batteries, carrying case. A built-in safety clutch shall be incorporated to protect the tachometer against overload if the speed is higher than the selected range.

6. INSULATION TESTER OF DIFFERENT RANGE - (1 NO.)

Approved makes : 1. Fluke Amprobe 2. Extech 3. Megger 4. Yokogawa 5. Tinsley

Insulation tester shall be portable and battery operated type with LCD display. Test voltage shall be 250 V / 500 V / 1000 V / 2500 V D.C. Range of insulation measurement shall be from 0.5 Meg Ohms to 50,000M ohms with an accuracy of $\pm 5\%$. Insulation resistance shall be indicated on a meter.

Following accessories shall be included :

- Necessary carriers with rubber and steel centres
- Measuring roller
- Extension rod
- Carrying case

The indication shall be magnetically damped. Push button shall be provided to hold the pointer for exact reading.

7. D.C. REGULATED POWER SUPPLY - (4 NOS.)

Approved makes : 1. Aplab 2. Agilent (keysight)

Bidder shall supply D.C. Regulated Power supply designed with latest state of the art electronic and IC technology. D.C. Regulated Power supply shall have the following features :

- Voltage Range : 0 to + 60V DC, 1 Amps. (floating),(Continuously adjustable)
- Voltage / Current Range : 0-60V/0-2.5A
- Display : LCD
- Meter Accuracy : $\pm 2\%$ FSD
- Power Supply Connection : 240 V AC, 50 Hz.
- Output Impedance : 50 m Ohm or less.
- Load Regulation : 0.1% variation in voltage , 0.2% variation in current
- Drift in 8 Hours : 0.1% variation in voltage, 0.2% variation in current
- Ripple and Noise : Less than 1 mV
- Setting Resolution : 20 mV / 20 mA
- Temperature co-efficient : 0.05% per Deg.C
- Accessories : Test cords and clips as required.

Power supply shall be short circuit proof and crowbar protected.

8. STOP WATCH – (2 NOS)

Approved makes : 1. Extech 2. Casio 3. Fluke-Amprobe

Digital Type

Stop Watch shall be electronic type with LCD type display and complete with battery set and carrying case. The stopwatch shall have start, stop and reset button. The case shall be non-rusting, dust and damp- proof.

9. CONTINUITY TESTER -(10 NOS.)

Approved makes : 1. Extech 2. Fluke-Amprobe 3. Meco 4. RS-Components

Continuity tester shall be electronic and battery operated. A hooter shall be provided which will sound when continuity detected. Tester shall be supplied with battery charger, lead wires and probes. The tester shall be kept in a carrying case



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10. TONG TESTER – (3 NOS.)

Approved makes : 1. Fluke 2. Yokogowa 3. Agilent (Keysight) 4.Extech 5. Meco

Tong tester shall be suitable for measuring the current ranges of 0-5/10-15/30 amps AC and DC. It shall have swiveling joint between tongs and meter to facilitate easy reading. Tong Testers shall have facility of indicating power factor, frequency and KW.

11.HIGH RANGE TONG TESTER – (1 NOS.)

Approved makes : 1. Fluke 2. Yokogowa 3. Agilent (Keysight) 4.Extech 5. Meco

High range tong tester shall be suitable for measuring the current ranges of 0-1000 amps AC with an accuracy of 1% and resistae of 0-2000 ohm with an accuracy of 1.2%. It shall have auto tanging facility along with 31/2 digit LCD display

12.STABILISED POWER SUPPLY – (2 NOS.)

Approved makes : 1. Aplab

Bidder shall supply stabilized power supply designed with latest electronics and IC technology. It shall have the following minimum features:

01. Voltage Range : 0-240V AC, continuously adjustable.
02. Current Range : 0-10A
03. Power Supply Connection : 240V AC, 50 Hz
04. Indication : Meters indicating voltage and current shall be integral with power supply
05. Load Regulation : 0.25% variation in voltage
06. Accessories : Test lead wire

13.STROBOSCOPE –(1 NO.)

Approved makes : 1. Fluke/Fluke Amprobe 2. RS Components

Portable stroboscope suitable for 240V AC, 50 Hz, supply from reputed Make shall be supplied. Measuring range shall be from 0 to 6000 rpm minimum in suitable ranges. It shall have flash rate of 100 to 10,000 flashes/ minute with Xenon flash lamp.

14.PORTABLE TREND RECORDER - (1 NO.)

Approved makes : 1. Chino 2.Yokogowa 3. Shinko 4.Honeywell 5.Fuji Electric

Recorder shall be suitable for 240V AC, 50 Hz, supply. Recorder shall have signal-conditioning circuits to receive 4-20 mA, DC, thermocouple, RTD and other voltage-current signals encountered in electronic circuits. Recorder chart shall have 6 speed selections between 2 and 700 cm per hour. the recorder shall be 3-pen type. The scales shall be graduated in 0-100%. Accuracy shall be $\pm 1\%$ or better. Reference junction compensation feature shall be built-in. The minimum input impedance for voltage measurement shall be 500 K Ohms and for current inputs the impedance shall be 950 Ohms. The following spares and consumables shall be provided:

- a) Chart rolls
- b) Ink cartridges/sacks
- c) Replacement tips
- d) Chart drive motor



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15. ELECTRONIC TEST BENCH – with Computerised Calibration System (2 NOS.)

Approved makes : 1. Scandura/Wika 2. Convergent technologies 3. Tinsley 4. Fluke

Self contained test bench with sets of drawers for testing and repair of electronic/ electrical instruments and gadgets shall be supplied. This shall include necessary isolating switch, power supply switch, holding brackets, power supply sockets, signal sockets, meters, plugs, variac, air gun etc. laid aesthetically in a bench-top unit. Computer aided calibration facility with calibration management system shall also be provided

Combined panel & desk type arrangement with instruments/ hardwares laid aesthetically shall be provided. Front and slant area shall be of 3mm CRCA sheet. Other sides including door shall be of 2mm CRCA sheets. Suitable illumination with door operated switch shall be provided. Color shall be Brilliant White (interior) and Light Grey 631 shade IS 5 (EXTERIOR). However, approval of color shade shall be obtained from Owner during detailed engineering.

Electronic part of the test bench shall include but not limited to, all the required test instruments and accessories such as power supply sockets with switch .415V AC-15/5A - 2 Nos, 230V AC -15/5A - 4 Nos, 220V DC - 2 Nos, ±24V DC- 2 Nos, ±48V DC-2 Nos, ±12V DC-2 Nos, ±5V DC-2 Nos.

Voltage levels are tentative and shall be matched to supply requirements of Bidder and Owner's range of products. Other instruments that should be supplied along with test bench shall include

The test bench shall be of modular design, enabling easy change of arrangement/layout as and when required. The test bench shall include necessary Isolation switches, power supply switches, holding brackets etc. The test bench shall have approximate dimension (L x W x H) 2000(L) x 1485(H) x 900(W) dimensions in mm).

The bench shall be furnished with thick laminations top. Desk with drawer shall be included. The front panel Shall be of 5 mm thick anodized aluminum plate and individually engraved mimic style

Bench Top :

Highly elegant modular rack mounting system for instrument is made up of quality steel, front plates are made of thick Anodized aluminum plates. Rubber mat should be provided on Table Top

Computerised calibration system shall consist of server and PC, 21" TFT monitor and A3 color laser jet printer and shall be located on the test bench (Details of the system shown in latter part of specification).

The variable A.C supply shall have a range of 0-260V and sub-panel shall contain ammeter and voltmeter. The output shall be protected with circuit breaker. A voltmeter shall be provided in sub-panel to indicate input and output voltages.

D.C. supplies shall be externally settable, floating type, reverse polarity protected. A metering sub-panel shall be provided for monitoring voltage, current with necessary plug sockets.

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1.2 The test bench shall include necessary power packs to feed the following socket mounted on the bench:

1	Main power Supply	It includes main switch for the whole workstation 3 ground socket for other instrument 240V 5A	
2	Isolated supply Module	It shall include main switch, ELCB ,circuit breaker, 240V AC+/-0.5%, 1Phase 50 Hz, 3KVA stabilized p/s supply socket , 110V AC, 2 AMPS(Step Down Transformer), 50hz supply socket 415V AC 15/5A 220V DC 2 A 230V 15/5A	No of socket-6 No of sockets -1 No of socket-2 No of socket-2 No of socket-4
3	Variable Ac Power supply	It shall include 0-260V AC, 1 phase, 50 Hz, (variac) 10 Amp, socket and terminal, 0-50V AC/2A, terminals. Digital meter for current and voltage	no. of socket - 2
4	Variable DC power supply	shall include 0-64V DC 5A (Programmable) stabilized output voltage supply , Digital display for voltage and current with RS-232 Interface	no of socket - 1
5	Constant Dc Voltage Supply	± 48 V DC, 3A ± 24V DC, 6A ± 12 V DC, 10A ± 5 V DC 5A Each unit shall include Digital meter for volts & ampere DC supplies should be externally settable, floating type, reverse polarity protected	No Of Socket-2 No of Socket-2 No of Socket-2 No of Socket-2
6	Digital Multimeter	One 5 ½ (Five and half Digit) Multimeter for display of voltage, current, resistance, with +/- 0.1% accuracy with RS-232 Connection/interface	One no (1)
7	Standard Current source	Accuracy +/- 0.01 ma, range 0-60 ma, load 500 ohms with digital current indicator-one no with RS-232 Interface	One no (1)
8	Standard milli volt source	Accuracy +/- 0.01mv ,Range 0-100mv with digital millivolt indicator-one No with RS-232 Interface	One no (1)
9	One AC voltage stabilizer (Input 240V ac nominal) (Output 240V ac +/-0.5%)	Regulation +/-0.5% for 0-100% Voltage variation	One no (1)

(Voltage level is tentative and shall be matched to supply requirements of Bidder's and owner's Range of Products)
Continuity tester , Frequency indicator may be provided.

1.3 The test bench shall be including socket holders, where the electronic gadgets under test may be plugged. The front equipment shall include multi point connectors and test jacks for Interconnection. There shall be connection between the connectors and holder in which device under test shall be plugged in.

1.4 The standard high accuracy resistor(250 ohm) shall be included to load and measure the current output of devices . Necessary control devices for voltage and current adjustment/ control switches for power supply to feeders, isolation, etc., shall be included. All electric circuits shall be protected against overload by fuses, whose holders are located on front of the panel. All electrical circuits and metal structure shall be properly grounded.

1.5 Anti-Static Band & other necessary accessories should be provided along with the equipment.

COMPUTERISED CALIBRATION SYSTEM

This shall be located on test bench.

01. Processor : Latest available version from Pentium
02. SD RAM : 4 GB (Min)
03. Hard Disk : 500GB (RAID)
04. Monitor : 24" (TFT)
05. Printer : A3 color laser jet
06. Power supply : 240V AC, 1 Phase, 50Hz
07. Other feature : USB Port, Serial/ parallel Ports, R/W DVD, 10/100 Mbps Ethernet port, Mouse, KB
08. Software : Licensed version of all necessary software
 - i) Operating system (latest) (Licensed for Life time)
 - ii) calibration software (Licensed for Life time)
 - iii) Licensed antivirus software (3 Year updates)
 - iv) Microsoft office latest (Licensed for Life time)

(Refer next page for detailed specs of pc and printer)



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PC and Printer

Consists of following main components: Tower Type Configuration Intel Core i5 Processor, 3.2 GHz 6 MB Cache 4 Core, 4 GB RAM ,500GB 7200 RPM 3.5 " SATA 6 Gb/s Hard drive(Minimum), 16X DVD –ROM drive, 1 Gb Ethernet port-2 nos., ASCII keyboard, Optical Mouse, USB port(4 min), Windows 7 Operating System, 24" widescreen TFT monitor with minimum resolution of 1024x768, **Sound** Integrated audio with built in speakers. **Graphics** : NVIDA NVS 300 512 MB Graphics PCI-Express Graphics card or better supporting 1600 x 1280 , Resolution with True colors.Dual output (DisplayPort to DVI Video adapter converter to be provided),**Ports** : 2 No standard serial port,4Nos USB (min),**Video ports/connectors** : DVI/Analog/VGA/DP/USB ports suitable adaptors for connecting to monitors should be provided. **Expansion Slots** : Minimum 3 Nos. PCIe/PCI/PCI-X based slots**Ethernet Ports** : **2 Separate Intel Gig NIC'S on PCIe in addition to onboard Gig NIC port.Cards must be from OEM** **1GB –Ethernet Port 2 Nos** ,**Keyboard/ Mouse** : PS/2 /USB standard keyboard and PS/2/USB optical scroll mouse with mouse pad
Operating system : Microsoft windows 7 professional 32 bit with latest service pack to be preloaded, (windows 7 Professional Recovery /Image CD to be supplied) or **Latest Operating system** Driver CD's to be supplied with drivers suitable for all controllers with required installation/set up utilities.Security feature : Chasis Lock,**Inputs** : 100 TO 240V AC ; 50/60 Hz. Power Cords(Suitable for Indian type sockets to be supplied) **BHEL Approved Makes : DELL/HP/IBM-Lenovo**

MONITOR: : 24" WIDESCREEN, LED BACKLIT Minimum RESOLUTION 1024 X 768 **BHEL APPROVED MAKES: DELL/ HP/IBM-lenovo** **Software:** Operating System – Microsoft Windows 7 Professional 32 BIT with latest service pack to be preloaded, windows 7 professional recovery/image CD to be supplied. **Or Latest operating system ,whichever is later**
Software : i) Operating system (specified or latest ,whichever is later) (Licensed for Life time), ii) calibration software (Licensed for Life time) iii) Licensed antivirus software (3 Year updates), iv) Microsoft office (Latest) (Licensed for Life time)

LaserJet Printer COLOR LASER PRINTER - A3 Size NETWORK READY A3 SIZE COLOR LASER PRINTER WITH THE FOLLOWING FEATURES: SPEED OF MINIMUM 20PPM (COLOR / B&W), RESOLUTION 600 x 600 dpi (min), INTERNAL RJ45 UTP AND USB PORTS, POSTSCRIPT 3 EMULATION, DUTY CYCLE 50000 SHTS (MIN), INPUT TRAY CAPACITY 350 SHTS (MIN). USB PRINTER CABLE AND ONE SET OF CARTRIDGE/TONER TO BE SUPPLIED IN ADDITION TO CARTRIDGE ACCOMPANYING PRINTER POWER: AC 230V, 50Hz WITH INDIAN TYPE POWER CORDS **BHEL Approved MAKES : HP, CANON, IBM, XEROX LEXMARK**

1.6) IMPORTANT NOTE : one set of below items One no each should be supplied along with the each test bench

- i).Digital oscilloscope(Approved makes and Specs as Main Bom per item slno:25)
- ii).Decade Resistance Box (Approved makes Specs as per item slno:2)
- iii) Digital Multimeter(Approved makes and Specs as per Item slno:29)
- iv) Function generator (Approved makes and pecc as per Item slno:4)
- v) *Chartless Recorder (Refer to specs given below BHEL approved makes : 1. Chino 2.Yokogawa 3. Shinko 4.Honeywell 5.Fuji Electric)*
- vi) Variable DC Stabilized Power supply (Approved makes and Specs as per Item slno:7)
- vii) Variable AC power supply(0-260V,10A) (Approved makes as per Item slno:20)
- viii) step down transformer (110V,2A) BHEL Approved makes : 1.AE/ Equivalent Reputed make
- ix) Continuity Tester (Approved makes and Specs as per Item slno:9)
- x) *Fixed Power supply(± 48 V DC, 3A ± 24V DC, 6A ,± 12 V DC, 10A ,± 5 V DC 5A) (BHEL Approved makes : 1.APLAB 2. Tektronix 3. Agilent (Keysight))*
- xi) *Electrically operated air gun ((BHEL Approved makes : reputed makes)*
- xii) Digital LCR-Q Bridge (Approved makes and Specs as per Item Slno:3)
- xiii) Card IC tester(Approved makes and Specs as per Item Slno:35)
- xiv) *Soldering station & Desoldering station (Specs given below BHEL approved makes : 1. Hakko 2. Weller 3. Xytronics*
- xv) *Power meter with Harmonic analysis (specs given below : BHEL approved Makes : Fluke ,Agilent ,Yokogawa)*
- xvi) *One set of Tool box with screw driver set , spanner, Plie Cutter etc to be supplied from Reputed makes*

Note :

- i)Individual break up prices of above items supplied along with the test bench should be provided separately which will be referred in case of addition/ deletion during Datasheet stage
- ii) If the above item is same as line items appearing elsewhere in specification same make/model may be offered in both places to maintain uniformity.



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Chartless Recorder : The paperless Recorder offered shall be suitable for 240 V AC, 50 Hz. The microprocessor based Recorder shall have signal-conditioning circuits to receive 4-20 mADC, thermocouple, RTD and other DC voltage signals encountered in electronic circuits and shall be configurable.

Measuring points : 12 , Sampling Rate : 12 Points /sec. Input resistance Dc voltage & Thermocouple input – Approximately 1 MΩ, Memory for history should have minimum (8GB) Including internal memory Alarms upto 4 alarms (programmable per channel). Display min 5.7” TFT color LCD (Min) , Communication type : Network,USB

Soldering & Desoldering station : Soldering and desoldering station shall be provided along with temperature controlling equipment for precise adjustment of temperature. Different sizes of soldering tips shall be provided with the iron. Accessories shall include soldering handpiece, power cord, connecting cable, iron holder, handle, cleaning drill, nozzle remover, heat resistant pad etc.

Power meter with Harmonic analysis :

Power Measuring and Logging

Should simultaneously measure 3 CH Voltage input, 4 CH current clamp-on probe input, 2 CH DCV input.

Should Display value list or trend graph screen of Instantaneous/ Average/Maximum/Minimum of Voltage/Current/Power/Power factor/Phase Angle/Phase Advanced Capacitance Calculation and DCV input.

Integration Value of Active/ Reactive/Apparent Energy is each displayed by consumption and generation.

VECTOR DISPLAY :

- Indicates Voltage and Current phase difference and values between input channels of voltage and current.
- Checks whether the wiring is appropriate or not.

Power Quality Measuring

Measure Temporary Malfunction of Power Line • Captures temporary malfunction phenomena of power line which causes malfunction or destruction of devices by types (Voltage swell, Voltage dip, Voltage interruption, Transient overvoltage, inrush current) as an event by high sampling rate of 24 μs and RMS calculation.

Event data contains the type of malfunction, occurred time or occurrence finish time, measured value and waveform of voltage and current of all channels for approx. 200 ms period.

- Measurement method conforms to IEC standard 61000- 4-30 Class S

Measure Continuous Malfunction of Power Line Harmonics

- Measure and display graphs and list of up to the 50th Harmonic components of voltage, current and power for each phase and in total.

Waveform

- Displays with up to 10 or 12 waveforms of voltage and current for each CH.

Flicker

- Measures, 1 minute flicker (Pst, 1 min), short flicker (Pst) and long flicker (Plt).

Unbalance rate

- Displays voltage and current unbalance rate on 3 phase wiring.

Analysis and Report of recorded datas:

- Automatically generates graph and report by simple clicking on a file data displayed on screen.
- Uniform management of main unit settings
- Realtime measuring by USB communication.

Types of data

- Power data, Power quality event data, Main Unit Setting data, Screen capture data.

Memory card and interface : SD Memory card, USB communication,



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Functions :

Power Measuring

Power line and Input Channel: 3 CH Voltage, 4 CH for Current Clamp Probe.

1P2W (up to 4 system), 1P3W (up to 2 system), 3P3W2current (up to 2 system), 3P3W3current, 3P4W

Power measuring item:

Instantaneous, Average, Maximum and Minimum values:

Voltage/Current/Power (Active, Reactive, Apparent)/Power factor/ Phase Angle/Frequency/Calculated Phase Shift
Condensor/DC voltage value 2 CH.

Integration Value

- Energy (Active, Reactive, Apparent) each by consumption and generation
- Demand (Occurrence of max. demand time, current demand, estimated demand value)

Recording Interval Period:

1/2/5/10/15/20/30 second, 1/2/5/10/15/20/30 minute, 1 hour/2 hours

Recording method :Manual, time setting, period setting

Demand measuring should be available

Power quality Function : Equipment should have capability to identify malfunctions like voltage swells/dips/interruptions/transient overvoltage(impulse) or inrush currents, or long period such as harmonic distortion, flicker and unbalance rate.The Equipment should help to identify each of those short period malfunctions, by recording occurrence time, occurrence finish time and waveforms. Low malfunctions can also be analyzed by harmonics, flicker, waveform or checking on the unbalance rate calculation for 3 phase measurement.

Wiring connections 1P2W (max. 4 systems), 1P3W (max. 2 systems), 3P3W (max. 2 systems), 3P3W3current, 3P4W

Measurements items Voltage, Current, Frequency, Active power, Reactive power, Apparent power, Active energy, Reactive energy, Apparent energy, Power factor, Phase Advancing Condensor, Neutral current, Demand, Harmonics, Power Quality (Swell/Dip/Interrupt/Transient overvoltage, Inrush current, Unbalance rate. IEC flicker

Voltage (RMS)

Range 600.0/1000 V Accuracy $\pm 0.5\%$ rdg $\pm 0.2\%$ rng.

Current (RMS) Upto 3000A,Accuracy $\pm 0.5\%$ rdg $\pm 0.2\%$ rng.

Active power

Accuracy $\pm 0.5\%$ rdg $\pm 0.2\%$ rng. + accuracy of clamp-on probe

All Required probes to complete the functionality of equipment should be offered with the equipment.



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16. PORTABLE DIGITAL MULTIMETER - (10 NOS.)

Approved makes : 1. Fluke 2. Yokogowa 3. Agilent (Keysight) 4. Extech 6. Meco 7. Tektronix

01. Display : 5 1/2 digit LCD display with unit indication
02. Functions : DC volts, AC volts, DC Ma & A, AC Ma & A, Ohms
03. Range : DC Volts; AC Volts; DC mA, AC mA, frequency and Ohms (Total 25 ranges)
 - a. DC Voltage-0- 200 mV / 1000 V
 - b. AC Voltage-0- 200 mV / 750 V
 - c. DC Current-0- 200 mA / 2A
 - d. AC Current-0- 200 mA / 2A
 - e. Resistance-0- 200 Ohm/ 200 M Ohm
 - f. Frequency-10 Hz to 100 kHz
04. Accuracy : $\pm 0.25\%$ of reading+1 digit basic range
05. Range selection : Manual and automatic with over range indication
06. Zero adjustment : Automatic
07. Overload protection : Up to 1000V DC or AC
08. Polarity indication : Automatic
09. Power supply : Battery/ mains operated with low battery voltage indication
10. Accessories : Test lead, fuse , battery

17. FIELD TRANSMITTER CALIBRATOR - (2 NOS.)

Approved makes : 1. Yokogowa 2. wika/scandura 2. ABB 4. Emerson 5. Honeywell

Bidder shall supply portable Field Transmitter Calibrators suitable for configuration and calibration of smart transmitters.
Field Transmitter Calibrators shall have following features:

01. Type : Portable
02. Display : 4 1/2 digit LCD
03. Range : 4-20Ma DC
04. Unit : Ma or percent
05. Output simulation : 24V DC loop power
06. Over range protection : 25%
07. Adjustment : Continuous output
08. Battery power supply : Rechargeable power pack
09. Accuracy : 0.1%
10. Accessories : Battery holder, carrying case, fuse, test leads, battery charger unit along with rechargeable battery

18. SOLDERING IRON WITH SOLDER SUCKER (8 SETS)

Approved makes (For soldering Iron) : 1. Soldron 2. Hakko (For solder Sucker) : 1. Soldron 2. Rs Components

Soldering iron shall be provided along with temperature controlling equipment for precise adjustment of temperature. Different sizes of soldering tips shall be provided with the iron.

Solder sucker shall be provided for removal of molten solder from terminal connections.

19. DESOLDERING STATION (1 SET)

Approved makes : 1. Hakko 2. Weller 3. Xytronics

Soldering iron shall be provided along with temperature controlling equipment for precise adjustment of temperature. Different sizes of soldering tips shall be provided with the iron.

Accessories shall include desoldering handpiece, power cord, connecting cable, iron holder, handle, cleaning drill, nozzle remover, heat resistant pad etc.



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20. VARIAC – (1 NOS.)

Approved makes : 1.AE

Light weight variac providing voltage upto 550V, 10A, 50 Hz is envisaged. Voltage scale around the voltage-varying knob shall have white lettering and graduation as black back ground.

21. POWER PACK – (2 NOS.)

Approved makes : 1.APLAB 2. Tektronix 3. Agilent (Keysight)

Bidder shall supply power pack designed with latest state of the art electronics technology. It shall accept 110V 1 phase / 240V 1 phase, 50 Hz signal as input. Output voltage of the power supply pack shall be 0-60V adjustable over the entire range. The systems shall be capable of providing both positive and negative supply voltage with respect to a common reference point. Power supply packs shall include indicating meters to indicate the output voltage and output current. The power pack shall be capable of delivering current upto 10 Amps. Max ripple should be 5 mA at full load.

22. VIBRATION ANALYZER BALANCER INSTRUMENT - (2 NOS.)

Approved makes : 1. SKF 2. B&K Vibro Germany 3. GE Bentley Nevada 3. SPM instruments

The microprocessor based portable self-contained dual input instrument shall have the following specification and features :

- 01. Indication : Digital/Analog frequency and amplitude meter
- 02. Frequency : 60 to 6,00,000 CPM
- 03. Sensitivity : 0.03 microns peak to peak adjustment
- 04. Diagnostic : Hard copy tabular print-out
- 05. Printer : In-built; Amplitude and frequency plotting capability (3 speeds)

The instrument shall have two range manual tunable filter, two range internal oscillator, high density stroboscopic light (One flash per cycle up to 15000 cpm, sub multiple firing up to 600000 cpm). The instrument shall be capable of the following measurements:

- a) Displacement in 0 to 3000 micron in 8 ranges.
- b) Velocity in 0-3000 mm / sec. in 8 ranges.
- c) Acceleration in 0-100 g in 8 ranges.
- d) Spike energy 0-100 g's in 8 ranges.

The instrument shall have LCD backlit display, membrane type key pad , replaceable, seals, rechargeable battery and battery charger. Enclosure class shall be IP-65.

- a) Temperature Range : 0 to + 50 Deg.C
- b) Power Supply : 230V, 50 Hz, 1 Ph, AC

Accessories.

- a) Accelerometer
- b) Straight probe
- c) Pick up cable
- d) Stroboscopic light
- e) Strobe cable
- f) Fuse
- g) Power cable

Note : The above item has to be demonstrated and training of one day has to be given to customer from manufacturer (OEM) At Project site

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23.PORTABLE METER CALIBRATOR (2 NOS.)

Approved makes : 1. Fluke 2. Agilent (Keysight) 3. Yokogowa 4. Tektronix 5. Wika /Scandura 6. Meco

This instrument shall provide an accurate measure of DC, AC, Volts, amps and ohms. It shall be able to generate milliamperes for instrument calibration. It shall be electronic type with LCD display and shall be provided with battery and battery charger.

Battery charging circuit shall be integral with the instrument and shall be suitable for 240V, AC, 50 Hz supply.

Ranges :

- D.C. Volts : 0 - 1mV - 10V
- D.C. Current : 0 - 1 micro A-1A
- A.C. Volts : 0 - 1mV - 10V
- A.C. Current : 0 - 1 micro A - 1A
- Ohms : 1 Ohm - 10 M Ohms
- Accuracy : ± 0.1%

24.DIGITAL CABLE IDENTIFICATION SYSTEM (1 NO.)

Approved makes : 1. Fluke 2. RS Component 3. Extech

Features : Quick identification of shorting lines and open lines. It shall handle upto 96 pairs at one time.

25. DUAL BEAM PORTABLE DIGITAL STORAGE OSCILLOSCOPE (2 NOS.)

Approved makes : 1. Tektronix 2. Agilent (Keysight) 3. Yokogowa

01. Bandwidth (3 db) : 60 MHz
02. Selection : Trigger, Time base, Horizontal & Vertical deflection
03. Deflection factor : 2 mV/div. to 5 V/div.
04. No. of Steps (Vert.) : 10 (min) (1-2-5)
05. Accuracy : ± 0.5% or better
06. Input impedance (Signal) : 1 M Ohm, 20 pf
07. Maximum voltage 400V d.c./a.c. p to p
08. CMRR : 10:1 at 50 MHz (minimum)
09. Sample rate : 10 x 106/Sec.
10. Record memory : 4K points
11. Save memory : 4K points
12. Display mode : x1, x10, storage compress
13. Time base : 0.05 s/div. to 0.5 s/div.
14. No. of steps (hr.) : 20 (min) (1-2-5)
15. Input impedance (trigger) : 20 K Ohm
16. Time base linearity : ± 5%
17. Z modulation frequency : Upto 5 MHz
18. Controls available : Intensity, focus, brightness
19. Operating voltage : 100-250V AC, 50 Hz
20. Ambient temperature : 0-50 Deg.C
21. Feature : Overload protection
22. Accessories : Probes, carry case etc., as required



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26. HAND HELD THERMOCOUPLE AND PT-100 OHM SIMULATOR AND INDICATOR (1 NO.)

Approved makes : 1. Agilent(Keysight) 2. Fluke 3. Yokogowa 4. AOIP France 5. Time Electronics 6. GE Druck 7.Scandura/wika 8. Beamex

Bidder shall supply hand held type T/C and RTD Pt-100 simulator and indicator. The instrument shall be electronic type with in built battery and battery charger. It shall have following specification:

01. Indication : Liquid Crystal Display (LCD)
02. Operating Temperature Limits : - 20 to 55 Deg.C
03. Storage Temperature Limits : - 30 to 60 Deg.C
04. Temperature Resolution : 1.0 or 0.1 Degree
05. Function : Generation/ measurement of Thermocouple e.m.f (for K,E,J,T,N,B,R,S)
Generation / measurement of equivalent RTD Temperature (PT-100)
06. Accessories : Test lead, carrying case, battery & battery holder, fuse, battery charger along with rechargeable battery

27. I.C. INSERTION AND EXTRACTION TOOLS FOR VARIOUS PIN NUMBERS 14,16 AND 48 (2 NOS.)

Approved makes : Rs Components

Bidder shall supply the tool having professional quality and of reputed make.

28.RHEOSTATS (1 SET.)

Approved makes : 1. Time Electronics 2. Tinsley 3.IET Labs

Rheostat shall be slide resistor type wound on ceramic frame. It should have max temperature rise of 375°C and maximum working voltage of 500 volts. Bidder shall supply Rheostats of the following ratings from reputed manufacturer:

01. 1A : 1 No.
02. 2A : 1 No.
03. 5A : 2 No.
04. 10A : 2 No.
05. 12A : 1 No.
06. 18A : 1 No.

29. DESKTOP DIGITAL MULTIMETER - (2 NOS.)

Approved makes : 1. Fluke 2. Agilent (Keysight) 3. Yokogowa 4. Nagman 5. Tektronix 6.Time Electronics 7. Exttech

Bidder shall supply desktop type Digital Multimeter for measuring DC and AC voltages, currents and resistances. Desk top type Digital Multimeters shall have the following features:

01. Display : 5 – ½ digit LED display
02. Measurements : DCV, ACV, Resistance (2W, 4W), DCA, ACA
03. Maximum Measurements in standard ranges : DCV - 1000V
ACV - 700V
Resistance - 200 Mohm
DCA - 2A
ACA - 2A
04. Sampling rate : Selectable
05. Over range information : To be displayed
06. Data Memory : To store upto 2000 measured data and atleast 10 set up information
07. Operating Temperature : 5 – 40 deg C
08. Power Requirements : 240V AC, 50 Hz
09. Communication Interface : RS-232C
10. Special functions : Auto range mode, Auto sample mode
11. Accessories : Power supply cord, Measurement lead, Remote connector

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30.PHASE SEQUENCE METER - (1 NO)

Approved makes 1. Fluke Amprobe 2. Agilent(Keysight) 3. Yokogowa 4. Extech 5. RS Components
Electronic type

31.FREQUENCY METER – (1NO.)

Approved makes : 1. Fluke 2. Agilent (Keysight) 3. Yokogowa 4. Tektronix
Electronic type

32. MINISCOPE METER – (1NO.)

Approved makes : 1.Agilent (Keysight) 2. Yokogowa 3. Fluke
BW: 100Mhz, Sampling rate: 5 Gs/s, No. of channel: 2 + ext. trigger, Rise time: 3.5 ns, Time/divn.: - 5ns-60s, Vol / div. 1mv to 100v, Record length: 512 Bytes / 30000 Bytes, Screen wave form / set up memory:- 10,20,40, Ni-cd operation and charger for minimum 4 hour operation, Automatic set up and trend plot
Accessories: Charger set, Probe set and Carrying case etc.

33.VIBRATION / SOUND LEVEL MONITOR – (1NO.)

Approved makes 1. Fluke Amprobe 2.RS Components 3. Extech

01. Velocity Range : 0 – 3000 mm/sec
02. Vibration Measurement : 0-3000 micron peak to peak
03. Sound amplitude measurement : 45-140dB
04. Frequency Range : 10-10000 Hz
05. Accessories : Microphone, vibration pick up, straight probe, pick up cable, carrying case,battery & battery charger

34.PORTABLE PH CALIBRATOR – (2 NOS.)

Approved makes : 1. Oakton 2. Orion 3. Hanna 4.Extech

To check and calibrate pH measuring equipments. Compact portable simulator shall be offered.

01. Range : 0 – 14 pH in steps of 1 pH
02. Accuracy : ± 0.01 Ph
03. Electrodes : Combination or Glss & Reference
04. Display : 4 digit LCD
05. Stability : 0.1 Ph / 24 hrs at constant temperature
06. Temperature compensation : 0-100 °C, manual/ automatic
07. Power source : 240V, 1 Ph, 50Hz
08. Accessories : Battery pack with charger, digital display, connector leads, carrying case, buffer tablets, test & glass electrode and others as necessary.

35. MODULE TESTER -(1 NO.)

Approved makes : 1. Qmax 2. Estech

01. Type : Latest version PC with windows based test software
02. No. of channels : More than 48
03. Power supply : Built in
04. Loop test : Continuous
05. Feature : Testing of memory devices, open collector devices, resistance, capacitance & voltage measurement, self test, diagnostic software, circuit tracer for IC links, extensive IC libraries
06. Accessory : Standard set of Dip clips, probes, different type of connectors, ribbon cables etc.

36.DC REGULATED POWER SOURCE -(2 NOS.)

Approved makes : 1. Aplab 2. Agilent (Keysight)

01. Range : 0 to $\pm 60V$ DC, 2.5A
02. Display : LCD
03. Power supply : 240V AC, 1 Phase, 50Hz
04. Mode Indication : LED indication for constant voltage/ constant current operating mode
05. Load Regulation : (i) 0.1% variation in voltage (ii) 0.2% variation in current
06. Ripple and Noise : Less than 1mV
07. Resolution : 50 mv/ ma
08. Features : Overvoltage protection/ Overcurrent protection
09. Accessories : Test lead



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37. AUTO TRANSFORMER - (1 NO.)

Approved makes : 1. AE

01. Capacity : 15A, 8A
02. Input : 0-550V, 50Hz
03. Output : 0-270V continually adjustable through knob
04. Scale : (i) Voltage scale around voltage varying knob (ii) White lettering and graduation as black background
05. Accessories : Test lead wires

38. NICKEL CADMIUM CELL - (1 NO.)

Approved makes : 1. Sony

01. Cell Type : Ni-Cd
 02. Voltage Range : To suit supplied Laboratory instruments
 03. Power Supply : 240V AC, 1 Phase, 50Hz
 04. Charger suit : Yes
- Note :** This item should be supplied with Charger Suite and 4Nos of cell .

39. SCANNER - (1 NO.)

Approved makes : 1. HP 2. Cannon

A scanner with the provision to scan upto A3 size drawing with the facility to reduce/enlarge store/retrieve, transfer/copy and compatible with windows platform shall be supplied.

Scan Type Flatbed ; Colour Scanning: Yes

Scan Speed Up to 50 ppm (black & white, grey, colour, 200 dpi)

Scan Resolution Hardware: Up to 600 x 600 dpi Optical: Up to 600 dpi Scan File Format PDF (image-only, searchable, MRC, PDF/A, encrypted), TIFF (single page, multi-page, compressed: G3, G4, LZW, JPEG), DOC, RTF, WPD, XLS, TXT, XML, XPS, HTML, OPF, JPG, BMP, PNG

Duty Cycle (daily) duty cycle: 5000 pages

Auto Document Feeder Capacity Standard, 200 sheets

Media Size (ADF) A3; A4; A5; A6; long paper up to 864 mm

External I/O ports 1 Hi-Speed USB 2.0 Standard Connectivity 1 Hi-Speed USB 2.0

40. TORXIMETER - (2 NO.)

Approved makes : 1. Sper Scientific

01. Application : Used for bolt torquing, torque wrench calibration, contact closure measurement
02. Feature : 3 units of measurement hold, peak, minmax, fast/ slow sampling, hi/ low resolution, auto power off
03. Accessories : Hard carrying case, torque probe, cable, battery along with battery charger etc.

41. LAPTOP - (2 NO.)

Approved makes : 1. HP 2. DELL

01. Processor : Latest or Core i5 (min)
02. RAM : 2 GB (min)
03. Hard Drive : 1 TB
04. Multimedia Drive : DVD+/-RW
05. Display : 15.6"
06. Network Card : Yes
07. Keyboard : Yes
08. Pointing Device : Touch pad
09. External Port : 3 nos (min) USB compliant port
10. Operating System : Latest available version
11. Software : Licensed version of all necessary software
12. Accessory : Carrying case , additional battery along with battery charger

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42. PORTABLE mA CALIBRATOR – (3 NO.)

Approved makes : 1. Fluke 2. Agilent (Keysight) 3. GE Druck 4. Scandura /wika 5. Yokogawa 6. Time Electronics 7. Beamex 8. Eurotron 9. Tinsley 10. AOIP France 11. Extech

01. Type : Microprocessor based
02. Application : To measure or source mA signal for calibration of receiver type instruments
03. Range : 0-24 mA
04. Resolution : 0.001
05. Accuracy : 0.001%
06. Measure Volts : 0 to 60 V
07. Accessories : Test lead, rechargeable battery with battery charger, carrying case etc.

43. TABLE MOUNTED mA CALIBRATOR – (2NO.)

Approved makes : 1. Fluke 2. Agilent (Keysight) 3. Scandura /wika 4. Yokogawa 5. Time Electronics 6. Beamex 7. Eurotron 8. Tinsley 9. AOIP France 10. Extech

01. Input range : 0 to ± 100 mA DC, 0 to ± 1200 mV, 0 to ± 80 V (Programmable)
02. Output range : 0 to 25 mA DC, 0 to ± 1200 mV, 0 to 10 V (Programmable)
03. Accuracy : $\pm 0.03\%$ of reading
04. Temperature : 0-50°C
05. Accessories : Test lead, power cord, carrying case etc.

44 . PORTABLE mV CALIBRATOR – (2NO.)

Approved makes : 1. Fluke 2. Agilent (Keysight) 3. GE Druck 4. Scandura /wika 5. Yokogawa 6. Time Electronics 7. Beamex 8. Eurotron 9. Tinsley 10. AOIP France 11. Extech

01. Input range : 0 to 120 mV, 0 to 30 V (Programmable)
02. Output range : 0 to 120 mV, 0 to 12 V, 0 to 30 V, 0 to 24 mA (Programmable)
03. Accuracy : $\pm 0.02\%$ of reading
04. Temperature : 0-50°C
05. Preferred feature : Reference junction compensation for thermocouple, over voltage/ current protection
06. Accessories : Test lead, rechargeable battery with battery charger, carrying case etc.

45. TEST RTD – (2NO.)

Approved makes : 1. Fluke 2. Wika 3. ASP Sensors 4. Isotech

01. Sensor type : Platinum resistance
02. Temperature : 0-600°C
03. Accessories : Cable, carrying case etc.

46. FREQUENCY COUNTER/ TIMER – (1NO.)

Approved makes 1. Agilent(Keysight) 2. Tektronix 3. Yokogawa 4. Fluke

01. Bandwidth : 350 MHz
02. Display : 12 digit
03. Temperature : 0-50°C
04. Accessories : Battery with battery charger, carrying case etc.

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SL.NO	PROJECT	CUSTOMER
1	BHADRADRI TPS (4X270W)	TELANGANA STATE POWER GENERATION CORPORATION LIMITED (TSGENCO)

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LABORATORY INSTRUMENTS(C&I PACKAGE)

REVISION:00

APPROVED

K.C.RAMAKRISHNAN

PREPARED

K.RAJASEKAR

ISSUED

416

30.05.2017



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S.No	Description	Reference
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2.	TECHNICAL SPECIFICATIONS	CE/416/BHAD /LABI/TS Rev 00, Pages 17



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SCOPE OF SUPPLY

The scope of supply consists of LABORATORY INSTRUMENTS (C&I) Package for the project mentioned.

Although immense care has been taken to cover all the items applicable for the project, it is possible that some items may have been missed (which needs to be added) or some items have been already supplied which are not to be supplied now for these projects. Then in either case, unpriced impact (technical) and price impact will be taken from participating vendors. But please note that if a vendor has not participated in this RFQ and if the impact is applicable due to change in quantities or due to acceptance of deviations, non-participating vendor will not be sent intimation (under this RFQ) as the changes are very, very minimal keeping the non-participating vendor still debarred under this packaged RFQ. Hence, all vendors should actively participate offering all the items. If a vendor does not quote for all the listed items, then his complete offer will be technically rejected. Please note that essence of this tender is packaging and hence all items within this project are to be offered so as to have one packaged vendor for this project.

Please note that if any item requires battery, same should be rechargeable type of same item make or equivalent good make. Then the corresponding charger is also to be provided. Also, please note that computer interface is to be provided with relevant pre-fabricated cable of 2 or 3 meters length for connectivity to computer, Current Probe and High Voltage Probe as and where applicable for the individual instrument. If any application software is required due to this, same is also to be provided as and where applicable for that particular instrument.

If any deviations are accepted by bhel During evaluation stage and subsequently not accepted by end customer during datasheet submission stage ,then vendor has to replace the model without any financial implication to BHEL.

Project wise unit rates are to be offered taking care of applicable BOM for individual projects since the items are being enquired as a package for individual projects. Subsequently, after ordering, unit rates of each and every BOM item of project is to be provided to take care of any addition/deletion during detailed engineering stage. Erection supervision and commissioning is also to be offered with lump sum rates each project wise.

Please note that for any item offered by vendor BHEL reserves the Right to ask the vendor, any or all of these credentials (Po copies of Past supplies/ commissioning Reports(MoM).If the credentials are not submitted/not satisfactory , the item will not be acceptable and supplier has to offer any other suitable make /model without any impact to BHEL.

All the electronic M&C items shall be microprocessor based and shall have the data logging facility for keeping calibration/maintenance records with proper communication facility for downloading these data on the Lab PC. Wherever such facility is available in the Equipment offered

The calibration standards of all M&C equipments furnished under this sub-section shall be traceable to National Bureau of Standards, USA or NPL, India or to the applicable standards existing in the country where the equipment is manufactured.Dust proof carrying case and Rechargeable battery along with external charger shall be provided For the project site under this RFQ vendor has to offer following option:-

- 1.) Despatch of items as per standard package as done normally.

ERECTION SUPERVISION & COMMISSIONING:

Please note that Erection Supervision & Commissioning is to be offered each project wise and same will be considered while evaluating lowest commercial tender. The commissioning will involve demonstrating the healthiness and working of all the items within the project to the satisfaction of BHEL site office/end-user. This will necessitate maximum of 3 days stay at project site.



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TECHNICAL DOCUMENTS TO BE SUBMITTED ALONG WITH OFFER(MANDATORY):

- 1.) Technical bid should be having Desc, Qty, make, Model, Strictly as per the Template format given below (In Pdf and excel)
- 2.) Catalogues of all the items in soft copy

DOCUMENTS TO BE SUBMITTED AFTER PLACEMENT OF ORDER:

- a. Datasheets along with catalogs for each and every item properly indexed.
- b. Mounting details including necessary accessories (If applicable)
- c. Recommendations (if any) for installation/ storage etc
- d. Spare part list
- e. Consumable list
- f. Training details
- g. O&M Manual (After datasheet approval)
- h. Any other scheme, data, drawing, document, etc required to establish product quality and completeness of supply.

The above documentation shall be each project wise with around 8 copies or On as required for each project on an average. Apart from hard copies, soft copy in the form of CD/Pen drive should also be provided for each project.

TEMPLATE To be followed for technical bid (Example) :

Sno	Desc	Qty	make	model
1	Soldering Station	2	HAKKO	FR-810 Accessories : handpiece holder, FP pick-up (with pick-up wire SS), heat resistant pad, power cord,

IMPORTANT NOTE : Along with the price bid Break up of prices should be submitted in following format for the following items supplied along with the electronic test bench along with the main price bid

SLNO	DESC	Qty	Unit price	Total
1	Digital Oscilloscope	Nos		
2	Decade Resistance box	Nos		
3	Digital Multimeter	Nos		
4	Function Generator	Nos		
5	Chartless Recorder	Nos		
6	Variable DC stabilised Power Supply	Nos		
7	Variable AC power Supply	Nos		
8	Stepdown Transformer	Nos		
9	Continuity Tester	Nos		
10	Fixed Power supply	Set		
11	Electrically operated air Gun	Nos		
12	Digital LCR-Q Bridge	Nos		
13	Card IC tester	Nos		
14	Soldering and DE soldering Station	Nos		
15	Power meter with Harmonic Analysis	Nos		
16	Tool box with screwdriver set ,spanner, plie cutter etc..	Nos		

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GENERAL INSTRUCTIONS :

Testing instrument / devices offered shall be proven type and shall incorporate latest design. All instruments supplied under this package shall be in brand-new and unused condition.

The workmanship and design shall be proven and in accordance with the best engineering practice to meet the intended purpose. Bidder shall ensure satisfactory performance of testing instruments/devices even in the worst environmental condition. All instruments shall be supplied from reputed and proven manufacturer.

Testing instruments/devices shall be furnished with all necessary accessories and original instruction/operating and maintenance manuals.

All instruments offered, shall conform to the relevant International Standards.

The various instruments/devices, small tools, accessories, etc. shall be furnished (in applicable cases) with suitable and durable crates, kits or carry boxes of convenient size; complete with necessary packing etc. for safe storage when not in use.

Measuring/testing instruments, along with associated accessories shall be suitable for intended operation (both indoor and outdoor installations as applicable).

Bidder shall be responsible for proper functioning of supplied items and shall make any necessary additions/modifications, as required for proper maintenance and testing of the installed instruments and controls. Bidder shall also be responsible for erection and commissioning of the test equipment.

It is obligatory to Bidder to furnish a complete list of spare parts for these testing/calibrating, instruments/devices. Bidder shall render guarantee for easy availability of all the spare parts required, especially for the components, which are prone to failure.

Bidder shall repair or replace the defective instruments/ devices at no extra cost within the guaranteed period of each instrument/device.

Scope of service of the Bidder shall also include operational and service training of Owner's personnel at site. Calibration and test certificates, as applicable, shall not be more than one (1) year old.

CODES AND STANDARDS

The design, material, construction features, manufacture, inspection and testing of laboratory instruments shall comply with all currently applicable statutes, regulations and safety codes in the locality where the equipment will be installed. The equipment shall also conform to the latest applicable standards

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SL.NO	PROJECT	CUSTOMER
1	BHADRADRI TPS (4X270W)	TELANGANA STATE POWER GENERATION CORPORATION LIMITED (TSGENCO)

TECHNICAL SPECIFICATIONS FOR LABORATORY INSTRUMENTS (C&I PACKAGE)

REVISION:00

APPROVED

K.C.RAMAKRISHNAN

PREPARED

K.RAJASEKAR

ISSUED

416

DATE

30.05.2017



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BILL OF MATERIALS

Sl. No.	Item Description	UNIT	One Set Qty	Total Two set qty
1	Portable Multifunction Calibrator (Microprocessor based)	Nos	2	4
2	Decade Resistance Box	Nos	2	4
3	AC Universal bridge	Nos	1	2
4	Signal Generator	Nos	2	4
5	Hand Tachometer	Nos	2	4
6	Insulation tester of Different Range	Nos	1	2
7	Dc Regulated power supply	Nos	2	4
8	Stop watch(Digital Type)	Nos	2	4
9	Continuity Tester	Nos	5	10
10	Tong Tester	Nos	2	4
11	High Range Tong Tester	Nos	1	2
12	Stabilised Power Supply	Nos	2	4
13	Stroboscope	Nos	1	2
14	Portable Trend Recorder	Nos	1	2
15*	Electronic Test bench with Computerized calibration system	Nos	1	2
16	Portable digital multimeter	Nos	5	10
17	Field Transmitter Calibrator	Nos	2	4
18	Soldering Iron With Solder sucker	Sets	2	4
19	DE soldering Station	set	1	2
20	VARIAC	Nos	1	2
21	Power Pack	Nos	2	4
22	Vibration Analyzer Balancer Instrument	Nos	2	4
23	Portable Meter Calibrator	Nos	2	4
24	Digital Cable Identification System	Nos	1	2
25	Dual Beam Portable Digital Storage Oscilloscope	Nos	2	4
26	Hand Held Thermocouple and PT-100 OHM Simulator and Indicator	Nos	1	2
27	Insertion And Extraction Tools For Various Pin Numbers 14,16 And 48	Nos	2	4
28	Rheostats	set	1	2
29	Desktop Digital Multimeter	Nos	2	4
30	Phase Sequence Meter	Nos	1	2
31	Frequency Meter	Nos	1	2
32	Mini scope Meter	Nos	1	2
33	Vibration / Sound Level Monitor	Nos	1	2
34	Portable PH Calibrator	Nos	2	4
35	Module Tester	Nos	1	2
36	Dc Regulated power Source	Nos	2	4
37	Auto Transformer	Nos	1	2
38	Nickel Cadmium Cell	set	1	2
39	Scanner	Nos	1	2
40	Torximitor	Nos	2	4
41	Laptop	Nos	2	4
42	Portable mA Calibrator	Nos	3	6
43	Table Mounted ma Calibrator	Nos	2	4
44	Portable mV Calibrator	Nos	2	4
45	Test RTD	Nos	2	4
46	Frequency Counter/Timer	Nos	1	2

*Note1 : One set of items mentioned specifically in section 1.6(Page 8 of 17) under Electronic test bench to be supplied with each Electronic test bench.

Note 2: This project consists of 2 sets as give above.

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1. PORTABLE MULTIFUNCTION CALIBRATOR – MICROPROCESSOR BASED -(4 NOS.)

Approved makes : 1. GE 2. FLUKE 3. Agilent (Keysight) 4. Yokogowa 5. Beamex 6. Wika/scandura 7. AOIP France 8. Time Electronics 9. Eurotron

Portable Multifunction Calibrator shall be supplied for testing and calibration of process instruments. The calibrator shall have facility for measurement and simulation of the following instruments and parameters :-

- a) Pressure and DP transmitters
- b) Electro-pneumatic converters.
- c) Thermocouples and RTD
- d) Electronic receivers and controllers
- e) DC voltage & current generation
- f) Frequency

The calibrator shall have large multiple digital indicator 4 to 5 digits. It can operate according to function and menu guided set up mode. The calibrator shall have storing facility of field calibration data together with set up information as per requirement.

The calibrator shall be microprocessor based with latest state of the art design and shall have LCD display simultaneously for both input and output signal, membrane type key pad with tactile sound, 230V AC mains supply, in built battery & battery charger, carrying case, test probes, fuse etc.. Preferred feature - IP-65 enclosure class.

Suitable pressure modules and pumps to meet the pressure range 1 to 2 bar, and 0 TO 70 bar and 0-350 bar to be supplied Pneumatic and hydraulic hose kit /test pumps also to be supplied along with any other accessories required.

2. DECADE RESISTANCE BOX - (4 NOS.)

Approved makes : 1.Toshniwal,2.Yokogowa, 3.Tinsley

Decade resistance box shall be supplied as per specification stated below :

A dial type resistance box shall be supplied. Range of resistance box shall typically be 0.01 ohm to 111.11111 K ohms. There shall be eight dials, each dial providing one decade of resistance value. The resistance coils should be made of manganin, non inductivity wound and aged resistors with low temperature coefficient and low contact resistance steps. The ends of the coils should be soldered to the terminal blocks with silver solder. The direct-reading accuracy of the resistance box shall be $\pm 2\%$ for 0.01 decade, $\pm 0.3\%$ for 0.1 decade, $\pm 0.05\%$ for 1,10,100,1K, 10K decades and $\pm 0.5\%$ for 100K decade . All resistors shall be temperature compensated. Resistance box shall be supplied with probes, leads, clips, connectors etc.

3.A.C. UNIVERSAL BRIDGE- (2 NO.)

Approved makes : 1.Fluke Amprobe, 2.wayne Kerr, 3.Agilent(Keysight),4. Yokogowa, 5.Tinsley 6. Exttech

A.C. bridge of the following specification shall be supplied together with probes, leads, clips, connectors, power supply cord, accessories etc.

R.L.C. bridge shall have a measuring frequency of 1 KHz/10 KHz. The bridge shall be suitable for 240V, 50 Hz supply.

- Resistance : 10 Ohms to 10 M Ohms in seven full scale ranges with least count 10 m Ohms in 10 Ohms range.
- Capacitance : 1000 PF to 1000 micro F in seven full scale ranges with least count of 1 PF in 1000 PF range
- Inductance : 1000 micro H to 1000 H in seven full scale ranges with least count of 1 micro H in 1000 micro H range

It shall also be possible to measure "D" dissipation factor for capacitors and "Q" quality factor for inductances.

4. SIGNAL GENERATOR – (4 NOS.)

Approved makes : 1.Fluke 2. Yokogowa 3. Tektronix 4. Agilent (Keysight)

Signal generator shall have frequency range of 0.01 c/s to 200 K c/s in at least four ranges . The signal generator shall have sine wave, square wave and saw tooth wave outputs.

The output frequency shall be continuously adjustable and frequency reading shall be displayed on a digital indicator. The voltage range of the generator shall be switchable between 1V & 10V and continuously controlled and shall be monitored on a built-in digital voltmeter. The signal generator shall have high frequency stability and low harmonic distortion. Harmonic distortion shall be less than 0.5 percent. Signal generator shall be suitable for 240V single phase, 50 Hz, supply and shall be complete with carrying case, probes, fuse and other accessories as required.



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5. HAND TACHOMETER - (4 NOS.)

Approved makes : 1. Fluke Amprobe 2. Extech 3. Line seiki

Bidder shall supply combined contact and photo type tachometer with latest state of the art design.

The tachometer shall have a range of 10-99999 RPM for optical type and 10-25000 RPM for contact type and 6-1000 meters for linear reading. The device shall have integral non contact photo electric pickup with adapter for contact pickup. Non contact pick up shall have a range of 1-25 inches from target. It shall have 5 digit LCD display and shall be battery operated. The tachometer shall have data display time of 1 minute after release of measurement and data memory time of 30 minutes The tachometer shall be rugged in construction and shall be complete with all accessories such as contact adapter, surface speed wheel, interchangeable tips-concave, convex, linear, reflective tape(100 strips), batteries, carrying case. A built-in safety clutch shall be incorporated to protect the tachometer against overload if the speed is higher than the selected range.

6. INSULATION TESTER OF DIFFERENT RANGE - (2 NO.)

Approved makes : 1. Fluke Amprobe 2. Extech 3. Megger 4. Yokogowa 5.Tinsley

Insulation tester shall be portable and battery operated type with LCD display. Test voltage shall be 250 V / 500 V / 1000 V / 2500 V D.C. Range of insulation measurement shall be from 0.5 Meg Ohms to 50,000M ohms with an accuracy of ±5%.. Insulation resistance shall be indicated on a meter.

Following accessories shall be included :

- a) Necessary carriers with rubber and steel centres
- b) Measuring roller
- c) Extension rod
- d) Carrying case

The indication shall be magnetically damped. Push button shall be provided to hold the pointer for exact reading.

7. D.C. REGULATED POWER SUPPLY - (4 NOS.)

Approved makes : 1. Aplab 2. Agilent (keysight)

Bidder shall supply D.C. Regulated Power supply designed with latest state of the art electronic and IC technology. D.C. Regulated Power supply shall have the following features :

- 01. Voltage Range : 0 to + 60V DC, 1 Amps. (floating),(Continuously adjustable)
- 02. Voltage / Current Range : 0-60V/0-2.5A
- 03. Display : LCD
- 04. Meter Accuracy : ± 2% FSD
- 05. Power Supply Connection : 240 V AC, 50 Hz.
- 06. Output Impedance : 50 m Ohm or less.
- 07. Load Regulation : 0.1% variation in voltage , 0.2% variation in current
- 08. Drift in 8 Hours : 0.1% variation in voltage, 0.2% variation in current
- 09. Ripple and Noise : Less than 1 mV
- 10. Setting Resolution : 20 mV / 20 mA
- 11. Temperature co-efficient : 0.05% per Deg.C
- 12. Accessories : Test cords and clips as required.

Power supply shall be short circuit proof and crowbar protected.

8.STOP WATCH – (4 NOS)

Approved makes : 1. Extech 2. Casio 3. Fluke-Amprobe

Digital Type

Stop Watch shall be electronic type with LCD type display and complete with battery set and carrying case. The stopwatch shall have start, stop and reset button. The case shall be non-rusting, dust and damp- proof.

9.CONTINUITY TESTER -(10 NOS.)

Approved makes : 1. Extech 2. Fluke-Amprobe 3. Meco 4.RS-Components

Continuity tester shall be electronic and battery operated. A hooter shall be provided which will sound when continuity detected. Tester shall be supplied with battery charger , lead wires and probes. The tester shall be kept in a carrying case



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10. TONG TESTER – (4 NOS.)

Approved makes : 1. Fluke 2. Yokogowa 3. Agilent (Keysight) 4.Extech 5. Meco

Tong tester shall be suitable for measuring the current ranges of 0-5/10-15/30 amps AC and DC. It shall have swiveling joint between tongs and meter to facilitate easy reading. Tong Testers shall have facility of indicating power factor, frequency and KW.

Note : 1 No AC tong tester and 1 No DC tong tester may be supplied.

11.HIGH RANGE TONG TESTER – (2 NOS.)

Approved makes : 1. Fluke 2. Yokogowa 3. Agilent (Keysight) 4.Extech 5. Meco

High range tong tester shall be suitable for measuring the current ranges of 0-1000 amps AC with an accuracy of 1% and resistae of 0-2000 ohm with an accuracy of 1.2%. It shall have auto tanging facility along with 3 1/2 digit LCD display

12.STABILISED POWER SUPPLY – (4 NOS.)

Approved makes : 1. Aplab

Bidder shall supply stabilized power supply designed with latest electronics and IC technology. It shall have the following minimum features:

01. Voltage Range : 0-240V AC, continuously adjustable.
02. Current Range : 0-10A
03. Power Supply Connection : 240V AC, 50 Hz
04. Indication : Meters indicating voltage and current shall be integral with power supply
05. Load Regulation : 0.25% variation in voltage
06. Accessories : Test lead wire

13.STROBOSCOPE –(2 NO.)

Approved makes : 1. Fluke/Fluke Amprobe 2. RS Components

Portable stroboscope suitable for 240V AC, 50 Hz, supply from reputed Make shall be supplied. Measuring range shall be from 0 to 6000 rpm minimum in suitable ranges. It shall have flash rate of 100 to 10,000 flashes/ minute with Xenon flash lamp.

14.PORTABLE TREND RECORDER - (2 NO.)

Approved makes : 1. Chino 2.Yokogowa 3. Shinko 4.Honeywell 5.Fuji Electric

Recorder shall be suitable for 240V AC, 50 Hz, supply. Recorder shall have signal-conditioning circuits to receive 4-20 mA, DC, thermocouple, RTD and other voltage-current signals encountered in electronic circuits. Recorder chart shall have 6 speed selections between 2 and 700 cm per hour. the recorder shall be 3-pen type. The scales shall be graduated in 0-100%. Accuracy shall be $\pm 1\%$ or better. Reference junction compensation feature shall be built-in. The minimum input impedance for voltage measurement shall be 500 K Ohms and for current inputs the impedance shall be 950 Ohms. The following spares and consumables shall be provided:

- a) Chart rolls
- b) Ink cartridges/sacks
- c) Replacement tips
- d) Chart drive motor



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15. ELECTRONIC TEST BENCH – with Computerised Calibration System (2 NOS.)

Approved makes : 1. Scandura/Wika 2. Convergent technologies 3. Tinsley 4. Fluke

Self contained test bench with sets of drawers for testing and repair of electronic/ electrical instruments and gadgets shall be supplied. This shall include necessary isolating switch, power supply switch, holding brackets, power supply sockets, signal sockets, meters, plugs, variac, air gun etc. laid aesthetically in a bench-top unit. Computer aided calibration facility with calibration management system shall also be provided

Combined panel & desk type arrangement with instruments/ hardwares laid aesthetically shall be provided. Front and slant area shall be of 3mm CRCA sheet. Other sides including door shall be of 2mm CRCA sheets. Suitable illumination with door operated switch shall be provided. Color shall be Brilliant White (interior) and Light Grey 631 shade IS 5 (EXTERIOR). However, approval of color shade shall be obtained from Owner during detailed engineering.

Electronic part of the test bench shall include but not limited to, all the required test instruments and accessories such as power supply sockets with switch .415V AC-15/5A - 2 Nos, 230V AC -15/5A - 4 Nos, 220V DC - 2 Nos, ±24V DC- 2 Nos, ±48V DC-2 Nos, ±12V DC-2 Nos, ±5V DC-2 Nos.

Voltage levels are tentative and shall be matched to supply requirements of Bidder and Owner’s range of products. Other instruments that should be supplied along with test bench shall include

The test bench shall be of modular design, enabling easy change of arrangement/layout as and when required. The test bench shall include necessary Isolation switches, power supply switches, holding brackets etc. The test bench shall have approximate dimension (L x W x H) 2000(L) x 1485(H) x 900(W) dimensions in mm).

The bench shall be furnished with thick laminations top. Desk with drawer shall be included. The front panel Shall be of 5 mm thick anodized aluminum plate and individually engraved mimic style

Bench Top :

Highly elegant modular rack mounting system for instrument is made up of quality steel, front plates are made of thick Anodized aluminum plates. Rubber mat should be provided on Table Top

Computerised calibration system shall consist of server and PC, 21” TFT monitor and A3 color laser jet printer and shall be located on the test bench (Details of the system shown in latter part of specification).

The variable A.C supply shall have a range of 0-260V and sub-panel shall contain ammeter and voltmeter. The output shall be protected with circuit breaker. A voltmeter shall be provided in sub-panel to indicate input and output voltages.

D.C. supplies shall be externally settable, floating type, reverse polarity protected. A metering sub-panel shall be provided for monitoring voltage, current with necessary plug sockets.

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1.2 The test bench shall include necessary power packs to feed the following socket mounted on the bench:

1	Main power Supply	It includes main switch for the whole workstation 3 ground socket for other instrument 240V 5A	
2	Isolated supply Module	It shall include main switch, ELCB ,circuit breaker, 240V AC+/-0.5%, 1Phase 50 Hz, 3KVA stabilized p/s supply socket , 110V AC, 2 AMPS(Step Down Transformer), 50hz supply socket 415V AC 15/5A 220V DC 2 A 230V 15/5A	No of socket-6 No of sockets -1 No of socket-2 No of socket-2 No of socket-4
3	Variable Ac Power supply	It shall include 0-260V AC, 1 phase, 50 Hz, (variac)10 Amp, socket and terminal, 0-50V AC/2A, terminals. Digital meter for current and voltage	no. of socket - 2
4	Variable DC power supply	shall include 0-64V DC 5A (Programmable) stabilized output voltage supply , Digital display for voltage and current with RS-232 Interface	no of socket - 1
5	Constant Dc Voltage Supply	± 48 V DC, 3A ± 24V DC, 6A ± 12 V DC, 10A ± 5 V DC 5A Each unit shall include Digital meter for volts & ampere DC supplies should be externally settable, floating type, reverse polarity protected	No Of Socket-2 No of Socket-2 No of Socket-2 No of Socket-2
6	Digital Multimeter	One 5 ½ (Five and half Digit) Multimeter for display of voltage, current, resistance, with +/- 0.1% accuracy with RS-232 Connection/interface	One no (1)
7	Standard Current source	Accuracy +/- 0.01 ma, range 0-60 ma, load 500 ohms with digital current indicator-one no with RS-232 Interface	One no (1)
8	Standard milli volt source	Accuracy +/- 0.01mv ,Range 0-100mv with digital millivolt indicator-one No with RS-232 Interface	One no (1)
9	One AC voltage stabilizer (Input 240V ac nominal) (Output 240V ac +/-0.5%)	Regulation +/-0.5% for 0-100% Voltage variation	One no (1)

(Voltage level is tentative and shall be matched to supply requirements of Bidder's and owner's Range of Products) Continuity tester , Frequency indicator may be provided.

1.3 The test bench shall be including socket holders, where the electronic gadgets under test may be plugged. The front equipment shall include multi point connectors and test jacks for Interconnection. There shall be connection between the connectors and holder in which device under test shall be plugged in.

1.4 The standard high accuracy resistor(250 ohm) shall be included to load and measure the current output of devices . Necessary control devices for voltage and current adjustment/ control switches for power supply to feeders, isolation, etc., shall be included. All electric circuits shall be protected against overload by fuses, whose holders are located on front of the panel. All electrical circuits and metal structure shall be properly grounded.

1.5 Anti-Static Band & other necessary accessories should be provided along with the equipment.

COMPUTERISED CALIBRATION SYSTEM

This shall be located on test bench.

01. Processor : Latest available version from Pentium

02. SD RAM : 4 GB (Min)

03. Hard Disk : 500GB (RAID)

04. Monitor : 24" (TFT)

05. Printer : A3 color laser jet

06. Power supply : 240V AC, 1 Phase, 50Hz

07. Other feature : USB Port, Serial/ parallel Ports, R/W DVD, 10/100 Mbps Ethernet port, Mouse, KB

08. Software : Licensed version of all necessary software

i) Operating system (latest) (Licensed for Life time)

ii) calibration software (Licensed for Life time)

iii) Licensed antivirus software (3 Year updates)

iv) Microsoft office latest (Licensed for Life time)

(Refer next page for detailed specs of pc and printer)



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PC and Printer

Consists of following main components: Tower Type Configuration Intel Core i5 Processor, 3.2 GHz 6 MB Cache 4 Core, 4 GB RAM ,500GB 7200 RPM 3.5 " SATA 6 Gb/s Hard drive(Minimum), 16X DVD –ROM drive, 1 Gb Ethernet port-2 nos., ASCII keyboard, Optical Mouse, USB port(4 min), Windows 7 Operating System, 24" widescreen TFT monitor with minimum resolution of 1024x768, **Sound** Integrated audio with built in speakers. **Graphics** : NVIDA NVS 300 512 MB Graphics PCI-Express Graphics card or better supporting 1600 x 1280 , Resolution with True colors.Dual output (DisplayPort to DVI Video adapter convertor to be provided),**Ports** : 2 No standard serial port,4Nos USB (min),**Video ports/connectors** : DVI/Analog/VGA/DP/USB ports suitable adaptors for connecting to monitors should be provided. **Expansion Slots** : Minimum 3 Nos. PCIe/PCI/PCI-X based slots**Ethernet Ports** : **2 Separate Intel Gig NIC'S on PCIe in addition to onboard Gig NIC port.Cards must be from OEM 1GB –Ethernet Port 2 Nos** ,**Keyboard/ Mouse** : PS/2 /USB standard keyboard and PS/2/USB optical scroll mouse with mouse pad
Operating system : Microsoft windows 7 professional 32 bit with latest service pack to be preloaded, (windows 7 Professional Recovery /Image CD to be supplied) or **Latest Operating system** Driver CD's to be supplied with drivers suitable for all controllers with required installation/set up utilities.Security feature : Chasis Lock,**Inputs** : 100 TO 240V AC ; 50/60 Hz. Power Cords(Suitable for Indian type sockets to be supplied) **BHEL Approved Makes : DELL/HP/IBM-Lenovo**

MONITOR: : 24" WIDESCREEN, LED BACKLIT Minimum RESOLUTION 1024 X 768 **BHEL APPROVED MAKES: DELL/ HP/IBM-lenovo** **Software:** Operating System – Microsoft Windows 7 Professional 32 BIT with latest service pack to be preloaded, windows 7 professional recovery/image CD to be supplied. **Or Latest operating system ,whichever is later**
Software : i) Operating system (specified or latest ,whichever is later) (Licensed for Life time), ii) calibration software (Licensed for Life time) iii) Licensed antivirus software (3 Year updates), iv) Microsoft office (Latest) (Licensed for Life time)

LaserJet Printer COLOR LASER PRINTER - A3 Size NETWORK READY A3 SIZE COLOR LASER PRINTER WITH THE FOLLOWING FEATURES: SPEED OF MINIMUM 20PPM (COLOR / B&W), RESOLUTION 600 x 600 dpi (min), INTERNAL RJ45 UTP AND USB PORTS, POSTSCRIPT 3 EMULATION, DUTY CYCLE 50000 SHTS (MIN), INPUT TRAY CAPACITY 350 SHTS (MIN). USB PRINTER CABLE AND ONE SET OF CARTRIDGE/TONER TO BE SUPPLIED IN ADDITION TO CARTRIDGE ACCOMPANYING PRINTER POWER: AC 230V, 50Hz WITH INDIAN TYPE POWER CORDS **BHEL Approved MAKES : HP, CANON, IBM, XEROX LEXMARK**

1.6) IMPORTANT NOTE : one set of below items One no each should be supplied along with the each test bench

- i).Digital oscilloscope(Approved makes and Specs as Main Bom per item slno:25)
- ii).Decade Resistance Box (Approved makes Specs as per item slno:2)
- iii) Digital Multimeter(Approved makes and Specs as per Item slno:29)
- iv) Function generator (Approved makes and pecc as per Item slno:4)
- v) *Chartless Recorder (Refer to specs given below BHEL approved makes : 1. Chino 2.Yokogawa 3. Shinko 4.Honeywell 5.Fuji Electric)*
- vi) Variable DC Stabilized Power supply (Approved makes and Specs as per Item slno:7)
- vii) Variable AC power supply(0-260V,10A) (Approved makes as per Item slno:20)
- viii) step down transformer (110V,2A) BHEL Approved makes : 1.AE/ Equivalent Reputed make
- ix) Continuity Tester (Approved makes and Specs as per Item slno:9)
- x) *Fixed Power supply(± 48 V DC, 3A ± 24V DC, 6A ,± 12 V DC, 10A ,± 5 V DC 5A) (BHEL Approved makes : 1.APLAB 2. Tektronix 3. Agilent (Keysight))*
- xi) *Electrically operated air gun ((BHEL Approved makes : reputed makes)*
- xii) Digital LCR-Q Bridge (Approved makes and Specs as per Item Slno:3)
- xiii) Card IC tester(Approved makes and Specs as per Item Slno:35)
- xiv) *Soldering station & Desoldering station (Specs given below BHEL approved makes : 1. Hakko 2. Weller 3. Xytronics*
- xv) *Power meter with Harmonic analysis (specs given below : BHEL approved Makes : Fluke ,Agilent ,Yokogawa)*
- xvi) *One set of Tool box with screw driver set , spanner, Plie Cutter etc to be supplied from Reputed makes*

Note :

- i)Individual break up prices of above items supplied along with the test bench should be provided separately which will be referred in case of addition/ deletion during Datasheet stage
- ii) If the above item is same as line items appearing elsewhere in specification same make/model may be offered in both places to maintain uniformity.



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Chartless Recorder : The paperless Recorder offered shall be suitable for 240 V AC, 50 Hz. The microprocessor based Recorder shall have signal-conditioning circuits to receive 4-20 mADC, thermocouple, RTD and other DC voltage signals encountered in electronic circuits and shall be configurable.

Measuring points : 12 , Sampling Rate : 12 Points /sec. Input resistance Dc voltage & Thermocouple input – Approximately 1 MΩ, Memory for history should have minimum (8GB) Including internal memory Alarms upto 4 alarms (programmable per channel). Display min 5.7” TFT color LCD (Min) , Communication type : Network,USB

Soldering & Desoldering station : Soldering and desoldering station shall be provided along with temperature controlling equipment for precise adjustment of temperature. Different sizes of soldering tips shall be provided with the iron. Accessories shall include soldering handpiece, power cord, connecting cable, iron holder, handle, cleaning drill, nozzle remover, heat resistant pad etc.

Power meter with Harmonic analysis :

Power Measuring and Logging

Should simultaneously measure 3 CH Voltage input, 4 CH current clamp-on probe input, 2 CH DCV input.

Should Display value list or trend graph screen of Instantaneous/ Average/Maximum/Minimum of Voltage/Current/Power/Power factor/Phase Angle/Phase Advanced Capacitance Calculation and DCV input.

Integration Value of Active/ Reactive/Apparent Energy is each displayed by consumption and generation.

VECTOR DISPLAY :

- Indicates Voltage and Current phase difference and values between input channels of voltage and current.
- Checks whether the wiring is appropriate or not.

Power Quality Measuring

Measure Temporary Malfunction of Power Line • Captures temporary malfunction phenomena of power line which causes malfunction or destruction of devices by types (Voltage swell, Voltage dip, Voltage interruption, Transient overvoltage, inrush current) as an event by high sampling rate of 24 μs and RMS calculation.

Event data contains the type of malfunction, occurred time or occurrence finish time, measured value and waveform of voltage and current of all channels for approx. 200 ms period.

- Measurement method conforms to IEC standard 61000- 4-30 Class S

Measure Continuous Malfunction of Power Line Harmonics

- Measure and display graphs and list of up to the 50th Harmonic components of voltage, current and power for each phase and in total.

Waveform

- Displays with up to 10 or 12 waveforms of voltage and current for each CH.

Flicker

- Measures, 1 minute flicker (Pst, 1 min), short flicker (Pst) and long flicker (Plt).

Unbalance rate

- Displays voltage and current unbalance rate on 3 phase wiring.

Analysis and Report of recorded datas:

- Automatically generates graph and report by simple clicking on a file data displayed on screen.
- Uniform management of main unit settings
- Realtime measuring by USB communication.

Types of data

- Power data, Power quality event data, Main Unit Setting data, Screen capture data.

Memory card and interface : SD Memory card, USB communication,



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Functions :

Power Measuring

Power line and Input Channel: 3 CH Voltage, 4 CH for Current Clamp Probe.

1P2W (up to 4 system), 1P3W (up to 2 system), 3P3W2current (up to 2 system), 3P3W3current, 3P4W

Power measuring item:

Instantaneous, Average, Maximum and Minimum values:

Voltage/Current/Power (Active, Reactive, Apparent)/Power factor/ Phase Angle/Frequency/Calculated Phase Shift
Condensor/DC voltage value 2 CH.

Integration Value

- Energy (Active, Reactive, Apparent) each by consumption and generation
- Demand (Occurrence of max. demand time, current demand, estimated demand value)

Recording Interval Period:

1/2/5/10/15/20/30 second, 1/2/5/10/15/20/30 minute, 1 hour/2 hours

Recording method :Manual, time setting, period setting

Demand measuring should be available

Power quality Function : Equipment should have capability to identify malfunctions like voltage swells/dips/interruptions/transient overvoltage(impulse) or inrush currents, or long period such as harmonic distortion, flicker and unbalance rate.The Equipment should help to identify each of those short period malfunctions, by recording occurrence time, occurrence finish time and waveforms. Low malfunctions can also be analyzed by harmonics, flicker, waveform or checking on the unbalance rate calculation for 3 phase measurement.

Wiring connections 1P2W (max. 4 systems), 1P3W (max. 2 systems), 3P3W (max. 2 systems), 3P3W3current, 3P4W

Measurements items Voltage, Current, Frequency, Active power, Reactive power, Apparent power, Active energy, Reactive energy, Apparent energy, Power factor, Phase Advancing Condensor, Neutral current, Demand, Harmonics, Power Quality (Swell/Dip/Interrupt/Transient overvoltage, Inrush current, Unbalance rate. IEC flicker

Voltage (RMS)

Range 600.0/1000 V Accuracy $\pm 0.5\%$ rdg $\pm 0.2\%$ rng.

Current (RMS) Upto 3000A,Accuracy $\pm 0.5\%$ rdg $\pm 0.2\%$ rng.

Active power

Accuracy $\pm 0.5\%$ rdg $\pm 0.2\%$ rng. + accuracy of clamp-on probe

All Required probes to complete the functionality of equipment should be offered with the equipment.



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16. PORTABLE DIGITAL MULTIMETER - (10 NOS.)

Approved makes : 1. Fluke 2. Yokogowa 3. Agilent (Keysight) 4. Extech 6. Meco 7. Tektronix

01. Display : 5 1/2 digit LCD display with unit indication
02. Functions : DC volts, AC volts, DC Ma & A, AC Ma & A, Ohms
03. Range : DC Volts; AC Volts; DC mA, AC mA, frequency and Ohms (Total 25 ranges)
 - a. DC Voltage-0- 200 mV / 1000 V
 - b. AC Voltage-0- 200 mV / 750 V
 - c. DC Current-0- 200 mA / 2A
 - d. AC Current-0- 200 mA / 2A
 - e. Resistance-0- 200 Ohm/ 200 M Ohm
 - f. Frequency-10 Hz to 100 kHz
04. Accuracy : $\pm 0.25\%$ of reading+1 digit basic range
05. Range selection : Manual and automatic with over range indication
06. Zero adjustment : Automatic
07. Overload protection : Up to 1000V DC or AC
08. Polarity indication : Automatic
09. Power supply : Battery/ mains operated with low battery voltage indication
10. Accessories : Test lead, fuse , battery

17. FIELD TRANSMITTER CALIBRATOR - (4 NOS.)

Approved makes : 1. Yokogowa 2. wika/scandura 2. ABB 4. Emerson 5. Honeywell

Bidder shall supply portable Field Transmitter Calibrators suitable for configuration and calibration of smart transmitters.
Field Transmitter Calibrators shall have following features:

01. Type : Portable
02. Display : 4 1/2 digit LCD
03. Range : 4-20Ma DC
04. Unit : Ma or percent
05. Output simulation : 24V DC loop power
06. Over range protection : 25%
07. Adjustment : Continuous output
08. Battery power supply : Rechargeable power pack
09. Accuracy : 0.1%
10. Accessories : Battery holder, carrying case, fuse, test leads, battery charger unit along with rechargeable battery

18. SOLDERING IRON WITH SOLDER SUCKER (4 SETS)

Approved makes (For soldering Iron) : 1. Soldron 2. Hakko (For solder Sucker) : 1. Soldron 2. Rs Components

Soldering iron shall be provided along with temperature controlling equipment for precise adjustment of temperature. Different sizes of soldering tips shall be provided with the iron.

Solder sucker shall be provided for removal of molten solder from terminal connections.

19. DESOLDERING STATION (2 SET)

Approved makes : 1. Hakko 2. Weller 3. Xytronics

Soldering iron shall be provided along with temperature controlling equipment for precise adjustment of temperature. Different sizes of soldering tips shall be provided with the iron.

Accessories shall include desoldering handpiece, power cord, connecting cable, iron holder, handle, cleaning drill, nozzle remover, heat resistant pad etc.



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20. VARIAC – (2 NOS.)

Approved makes : 1.AE

Light weight variac providing voltage upto 550V, 10A, 50 Hz is envisaged. Voltage scale around the voltage-varying knob shall have white lettering and graduation as black back ground.

21. POWER PACK – (4 NOS.)

Approved makes : 1.APLAB 2. Tektronix 3. Agilent (Keysight)

Bidder shall supply power pack designed with latest state of the art electronics technology. It shall accept 110V 1 phase / 240V 1 phase, 50 Hz signal as input. Output voltage of the power supply pack shall be 0-60V adjustable over the entire range. The systems shall be capable of providing both positive and negative supply voltage with respect to a common reference point. Power supply packs shall include indicating meters to indicate the output voltage and output current. The power pack shall be capable of delivering current upto 10 Amps. Max ripple should be 5 mA at full load.

22. VIBRATION ANALYZER BALANCER INSTRUMENT - (4 NOS.)

Approved makes : 1. SKF 2. B&K Vibro Germany 3. GE Bentley Nevada 3. SPM instruments

The microprocessor based portable self-contained dual input instrument shall have the following specification and features :

01. Indication : Digital/Analog frequency and amplitude meter
02. Frequency : 60 to 6,00,000 CPM
03. Sensitivity : 0.03 microns peak to peak adjustment
04. Diagnostic : Hard copy tabular print-out
05. Printer : In-built; Amplitude and frequency plotting capability (3 speeds)

The instrument shall have two range manual tunable filter, two range internal oscillator, high density stroboscopic light (One flash per cycle up to 15000 cpm, sub multiple firing up to 600000 cpm). The instrument shall be capable of the following measurements:

- a) Displacement in 0 to 3000 micron in 8 ranges.
- b) Velocity in 0-3000 mm / sec. in 8 ranges.
- c) Acceleration in 0-100 g in 8 ranges.
- d) Spike energy 0-100 g's in 8 ranges.

The instrument shall have LCD backlit display, membrane type key pad , replaceable, seals, rechargeable battery and battery charger. Enclosure class shall be IP-65.

- a) Temperature Range : 0 to + 50 Deg.C
- b) Power Supply : 230V, 50 Hz, 1 Ph, AC

Accessories.

- a) Accelerometer
- b) Straight probe
- c) Pick up cable
- d) Stroboscopic light
- e) Strobe cable
- f) Fuse
- g) Power cable

Note : The above item has to be demonstrated and training of one day has to be given customer from manufacturer (OEM) At Project site.

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23. PORTABLE METER CALIBRATOR (4 NOS.)

Approved makes : 1. Fluke 2. Agilent (Keysight) 3. Yokogawa 4. Tektronix 5. Wika /Scandura 6. Meco

This instrument shall provide an accurate measure of DC, AC, Volts, amps and ohms. It shall be able to generate milliamperes for instrument calibration. It shall be electronic type with LCD display and shall be provided with battery and battery charger.

Battery charging circuit shall be integral with the instrument and shall be suitable for 240V, AC, 50 Hz supply.

Ranges :

- D.C. Volts : 0 - 1mV - 10V
- D.C. Current : 0 - 1 micro A-1A
- A.C. Volts : 0 - 1mV - 10V
- A.C. Current : 0 - 1 micro A - 1A
- Ohms : 1 Ohm - 10 M Ohms
- Accuracy : $\pm 0.1\%$

24. DIGITAL CABLE IDENTIFICATION SYSTEM (2 NO.)

Approved makes : 1. Fluke 2. RS Components 3. Extech

Features : Quick identification of shorting lines and open lines. It shall handle upto 96 pairs at one time.

25. DUAL BEAM PORTABLE DIGITAL STORAGE OSCILLOSCOPE (4 NOS.)

Approved makes : 1. Tektronix 2. Agilent (Keysight) 3. Yokogawa

01. Bandwidth (3 db) : 60 MHz
02. Selection : Trigger, Time base, Horizontal & Vertical deflection
03. Deflection factor : 2 mV/div. to 5 V/div.
04. No. of Steps (Vert.) : 10 (min) (1-2-5)
05. Accuracy : $\pm 0.5\%$ or better
06. Input impedance (Signal) : 1 M Ohm, 20 pf
07. Maximum voltage 400V d.c./a.c. p to p
08. CMRR : 10:1 at 50 MHz (minimum)
09. Sample rate : 10 x 106/Sec.
10. Record memory : 4K points
11. Save memory : 4K points
12. Display mode : x1, x10, storage compress
13. Time base : 0.05 s/div. to 0.5 s/div.
14. No. of steps (hr.) : 20 (min) (1-2-5)
15. Input impedance (trigger) : 20 K Ohm
16. Time base linearity : $\pm 5\%$
17. Z modulation frequency : Upto 5 MHz
18. Controls available : Intensity, focus, brightness
19. Operating voltage : 100-250V AC, 50 Hz
20. Ambient temperature : 0-50 Deg.C
21. Feature : Overload protection
22. Accessories : Probes, carry case etc., as required

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26. HAND HELD THERMOCOUPLE AND PT-100 OHM SIMULATOR AND INDICATOR (2 NO.)

Approved makes : 1. Agilent(Keysight) 2. Fluke 3. Yokogowa 4. AOIP France 5. Time Electronics 6. GE Druck 7.Scandura/wika 8. Beamex

Bidder shall supply hand held type T/C and RTD Pt-100 simulator and indicator. The instrument shall be electronic type with in built battery and battery charger. It shall have following specification:

01. Indication : Liquid Crystal Display (LCD)
02. Operating Temperature Limits : - 20 to 55 Deg.C
03. Storage Temperature Limits : - 30 to 60 Deg.C
04. Temperature Resolution : 1.0 or 0.1 Degree
05. Function : Generation/ measurement of Thermocouple e.m.f (for K,E,J,T,N,B,R,S)
Generation / measurement of equivalent RTD Temperature (PT-100)
06. Accessories : Test lead, carrying case, battery & battery holder, fuse, battery charger along with rechargeable battery

27. I.C. INSERTION AND EXTRACTION TOOLS FOR VARIOUS PIN NUMBERS 14,16 AND 48 (4 NOS.)

Approved makes : Rs Components

Bidder shall supply the tool having professional quality and of reputed make.

28.RHEOSTATS (2 SET.)

Approved makes : 1. Time Electronics 2. Tinsley 3.IET Labs

Rheostat shall be slide resistor type wound on ceramic frame. It should have max temperature rise of 375°C and maximum working voltage of 500 volts. Bidder shall supply Rheostats of the following ratings from reputed manufacturer:

01. 1A : 1 No.
02. 2A : 1 No.
03. 5A : 2 No.
04. 10A : 2 No.
05. 12A : 1 No.
06. 18A : 1 No.

29. DESKTOP DIGITAL MULTIMETER - (2 NOS.)

Approved makes : 1. Fluke 2. Agilent (Keysight) 3. Yokogowa 4. Nagman 5. Tektronix 6.Time Electronics 7. Exttech

Bidder shall supply desktop type Digital Multimeter for measuring DC and AC voltages, currents and resistances. Desk top type Digital Multimeters shall have the following features:

01. Display : 5 – ½ digit LED display
02. Measurements : DCV, ACV, Resistance (2W, 4W), DCA, ACA
03. Maximum Measurements in standard ranges : DCV - 1000V
ACV - 700V
Resistance - 200 Mohm
DCA - 2A
ACA - 2A
04. Sampling rate : Selectable
05. Over range information : To be displayed
06. Data Memory : To store upto 2000 measured data and atleast 10 set up information
07. Operating Temperature : 5 – 40 deg C
08. Power Requirements : 240V AC, 50 Hz
09. Communication Interface : RS-232C
10. Special functions : Auto range mode, Auto sample mode
11. Accessories : Power supply cord, Measurement lead, Remote connector

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30.PHASE SEQUENCE METER - (2 NO)

Approved makes 1. Fluke Amprobe 2. Agilent(Keysight) 3. Yokogowa 4. Extech 5. RS Components
Electronic type

31.FREQUENCY METER – (2NO.)

Approved makes : 1. Fluke 2. Agilent (Keysight) 3. Yokogowa 4. Tektronix
Electronic type

32. MINISCOPE METER – (2NO.)

Approved makes : 1.Agilent (Keysight) 2. Yokogowa 3. Fluke
BW: 100Mhz, Sampling rate: 5 Gs/s, No. of channel: 2 + ext. trigger, Rise time: 3.5 ns, Time/divn.: - 5ns-60s, Vol / div. 1mv to 100v, Record length: 512 Bytes / 30000 Bytes, Screen wave form / set up memory:- 10,20,40, Ni-cd operation and charger for minimum 4 hour operation, Automatic set up and trend plot
Accessories: Charger set, Probe set and Carrying case etc.

33.VIBRATION / SOUND LEVEL MONITOR – (2NO.)

Approved makes 1. Fluke Amprobe 2.RS Components 3. Extech

01. Velocity Range : 0 – 3000 mm/sec
02. Vibration Measurement : 0-3000 micron peak to peak
03. Sound amplitude measurement : 45-140dB
04. Frequency Range : 10-10000 Hz
05. Accessories : Microphone, vibration pick up, straight probe, pick up cable, carrying case,battery & battery charger

34.PORTABLE PH CALIBRATOR– (4 NOS.)

Approved makes : 1. Oakton 2. Orion 3. Hanna 4.Extech

To check and calibrate pH measuring equipments. Compact portable simulator shall be offered.

01. Range : 0 – 14 pH in steps of 1 pH
02. Accuracy : ± 0.01 Ph
03. Electrodes : Combination or Glss & Reference
04. Display : 4 digit LCD
05. Stability : 0.1 Ph / 24 hrs at constant temperature
06. Temperature compensation : 0-100 °C, manual/ automatic
07. Power source : 240V, 1 Ph, 50Hz
08. Accessories : Battery pack with charger, digital display, connector leads, carrying case, buffer tablets, test & glass electrode and others as necessary.

35. MODULE TESTER -(2 NO.)

Approved makes : 1. Qmax 2. Estech

01. Type : Latest version PC with windows based test software
02. No. of channels : More than 48
03. Power supply : Built in
04. Loop test : Continuous
05. Feature : Testing of memory devices, open collector devices, resistance, capacitance & voltage measurement, self test, diagnostic software, circuit tracer for IC links, extensive IC libraries
06. Accessory : Standard set of Dip clips, probes, different type of connectors, ribbon cables etc.

36.DC REGULATED POWER SOURCE -(4 NOS.)

Approved makes : 1. Aplab 2. Agilent (Keysight)

01. Range : 0 to ± 60 V DC, 2.5A
02. Display : LCD
03. Power supply : 240V AC, 1 Phase, 50Hz
04. Mode Indication : LED indication for constant voltage/ constant current operating mode
05. Load Regulation : (i) 0.1% variation in voltage (ii) 0.2% variation in current
06. Ripple and Noise : Less than 1mV
07. Resolution : 50 mv/ ma
08. Features : Overvoltage protection/ Overcurrent protection
09. Accessories : Test lead



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37. AUTO TRANSFORMER - (2 NO.)

Approved makes : 1. AE

01. Capacity : 15A, 8A
02. Input : 0-550V, 50Hz
03. Output : 0-270V continually adjustable through knob
04. Scale : (i) Voltage scale around voltage varying knob (ii) White lettering and graduation as black background
05. Accessories : Test lead wires

38. NICKEL CADMIUM CELL - (2 set.)

Approved makes : 1. Sony

01. Cell Type : Ni-Cd
 02. Voltage Range : To suit supplied Laboratory instruments
 03. Power Supply : 240V AC, 1 Phase, 50Hz
 04. Charger suit : Yes
- Note :** This item should be supplied with Charger Suite and 4Nos of cell .

39. SCANNER - (2 NO.)

Approved makes : 1. HP 2. Cannon

- A scanner with the provision to scan upto A3 size drawing with the facility to reduce/enlarge store/retrieve, transfer/copy and compatible with windows platform shall be supplied.
- Scan Type Flatbed ; Colour Scanning: Yes
Scan Speed Up to 50 ppm (black & white, grey, colour, 200 dpi)
Scan Resolution Hardware: Up to 600 x 600 dpi Optical: Up to 600 dpi Scan File Format PDF (image-only, searchable, MRC, PDF/A, encrypted), TIFF (single page, multi-page, compressed: G3, G4, LZW, JPEG), DOC, RTF, WPD, XLS, TXT, XML, XPS, HTML, OPF, JPG, BMP, PNG
Duty Cycle (daily) duty cycle: 5000 pages
Auto Document Feeder Capacity Standard, 200 sheets
Media Size (ADF) A3; A4; A5; A6; long paper up to 864 mm
External I/O ports 1 Hi-Speed USB 2.0 Standard Connectivity 1 Hi-Speed USB 2.0

40. TORXIMETER - (4 NO.)

Approved makes : 1. Sper Scientific

01. Application : Used for bolt torquing, torque wrench calibration, contact closure measurement
02. Feature : 3 units of measurement hold, peak, minmax, fast/ slow sampling, hi/ low resolution, auto power off
03. Accessories : Hard carrying case, torque probe, cable, battery along with battery charger etc.

41. LAPTOP - (4 NO.)

Approved makes : 1. HP 2. DELL

01. Processor : Latest or Core i5 (min)
02. RAM : 2 GB (min)
03. Hard Drive : 1 TB
04. Multimedia Drive : DVD+/-RW
05. Display : 15.6"
06. Network Card : Yes
07. Keyboard : Yes
08. Pointing Device : Touch pad
09. External Port : 3 nos (min) USB compliant port
10. Operating System : Latest available version
11. Software : Licensed version of all necessary software
12. Accessory : Carrying case , additional battery along with battery charger

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42. PORTABLE mA CALIBRATOR – (6 NO.)

Approved makes : 1. Fluke 2. Agilent (Keysight) 3. GE Druck 4. Scandura /wika 5. Yokogawa 6. Time Electronics 7. Beamex 8. Eurotron 9. Tinsley 10. AOIP France 11. Extech

01. Type : Microprocessor based
02. Application : To measure or source mA signal for calibration of receiver type instruments
03. Range : 0-24 mA
04. Resolution : 0.001
05. Accuracy : 0.001%
06. Measure Volts : 0 to 60 V
07. Accessories : Test lead, rechargeable battery with battery charger, carrying case etc.

43. TABLE MOUNTED mA CALIBRATOR – (4NO.)

Approved makes : 1. Fluke 2. Agilent (Keysight) 3. Scandura /wika 4. Yokogawa 5. Time Electronics 6. Beamex 7. Eurotron 8. Tinsley 9. AOIP France 10. Extech

01. Input range : 0 to ± 100 mA DC, 0 to ± 1200 mV, 0 to ± 80 V (Programmable)
02. Output range : 0 to 25 mA DC, 0 to ± 1200 mV, 0 to 10 V (Programmable)
03. Accuracy : $\pm 0.03\%$ of reading
04. Temperature : 0-50°C
05. Accessories : Test lead, power cord, carrying case etc.

44 . PORTABLE mV CALIBRATOR – (4NO.)

Approved makes : 1. Fluke 2. Agilent (Keysight) 3. GE Druck 4. Scandura /wika 5. Yokogawa 6. Time Electronics 7. Beamex 8. Eurotron 9. Tinsley 10. AOIP France 11. Extech

01. Input range : 0 to 120 mV, 0 to 30 V (Programmable)
02. Output range : 0 to 120 mV, 0 to 12 V, 0 to 30 V, 0 to 24 mA (Programmable)
03. Accuracy : $\pm 0.02\%$ of reading
04. Temperature : 0-50°C
05. Preferred feature : Reference junction compensation for thermocouple, over voltage/ current protection
06. Accessories : Test lead, rechargeable battery with battery charger, carrying case etc.

45. TEST RTD – (4 NO.)

Approved makes : 1. Fluke 2. Wika 3. ASP Sensors 4. Isotech

01. Sensor type : Platinum resistance
02. Temperature : 0-600°C
03. Accessories : Cable, carrying case etc.

46. FREQUENCY COUNTER/ TIMER – (2 NO.)

Approved makes 1. Agilent(Keysight) 2. Tektronix 3. Yokogawa 4. Fluke

01. Bandwidth : 350 MHz
02. Display : 12 digit
03. Temperature : 0-50°C
04. Accessories : Battery with battery charger, carrying case etc.

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भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division
PB 2606 , Mysore Road Bangalore , 560026 INDIA

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CE: PR: 003- Rev 00

SPECIAL COMMERCIAL CONDITIONS OF CONTRACT

Reference is brought to BHEL's Instructions to Bidders (Document Ref: CE: PR: 001- Rev 01) and General Commercial Conditions for Contract (Document Ref: CE: PR: 002- Rev 01) which are also sent along with the RFQ. These two documents along with Special Conditions of Contract annexed to this RFQ will form an integral part of the contract as and when the RFQ culminates into a Purchase Order / Contract.

RFQ No: SAM0000154 RFQ Date: 02.08.2017 Due Date: 24.08.2017
Project: TSGENCO KOTHAGUDEM (1x800 MW) & TSGENCO BHADRADRI (4x270 MW).
Item Description: ELECTRICAL LAB ITEMS – BOP

TYPE OF BID: ~~SINGLE PART BID / TWO PART BID~~ / **THREE PART BID**

Purchase Executives:-Ms. Sarita Mohapatra or Mr. Umapathi K.
E-mail IDs:- sarita@bheledn.co.in & umapathi@bheledn.co.in

E-tendering: **Applicable** / ~~Not Applicable~~.

Reverse Auction: ~~Not Applicable~~ / Will be intimated during commercial clarifications to technically acceptable vendors.
In case BHEL does not resort to Reverse Auction, the price bids and price impacts (if any) shall be opened as per BHEL's standard practice.

Splitting of tendered quantity to MSE vendors: The tendered quantity will ~~will not~~ be split to MSE vendors subject to submission of relevant documents by vendors. Refer clause H of Instructions to Bidders for conditions applicable and for information on documents to be submitted.

Destination: Items are to be directly despatched to BHEL's Site Office or Stores/Customer's Stores located in, (I) **Kothagudem, Telangana**
(II) **Manuguru, Telangana**.

Road Permit, if applicable, will be issued by BHEL along with Despatch Clearance.

Project Benefits:

Imported scope of supply:

- DEEC / EPCG/DFIA contract: Eligible for "NIL" Basic Customs Duty.
- Physical Export project: Eligible for exemption of Customs Duty and GST.
- Project Imports: Eligible for Concessional Basic Custom Duty.
- Basic Custom duty and Cess on Basic Custom duty are reimbursable by customer.

Terms of Delivery:

Indicate station of despatch: _____

Indicate place of manufacturing (wherever applicable): _____

- Indigenous scope of supply:** Ex-works (including Packing & Forwarding charges but excluding Taxes & Duties):

- Imported scope of supply:** F.C.A. (for air consignments) /F.O.B. (for sea consignments)

(Including Packing, Forwarding, Handling, Ancillary charges like processing of Sight Draft/ Letter of Credit, negotiation of bank Documents, Export declaration, Country of Origin etc.): _____

Kindly indicate the **approximate weight of the total consignment for the imported portion** of the subject item. This is required for calculating freight charges to the Project Site. _____ Kgs.

Also indicate the following:

- Works address _____
- Office address _____
- In the event of your company being the lowest bidder, PO to be placed on works or office address. _____

S NO.	TERMS	BHEL ACCEPTABLE TERM	BIDDER'S CONFIRMATION	DEVIATION IF ANY
01	Validity	The offer will be valid for a period of 120 days from the date of technical bid opening.	AGREE	
02	Goods and Services Tax	Please indicate current rate of GST, HSN Number of the quoted goods and GSTIN Number of the billing location. However, reimbursement of GST shall be at actuals against proof of Tax Invoice only. (Within contractual delivery).	APPLICABLE / NOT APPLICABLE Present rate of GST% HSN Number GSTIN Number	
03	Octroi	If applicable, indicate current rate of Octroi.	AGREE Present Octroi rate%	
04	Freight Charges (for indigenous scope of supply)	Freight charges shall be to vendor's account. Quote lump sum reasonable Freight charges separately in priced offer, clearly indicating the applicable taxes. Vendor's offer will be evaluated on "Total cost basis" including freight charges. Vendor shall book the consignment through their approved Road carriers on "Freight pre-paid" and door delivery consignee copy attached basis. Freight charges to be claimed from BHEL along with POD (Proof of Delivery) on original L/R.	AGREED And quoted as lumpsum amount in price bid. Applicable Tax ____% (extra in freight charges)	
05	Tax on E&C and Training Charges	Please indicate current rate of GST applicable, SAC (Service Accounting Code No.) and GSTIN Number of place of supply of service. However, reimbursement of GST shall be at actuals against proof of Tax Invoice only. (Within contractual delivery).	APPLICABLE / NOT APPLICABLE Present rate of GST% SAC Number GSTIN Number	
06	Parting of license for imported raw materials	In case of Mega project, Ultra-Mega project and Physical Export project where Custom Duty and Excise Duty are NIL and vendor is importing any raw materials / components for the enquired item, same are eligible for Zero Customs duty. As per EXIM policy, BHEL will part the import licence with the vendors to obtain import licence by themselves and custom clear the raw materials/ components by availing zero customs duty. Hence, please furnish list of raw materials / components to be imported by you with Quantity and CIF value (for which BHEL has to share import licence). The benefit due to the above shall be passed on to BHEL and confirmed in the quotation. If there are no imported raw materials/components, same shall be confirmed in the offer.	AGREE —CIF value Yes, benefit passed on to BHEL in the price quotation. We confirm that there are no imported components.	
07	Delivery Period	Within 10 weeks from the date of issue of approved documents or manufacturing clearance by BHEL, whichever is later.	AGREE weeks	
08	Guarantee/Warranty	36 months from the date of delivery of goods or 30 months from the date of commissioning of goods, whichever is earlier.	AGREE	

15	O & M Manuals	As built Drawings, O & M Manuals and other approved documents shall be furnished in required no. of sets as per Specification/Purchase Order. Note: Supply of above documents (O&M) in required no. of sets along with material shall be indicated in packing list. If not mentioned BHEL may insist for submission in required sets once again.	AGREE	
16	Evaluation criteria for tendered item	Items will not be split on item wise lowest offer. Items to be evaluated and procured as a package.	AGREE	
17	Integrity Commitment	Integrity commitment will be applicable in the tender process and execution of contracts as mentioned in clause "1" of Instructions to Bidders.	AGREE	

With this, it is inferred that vendor has understood and accepts all terms & conditions as indicated in Instructions to Bidders (Document Ref: CE: PR: 001- Rev 01) & General Commercial Conditions for Contract (Document Ref: CE: PR: 002- Rev 01).

1. In the event of placement of order, Purchase orders will be placed separately for each project. Hence, Freight charges on lump sum basis to be quoted for both the projects in the EPS Portal along with applicable tax rates. However, project wise Freight charges break up to be given positively in an attachment along with Price Bid. Otherwise it will be treated as "FREE OF COST" for both the projects.

2. E&C Charges to be quoted on lump sum basis for both the projects in the EPS Portal along with Applicable taxes, SAC No and GSTIN for the place of supply of service. However, project wise E&C charges break up to be given positively in an attachment along with Price Bid.

3. The Electrical Lab Items package is indicated as 1 set in the online eps portal, however Project wise Price break up for all the items to be submitted positively separately in an attachment enclosed to Price bid.

4. It shall also be ensured that the total basic material price quoted in EPS portal matches with the total basic price quoted in attachment, if any enclosed to Price-Bid.

VENDOR'S SIGNATURE WITH SEAL

NOTE: 1) The above filled-in and signed-sealed document shall be furnished as part of Part-I Bid without fail. If no deviations are brought, it will be treated as if all terms and conditions of this enquiry are accepted by vendor without any deviation.

2) For EPS tenders, bidder should also necessarily fill the corresponding columns of "SPECIAL COMMERCIAL CONDITIONS OF CONTRACT" in EPS portal and the confirmation provided by bidder against these commercial terms in EPS portal will only be considered by BHEL.



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 भारत हेवी इलेक्ट्रिकल्स लिमिटेड

Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division

PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE:PR:001- Rev 01

INSTRUCTIONS TO BIDDERS (Common for all RFQs)

Bidder is requested to read the instructions carefully and submit their quotation taking into consideration of all the points:

A. GENERAL INSTRUCTIONS:

1. Any Purchase Order resulting from this enquiry shall be governed by the Instructions to Bidders (document reference: CE: PR: 001 – Rev 01), General Conditions of Contract (document reference: CE: PR: 002 - Rev 01) and Special Conditions of Contract, if any, of the enquiry.
2. Any deviations from or additions to the “General Conditions of Contract” or “Special Conditions of Contract” require BHEL’s express written consent. The general terms of business or sale of the bidder shall not apply to this tender.
3. Bidders (also includes the term suppliers / contractors wherever used in this document) are instructed to quote their most competitive price and best delivery, etc. in the offer. Prices should be indicated in both figures & words **(Please also refer clause 12 under section B)**
4. Regret letter (either through post or by mail or by EPS) indicating reasons for not quoting must be submitted without fail, in case of non-participation in this tender. If a bidder fails to respond against 3 consecutive tenders for the same item, he shall be liable for removal as a registered vendor of BHEL.
5. Procurement directly from the manufacturers shall be preferred. However, if the OEM/ Principal insist on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer/ supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer/ supplier or the manufacturer/ supplier could bid directly but not both. In case bids are received from the manufacturer/ supplier and his agent, bid received from the agent shall be ignored.
6. Consultant / firm (and any of its affiliates) shall not be eligible to participate in the tender/s for the related goods for the same project if they were engaged for consultancy services for the same project.
7. If an Indian representative/associate/liaison office quotes on behalf of a foreign based bidder, such representative shall furnish compulsorily the following documents:
 - a. Authorization letter to quote and negotiate on behalf of such foreign-based bidder.
 - b. Undertaking from such foreign based bidder that such contract will be honored and executed according to agreed scope of supply and commercial terms and conditions.
 - c. Undertaking shall be furnished by the Indian representative stating that the co-ordination and smooth execution of the contract and settlement of shortages/damages/replacement/repair of imported scope till system is commissioned and handed over to customer will be the sole responsibility of the Indian representative/associates/agent/liaison office.
 - d. Refer **Annexure I** on “Guidelines for Indian Agents”.
8. In case of imported scope of supply, customs clearance & customs duty payment will be to BHEL account after the consignment is received at Indian Airport /Seaport. Bidders must provide all original documents

required for completing the customs clearance along with the shipment. Warehousing charges due to incomplete or missing documentation will be recovered from the supplier's bill. All offers for imported scope of supply by air, must be made from any of the gateway ports (within the country) indicated (**Refer Annexure II**).

9. The offers of the bidders who are on the banned list and also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of the banned firms is available on BHEL website: **www.bhel.com**
10. Business dealings with bidders will be suspended if they are found to have indulged in any malpractices/misconduct which are contrary to business ethics like bribery, corruption, fraud, pilferage, cartel formation, submission of fake/false/forged documents, certificates, information to BHEL or if they tamper with tendering procedure affecting the ordering process or fail to execute a contract, or rejection of 3 consecutive supplies or if their firms / works are under strike/lockout for a long period. Bidder may refer "Guidelines for Suspension of Business Dealings with Suppliers/ Contractors" available on www.bhel.com for more details.

B. GUIDELINES FOR PREPARATION OF OFFER:

1. Quotation shall be submitted in Single Part Bid, Two Part Bid or Three Part Bid, as called for in the tender:
 - **SINGLE PART BID:** Technical and Commercial Bid with prices along with price summary & filled in BHEL Standard Commercial terms and conditions in a single sealed envelope.
 - **TWO PART BID:** Unpriced offer i.e. "Techno-commercial Bid" with filled in BHEL Standard Commercial terms and conditions in a sealed envelope **along with the copy of the "Price Bid" without the prices** should be enclosed in one cover and the cover must be super scribed "**Techno-commercial offer**) and Priced offer i.e. "Price Bid" containing price summary in a separate sealed envelope and must be super scribed "**Price Bid**". Both these envelopes shall be enclosed in a single sealed envelope superscribed with enquiry number, due date of tender and any other details as called for in the tender document.
 - **THREE PART BID:** Pre-qualification Bid(Part-I), Techno Commercial Bid with filled in BHEL Standard Commercial terms and conditions (Part-II), and Price Bid (Part-III). All three envelopes shall be enclosed in a single sealed envelope superscribed with enquiry number, due date of tender and any other details as called for in the tender document.

If any of the offers (Part I, Part II or Part III) are not submitted before the due date and time of submission (or) if any part of the offer is incomplete, the entire offer of the bidder is liable for rejection.

2. Supplier shall ensure to superscribe each envelope with RFQ number, RFQ Date, RFQ Due date and time, Item Description and Project clearly & boldly. Also mention on the envelope whether it is "Techno Commercial Bid" or "Price Bid" or "Pre-Qualification Bid". Please ensure complete address, department name and purchase executive name is mentioned on the envelope (before dropping in the tender box or handing over) so that the tender is available in time for bid opening.
3. BHEL standard Commercial Terms and Conditions (duly filled, signed & stamped) must accompany Technical-Commercial offer without fail and should be submitted in original only. Xerox copy will not be accepted.

The above indicated submission of Offers in "sealed envelope/hard copy" as mentioned in points B.1-B.3 is applicable for tenders that are not floated through EPS.

4. Validity: Unless otherwise specified in SCC(special commercial conditions of contract), the original offer will be valid for a period of 120 days from the date of technical bid opening.

5. Any of the terms and conditions not acceptable to supplier, shall be explicitly mentioned in the Techno-Commercial Bid. If no deviations are brought out in the offer it will be treated as if all terms and conditions of this enquiry are accepted by the supplier without deviation.
6. Deviation to this specification/item description, if any, shall be brought out clearly indicating "DEVIATION TO BHEL SPECIFICATION" without fail, as a part of Techno-Commercial Bid. If no deviations are brought out in the offer it will be treated as if the entire specification of this enquiry is accepted without deviation.
7. Suppliers shall submit one set of original catalogue, datasheets, bill of materials, dimensional drawings, mounting details and/or any other relevant documents called in purchase specification as part of Technical Bid.
8. "Price Bid" shall be complete in all respects containing price break-up of all components along with all applicable taxes and duties, freight charges (if applicable) etc. Once submitted no modification / addition / deletion will be allowed in the "Price Bid." Bidders are advised to thoroughly check the unit price, total price to avoid any discrepancy.
9. In addition, bidder shall also quote for erection & commissioning charges/erection supervision & commissioning charges (E&C/service charges) if & as applicable, documentation charges, testing Charges (type & routine), training charges etc. as applicable along with corresponding tax. The price summary must indicate all the elements clearly.
10. Vendors should indicate "lumpsum" charges (including To & Fro Fare, Boarding, Lodging, Local Conveyance etc.) for carrying out Erection and Commissioning (or) Erection Supervision and Commissioning, as applicable and further handing over to customer. The quotation shall clearly indicate scope of work, likely duration of commissioning, pre-commissioning checklist and service tax (if any).
11. Wherever bidders require PAC (Project Authority Certificate)/applicable certificates for import of raw materials, components required for DECC,EPCG Power Projects, Export Projects or other similar projects wherein supplies are eligible for customs duty benefits, lists and quantities of such items and their values (CIF) has to be mentioned in the offer. Prices must be quoted taking into account of such benefits.
12. All quotations shall be free from corrections/overwriting. Corrections if any should be authenticated with signature and seal. Any typographical error, totaling mistakes, currency mistake, multiplication mistake, summing mistakes etc. observed in the price bids will be evaluated as per **Annexure III** "Guidelines for dealing with Discrepancy in Words & Figures – quoted in price bid" and BHEL decision will be final.
13. Documents submitted with the offer shall be signed and stamped in each page by authorized representative of the bidder. This clause is not mandatory for offers uploaded through E-Procurement System(EPS).

C. GUIDELINES FOR OFFER SUBMISSION:

1. Offers / Quotations must be dropped in tender box before 13.00 Hrs. on or before due date mentioned in RFQ. The offers are to be dropped in the proper slot of the Tender Box kept in our reception area with caption "CE, SC&PV, DEFENCE." Tenders are opened on 3 days in a week (Monday/Wednesday/Friday). Tender must be deposited in the slot corresponding to the day (Monday - Box no.4/Wednesday - Box no. 6 /Friday - Box no.8) while depositing the offer (Dropping of offers in tender box is not applicable for EPS tenders).
2. E-Mail/ Internet/EDI offers received in time shall be considered only when such offers are complete in all respects. In case of offers received through E-mail, please send the offer to the email ID specified in the SCC document of the tender (This clause will not be applicable for EPS tenders).
3. In cases where tender documents are bulky, or due to some reasons tender documents are required to be submitted by hand or through posts/couriers, the offers are to be handed over either of the two officers whose names are mentioned in the SCC document of tender RFQ. (This clause will not be applicable for EPS tenders).

4. Tenders will be opened on due date, time and venue as indicated in the RFQ in the presence of bidders at the venue indicated in the RFQ. For EPS tenders, e-mail notifications will be automatically generated and forwarded to registered e-mail ID/s of bidders during opening of tenders.
5. Vendor will be solely responsible:
 - a. For submission of offers before due date and time. Offers submitted after due date and time will be treated as "Late offers" and will be rejected.
 - b. For submission of offers in the correct compartment of the tender box based on the day of due date (Monday/Wednesday/Friday). Please check before dropping your offer in the correct tender box.
 - c. For depositing offers in proper sealed condition in the tender box. If the bidder drops the tender in the wrong tender box (or) if the tender document is handed over to the wrong person, BHEL will not be responsible for any such delays.
 - d. For offers received through email etc., suppliers are fully responsible for lack of secrecy on information and ensuring timely receipt of such offers in the tender box before due date & time (This clause will not be applicable for EPS tenders).

The above indicated submission of Offers as mentioned in points 5.a-5.d is applicable for tenders that are not floated through EPS.

- e. In case of e-tender, all required documents should be uploaded before due date and time. Availability of power, internet connections, system/software requirements etc. will be the sole responsibility of the vendor. Wherever assistance is needed for submission of e-tenders, help-line numbers as available in the web-site of service provider of BHEL may be contacted.

Purchase Executive/ BHEL shall not be responsible for any of the activities relating to submission of offer.

D. PROCESSING OF OFFERS RECEIVED:

1. Any discount/ revised offer submitted by the supplier on its own shall be accepted provided it is received on or before the due date and time of offer submission (i.e. Part-I bid). The discount shall be applied on pro-rata basis to all items unless specified otherwise by the bidder.
2. Changes in offers or Revised offers given after Part-I bid opening shall not be considered as a part of the original offer unless such changes/revisions are requested by BHEL.
3. In case there is no change in the technical scope and/ or specifications and/ or commercial terms & conditions, the supplier will not be allowed to change any of their bids after Technical bids are opened (after the due date and time of tender opening).
4. In case of changes in scope and/ or technical specifications and/ or commercial terms & conditions by BHEL and it accounts for price implications from vendors, all techno-commercially acceptable bidders shall be asked by BHEL (after freezing the scope, technical specifications and commercial terms & conditions) to submit the impact of such changes on their price bid. Impact price will be applicable only for changes in technical specification / commercial conditions by BHEL. The impact price must be submitted on or before the cut-off date specified by BHEL and the original price bid and the price impact bid will be opened together at the time of price bid opening.
5. BHEL EDN reserves the right to adopt Reverse Auction or standard Price Bid Opening procedure for price evaluation, at its discretion. This shall be decided after completion of techno-commercial evaluation of tender. **(Refer BHEL website www.bhel.com for Guidelines of Reverse Auction)**. In case BHEL does not resort to Reverse Auction, the price bids and price impacts (if any) already submitted and available with BHEL shall be opened as per BHEL's standard practice.
6. Un-opened bids (including price bids) will be returned to the respective bidders after release of Purchase order. Regarding Offers for EPS tenders that get rejected on PQC/ techno-commercial grounds, the bids for

the subsequent parts will not be opened i.e., both technical bid and price bid (Parts-II & III) will not be opened in case of rejection on PQC ground and price bid (Part-II/Part-III, as applicable) will not be opened in case of rejection on techno-commercial ground.

7. After receipt of Purchase Order, supplier should submit required documents viz., specified drawings, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report, O & M Manuals and/or any other relevant documents as per Specification/Purchase Order, as and when required by BHEL/Customer.
8. Any deviation to the terms and conditions not mentioned in the quotation by supplier in response to this enquiry will not be considered, if put forth subsequently or after issue of Purchase Order, unless clarification is sought for by BHEL EDN and agreed upon in the Purchase Order.
9. Evaluation shall be on the basis of delivered cost (i.e. "Total Cost to BHEL").
"Total Cost to BHEL" shall include total basic cost, packing & forwarding charges, taxes and duties (if & as applicable), freight charges, taxes on Services, customs clearance charges for imported items, any other cost indicated by bidder for execution of the contract and loading factors (for non-compliance to BHEL Standard Commercial Terms & Conditions). Benefits arising out of Nil Import Duty on DEEC, EPCG, DFIA Projects, Physical Exports or such 100% exemptions (statutory benefits), project imports, customer reimbursements of statutory duties (like Basic Customs Duty and cess on customs duty), Input tax credits as applicable will also be taken into account for arriving at the Total cost to BHEL (wherever applicable and as indicated in SCC document of tender).
10. No deviation will be permitted from the duration of Guarantee/Warranty and/or Comprehensive Annual Maintenance Contract period specified in SCC.
11. For evaluation of offers in foreign currency, the exchange rate (TT selling rate of SBI) shall be taken as under:

Single part bids:	Date of tender opening
Two/three part bids:	Date of Part-I bid opening
Reverse Auction:	Date of Part-I bid opening

In case of Performance Bank Guarantee (PBG) also, exchange rate will be considered as mentioned above for converting foreign currency to Indian currency and vice versa.

If the relevant day happens to be a bank holiday, then the exchange rate as on the previous working day of the bank (SBI) shall be taken.
12. Ranking (L-1, L-2 etc.) shall be done only for the techno-commercially acceptable offers.

E. INFORMATION ON PAYMENT TERMS:

1. All payments will be through Electronic Fund transfer (EFT). Vendor has to furnish necessary details as per BHEL standard format (**Refer Annexure IV**) for receiving all payments through NEFT. (Applicable for Indian vendors only)
2. In case of High Sea Sales transaction, customs clearance of the consignment landed on Indian Sea/Air ports will be done by BHEL based on the original HSS documents provided by vendors. All warehousing charges due to delay in submission of complete and or correct HSS documents to BHEL will be to supplier's account only. Such recovery will be made out of any of the available bills (**Refer Annexure V**).
3. Statutory deductions, if any, will be made and the deduction certificate shall be issued. In case vendor does not provide PAN details, the TDS deduction shall be at the maximum percentage stipulated as per the provisions of Income Tax Act (Applicable for Indian vendors only).
Foreign vendors shall submit relevant details of their bankers like Swift Code, Banker's Name & Address etc.
4. Incomplete documentation will not be accepted. Delayed submission of invoice / documents may result in corresponding delay in payment. In this connection, request to also refer clause: K about invoicing &

payment formalities under GST regime. Applicable documents shall be submitted to the purchaser at the time of execution of supplies/services for availing GST input credits.

F. STANDARD PAYMENT TERMS OF BHEL-EDN

Against Purchase Orders for indigenous procurement-(a), (b) & (c):

(a) SUPPLY WITH ERECTION & COMMISSIONING:

85% of basic value + 100% of taxes and freight charges will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation, whichever is later.

Retention money equivalent to balance 15% of basic value will be paid in 15 days from the date of submission of supplementary invoice/documents along with E & C charges (if any) against proof of completion of E&C.

(b) SUPPLY WITH ERECTION SUPERVISION & COMMISSIONING:

90% of the basic value + 100% of taxes and freight charges will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation, whichever is later.

Retention money equivalent to balance 10% of basic value will be paid in 15 days from the date of submission of supplementary invoice/documents along with erection supervision & commissioning charges (if any) against proof of completion of commissioning.

(c) SUPPLY ONLY:

100% of PO value with taxes and freight will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation, whichever is later.

Against Purchase orders for import procurement-(d), (e) & (f):

(d) SUPPLY WITH ERECTION & COMMISSIONING:

85% of the basic value will be paid on the 45th day, against usance draft of 45 days, from the date of AWB/BOL on submission of complete set of documents.

Retention money equivalent to balance 15% of basic value will be paid in 15 days from the date of submission of supplementary invoice/documents along with E&C charges (if any) against proof of completion of E&C.

(e) SUPPLY WITH ERECTION SUPERVISION & COMMISSIONING:

90% of the basic value will be paid on the 45th day, against usance draft of 45 days, from the date of AWB/BOL on submission of complete set of documents.

Retention money equivalent to balance 10% of basic value will be paid in 15 days from the date of submission of supplementary invoice/documents along with erection supervision & commissioning charges (if any) against proof of completion of commissioning.

(f) SUPPLY ONLY:

100% of PO value will be paid against usance draft of 45 days from the date of AWB/BOL on submission of complete set of documents.

Against Purchase orders for High-sea sales procurement-(g), (h) & (i):

g) SUPPLY WITH ERECTION & COMMISSIONING:

85% of basic value will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation, whichever is later.

Retention money equivalent to balance 15% of basic value will be paid in 15 days from the date of submission of supplementary invoice/documents along with E & C charges (if any) against proof of completion of E&C.

h) SUPPLY WITH ERECTION SUPERVISION & COMMISSIONING:

90% of the basic value + 100% of taxes, duties and freight charges will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation, whichever is later.

Retention money equivalent to balance 10% of basic value will be paid in 15 days from the date of submission of supplementary invoice/documents along with erection supervision & commissioning charges (if any) against proof of completion of commissioning.

i) SUPPLY ONLY:

100% of PO value with taxes, duties and freight will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation, whichever is later.

j) Comprehensive Annual Maintenance Contract:

Evaluation methodology: Unless and otherwise specified in SCC, CAMC will be applicable for a period of 04 years from the date of expiry of warranty period (or) from the date of completion of commissioning of equipment, whichever is later and the total AMC value should not be less than 20% of the main supply value. In case the quoted total AMC value is less than 20% of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price and apportioning towards AMC charges.

Payment terms: 100% AMC charges along with tax as applicable, will be paid in 15 days from the date of submission of supplementary invoice/documents against proof of completion of AMC on yearly basis.

k) Terms of Payment for Training: 100% payment will be made in 45 days from the date of completion of Training or 15 days from the date of submission of complete set of invoice along with documentary evidence, whichever is later.

LOADING FACTORS FOR PAYMENT TERMS:

- 1) In all cases where credit period is <45 days and >=30 days with the above offered standard payment terms, loading applicable will be 5% of basic value.
(This loading factor is applicable only for purchase orders against indigenous supply or High-sea sales procurement).
- 2) For offers received with usance draft of less than 45 days, loading of 5% will be applicable.
(This loading factor is applicable only for purchase orders for imported supply).
- 3) For offers received with Letter of Credit payment term in place of usance draft payment term, loading applicable will be 5% of basic value.
Additional loading of 5% will be applicable for payment terms as Letter of Credit with usance of less than 45 days.
(This loading factor is applicable only for purchase orders for imported supply).
- 4) All payment terms with credit period of less than 30 days for indigenous supply/HSS and any other variation of payment terms are liable for rejection.

- 5) Standard payment terms indicated in Clauses: F (a), (b), (c), (d), (e), (f), (g), (h), (i),(j)&(k) will not attract any loading.

Note 1: Basic value of Purchase Order mentioned above will include all components of the purchase order and will exclude only taxes, duties, freight, training charges, E&C and AMC charges (wherever applicable).

Wherever the Purchase Order is split into import portion and indigenous portion of supply, the retention money will be 10% (where scope includes E&C) or 05% (where scope includes Erection supervision & Commissioning) of both purchase order values put together.

Note 2: *If the E&C could not be completed till the end of the Warranty period due to reasons not attributable to the supplier, BHEL will release the retention money to the supplier against Bank Guarantee for equivalent value valid for an initial period of one year.*

Note 3: In case of multiple packages/units in a power plant, payment of retention money/E&C charges will be processed on pro-rata basis.

G. Performance bank guarantee (PBG):

Performance bank guarantee (PBG) will be applicable as called in the tender documents.

Unless otherwise specified in the SCC, the PBG against performance of the contract shall be valid for a period of 24 months from the date of dispatch of goods + claim period of 06 months, for a value equal to 10 % of the basic value of the purchase order which will include all components of the purchase order and will exclude only taxes, duties, freight, training charges, E&C and AMC charges (wherever applicable).

1. The BG issued in Indian Rupees by Banks in India is to be executed on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier /Bank issuing the guarantee.
2. No deviation for the duration and value of PBG will be permitted.
3. PBG shall be from any of the BHEL consortium of bankers (**refer Annexure VI**).
4. PBGs from nationalized banks are also acceptable.
5. PBG should be sent directly by the bank to the dealing executive mentioned in the purchase order located at the address mentioned in the purchase order.
6. PBG should be in the format indicated (**refer annexure VII**). No deviation to this format will be allowed. However in case BHEL changes the PBG format, bidder shall honor the same.
7. In Case of Bank Guarantees submitted by Foreign Vendors-
 - a. From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India) can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the BHEL Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
 - b. From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)
 - b.1 Please note that Bank Guarantee issued by any of the Consortium Banks only will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter-

Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It shall be noted that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor.

b.2 In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at sl.no. b.1 is required to be followed.

b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time).

8. Expired BGs / PBGs will be returned only after expiry of the claim period or on completion of the contractual obligation with respect to Purchase Order.

H. PROVISIONS APPLICABLE FOR MSE VENDORS (MICRO AND SMALL ENTERPRISES)

Benefits/facilities as applicable for Micro and Small Enterprises (MSEs) shall be available to MSEs registered with Government designated authorities as per the Purchase & Price Preference Policy of the Government subject to them becoming eligible otherwise.

Vendors who qualify as MSE vendors are requested to submit applicable certificates (as specified by the Ministry of Micro, Small and Medium Enterprises) at the time of vendor registration. Vendors have to submit any of the following documents along with the tender documents in the Part I / Technical bid to avail the applicable benefits:

- a. Attested copy of valid NSIC certificate or
- b. Attested copy of Entrepreneur's Memorandum part II (EM II) certificate having deemed validity (two years from the date of issue of acknowledgement in EM II) or
- c. EM II certificate along with attested copy of a CA certificate (Format enclosed at Annexure VIII where deemed validity of EM II certificate for two years has expired) applicable for the relevant financial year (latest audited) or
- d. Udyog Aadhaar Memorandum and Acknowledgement along with attested copy of a CA certificate.

Documents has to be notarized/attested by a Gazetted officer and must be valid as on the date of part I / technical bid opening for the vendors to be eligible for the benefits applicable for MSE vendors. Please note that no benefit shall be applicable if any deficiency in the above required documents are not submitted before price bid opening of the tender.

Bidders to however note the documents that shall be furnished in order to establish credentials as MSE vendor should be as per the extant statutory requirements specified by the Ministry of Micro, Small and Medium Enterprises.

Note: If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded in the EPS portal.

PURCHASE PREFERENCE FOR MSE VENDORS:

- e. MSE vendors quoting within a price band of L1 + 15% shall be allowed to supply up to 20% of the requirement against this tender provided
 1. The MSE vendor matches the L1 price.
 2. L1 price is from a non MSE vendor.
 3. L1 price will be offered to the vendor nearest to L1 in terms of price ranking (L2 - nearest to L1). In case of non-acceptance by the MSE vendor (L2), next ranking MSE vendor will be offered who is within the L1 + 15% band (if L3 is also within 15% band).

4. 20% of the 20% (i.e. 4% of the total enquired quantity) will be earmarked for SC/ST owned MSE firms provided conditions as mentioned in (1) and (2) are fulfilled.
5. In case no vendor under SC / ST category firms are meeting the conditions mentioned in (1) and (2) or have not participated in the tender, in such cases the 4% quantity will be distributed among the other eligible MSE vendors who have participated in the tender.
6. Serial no. 1 to 5 will not be applicable wherever it is not possible to split the tendered quantity/items on account of customer contract requirement, or the items tendered are systems. Such information that tendered quantity will not be split will be indicated in the SCC.

I. INTEGRITY COMMITMENT IN THE TENDER PROCESS, AND EXECUTION OF CONTRACTS:

1. Commitment by BHEL:

BHEL commits to take all measures necessary to prevent corruption in connection with the Tender process and execution of the Contract. BHEL will, during the tender process, treat all bidder / suppliers in a transparent and fair manner, and with equity.

2. Commitment by Bidder(s)/ Contractor(s):

- a. The Bidder(s)/ Contractor(s) commit(s) to take all measures to prevent corruption and will not directly or indirectly try to influence any decision or benefit which he is not legally entitled to.
- b. The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding or any actions to restrict competition.
- c. The Bidder(s)/ Contractor(s) will not commit any offence under the relevant Acts. The Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain or pass on to others, any information or document provided by BHEL as part of business relationship.
- d. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to the relevant guidelines issued from time to time by Government of India/ BHEL.

If the Bidder(s) / Contractor(s), before award or during execution of the Contract commit(s) a transgression of the above or in any other manner such as to put his reliability or credibility in question, BHEL is entitled to disqualify the Bidder(s) / Contractor (s) from the tender process or terminate the contract and/ or take suitable action as deemed fit.

J.Integrity Pact (IP):

- a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner.
A panel of independent External Monitors (IEMs) have been appointed to oversee implementation of IP in BHEL.

The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory who signs in the offer) along with techno-commercial bid. Only those Bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.

- b) Please refer Section-8 of the IP for Role and Responsibilities of IEMs (Annexure-IX). In case of any complaint arising out of the tendering process, the matter may be referred to the IEM mentioned in the tender.

Note: No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department.”

K. Information regarding invoicing under GST regime:

Vendor should intimate BHEL immediately on the same date of invoicing without any delay.

- I. Vendor shall necessarily submit tax invoices in the format as specified under GST Laws, with details as below:

(a) Name, address and GST registration number (GSTIN) of the supplier

(b) Invoice number, Date of issue.

(c) HSN Code (Harmonized System of Nomenclature) / SAC (Services Accounting Code).

(d) Description, quantity, unit, total value of goods or services, rate of tax, amount of tax (CGST, SGST, IGST, UTGST), place of supply (consignor address), address of buyer and/or consignee (as applicable) with GSTIN etc.

- II. Payment of GST as applicable, will be made to vendor only if it is matching with the data uploaded by Vendor in GST portal.

- III. Vendor to give a declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL (if asked by BHEL).



ಭಾರತ್ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್
 भारत हेवी इलेक्ट्रिकल्स लिमिटेड

Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division

PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE: PR: 002- Rev 01

GENERAL COMMERCIAL CONDITIONS FOR CONTRACT

These 'General Commercial Conditions for Contract for Purchase' herein after referred to as GCC apply to all enquiries, tenders, requests for quotations, orders, contracts and agreements concerning the supply of goods and the rendering of related services (hereinafter referred to as "deliveries") to Bharat Heavy Electricals Limited and any of its units, regions or divisions (hereinafter referred to as "BHEL" or the Purchaser) or its projects/ customers.

Any deviations from or additions to these GCC require BHEL's express written consent. The general terms of business or sale of the vendor shall not apply to BHEL. Acceptance, receipt of shipments or services or effecting payment shall not mean that the general terms of business or sale of the vendor have been accepted.

Orders, agreements and amendments thereto shall be binding if made or confirmed by BHEL in writing. Only the Purchasing department of BHEL is authorized to issue the Purchase Order or any amendment thereof.

Definitions: Throughout these conditions and in the specifications, the following terms shall have the meanings assigned to them, unless the subject matter or the context requires otherwise.

- 'The Purchaser' means Bharat Heavy Electricals Limited, Electronics division, Mysore road, Bangalore 560 026, a Unit of Bharat Heavy Electricals Limited (A Govt. of India Undertaking) incorporated under the Companies Act having its registered office at BHEL House, Siri Fort, New Delhi-110049, India and shall be deemed to include its successors and assigns. It may also be referred to as BHEL.
- 'The vendor' means the person, firm, company or organization on whom the Purchase Order is placed and shall be deemed to include the vendor's successors, representative heirs, executors and administrator as the case may be. It may also be referred to as Seller, Contractor or Supplier.
- 'Contract' shall mean and include the Purchase Order incorporating various agreements, viz. tender/ RFQ, offer, letter of intent/acceptance/ award, the General Conditions of Contract and Special Conditions of Contract for Purchase, Specifications, Inspection/ Quality Plan, Schedule of Prices and Quantities, Drawings, if any enclosed or to be provided by BHEL or his authorized nominee and the samples or patterns if any to be provided under the provisions of the contract.
- 'Parties to the Contract' shall mean the 'The Vendor' and the Purchaser as named in the main body of the Purchase Order.

Interpretation:

In the contract, except where the context requires otherwise:

- words indicating one gender include all genders;
- words indicating the singular also include the plural and words indicating the plural also include the singular;
- provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing, and
- "Written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record.

Applicable Conditions:

1. **Price Basis:**All prices shall be firm until the purchase order is executed / completed in all respects. No price variations / escalation shall be permitted unless otherwise such variations / escalations are provided for and agreed by BHEL in writing in the purchase order.

2. **Ordering and confirmation of Order:**Vendor shall send the order acceptance on their company letter head within 02 weeks from the date of receipt of Purchase Order or such other period as specified/ agreed by BHEL. BHEL reserves the right to revoke the order placed if the order confirmation differs from the original order placed. The acceptance of goods/services/supplies by BHEL as well as payments made in this regard shall not imply acceptance of any deviations.
The purchase order will be deemed to have been accepted if no communication to the contrary is received within one week (or the time limit as specified/agreed by BHEL) from the date of receipt of the purchase order.

3. **Documentation:**After receipt of Purchase Order, vendor should submit necessary documents(if & as applicable) like drawings specified, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report , O & M Manuals and/or any other relevant documents as per Specification/Purchase Order, as and when required by BHEL/Customer.
At any stage within the contract period, the vendor shall notify of any error, fault or other defect found in BHEL's documents /specifications or any other items for reference. If and to the extent that (taking account of cost and time) any vendor exercising due care would have discovered the error, fault or other defect when examining the documents/specifications before submitting the tender, the time for completion shall not be extended. However if errors, omissions, ambiguities, inconsistencies, inadequacies or other defects are found in the vendor's documents, they shall be corrected at his cost, notwithstanding any consent or approval.

4. **Penalty:**
 - a. **For delay in documentation:** In the event of delay in submission of complete set of specified documents ((like drawings, bill of materials, datasheets, catalogues, quality plan etc. as called in tender specifications including soft copies wherever applicable) in required sets beyond three(03) weeks (or as agreed/indicated in the SCC/Purchase Order) from the date of receipt of Purchase Order(by email), penalty at 0.5% (half percent) per week or part thereof, limited to a maximum of 5% (five percent) of the basic material value of the Purchase Order will be applicable.
Penalty for delayed documentation if applicable, shall be deducted at the time of first supply payment. If penalty is applicable for duration of less than a week, penalty @ 0.5% (half percent) of the basic material value will be deducted.

 - b. **For delay in delivery:**In the event of delay in agreed contractual delivery as per Purchase Order, penalty @ 0.5 % (half percent) per week or part thereof but limited to a max of 10% (ten percent) value of undelivered portion (basic material cost) will be applicable. Delivery will commence from the date of issue of manufacturing clearance or approved document by BHEL, whichever is later. The date for which Inspection call is issued by vendor along with test certificates / test reports /Certificate of Conformance / calibration reports, as proof of completion of manufacturing will be treated as date of deemed delivery for penalty calculation. In the absence of furnishing such document indicated above as proof of completion of manufacturing along with inspection call, actual date of inspection will be considered as date of deemed delivery and BHEL will not be responsible for delay in actual date of inspection.

Penalty for delayed delivery if applicable, shall be deducted at the time of first supply payment. If penalty is applicable for duration of less than a week, penalty @ 0.5% (half percent)of the basic material value will be deducted.

5. **Contract variations (Increase or decrease in the scope of supply):** BHEL may vary the contracted scope as per requirements at site. If vendor is of the opinion that the variation has an effect on the agreed price or delivery period, BHEL shall be informed of this immediately in writing along with technical details. Where unit rates are available in the Contract, the same shall be applied to such additional work. Vendor shall not

perform additional work before BHEL has issued written instructions/ amendment to the Purchase Order to that effect. The work which the vendor should have or could have anticipated in terms of delivering the service(s) and functionality (i.e.) as described in this agreement, or which is considered to be the result of an attributable error on the vendor's part, shall not be considered additional work.

6. **Inspection:** Prior written notice of atleast 10 days shall be given along with internal test certificates/COC and applicable test certificates. Materials will be inspected by BHEL-EDN-QS/CQS or BHEL nominated Third Party Inspection Agency (TPIA) or BHEL authorized Inspection Agency or Customer / Consultant or jointly by BHEL & Customer / consultant. All tests have to be conducted as applicable in line with approved Quality plan or QA Checklist or Purchase specification and original reports shall be furnished to BHEL-EDN, Bangalore for verification/acceptance for issue of dispatch clearance.
All costs related to inspections & re-inspections shall be borne by vendor. Whether the Contract provides for tests on the premises of the vendor or any of his Sub-contractor/s, vendor shall be responsible to provide such assistance, labour, materials, electricity, fuels, stores, apparatus, instruments as may be required and as may be reasonably demanded to carry out such tests efficiently. Cost of any type test or such other special tests shall be borne by BHEL only if specifically agreed to in the purchase order.
7. **Transit Insurance:** Transit insurance coverage between vendor's works and project site shall be to the account of BHEL, unless specifically agreed otherwise. However, vendor shall send intimation directly to insurance agency (as mentioned in dispatch instructions issued by BHEL) through fax/courier/e-mail, immediately on dispatch of goods for covering insurance. A copy of such intimation sent by vendor to insurance agency shall be given to BHEL along with dispatch documents. Dispatch documents will be treated as incomplete without such intimation copy. BHEL shall not be responsible for sending intimations to insurance agency on behalf of the vendor.
8. **Mode of dispatch:**
Indigenous Scope: By road on Door Delivery Consignee Copy attached basis through your approved transporter (unless otherwise indicated in Dispatch Instructions), only on receipt of Despatch Clearance from BHEL.
Imported Scope: By Air/Sea through BHEL approved Freight Forwarder/supplier approved Consolidator respectively as per agreed contractual terms, only on receipt of Dispatch Clearance from BHEL.
9. **High Sea Sales (HSS):** Customs clearance of the consignment landed on Indian Sea/Air ports will be done by BHEL based on the original HSS documents provided by vendors.
Any delay in submission of complete/correct HSS documents to BHEL may incur demurrage charges. All demurrage charges on account of incomplete /incorrect HSS documents submission by vendor will be to vendor's account and all such charges will be recovered from any of the available vendor bills with BHEL.
10. **Packaging and dispatch:** The Seller shall package the goods safely and carefully and pack them suitably in all respects considering the peculiarity of the material for normal safe transport by Sea/ Air / Rail/ Road to its destination suitably protected against loss, damage, corrosion in transit and the effect of tropical salt laden atmosphere. The packages shall be provided with fixtures/ hooks and sling marks as may be required for easy and safe handling. If any consignment needs special handling instruction, the same shall be clearly marked with standard symbols / instructions. Hazardous material should be notified as such and their packing, transportation and other protection must conform to relevant regulations.
The packing, shipping, storage and processing of the goods must comply with the prevailing legislation and regulations concerning safety, the environment and working conditions. Any Imported/Physical Exports items packed with raw/ solid wood packing material should be treated as per ISPM – 15 (fumigation) and accompanied by Phytosanitary/ Fumigation certificate. If safety information sheets (MSDS – Material Safety Data Sheet) exist for an item or the packaging, vendor must provide this information without fail along with the consignment.
Each package must be marked with Consignee name, Purchase order number, Package number, Gross weight and net weight, dimensions (LxBxH) and Seller's name. Packing list of goods inside each package with PO item number and quantity must also be fixed securely outside the box to indicate the contents of each box. Total number of packages in the consignment must also be indicated in the packing list.
Separate packing & identification of items should be as follows.
 1. Main Scope - All items must be tagged with part no. & item description.

2. Commissioning spares - All items must be tagged with part no. & item description.
 3. Mandatory spares - All items must be tagged with part no. & item description. All boxes/containers of spare items are to be distinctly marked in Red colour with boldly written "S" mark on each face of the containers /secure boxes as indication of items to be handed over directly to customer.
11. Assignment of Rights & Obligations; Subcontracting: Vendor is not permitted to subcontract the delivery or any part thereof to third party or to assign the rights and obligations resulting from this agreement in whole or in part to third parties without prior written permission from BHEL. Any permission or approval given by the BHEL shall, however, not absolve the vendor of the responsibility of his obligations under the Contract.
 12. Progress report: Vendor shall render such report as to the progress of work and in such form as may be called for by the concerned purchase officer from time to time. The submission and acceptance of such reports shall not prejudice the rights of BHEL in any manner.
 13. Non-disclosure and Information Obligations: Vendor shall provide with all necessary information pertaining to the goods as it could be of importance to BHEL. Vendor shall not reveal any specified confidential information that may be divulged by BHEL to Vendor's employees not involved with the tender/ contract & its execution and delivery or to third parties, unless BHEL has agreed to this in writing beforehand. Vendor shall not be entitled to use the BHEL name in advertisements and other commercial publications without prior written permission from BHEL.
 14. Cancellation /Termination of contract: BHEL shall have the right to completely or partially terminate the agreement by means of written notice to that effect. Termination of the Contract, for whatever reason, shall be without prejudice to the rights of the parties accrued under the Contract up to the time of termination.
BHEL shall have the right to cancel/foreclose the Order/ Contract, wholly or in part, in case it is constrained to do so on account of any decline, diminution, curtailment or stoppage of the business.
 15. Risk Purchase Clause: In case of failure of supplier, BHEL at its discretion may make purchase of the materials / services not supplied / rendered in time at the RISK & COST of the supplier. Under such situation, the supplier who fails to supply the goods in time shall be wholly liable to make good to BHEL any loss due to risk purchase.
In case of items demanding services at site like erection and commissioning, vendor should send his servicemen/representatives within 7 days from the service call. In case a vendor fails to attend to the service call, BHEL at its discretion may also make arrangements to attend such service by other parties at the **RISK & COST** of the supplier. Under such situation the supplier who fails to attend the service shall be wholly liable to make good to BHEL any loss due to risk purchase/service including additional handling charges due to the change.
 16. Shortages: In the event of shortage on receipt of goods and/or on opening of packages at site, all such shortages, caused by supplier's act or omission, shall be made good within a reasonable time that BHEL may allow from such intimation and at free of cost.
Transit Damages: In the event of receipt of goods in damaged condition or having found them so upon opening of packages at site, supplier shall make good of all such damages within a reasonable time from such intimation by BHEL. In case BHEL raises an insurance claim, the cost of material limited to insurance settled amount less handling charges will be reimbursed to supplier.
 17. Remedial work: Notwithstanding any previous test or certification, BHEL may instruct the vendor to remove and replace materials/goods or remove and re-execute works/services which are not in accordance with the purchase order. Similarly BHEL may ask the vendor to supply materials or to execute any services which are urgently required for any safety reasons, whether arising out of or because of an accident, unforeseeable event or otherwise. In such an event, Vendor shall provide such services within a reasonable time as specified by BHEL.
 18. Indemnity Clause: Vendor shall comply with all applicable safety regulations and take care for the safety of all persons involved. Vendor is fully responsible for the safety of its personnel or that of his subcontractor's

men / property, during execution of the Purchase Order and related services. All statutory payments including PF, ESI or other related charges have to be borne by the vendor. Vendor is fully responsible for ensuring that all legal compliances are followed in course of such employment.

19. Product Information, Drawings and Documents:All specified drawings, technical documents or other technical information received by Vendor from BHEL or vice versa shall not, without the consent of the other party, be used for any other purpose than that for which they were provided. They may not, without the consent of the Disclosing party, otherwise be used or copied, reproduced, transmitted or communicated to third parties. All information and data contained in general product documentation, whether in electronic or any other form, are binding only to the extent that they are by reference expressly included in the contract.

Vendor, as per agreed date/s but not later than the date of delivery, provide free of charge information and drawings which are necessary to permit and enable BHEL to erect, commission, operate and maintain the product. Such information and drawings shall be supplied in as many numbers of copies as may be agreed upon.

All intellectual properties, including designs, drawings and product information etc. exchanged during the formation and execution of the Contract shall continue to be the property of the disclosing party.

20. Intellectual Property Rights, Licenses:If any Patent, design, Trade mark or any other intellectual property rights apply to the delivery(goods/related service) or accompanying documentation shall be the exclusive property of the Vendor and BHEL shall be entitled to the legal use thereof free of charge by means of a non-exclusive, worldwide, perpetual license. All intellectual property rights that arise during the execution of the Purchase Order/ contract for delivery by vendor and/or by its employees or third parties involved by the vendor for performance of the agreement shall belong to BHEL. Vendor shall perform everything necessary to obtain or establish the above mentioned rights. The Vendor guarantees that the delivery does not infringe on any of the intellectual property rights of third parties. The Vendor shall do everything necessary to obtain or establish the alternate acceptable arrangement pending resolution of any (alleged) claims by third parties. The Vendor shall indemnify BHEL against any (alleged) claims by third parties in this regard and shall reimburse BHEL for any damages suffered as a result thereof.

21. Force Majeure:Notwithstanding anything contained in the purchase order or any other document relevant thereto, neither party shall be liable for any failure or delay in performance to the extent said failures or delays are caused by the "Act of God" and occurring without its fault or negligence, provided that, force majeure will apply only if the failure to perform could not be avoided by the exercise of due care and vendor doing everything reasonably possible to resume its performance.

A party affected by an event of force majeure which may include fire, tempest, floods, earthquake, riot, war, damage by aircraft etc., shall give the other party written notice, with full details as soon as possible and in any event not later than seven (7) calendar days of the occurrence of the cause relied upon. If force majeure applies, dates by which performance obligations are scheduled to be met will be extended for a period of time equal to the time lost due to any delay so caused.

Notwithstanding above provisions, in an event of Force Majeure, BHEL reserves for itself the right to cancel the order/ contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements for completion of deliveries and other schedules.

22. Guarantee / Warranty:

Wherever required, and so provided in the specifications/ Purchaser Order, the Seller shall guarantee that the stores supplied shall comply with the specifications laid down, for materials, workmanship and performance.

Unless otherwise specified in SCC,guarantee / warranty period for main supply items shall be applicable for a period of 24 months from the date of delivery of goods or 18 months from the date of commissioning of goods, whichever is earlier.

The guarantee / warranty period as described above shall apply afresh to replaced, repaired or re-executed parts of a delivery. Unless otherwise specifically provided in the Purchase Order, Vendor's liability shall be co terminus with the expiration of the applicable guarantee / warranty period.

23. Limitation of Liability: Vendor's liability towards this contract is limited to a maximum of 100% of the contract value and consequential damages are excluded. However the limits of liability will have no effect in cases of criminal negligence or wilful misconduct.
The total liability of Vendor for all claims arising out of or relating to the performance or breach of the Contract or use of any Products or Services or any order shall not exceed the total Contract price.
24. Liability during guarantee / warranty: Vendor shall arrange replacement / repair of all the defective materials / services under its obligation under the guarantee / warranty period. The rejected goods shall be taken away by vendor and replaced / repaired. In the event of the vendor's failure to comply, BHEL may take appropriate action including disposal of rejections and replenishment by any other sources at the cost and risk of the vendor.
25. Liability after guarantee / warranty period: At the end of the guarantee / warranty, the Vendor's liability ceases except for latent defects. For the purpose of this clause, latent defects shall be the defects inherently lying within the material or arising out of design deficiency which do not manifest themselves during the guarantee / warranty Period, but later. The Contractor's liability for latent defects warranty for the equipment including spares shall be limited to a period of six months from the end of the guarantee / warranty period of the respective equipment including spares or first time commissioning whichever is later but not later than three (03) years from the date of shipment.
26. Compliance with Laws: Vendor shall, in performing the contract, comply with all applicable laws. The vendor shall make all remittances, give all notices, pay all taxes, duties and fees, and obtain all permits, licences and approvals, as required by the laws in relation to the execution and completion of the contract and for remedying of any defects; and the Contractor shall indemnify and hold BHEL harmless against and from the consequences of any failure to do so.
27. Settlement of Disputes: Except as otherwise specifically provided in the Purchase Order, decision of BHEL shall be binding on the vendor with respect to all questions relating to the interpretation or meaning of the terms and conditions and instructions herein before mentioned and as to the completion of supplies/work/services, other questions, claim, right, matter or things whatsoever in any way arising out of or relating to the contract, instructions, orders or these conditions or otherwise concerning the supply or the execution or failure to execute the order, whether arising during the schedule of supply/work or after the completion or abandonment thereof. Any disputes or differences among the parties shall to the extent possible be settled amicably between the parties thereto, failing which the disputed issues shall be settled through arbitration. Vendor shall continue to perform the contract, pending settlement of dispute(s).
28. Arbitration Clause: In case amicable settlement is not reached in the event of any dispute or difference arising out of the execution of the Contract or the respective rights and liabilities of the parties or in relation to interpretation of any provision in any manner touching upon the Contract, such dispute or difference shall (except as to any matters, the decision of which is specifically provided for therein) be referred by either party to the sole arbitration of an Arbitrator appointed by the Executive Director/ General Manager of the purchasing unit/ region/ division of BHEL. Vendor shall have no objection even if the Arbitrator so appointed is an employee of BHEL or has ever dealt/ had to deal with any matter relating to this Contract.
Subject as aforesaid the provisions of the Arbitration and Conciliation Act, 1996 of India or any statutory modification or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceedings under this clause. It is a term of contract that the party initiating arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute. The venue for the arbitration shall be Bangalore, India. The award of the arbitrator shall be a speaking award and shall be final, conclusive and binding on all parties to this contract.
The cost of arbitration shall be borne equally by the parties. Notwithstanding the existence of any dispute or difference or any reference for the arbitration, the vendor shall proceed with and continue without hindrance the performance of the work under the contract with due diligence and expedition in a professional manner.

29. Applicable Laws and Jurisdiction of Courts: Prevailing Indian laws both substantive and procedural, including modifications thereto, shall govern the Contract. Subject to the conditions as aforesaid, the competent courts in Bangalore alone shall have jurisdiction to consider over any matters touching upon this contract.
30. General Terms: That any non-exercise, forbearance or omission of any of the powers conferred on BHEL and /or any of its authorities will not in any manner constitute waiver of the conditions hereto contained in these presents.

That the headings used in this agreement are for convenience of reference only.

That all notices etc., to be given under the Purchase order shall be in writing, type script or printed and if sent by registered post or by courier service to the address given in this document shall be deemed to have been served on the date when in the ordinary course, they would have been delivered to the addressee.

Annexure I

- Definition of Indian Agent: An Indian Agent of foreign principal is an individual, a partnership, an association of persons, a private or public company, that carries out specific obligation(s) towards processing of BHEL tender or finalization or execution of BHEL's contract on behalf of the foreign supplier.

In case of yes, vendor to note the following and reply accordingly:

- BHEL shall deal directly with foreign vendors, wherever required, for procurement of goods. However, if the foreign principal desires to avail of the services of an Indian agent, then the foreign principal should ensure compliance to regulatory guidelines - which require mandatory submission of an Agency Agreement.
- It shall be incumbent on the Indian agent and the foreign principal to adhere to the relevant guidelines of Government of India, issued from time to time.
- The Agency Agreement should specify the precise relationship between the foreign OEM / foreign principal and their Indian agent and their mutual interest in the business. All services to be rendered by agent/ associate, whether of general nature or in relation to the particular contract, must be clearly stated by the foreign supplier/ Indian agent. Any payment, which the agent or associate receives in India or abroad from the OEM, whether as commission or as a general retainer fee should be brought on record in the Agreement and be made explicit in order to ensure compliance to laws of the country.
- Any agency commission to be paid by BHEL to the Indian agent shall be in Indian currency only.
- Tax deduction at source is applicable to the agency commission paid to the Indian agent as per the prevailing rules.
- In the absence of any agency agreement, BHEL shall not deal with any Indian agent (authorized representatives / associate / consultant, or by whatever name called) and shall deal directly with the foreign principal only for all correspondence and business purposes.
- The "Guidelines for Indian Agents of Foreign Suppliers" enclosed at annexure -'A' shall apply in all such cases.

VENDOR SIGNATURE WITH SEAL

- viii. The supply and execution of the Purchase Order (including indigenous supplies/ service) shall be in the scope of the OEM/ foreign principal. The OEM/ foreign principal should submit their offer inclusive of all indigenous supplies/ services and evaluation will be based on 'total cost to BHEL'. In case OEM/ foreign principal recommends placement of order(s) towards indigenous portion of supplies/ services on Indian supplier(s)/ agent on their behalf, the credentials/ capacity/ capability of the Indian supplier(s)/ agent to make the supplies/ services shall be checked by BHEL as per the extant guidelines of Supplier Evaluation, Approval & Review Procedure (SEARP), before opening of price bids. In this regard, details may be checked as per Annexure-B (copy enclosed). It will be the responsibility of the OEM/ foreign principal to get acquainted with the evaluation requirements of Indian supplier/ agent as per SEARP available on www.bhel.com.

The responsibility for successful execution of the contract (including indigenous supplies/ services) lies with the OEM/ foreign principal. All bank guarantees to this effect shall be in the scope of the OEM/ foreign principal.

---X---

VENDOR SIGNATURE WITH SEAL

Guidelines for Indian Agents of Foreign Suppliers

- 1.0 There shall be compulsory registration of agents for all Global (Open) Tender and Limited Tender. An agent who is not registered with BHEL shall apply for registration in the registration form in line with SEARP.
- 1.1 Registered agents will file an authenticated Photostat copy duly attested by a Notary Public/Original certificate of the Principal confirming the agency agreement and giving the status being enjoyed by the agent and the commission/ remuneration/ salary/ retainership being paid by the principal to the agent before the placement of order by BHEL.
- 1.2 Wherever the Indian representatives have communicated on behalf of their principals and the foreign parties have stated that they are not paying any commission to the Indian agents, and the Indian representative is working on the basis of salary or as retainer, a written declaration to this effect should be submitted by the party (i.e. Principal) before finalizing the order.
- 2.0 **Disclosure of particulars of agents/ representatives in India, if any.**
- 2.1 Tenderers of Foreign nationality shall furnish the following details in their offers:
- 2.1.1 The Bidder(s)/ Contractor(s) of foreign origin shall disclose the name and address of the agents/ representatives in India if any and the extent of authorization and authority given to commit the Principals. In case the agent/ representative be a foreign Company, it shall be confirmed whether it is existing Company and details of the same shall be furnished.
- 2.1.2 The amount of commission/ remuneration included in the quoted price(s) for such agents/ representatives in India.
- 2.1.3 Confirmation of the Tenderer that the commission/ remuneration, if any, payable to his agents/ representatives in India, may be paid by BHEL in Indian Rupees only.
- 2.2 Tenderers of Indian Nationality shall furnish the following details in their offers:
- 2.2.1 The Bidder(s)/ Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any, indicating their nationality as well as their status, i.e. whether manufacturer or agents of manufacturer holding the Letter of Authority of the Principal specifically authorizing the agent to make an offer in India in response to tender either directly or through the agents/ representatives.
- 2.2.2 The amount of commission/ remuneration included in the price (s) quoted by the Tenderer for himself.
- 2.2.3 Confirmation of the foreign principals of the Tenderer that the commission/ remuneration, if any, reserved for the Tenderer in the quoted price(s), may be paid by BHEL in India in equivalent Indian Rupees on satisfactory completion of the Project or supplies of Stores and Spares in case of operation items.
- 2.3 In either case, in the event of contract materializing, the terms of payment will provide for payment of the commission/ remuneration, if any payable to the agents/ representatives in India in Indian Rupees on expiry of 90 days after the discharge of the obligations under the contract.
- 2.4 Failure to furnish correct and detailed information as called for in paragraph 2.0 above will render the concerned tender liable to rejection or in the event of a contract materializing, the same liable to termination by BHEL. Besides this there would be a penalty of banning business dealings with BHEL or damage or payment of a named sum.

ANNEXURE - II
LIST OF INTERNATIONAL GATEWAY AIRPORTS

For air based consignment, terms of delivery will be on FCA basis from following listed airports only. Vendors are requested to verify this list for use before submission of offer.

SCHEDULE NO	COUNTRY	CURRENCY CODE	AIRPORT
D01	UK	GBP	LONDON (HEATHROW)
D02	UK	GBP	NEW CASTLE
D03	UK	GBP	OXFORD. CHETLAM
D04	UK	GBP	BRISTOL. WELLINGBOROUGH
D05	UK	GBP	BIRMINGHAM
DO6	UK	GBP	EAST MIDLANDS
D07	UK	GBP	MANCHESTER
D08	UK	GBP	LEEDS
D09	UK	GBP	GLASGOW
D10	FRANCE	EURO	PARIS (ROISSY) & LYON
D11	SWEDEN	EURO	STOCKHOLM
D12	SWEDEN	EURO	GOTHENBERG & MALMO
D13	ITALY	EURO	ROMA, MILAN
D14	ITALY	EURO	TURIN, BOLOGNA, FLORENCE
D15	NETHERLANDS	EURO	AMSTERDAM, ROTTERDAM
D16	AUSTRIA	EURO	VIENNA, LINZ, GRAZ
D17	BELGIUM	EURO	ANTWERP, BRUSSELS
D18	DENMARK	DKK	COPENHAGEN
D19	JAPAN	JPY	TOKYO, OSAKA
D20	SINGAPORE	SGD	SINGAPORE
D21	CANADA	CAD	TORONTO
D22	CANADA	CAD	MONTREAL
D23	USA	USD	NEW YORK, BOSTON
D24	USA	USD	CHICAGO
D25	USA	USD	SAN FRANCISCO, LOS ANGELES
D26	USA	USD	ALANTA, HOUSTON
D27	GERMANY	EURO	MUNICH, KOLN, DUSSELDORF, HANNOVER, HAMBURG, STUTTGART, DAMSTADT, MANIHIEM, NURUMBERG
D28	GERMANY	EURO	FRANKFURT
D29	GERMANY	EURO	BERLIN
D30	SWITZERLAND	SFR	BASLE, ZURICH, GENEVA
D31	SPAIN	EURO	BARCELONA
D32	AUSTRALIA	AUD	SYDNEY
D33	AUSTRALIA	AUD	MELBOURNE
D34	AUSTRALIA	AUD	PERTH
D35	CZECH	EURO	PRAGUE
D36	HONG KONG	HKD	HONG KONG
D37	NEW ZELAND	NZD	AUCKLAND
D38	RUSSIA	USD	MOSCOW
D39	SOUTH KOREA	USD	KIMPO INTERNATIONAL, INCHEON
D40	FINLAND	EURO	HELSINKI
D41	ROMANIA	EURO	BUCHAREST
D42	NORWAY	EURO	OSLO
D43	IRELAND	EURO	DUBLIN
D44	ISRAEL	USD	TEL AVIV
D45	UAE	USD	DUBAI
D46	OMAN	USD	MUSCAT
D47	EGYPT	USD	CAIRO
D48	TAIWAN	USD	TAIPEI
D49	UKRAINE	USD	KIEV
D50	CHINA	USD	SHANGHAI, SHENZHEN
D51	PHILIPINES	USD	MANILA
D52	MALAYSIA	USD	KUALALUMPUR, PE NANG
D53	CYPRUS	USD	LARNACA
D54	SOUTH AFRICA	USD	JOHANNESBERG, DURBAN
D55	SLOVAKIA	EURO	BARTISLOVA
D56	SAUDI ARABIA	SAR	RIYADH
D57	TURKEY	EURO	ISTANBUL
D58	THAILAND	USD	BANGKOK
D59	BRAZIL	USD	SAO PAULO, RIO DE JANEIRO

ANNEXURE – III
DISCREPANCY IN WORDS & FIGURES – QUOTED IN PRICE BID

Following guidelines will be followed in case of discrepancy in words & figures-quoted in price bid:

(a) If, in the price structure quoted for the required goods/services/works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.

(b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and

(c) If there is a discrepancy between 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 (a) and (b) above.

(d) If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.

ANNEXURE - IV
Electronic Funds Transfer (EFT) OR
Paylink Direct Credit Form

Please Fill up the form in **CAPITAL LETTERS** only.

TYPE OF REQUEST(Tick one): _____ CREATE _____ CHANGE

BHEL Vendor / Supplier Code:	<input type="text"/>
Company Name :	<input type="text"/>
Permanent Account Number(PAN):	<input type="text"/>
Address	<input type="text"/>
	<input type="text"/>

City:	<input type="text"/>	PINCODE	<input type="text"/>	STATE	<input type="text"/>
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Contact Person(s)	<input type="text"/>
Telephone No:	<input type="text"/>
Fax No:	<input type="text"/>
e-mail id:	<input type="text"/>

1 Bank Name:	<input type="text"/>
2 Bank Address:	<input type="text"/>
	<input type="text"/>

3 Bank Telephone No:	<input type="text"/>
4 Bank Account No:	<input type="text"/>

5 Account Type: Savings/Cash Credit	<input type="text"/>
6 9 Digit Code Number of Bank and branch appearing on MICR cheque issued by Bank	<input type="text"/>
7 Bank IFSC Code(applicable for NEFT)	<input type="text"/>
8 Bank IFSC code(applicable for RTGS)	<input type="text"/>

(Indian Financial System Code)

- A I hereby certify that the particulars given above are true, correct and complete and that I, as a representative for the above named Company, hereby authorise BHEL, EDN, Bangalore to electronically deposit payments to the designated bank account.
- B If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold BHEL / transferring Bank responsible.
- C This authority remains in full force until BHEL, EDN, Bangalore receives written notification requesting a change or cancellation.
- D I have read the contents of the covering letter and agree to discharge the responsibility expected of me as a participant under ECS / EFT.

Date:

Authorised Signatory:
 Designation:

Telephone No. with STD Code

Company Seal

Bank Certificate

We certify that _____ has an Account No _____ with us and we confirm that the bank details given above are correct as per our records.

Date: _____ (.....)
 Place: _____ Signature

Please return completed form **along with a blank cancelled cheque or photocopy** thereof to:
 Bharath Heavy Electricals Ltd,
 Attn:
 Electronics Division, Mysore Road,
 BANGALORE - 560 026
 In case of any Query, please call concerned purchase executive.

ANNEXURE - V
PRESENT PROCEDURE FOR SALE IN TRANSIT (HIGH SEA SALES)

In case of High Sea Sales, vendor should submit following documents:

1. ORIGINAL HIGH SEA SALES AGREEMENT

- Sale agreement (on Rs. 200/- non-judicial stamp paper & notarised with 2 witnesses with identity) has to be signed between BHEL and the Party importing material. The date of the sale documents should be in between the date of House Air Way Bill / Bill of Lading and before landing of the goods in Indian origin.
- The date of the stamp paper should be prior to the Air Way Bill / Bill of Lading date.
- Following shall be included in the High Sea Sales Agreement:
“THE BUYER ALSO UNDERTAKE DISCHARGES, THE OBLIGATION AND FULFILLMENT OF CONDITIONS, IF ANY, ATTACHED TO THE IMPORTATION, ASSESSMENT AND CLEARANCE OF THE GOODS IN TERMS CUSTOMS TARIFF ACT 1975, THE CUSTOMS ACT 1962 & RULES & REGULATIONS MADE THERE UNDER AND OTHER RELEVANT ACTS, ORDERS, NOTIFICATIONS”.

2. ORIGINAL INVOICES: INDIGENOUS RUPEE INVOICE & FOREIGN CURRENCY INVOICE

- Prices should be C.I.F., designated airport/seaport basis.
- I.E.C., C.S.T., K.S.T. Nos. to be mentioned.
- Description of item (Nomenclature), Unit & Quantity in both the Foreign Currency & the Indigenous Invoice in Rupee shall be exactly as per Purchase Order Description of item, Quantity and Unit. The Indigenous Invoice value shall be exactly as per Purchase Order value.
- Seller should give Foreign Currency Invoice from the original consignor. The Foreign Currency Invoice value should be at least 2% (two per cent) less than the Indigenous Rupee Invoice value in equivalent foreign currency.

4. ORIGINAL HOUSE AIR WAY BILL/ BILL OF LADING

- The sale agents should duly endorse House Air Way Bill (HAWB) for air shipments or original Bill of Lading (O.B.L.) for sea shipments and Foreign Currency Invoice in favour of BHEL-EDN.

5. ORIGINAL CARGO ARRIVAL NOTICE FROM FORWARDER.

6. ORIGINAL DELIVERY ORDER ISSUED IN NAME OF BHEL-EDN.

7. ORIGINAL PACKING LIST.

8. A LETTER TO THE COMMISSIONER OF CUSTOMS FOR EFFECTING ABOVE SALE.

9. A LETTER TO THE DEPUTY ASSESSOR (OCTROI) FOR EFFECTING ABOVE SALE IN FAVOUR OF BHEL.

REMARKS: In case vendor needs any clarifications on the above, the same may be sought in writing.

Annexure-VI
BHEL MEMBER BANKS (LIST OF CONSORTIUM BANKS)

BANK GUARANTEE (BG) SHALL BE ISSUED FROM THE FOLLOWING BANKS ONLY:

	Nationalised Banks		Nationalised Banks
1	Allahabad Bank	19	Vijaya Bank
2	Andhra Bank		Public Sector Banks
3	Bank of Baroda	20	IDBI
4	Canara Bank		Foreign Banks
5	Corporation Bank	21	CITI Bank N.A
6	Central Bank	22	Deutsche Bank AG
7	Indian Bank	23	The Hongkong and Shanghai Banking Corporation Ltd. (HSBC)
8	Indian Overseas Bank	24	Standard Chartered Bank
9	Oriental Bank of Commerce	25	J P Morgan
10	Punjab National Bank		
11	Punjab & Sindh Bank		Private Banks
12	State Bank of India	26	Axis Bank
13	State Bank of Hyderabad	27	The Federal Bank Limited
14	Syndicate Bank	28	HDFC Bank
15	State Bank of Travancore	29	Kotak Mahindra Bank Ltd
16	UCO Bank	30	ICICI Bank
17	Union Bank of India	31	IndusInd Bank
18	United Bank of India	32	Yes Bank

Note:

- All BGs must be issued from BHEL consortium banks listed above.
- This list is subject to changes. Hence vendors are requested to check this list every time before issuing BGs.
- Bank Guarantees issued by Co-Operative Banks/Financial Institutions cannot to be accepted under any circumstance.

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To
NAME
& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____¹ through its Unit at.....(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) with its registered office at _____² hereinafter referred to as the 'Vendor / Contractor / Supplier', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated³ valued at Rs.....⁴ (Rupees -----)/FC.....(in words.....) for⁵ (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to% (.... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we,, (hereinafter referred to as the Bank), having registered/Head office at and inter alia a branch at being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs -- -----⁶ (Rupees -----) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

We thebank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till

all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

WeBANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier 's liabilities.

This Guarantee shall remain in force upto and including.....⁷ and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the⁸we shall be discharged from all liabilities under this guarantee thereafter.

We, BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....⁶
- b) This Guarantee shall be valid up to⁷
- c) Unless the Bank is served a written claim or demand on or before _____⁸ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated.....

Place of Issue.....

¹ NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited

² NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ CONTRACT VALUE

⁵ PROJECT/SUPPLY DETAILS

⁶ BG AMOUNT IN FIGURES AND WORDS

⁷ VALIDITY DATE

⁸ DATE OF EXPIRY OF CLAIM PERIOD

Annexure – VIII
(Applicable only for MSE suppliers)
Certificate by Chartered Accountant on Letter Head

This is to certify that M/s
.....(hereinafter referred to as `Company')
having its registered office at is registered under MSMED Act 2006,
(Entrepreneur Memorandum No (Part-11 dtd
Category: (Micro/Small) (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as
per the latest audited financial year..... as per MSMED Act 2006 is as follows:

- 1. For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.1722 (E) dated October 5, 2006:
Rs.....Lacs.

- 2. For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:
Rs.Lacs.

The above investment of Rs.Lacs in within permissible limit of
Rs.....Lacs for.....Micro / Small (Strike off which is not
applicable) Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (**Strike off which is not applicable**) and the date of graduation of such enterprise from its original category is (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name:

Membership Number:

Seal of Chartered Accountant

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi – 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for

_____. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 – Commitments of the Principal

- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-
 - 1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - 1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - 1.1.3 The Principal will exclude from the process all known prejudiced persons.
- 1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 – Commitments of the Bidder(s)/ Contractor(s)

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
 - 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved

in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
 - 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant IPC/ PC Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
 - 2.1.4 The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 – Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors". framed by the Principal.

Section 4 – Compensation for Damages

- 4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/Bid Security.
- 4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

Section 5 – Previous Transgression

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 – Equal treatment of all Bidders/ Contractors/ Sub-contractors

- 6.1 The Bidder(s)/ Contractor(s) undertake(s) to obtain from all subcontractors a commitment consistent with this Integrity Pact and report Compliance to the Principal. This commitment shall be taken only from those sub-contractors whose contract value is more than 20 % of Bidder's/ Contractor's contract value with the Principal. The Bidder(s)/ Contractor(s) shall continue to remain responsible for any default by his Sub-contractor(s).
- 6.2 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.
- 6.3 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 – Criminal Charges against violating Bidders/ Contractors /Sub-contractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 –Independent External Monitor(s)

- 8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

- 8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality.
- 8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
- 8.5 As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or heal the situation, or to take other relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
- 8.6 The Monitor will submit a written report to the CMD, BHEL within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.
- 8.7 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.8 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant IPC / PC Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the

Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.9 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.10 The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

9.1 This Pact begins and shall be binding on and from the submission of bid(s) by bidder(s). It expires for the Contractor 12 months after the last payment under the respective contract and for all other Bidders 6 months after the contract has been awarded.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 – Other Provisions

10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.

10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders/ contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On behalf of the Principal

For & On behalf of the Bidder/ Contractor

(Office Seal)

(Office Seal)

Place-----

Date-----

Witness: _____

Witness: _____

(Name & Address) _____

(Name & Address) _____

Registration of Suppliers

unregistered Supplier: Supplier visits EPS at <https://bheleps.buyjunction.in>

- a. Supplier visits EPS at <https://bheleps.buyjunction.in>
- b. Clicks "REGISTER" for registration
- c. Fills up the Registration Page form
- d. MJ will ensure Authentication of Registration ¹
- e. Supplier logs in with the ID and password
- f. Supplier Maps the signing Certificate
- g. MJ will ensure the authentication the signing certificate ¹.
- h. Supplier Logs in to the system again and views the RFQ
- i. Supplier Attaches himself to the RFQ by clicking the Interested button
- j. Supplier fills the bid template and makes necessary attachments
- k. Supplier submits his bid by clicking CONFIRM.

NB:-

¹ -- BHEL Administrator or user will have no role for approving Registration and Open Tenders and DSC for Any supplier who has registered himself from the front END which is in case of OT.

- **For registered Supplier:**

- Supplier visits EPS home page
 - Supplier signs in with his/her user id and password
 - Selects the RFQ Code and views it.
 - Attaches himself to the RFQ by clicking the Interested button
 - Supplier fills the bid template and makes necessary attachments
 - Supplier submits his bid by clicking CONFIRM.
-