



भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

**e-tender Document for Supply, Installation and Commissioning of Test Equipments for BIS
Laboratories
(Tender Reference No. -ELECTRICAL 2020)**

INVITED BY

BUREAU OF INDIAN STANDARDS (BIS)

Scientist F & Head, Laboratory Policy and Planning Department (LPPD)

9, BSZ Marg, New Delhi-110002

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E-TENDER NOTICE

Bureau of Indian Standards (Laboratory Policy and Planning Department) invites bids, under **two bid system (Technical bid and Financial bid)** from bonafide experienced Manufacturers/Suppliers/Dealers / Agencies/ Direct Importers for the job defined in this tender, as per details given below:

DESCRIPTION	SUPPLY, INSTALLATION AND COMMISSIONING OF test Equipment for..... (Please refer Annex-3 for Technical Specifications of the equipment)
Type of Tender	OPEN
EMD Amount (in INR)	Please see point No 1-3 Below
<p>i. Bidder(s) having beneficial ownership in countries which share land border with India in accordance with Department of Expenditure Order no. F. No. 6/18/2019-PPD dated 23.07.2020 and DPIIT OM No.P-45021/112/2020-PP(BE-II)(E-43780) dated 24.08.2020 shall register themselves with DPIIT after applying on the prescribed format.</p> <p>ii. The bidder can bid for one or more than one equipment. The items reserved for MSE as per MSE Policy 2012 shall be bid by MSE OEM only.</p> <p>iii. The EMD amount for each equipment is, as detailed in Annex 3. Bidder shall quote only those products in the bid which are not obsolete in the market and has at least 7 years residual market life i.e. the offered product shall not be declared end-of-life by the OEM. The bidder has to bid for each equipment separately and provide EMD amount mentioned for each equipment separately for which he is submitting his bid. The EMD is to be submitted through payment online in an acceptable form or instrument bank guarantee or banker's cheque or fixed deposit receipt (the bidder shall have to upload scanned copy of the transaction document showing transaction code/RTGS No. etc.) in favour of Bureau of Indian Standards, New Delhi, payable at New Delhi. A scanned copy of EMD submitted also needs to be uploaded along with the bid at the Central Public Procurement Portal. For the purpose of online payment of EMD, the bank details of the BIS are as follows:</p> <ul style="list-style-type: none"> • Syndicate Bank, Bureau of Indian Standards, 9 Bahadur Shah Zafar Marg, New Delhi. • IFSC/NEFT Code: SYNB0009084, Account No.: 90841010000018, Email id: dac@bis.gov.in, PAN No. AAATB0431G, GSTIN : 07AAATB0431G1ZD <p>iv. Proof of payment of EMD should be submitted along with Technical Bid.</p> <p>v. No interest shall be payable for the sum deposited as Earnest Money Deposit.</p> <p>vi. EMD of the unsuccessful bidders would be returned to them after expiry of the final bid validity and latest on or before the 30 days after the award of the contract.</p> <p>vii. The EMD shall remain valid for a period of forty-five days beyond the final bid validity period.</p> <p>viii. If EMD is forfeited for any reason, the concerned bidder may be debarred from participation in the RFPs/tenders floated by BIS in future as per its sole discretion.</p> <p>Registered MSEs & Start-ups (Micro and Small enterprises (MSEs) as defined in MSE procurement policy 2012 issued by Department of MSME or are registered with the Central Purchase organisation or the concerned ministry or department or start-ups as recognised by the Government) or OEMs registered with NSIC are exempted from payment of EMD provided proof of registration is submitted.</p>	

PERFORMANCE SECURITY DEPOSIT

- i) The successful bidder will have to submit a Performance Security equivalent to 10% of the total order in the form of online payment or instrument fixed deposit in an acceptable form; in favour of BIS, New Delhi. Performance Security should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the supplier including warranty obligations. For the purpose of online payment of Performance Security, the bank details of the BIS are as follows:
- Syndicate Bank, Bureau of Indian Standards, 9 Bahadur Shah Zafar Marg, New Delhi.
 - IFSC/NEFT Code: SYNB0009084, Account No.: 90841010000018, Email id: dac@bis.gov.in, PAN No. AAATB0431G, GSTIN : 07AAATB0431G1ZD
- ii) The successful bidder has to renew the performance security on the same terms and conditions for the period up to the contract including extension period, if any.
- iii) Performance Guarantee would be returned only after successful completion of job assigned to them after adjusting/recovering any dues recoverable/payable from/by the Supplier on any account under the contract.

Address of the issuing Authority	Sc F & Head, Laboratory Policy and Planning Department (LPPD) 9, BSZ Marg, New Delhi-110002 Email: clpolicycell@bis.gov.in Phone: 011-23230860
Download Start & Bid Submission Start Date & Time	14-10-2020
Download End & Bid Submission End Date & Time	6-11-2020
Pre Bid Meeting	23-10-2020
Technical Bid opening date & Time	09-11-2020

1. Bureau of Indian Standards reserves the right to amend or with draw any terms and conditions contained in the tender document or to reject any or all bids without giving any notice or assigning any reason. The decision of issuing authority in this regard shall be final.
2. The bidder can submit his technical and financial bid along with applicable EMD for one or more number of equipments separately. The evaluation of technical and financial bid for each equipment will be carried out separately and L1 bidder will be determined for each equipment separately. The selection process for one equipment will not have any effect on other equipments. BIS reserves the right to proceed with one or more equipments as mentioned in the tender document while cancelling the purchase of one or more number of equipments.
3. Performance security deposit for each equipment will have to be submitted separately by the selected bidder in the manner as detailed above.

-Sd-
Sc F & Head (LPPD)

TENDER DOCUMENT

PART-I: TECHNICAL BID

A: PRE-QUALIFICATION CRITERIA (PQC)

1. The bidder shall be PSU/ autonomous /public /private limited / Partnership/ Proprietorship / any other firm having been in business in India for the last three calendar years (2017-18, 2018-19, 2019-20) for supply of the same/similar equipment. The documents authenticating the establishment of the firm shall be submitted.
2. The bidder shall have supplied, installed and commissioned at least three such same/ similar equipment in India and one of them should be in the last three years. Additionally, the list of customers shall also be enclosed.
3. The bidder shall enclose copies of purchase orders/letters of satisfaction from buyers or any other document as a proof of supply of same / similar equipment to Govt. or private customers with the minimum value of order.
4. The bidder shall submit copies of audited financial statements containing P & L account & balance sheets of last three years.
5. The bidder shall enclose valid proof of tax registrations as applicable to them such as GST/ PAN / last ITR or any other registration for taxation purpose (for Indian Bidders).
6. The bidder should not have been blacklisted. A declaration regarding the same is to be submitted by the bidder in the format supplied at Annexure-4 A.
7. The bidder should not have earlier withdrawn from any tendering process of BIS.
8. The Bidder shall be willing to provide after sales support through a combination of warranty and comprehensive annual maintenance contract for a period of 6 years as per terms and conditions.
9. The bidder should not be under liquidation, court receivership or similar proceedings, should not be bankrupt. Bidder to upload undertaking to this effect with bid.
10. Net worth of the OEM should be positive as per the last audited financial statement

Note: The bidder shall enclose all requisite documents self attested as specified in the checklist. The bidder must fill the checklist enclosed with relevant details.

Checklist for Pre-Qualification Criteria (PQC)

Bidders must fill this check list with a **tick (✓)** in the boxes in the right hand column. Relevant document, as per the checklist, shall also be enclosed with the technical bid.

S No.	Requirement	Document submitted	Check box
1.	Bidder is	1. Original Equipment Manufacturer 2. Dealer/ agency/ supplier/	1. <input type="checkbox"/> 2. <input type="checkbox"/>
2.	Bidder is based in	1. India 2. Abroad	1. <input type="checkbox"/> 2. <input type="checkbox"/>
3.	The bidder is a public undertaking/ autonomous body/ public limited / private limited / Proprietorship Company / firm	1. PSU/Autonomous 2. Limited/ Private Limited 3. Proprietary / Partnership firm/LLP 4. Others (specify)	1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/>
4.	Enclose applicable documents of establishment of firm - Certificate of Incorporation - Authorization letter from Principals - Partnership Deed/LLP - Proprietary Details - Others (specify)	1. Yes, details enclosed 2. No, details not enclosed	1. <input type="checkbox"/> 2. <input type="checkbox"/>
5.	Enclose applicable documents of Tax Registration: - GST - PAN - Last ITR - Others (specify)	1. Yes, details enclosed 2. No, details not enclosed	1. <input type="checkbox"/> 2. <input type="checkbox"/>
6	Enclosed statements of turnover per year for last three successive years.	1. Yes, details enclosed 2. No, details not enclosed	1. <input type="checkbox"/> 2. <input type="checkbox"/>
7.	Enclose copies of audited financial statements containing P & L account Balance Sheet for last three years	1. Yes, details enclosed 2. No, details not enclosed	1. <input type="checkbox"/> 2. <input type="checkbox"/>
8.	List of customers attached	1. Yes, details enclosed 2. No, details not enclosed	1. <input type="checkbox"/> 2. <input type="checkbox"/>
9.	Enclosed letter of satisfaction from buyers or purchase orders or any other document from customers whom same / similar equipment was supplied.	1. Yes, details enclosed 2. No, details not enclosed	1. <input type="checkbox"/> 2. <input type="checkbox"/>
10	Whether Bidder is willing to provide after sales support through a combination of warranty and comprehensive annual maintenance contract for a period of 6 years as per mutually worked out terms and conditions	1. Yes, willing to provide 2. No, not willing to provide	1. <input type="checkbox"/> 2. <input type="checkbox"/>
11	Whether withdrawn from tendering process of BIS on an earlier occasion	1. Yes 2. No	1. <input type="checkbox"/> 2. <input type="checkbox"/>
12	Whether blacklisted (submit declaration in annexure -4 A)	1. Yes 2. No	1. <input type="checkbox"/> 2. <input type="checkbox"/>
13.##	Had earlier supplied equipment/ service to BIS	1. Yes 2. No	1. <input type="checkbox"/> 2. <input type="checkbox"/>

- This is an additional information.

I Pre-bid Meeting

A Pre-bid meeting for interested Bidders will be held at the scheduled date and time indicated in the tender document. Any change in venue or timing of pre-bid meeting will be hosted on BIS website (www.bis.gov.in) and the Central Public Procurement (CPP) Portal of Government of India (<https://eprocure.gov.in/cppp>) .

Interested Bidders will be allowed to seek clarification and get their doubts cleared during pre-bid meeting.

Any change that would be made in the Tender Document by the Competent Authority after issue of the Tender /Pre bid meeting will be hosted on BIS website (www.bis.gov.in) and on CPP Portal of Government of India in the form of Corrigendum/Addendum for incorporating the same in the Bid before submission

The minutes of pre-bid meeting shall be intimated to all bidders present in the pre-bid meeting and shall also be exhibited on BIS website and on the CPP portal.

II Availability of Tender Document:

The Tender document may also be downloaded from the website of the Bureau (www.bis.gov.in) and the CPP Portal.

The bidder shall bear all costs associated with the preparation and submission of its tender. The Bureau shall, in no case, be responsible or liable for these costs, regardless of the conduct or the outcome of the Bidding process.

III Language of Bid/Contract:

The language of the Bid shall be in English/Hindi and all correspondences etc. shall conform to English/Hindi language.

IV Last Date for Submission

Tenders have to be submitted online on CPP Portal (<https://eprocure.gov.in/eprocure/app>). It shall be the responsibility of the bidder / tenderer to ensure that tender is submitted on before the deadline of submission prescribed.

Submission of Tenders shall be closed on CPP Portal mentioned earlier at the date & time of submission prescribed after which no bidder shall be able to submit the Tender.

It shall be the responsibility of the bidder / tenderer to ensure that his tender is submitted online on the CPP Portal (<https://eprocure.gov.in/eprocure/app>) before the deadline of submission. BIS will not be responsible for non-receipt of tender documents due to any delay or loss etc.

V Manner of Submission of Bid

Bids shall be submitted online only at CPP Portal.

Bidders are advised to follow the instructions provided in the 'Instructions to the Contractors/Bidder for the e-submission of the bids online through the Central Public Procurement Portal. A set of instructions for online bid submission are enclosed.

Bid documents may be scanned with minimum 100 dpi with black and white option which helps in reducing size of the scanned document.

Bidder who has downloaded the tender from the BIS website and the Central Public Procurement Portal shall not tamper/modify the tender form including downloaded price bid template in any manner. In case if the same is found to be tempered/modified in any manner, bid will be completely rejected and EMD would be forfeited and Bidder may be banned from doing business with BIS.

E-mail or fax submission shall not be considered.

VI Contents of the bid document

The bidders shall submit their bids in two parts, one part of the bid shall be **Technical Bid** and second part **Financial Bid**.

VII BID Format

- a) Price Schedule(s) as per the BoQ format filled up with all the relevant information to be uploaded in the form of BOQ_PriceBid.xls.

The price bid format is provided as BoQ_PriceBid.xls along with this Tender Enquiry Document at <https://eprocure.gov.in/eprocure/app>. Bidders are advised to download this BoQ_XXXX.xls as it is and quote their offer/rates in the permitted column and upload the same in the commercial bid. **Bidder shall not tamper/modify downloaded price bid template in any manner.** In case if the same is found to be tempered/modified in any manner, tender will be completely rejected and tenderer is liable to be banned from doing business with the Bureau.

- b) The authorized signatory of the bidder must digitally sign the bid. Bid sent by fax/email shall not be considered.

B: INSTRUCTIONS TO BIDDERS (FOR STRICT COMPLIANCE)

I DISCLAIMER

The information contained in the Tender Document, provided by the Bureau, is for information of the Bidders to assist them in formulation of their bids. Each Bidder can conduct their own investigation and analysis before submission of the bid. The Bureau shall not incur any liability, whatsoever, with regard to the completeness of the information contained in the Tender Document that the Bidder may require for submission of the bid. The Bureau reserves the right to amend any condition of the Tender Document through publication of a Corrigendum, besides rejection of any or all the bids received, if the Competent Authority of the Bureau decides so.

II ONLINE BID SUBMISSION

The bidder can bid for one or more than one equipment. The bidder has to bid for each equipment separately and provide EMD amount mentioned for each equipment separately for which he is submitting his bid.

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal. More information useful for submitting online bids on the CPP Portal may be obtained at: <https://eprocure.gov.in/eprocure/app>.

Bidder should be responsible for registering his company at Central Public Procurement Portal and seeking all necessary approvals required to upload the bid.

The THE BUREAU reserves the right to amend the document, tentative schedule and critical dates. It is the sole responsibility of prospective bidders to go through Central Public Procurement Portal / THE BUREAU Website from time to time for any updated information.

III REGISTRATION ON CPP PORTAL

- i. Bidders are required to enrol on the e-Procurement module of the Central Public Procurement Portal (URL: <https://eprocure.gov.in/eprocure/app>) by clicking on the link “Online bidder Enrolment” on the CPP Portal which is free of charge.
- ii. As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
- iii. Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.
- iv. Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / nCode / eMudhra etc.), with their profile.
- v. Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.
- vi. Bidder then logs in to the site through the secured log-in by entering their user ID /password and the password of the DSC / e-Token.

IV SEARCHING THE TENDER DOCUMENT

- i. There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal.
- ii. Once the bidders have selected the tenders they are interested in, they may download the required documents / tender Annexes. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
- iii. The bidder should make a note of the unique Tender ID assigned to each tender; in case they want to obtain any clarification / help from the Helpdesk.

V PREPARATION OF BIDS

- i. Bidder should consider any corrigendum published on the tender document before submitting their bids.
- ii. Bidder should go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
- iii. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / Annex and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.
- iv. To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. GST/PAN, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Space" or "Other Important Documents" area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

VI SUBMISSION OF BIDS

- i. Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- ii. The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
- iii. Bidder has to select the payment option as "offline" to pay the EMD as applicable and enter details of the instrument. Bidder should pay the EMD as per the instructions specified in the tender document. The details of the NEFT/online instrument, should tally with the data entered during bid submission time. Otherwise the uploaded bid will be rejected. The EMD amount will be returned to the unsuccessful Bidders as per the provisions of GFR. It will be returned to the successful Bidder after receipt of the Performance Security.

Forfeiture of EMD: The Bid Security / Earnest Money deposited is liable to be forfeited if the tenderer withdraws or amends or impairs or derogates the offer in any respect within the period of

validity of the tender or fails to comply with any other condition stipulated in the document or if the successful Bidder does not pay the Performance Security in the prescribed time limit or fails to sign the Agreement after the award of Contract.

- iv. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BoQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BoQ file, open it, enable Macro in the excel sheet and complete the coloured (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.
- v. The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
- vi. All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128-bit encryption technology. Data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- vii. The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- viii. Upon the successful and timely submission of bids (i.e. after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
- ix. The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

VII ASSISTANCE TO BIDDERS

- i. Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.
- ii. Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk Nos. 0120-4200462, 0120-4001002

VIII TERMS & CONDITION

- i. The Invitation for Bids is to be uploaded on two bids basis i.e. Technical Bid and Financial Bid. The bidder can bid for one or more than one equipment. The EMD amount for each equipment is, as detailed in Annex 3. The bidder has to bid for each equipment separately and provide EMD amount mentioned for each equipment separately for which he is submitting his bid.
- ii. It is the responsibility of the Bidder to ensure that the bids are up loaded on time within the deadline through www.eprocure.gov.in A scanned copy of the EMD submitted needs to be uploaded at the Central Public Procurement Portal and the original instrument of EMD shall be submitted before the Registered Micro & Small Enterprises (MSEs) as defined in MSEs Procurement Policy, 2012 issued by Department of Micro, Small & Medium Enterprises (MSME) or as registered with the Central Purchase Organisation or the concerned Ministry or Department or Start-ups recognized by

Department of Industrial Policy and Promotion (DIPP) are exempted from payment of EMD on production of valid certificate of registration with the authority/agency as indicated in the policy.

- iii. All bids shall remain valid for 180 days from the last date of submission of bids.
- iv. The BIS reserves the right to solicit additional information from Bidders.
- v. The THE BUREAU reserves the right to accept the whole, or part of or reject any or all bids without assigning any reasons and to select the Bidder(s) who, in the sole opinion, best meet the interest of the THE BUREAU.
- vi. Although negotiations are severely discouraged, the THE BUREAU also reserves the right to negotiate with the bidders placed as L1 bidder in the interest of the THE BUREAU.
- vii. The THE BUREAU reserves the right not to accept bid(s) from agencies resorting to unethical practices or on whom investigation/enquiry proceedings have been initiated by Government investigating Agencies/Vigilance Cell.
- viii. All information contained in this tender/bid, or provided in subsequent discussions or disclosures, is proprietary and confidential. No information shall be shared by the bidder with any other organizations/agencies.
- ix. The successful bidder will submit the supply plan to THE BUREAU.
- x. The **Financial bid will be opened** on a date, to be fixed later, for the successful bidders in the technical bid. Authorized representative of the bidder with an authority letter may remain present on the scheduled date and time.
- xi. The bid along-with all requisite documents must **be signed and stamped by the authorized person**, failing which the bid shall be liable for rejection.
- xii. The BUREAU reserves the right to accept or reject any bid or all the bids without assigning any reason thereof.
- xiii. **Process to be confidential:**
Information relating to the examination, evaluation and comparison of Bids and the award of a Contract shall not be disclosed to Bidders or any other person not officially concerned with such process until the award to the successful Bidder has been announced.
- xiv. Any kind of canvassing in regard to the offered equipment after submitting bid shall be treated as disqualification.

Special Conditions: Cost of the items should be mentioned clearly in the **Part-II: Financial Bid** only. The following details need to be included:

- a. Price break-up of main equipment, accessories. Consumables, spares, fixtures (whichever is applicable) to be supplied by the bidder.
- b. Rates quoted should specifically mention GST/other taxes-duties, as applicable. In absence of any such stipulation, it will be presumed that the prices include all Taxes/charges and no claim for the same shall be entertained.
- c. Please quote your rates, other charges, applicable taxes and duties in the format prescribed in **Part-II: Financial Bid** (Please refer page 18).
- d. The equipment is required to be supported for performance for six years, i.e., three years of warranty plus three years of CAMC (Comprehensive Annual Maintenance Contract). If the warranty offered by the bidder is less than three years, then the bidder shall quote the CAMC charges, year wise, for the remaining period of warranty, plus for fourth, fifth and sixth years. Please refer (B) of **Part-II: Financial Bid**

Financial bid shall be evaluated on the total price quoted, which is a combination of unit price of the equipment and CAMC charges upto six years of operation of equipment. The payment will be made for unit price of the equipment which will cover the warranty period also. The CAMC charges as quoted in the financial bid at (B) of Part -II shall be payable on yearly basis after CAMC starts.

e. Prices shall be quoted in Indian Rupees.

f The rates quoted shall be valid for a period of one year from the date of opening of the financial bid of the tender.

g. The successful bidder is responsible for Packing, Forwarding, Freight & Insurance, Delivery at site and Installation, Commissioning and Training of THE BUREAU personnel (at least 2 personnel per instrument) in a satisfactory manner.

h. The Agency Commission to the Indian Clearing Agent will not be paid by the THE BUREAU and the same would be borne by the supplier.

i. The bidder is expected to work out his rates keeping in view the technical specifications as per Annexure-3 of Technical bid & conditions mentioned clearly and arrive at the amount to be quoted. The bidder shall be deemed to have satisfied itself before bidding as to the correctness and sufficiency of its bid and of the rates and prices quoted in the attached form for financial bid (Part-II), which rates and prices shall, except as otherwise provided, cover all its obligations under the Tender and all matters and things necessary for proper fulfilling his obligations under the Tender. The financial bid shall clearly indicate all taxes including local taxes, etc. to be paid by the bidder for the goods to be supplied at specified places and any claim for extra payment on any such account shall not be entertained.

j. The price quoted by the bidder shall be applicable for the repeat order(s), if repeat orders are placed with the supplier. However, THE BUREAU reserves the right, not to place the repeat order.

xvii. Execution of Agreement: It shall be incumbent on the successful bidder to execute the Agreement, as per Annexure 6, on a non-judicial stamp paper of appropriate value to be purchased in New Delhi before commencement of the supply of the laboratory equipment and pay stamp duty, legal and statutory charges for the Agreement, if any, as applicable on the date of the execution. Please read carefully, the conditions of contract as given in **Part-III: Conditions of contract.**

xviii. The bidder can submit his technical and financial bid along with applicable EMD for one or more number of equipments separately. The evaluation of technical and financial bid for each equipment will be carried out separately and L1 bidder will be determined for each equipment separately. The selection process for one equipment will not have any effect on other equipments. THE BUREAU reserves the right to proceed with one or more equipments as mentioned in the tender document while cancelling the purchase of one or more number of equipments.

xix. In case, more than one bidder becomes L1 jointly and there are more than one equipment of that kind to be supplied, the purchase order will be split in the successful bidders.

xx. Customs Duty Drawback-If any of the contracted stores are, on exportation, entitled to a drawback of customs duty in respect of themselves or the raw materials involved in their manufacture, the price to be charged by the Seller should be the net price after the deduction of all the entitled custom duty drawbacks.

xxi. Country of Origin: All goods and services to be supplied and provided under the contract shall have the origin in India or in the countries with which the Government of India has trade relations. The word "origin" incorporated in this clause means the place from where the goods are mined, cultivated, grown, manufactured, produced or processed or from where the services are arranged.

xxii. The insurance cover shall be obtained by the Supplier in its own name and not in the name of the Purchaser or its Consignee.

xxiii. **Software and Software Upgrades :**

The Supplier shall agree to provide copies of as-built software in executable code that are installed in the system at all levels. It shall also state the Hardware that needs to be in place for implementation ensuring that the Equipment/ Instrument un-availability is minimal. The Supplier shall also comply and guarantee software upgrades for the service life of the Equipment/ Instrument. Taking into account the operational requirements of the Purchaser, there may be a need to customize some portion of the software. Supplier should agree for such customization, which is expected to be limited, at no extra cost. Any software upgrades developed by the Supplier during the warranty and the post warranty period should be made available to the Purchaser at no extra cost and should be delivered and installed in a prompt and efficient manner. The Supplier should install and train the operator with software upgrades. The software provided should be able.

Force Majeure: Force Majeure (FM) means extraordinary events or circumstance beyond human control such as an event described as an act of God (like a natural calamity) or events such as a war, Strike, riots, crimes (but not including negligence or wrong-doing, predictable/ Seasonal rain and any other events specifically excluded in the clause). An FM clause in the contract frees both parties from contractual liability or obligation when prevented by such events from fulfilling their obligations under the contract. An FM clause does not excuse a party's non-performance entirely, but only suspends it for the duration of the FM. The supplier has to give notice of FM as soon as it occurs and it cannot be claimed ex-post facto. There may be a FM situation affecting Bureau of Indian Standards only. In such a situation, the Bureau of Indian Standards is to communicate with the supplier along similar lines as above for further necessary action. If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of FM for a period exceeding 90 (Ninety) days, either party may at its option terminate the contract without any financial repercussion on either side. Notwithstanding the punitive provisions contained in the contract for delay or breach of contract, the supplier would not be liable for imposition of any such sanction so long as the delay and/ or failure of the supplier in fulfilling its obligations under the contract is the result of an event covered in the FM clause.

- xxiv. **Preference to 'Make in India':** The process will also be subjected to the provisions of 'Public Procurement (Preference to Make in India) Order 2017 and the same will be followed. The bidder, however, shall meet the requirements of technical bid for availing preference under the make in India order.
- xxv. **Integrity Pact:** For successful supplier, it is essential to sign the integrity pact with the THE BUREAU, given at annexure-7. The pact essentially envisages an agreement between the prospective suppliers/ bidders and the buyer, committing persons/ officials on both sides, not to resort to any corrupt practices in any aspect/ stage of the contract. Only those suppliers/ bidder, who commit themselves to such a pact with the buyer, would be considered competent to participate in the bidding process. In other words, entering into this pact is a preliminary qualification.

C: STANDARD FORMS TO BE UTILIZED BY THE BUREAU AND THE BIDDERS.

- a. Annexure-1 Details to be furnished by Bidders
 Details to be furnished by the bidders
- b. Annexure-2 Statement regarding the deviations from the clauses of

 the tender document
- c. Annexure-3 Technical Specification
- d. Annexure-4 Technical compliance statement by the bidder
- e. Annexure-5 Declaration regarding blacklisting or litigation

Annexure-1

Details to be furnished by the bidders

- i. Name of the bidder:
- 2 Details Registration/Import licence if any with validity date:
 - i. Address for Communication:
 - i. Telephone No.:
Landline:..... Mobile:.....
 - i. E-mail:
 - i. Manufacturers Name and Address (if different);
7. Bank Account Details:
Name of the bank:..... A/c no.
IFSC code Type of A/c.....
- i. Name and designation of the person authorized to sign the documents:
7. PAN, TIN Number of the bidder:
- 8 GST No.:
- i. Details of EMD
Draft Number :..... Date:
Name of the Bank: Payable at:

This is to certify that the above facts are true to the best of my/our knowledge and belief. I/We have read and understood the terms and conditions of the Tender document.

I/We give an undertaking to abide by these terms and conditions of the tender document.

Name and Signature of the bidder

Seal of the Bidder

Date

Annexure-2

**Statement regarding the deviations from the clauses
of the tender document:**

S No.	Tender clause no.	Details of deviation	Justification, if any

Annexure-3

List of equipment

Sl. No	Equipment	Item No	No. of Equipment Required	Estimated Total Cost Of equipment	EMD Amount (Lakhs)	BIS Lab where supply is to be made (*)	Technical Specifications
1.	-Fast Transient /Bust Generator -Conducted Susceptibility -Electrostatic Discharge -Damp Oscillatory Wave generator -CE /RE /Radiated Immunity/ Disturbance Power measurement Surge/Impulse Tester	C1	1	627 lakhs	Rs. 12.54 lakhs	CL	Annexure C1
2.	Programmable Vibration Test Apparatus. Programmable shock Test Sep Up	C2	1	33 lakhs	Rs. 0.66 lakhs	CL	Annexure C2
3.	Making and breaking capacity & Normal Operation test setup up as per IS 1293	C3	2	100 lakhs	Rs. 2 Lakhs	CL, WROL	Annexure C3
4.	Making and breaking capacity and normal operation test set up as per IS 3854	C4	2	80 lakhs	Rs. 1.6 Lakhs	CL, WROL,	Annexure C4

5.	Tensile testing machine(horizontal) for ultimate breaking	C5	1	40 lakhs	Rs. 0.8 Lakhs	NROL	Annexure C5
6.	Data acquisition system for storage water heaters	C6	2	122 lakhs	Rs. 2.44 Lakhs	CL, NROL	Annexure C6
7.	Computerized TTM	C7	1	50 lakhs	Rs. 1 Lakh	NROL	Annexure C7
8.	Profile projector with data acquisition system	C8	3	150 lakhs	Rs. 3 lakhs	NROL, CL, SROL	Annexure C8
9.	HV tester(up to 700 KV and RIV tester)	C9	1	60 lakhs	Rs. 1.2 Lakhs	NROL	Annexure C9
10.	Data logger with microprocessor control for electric iron	C10	2	38 lakhs	Rs. 0.76 lakhs	CL, NROL	Annexure C10
11.	Skewing machines	C11	2	40 lakhs	Rs. 0.8 Lakhs	CL, NROL	Annexure C11
12.	Power analyser single phase	C12	14	42 lakhs	Rs. 0.84 Lakhs	9 no. at CL, 5 no. at NROL	Annexure C12
13.	Impulse test (0 to 5KV, 0-15 KV)	C13	2	40 lakhs	Rs. 0.8 Lakhs	2 no. at CL	Annexure C13

Annexure 3A

Technical Specification of test equipment for

S.No.	Components/ Fixtures/ Accessories/ Spare parts/ CRMs etc.	Requirement
(1)	(2)	(3)
1.		
2		
3		
4		

Annexure-4

**Technical compliance statement by the bidder for Test equipment for
.....**

Sl.No.	Technical Specification (Annexure 3)	Quoted details by the bidder	Deviation from col (2), if any	Remarks
(1)	(2)	(3)	(4)	(5)

Note:

**Do not mention “We Comply or Complied with or yes” in your response at col (3),
Quote the actual specifications of equipment to be supplied in col (3).
Deviations, if any, from col (2) be quoted in col (4).**

Annexure-4 A

Declaration regarding black-listing or litigations

I/We hereby declare that our firm/ agency is not black-listed by any Ministry or Department of Central Government/ State Government or PSU or other bodies under the Central Government/ State Government. I/We further declare that no criminal case is registered or pending against the firm/ company or its owner/ partners/ directors anywhere in India.

Dated theday of2020.

Signature of Bidder _____

Name & Address of Bidder _____

Seal of the Firm/ Company” _____

PART-II: FINANCIAL BID

- i) The financial bid will be submitted in the following form which can be downloaded from CPPP website. Bidders are advised to quote their offer/ rates in therelevant column and and upload the same in the financial/ commercial bid.
- ii) Financial bid shall be evaluated on the unit price quoted + custome duty + surcharge/ cess on custom duty+ CAMC charges upto six years of operation of equipment+ other taxes including or IGST and unit price quoted + CAMC charges upto six years of operation of equipment + other taxes including GST. The payment will be made for unit price of the equipment (which will cover the warranty period also), custome duty with surcharge/ cess on custom duty (if applicable) and IGST / GST. The CAMC charges as quoted in the financial bid at (B) of Part -II shall be payable on yearly basis after CAMC starts.
- iii) The format for submitting **Financial Bid** is given below:

(A) UNIT PRICE

S No.	Item description and item code	Component As per Technical Specification (Annexure –3)	Unit Price (in INR) Exclusive of all Taxes at designated Delivery Point	Price in words	Surcharge on Custom Duty, to be entered by the bidder	IGST (for imported item) in % of unit price or GST (for indogenous item) in % of unit price to be entered by the bidder	Total Unit Price including of taxes (in INR [(iv)+(v)+(vi)+(vii)])	Period of Warranty (1/2/3 years)
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
1.								
2								
3								

(i) Comprehensive Annual Maintenance Contract (CAMC) Charges (in INR):

S No.	Component	2 nd year	3 rd year	4 th year	5 th year	6 th year
1	CAMC *					
2.	Applicable Taxes					
3.	Total					

Total Price of Bid (A+B) (Inclusive of taxes) (In Words)

.....

.....

Signature of bidder
Name & Address
Date

Note:

- i) *Discount or any other offers affecting the package price must be mentioned here only. Discount or any other offers affecting the package price mentioned at any other place of the bid will not be considered.*
- ii) .
- iii) * *CAMC for 2nd and 3rd year to be quoted if the warranty period is for one year*

PART-III: CONDITIONS OF CONTRACT

a) CONTRACTOR:

‘Contractor’ shall mean the individual or firm or company whether incorporated or not, has qualified in bidding process and undertaking the Contract and shall include legal representatives of such individual or persons composing such firm or unincorporated company or successors of such firm or company as the case may be and permitted assigns of such individual or firm or company.

b) PARTIES TO THE CONTRACT:

The parties to the contract shall be the Supplier/ Contractor (whose offer is accepted by THE BUREAU) and THE BUREAU.

The person signing the offer or any other document forming the part of Contract on behalf of other persons of a firm shall be deemed to have due authority to bind such (person/s) or the firm as the case may be, in all matters pertaining to the Contract. If it is found that the person concerned has no such authority, THE BUREAU may, without prejudice to any other Civil/Criminal remedies, terminate the Contract and hold the signatory and / or the firm liable for all costs and damages for such termination.

c) PERFORMANCE SECURITY

i) based in India

ii) For Indian Supplier: The successful bidder shall submit, within 15 days of the placement of the order, an unconditional Performance Bank Guarantee from a Nationalized/ scheduled Bank for 10% of the order value, as per format indicated in Annexure-5. Performance Security will remain **valid for a period of sixty days beyond** the date of completion of all contractual obligations of the supplier including warranty obligations.

Any amount due/recoverable from the Supplier/ Contractor under the terms of this Contract or any other account, may be deducted from the amount of Performance Security. In case, the amount of Performance Security is reduced by reason of any such deduction, the Supplier/ Contractor shall, within fifteen (15) days of receipt of notice of demand from THE BUREAU, make good the deficit. In case, security is deposited by way of bank guarantee by the Supplier/ Contractor, then any penalty for damages liquidated or un-liquidated or for any breach or failure or determination of Contract, not previously paid to THE BUREAU, shall immediately on demand be paid by the said bankers to THE BUREAU under and in terms of the said guarantee.

If during the term of this Contract, the Contractor is in default of the due and faithful performance of its obligations under this Contract, or any other outstanding dues by the way of fines, penalties and recovery of any other amounts due from the Contractor, THE BUREAU shall, without prejudice to its other rights and remedies hereunder or at the Applicable Law, be entitled to call in, retain and appropriate the Performance Security.

Nothing herein mentioned shall debar THE BUREAU from recovering from Contractor by a suit or any other means any such losses, damages, costs, charges and expenses as aforesaid, in case the same shall exceed the amount of the Performance Security.

The Performance Security shall be retained until all disputes, if any, between both the parties have been settled to the entire satisfaction of THE BUREAU. The Performance Security shall be returned to the Contractor by THE BUREAU within sixty days following the Completion Date or Termination Date of this Contract provided that there are no outstanding claims of THE BUREAU on the Contractor.

d) CONTRACT DOCUMENTS:

The several Contract documents forming the Contract shall be taken as mutually explained to one party by the other, but in case of ambiguities or discrepancies the same shall be explained and harmonized by the Authorized Officer of THE BUREAU who shall issue to the Contractor necessary instruction thereon and in such event unless otherwise provided in the Contract the priority of the documents forming the contract shall be as follows:

- i) The Agreement
- ii) The terms and conditions of the Contract
- iii) Tender Notice and Tender Document
- iv) Purchase order or Letter of Acceptance
- v) Any other correspondence exchanged between the parties in connection with the contract.
- vi) The Contractor's Offer

5. QUANTITY OF GOODS or PLACE OF SUPPLY or PERSONS WHO CAN PLACE ORDERS

The **Testing Equipments** shall be supplied at various THE BUREAU labs, as detailed in Annexure 3, at the address(s) given below:

- a) CL- Central Laboratory,
Bureau of Indian Standards,
Plot no. 20/9, Site IV, Sahibabad Industrial Area,
Sahibabad- 201010, Distt. Ghaziabad (U.P.)
- b) EROL- Eastern Regional Office Laboratory,
P-230, C.I.T. Scheme VII M,
Block-W, Kankurgachi,
Kolkata-700054.
- c) NROL- Northern Regional Office Laboratory
B-69, Phase VII, SAS Nagar
Industrial Focal Point, Mohali-160051
- d) WROL- Western Regional Office Laboratory
Manakalaya
Bureau of Indian Standards E-9, M.I.D.C.,
Behind Marol Telephone Exchange,
Andheri (East), Mumbai 400 093
- e) SROL- Southern Regional Office Laboratory
C.I.T Campus, IV Cross Road
Chennai-600 113
- f) BNBOL- Bangalore Branch Laboratory
Peenya Industrial Area,
Ist Stage, Bangalore-Tumkur Road,
Bangalore-560 058
- g) PBOL- Patna Branch Laboratory
Pataliputra Industrial Estate, Patna-800 013

Goods for each THE BUREAU Laboratory can be ordered by Head of that THE BUREAU Laboratory only, who is authorized by THE BUREAU to place orders against this Contract. Goods can be repeat-ordered by Head of other THE BUREAU Laboratories, who are authorized by THE BUREAU to place repeat orders against this Contract. However, the Authorized Officer reserves right not to place repeat orders.

Immediately on receipt of the purchase order (leats within one week of receipt of the purchase order), the contractor supplier shall intimate the concerned laboratory about the consumables or other additional articles required for correct functioning of the instrumentor equipment, so that timely installation and commissioning can be done, and no time is lost in completion of such formalities after receipt of the instrumentor equipment.

6 TRANSPORTATION:

The supplier is required to ensure having an import license for the equipment quoted where applicable as per GOI guidelines. The Goods shall be delivered at the destinations specified in Clause 8 below and shall include loading, unloading and transportation. **The Goods damaged during transportation shall have to be replaced at Contractor's cost.**

7. QUALITY OF GOODS:

All Goods to be supplied by the Contractor shall be in conformity with the Technical specifications as laid down in Annexure-3 of this bid.

8 CONSIGNMENT DESTINATION:

For the destination mentioned in the purchase order:

- h) (Head) Central Laboratory,
Bureau of Indian Standards,
Plot no. 20/9, Site IV, Sahibabad Industrial Area,
Sahibabad- 201010, Distt. Ghaziabad (U.P.)
- i) (Head) Eastern Regional Office Laboratory,
P-230, C.I.T. Scheme VII M,
Block-W, Kankurgachi,
Kolkata-700054.
- j) (Head) Northern Regional Office Laboratory
B-69, Phase VII, SAS Nagar
Industrial Focal Point, Mohali-160051
- k) (Head) Western Regional Office Laboratory
Manakalaya
Bureau of Indian Standards E-9, M.I.D.C.,
Behind Marol Telephone Exchange.
Andheri (East), Mumbai 400 093
- l) (Head) Southern Regional Office Laboratory
C.I.T Campus, IV Cross Road
Chennai-600 113
- m) (Head) Bangalore Branch Laboratory

Peenya Industrial Area,
1st Stage, Bangalore-Tumkur Road,
Bangalore-560 058

- n) (Head) Patna Branch Laboratory
Pataliputra Industrial Estate, Patna-800 013

- 9 INSTALLATION AND COMMISSIONING:** Installation and commissioning of the equipment will be done by the supplier **FREE OF CHARGE** at the consignee's premises. The supplier has to arrange for labour and others.

10 WARRANTY

10.1 The equipment along with all critical components or accessories is to be guaranteed for trouble free performance for a **minimum period of three years after installation**. If the warranty period is less than three years, the Comprehensive Annual Maintenance Contract Charges for the remaining period (three years – the actual warranty period quoted) shall be added to the cost of equipment for the purpose of evaluation of the financial bid.

10.2 The defects, if any, during the warranty period shall be rectified free of charge by arranging free replacement at site, wherever necessary. **The last six months of the warranty period shall be free of complaints, failing which the warranty period will get extended by another six months.**

11. FREE TRAINING

Training, free of cost will be provided by the supplier to **at least two THE BUREAU officials** for testing, routine maintenance and smooth running of the equipment, after installation and commissioning at the location.

12. INSPECTION OR PRE-DELIVERY INSPECTION

THE BUREAU reserves the right to carry out predelivery inspection or inspection at the time of delivery. The obligation to supply goods conforming to specification and its successful installation and commissioning shall be on the supplier.

The Authorized Officer shall be entitled to inspect and examine goods intended to be supplied to THE BUREAU either at the factory, godown or at any place(s) where these are lying or from which these are being obtained and the supplier shall provide such facilities as may be required for such inspection and examination. If goods are not found as per specified requirements, purchase order will be revoked and thereafter THE BUREAU shall be free to purchase the goods from the open market. THE BUREAU will not make any payment for any such non-conforming goods.

All goods shall be inspected by THE BUREAU preferably in the presence of supplier or his authorized representative, when the packages are opened in THE BUREAU Labs on delivery and prior to installation. The decision of THE BUREAU shall be binding. Rejected items or goods or stores shall be removed by the supplier at his own cost and risk, within 30 days of receipt of notice for the removal of such goods, and no liability, whatsoever, on THE BUREAU shall be attached for the rejected or disapproved goods or items or stores. In case of default on the part of the supplier in removing the rejected goods, the Authorized Officer of THE BUREAU shall be at liberty to have them removed by other means. The Authorized Officer shall have full powers to procure other goods through other means for substituting the rejected goods. All costs, which may be incurred upon such removal and/or substitution, shall be borne by the supplier.

The Authorized Officer shall have full powers to decide about removal of any or all of the goods supplied which are not in accordance with the contract specifications or which do not conform to the samples, if any, approved by THE BUREAU.

13. TIME FOR SUPPLY, INSTALLATION AND COMMISSIONING.

13.1 The time allowed for delivery, successful installation and commissioning shall be 8 weeks from the date of purchase order (PO). 13.2 **Liquidated Damages For Delayed Supply Installation and Commissioning:** Time and date of **Supply Installation and Commissioning of equipments** as stipulated in the order shall be deemed to be the essence of the contract. In case of delay in execution of the order beyond the date of delivery as stipulated in the order or any extensions sanctioned by the Authorized Officer, THE BUREAU may at its option either:-

13.3.1 Accept delayed delivery at prices reduced by a sum equivalent to one percent (1%) of the value of any goods not delivered for every week of delay or part thereof limited to a maximum of 10% of the total order value.

13.3.2 Cancel the order in part or full and purchase such cancelled quantities from elsewhere on account and at the risk of the bidder, without prejudice to its rights in respect of goods delivered.

14. RISK PURCHASE

In case the Contractor fails to deliver the quantity as stipulated in the delivery schedule, THE BUREAU reserves the right to procure the same or similar Goods from alternate sources at the risk, cost and responsibility of the Contractor.

15. IMPOSITION OF FINES or PENALTY

Subsequent to an order being placed against the quotation received in response to this enquiry if it is found that the goods supplied are not of the right quality or not according to specifications required by THE BUREAU or received in damaged or broken condition or otherwise not satisfactory owing to any reason of which THE BUREAU shall be the sole judge, THE BUREAU shall be entitled to reject the goods, cancel the contract and buy its requirements in the open market and recover the loss, if any, from supplier reserving to itself the right to forfeit the security deposit, if any, furnished by the supplier against the contract. The supplier will make his own arrangements to remove the rejected goods within 30 days of instruction to do so. Thereafter, they will lie entirely at the suppliers risk and responsibilities and storage charges along with any other charges applicable will be recoverable from the supplier.

16. TERMS OF PAYMENT:

A) The Terms of Payment are: The successful bidder shall furnish with in 15 days of placement of the order a Performance Security, from a Nationalized or Scheduled Bank for 10% of the order value. **Performance Security should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the supplier including warranty obligations.** On The Performance Security shall be furnished in the bank account of BUREAU of INDIAN STANDARDS (payable at.....) or Performance Bank Guarantee as per format indicated in Annexure-5.

B)

C) **Payment for Indian Suppliers:** 100% payment shall be made against delivery, installation, commissioning, training at site and on acceptance as per Purchase Order on receipt of invoice, delivery challan. note, certificate of acceptance by the Bureau and other relevant documents and provided, that the

Performance Security for 10% of the order value, within 15 days of placement of the order is given to THE BUREAU.

17. TAXES

Taxes will be deducted by THE BUREAU wherever applicable.

18. INDEMNITY:

The Contractor shall indemnify and keep indemnified THE BUREAU against all losses and claims for injuries or damage to any person or any property whatsoever which may arise out of or in consequence of the Contract and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto under the provisions of various labour laws as amended from time to time.

The Contractor shall indemnify, protect and save THE BUREAU against all claims, losses, costs damages, expenses, action suits and other proceeding, resulting from infringement of any patent, trademarks, copyrights etc. or such other statutory infringements.

19. CORRUPT OR FRAUDULENT PRACTICES

THE BUREAU requires that the Bidders under this Bid observe the highest standards of ethics during the procurement and execution of such Contracts.

THE BUREAU will reject a proposal for award if it determines that the Contractor has engaged in corrupt or fraudulent practices before, during or after the period of contract; THE BUREAU will hold the Contractor ineligible to be awarded a contract, either indefinitely or for a period of 24 months from the date of declaring the contractor ineligible if it at any time determines that the Contractor has engaged in corrupt and fraudulent practices in competing for, or in executing the Contract.

20. THE BUREAU MAY TERMINATE THE ORDER, IF

- (a) The Contractor becomes insolvent;
- (b) A receiver, administrator, trustee or liquidator is appointed over a substantial part of its assets;
- I Any act is done or event occurs with respect to the Contractor or its assets, which, under any applicable law has substantially similar effect to any of the foregoing acts or events;
- (c) Serious discrepancy in the quality of the Goods is noticed during the inspection.
- I Delays in delivery beyond the scheduled date of delivery as stipulated in the order or any extensions sanctioned.
- (d) Delays in installation and commissioning beyond the period stipulated or any extensions sanctioned.
- (e) If the Contractor is in breach of any law or statute governing the supply of Goods or Services;
- (f) The Contractor, in the judgement of the THE BUREAU, has engaged in corrupt or fraudulent practices in competing for or in carrying out the Services under the Contract.
- (g) The Contractor enters into voluntary or involuntary bankruptcy or liquidation.

It shall also be lawful for THE BUREAU to terminate the Agreement at any time without assigning any reason and without being liable for loss or damage which the Contractor may suffer by reason of such termination, by giving the Contractor 15 days notice in writing by THE BUREAU for such termination. Any such termination shall be without prejudice to any other right of the THE BUREAU under the Contract.

If the Contractor decides to terminate the Contract before the end of contract period, the Contractor has to give an advance intimation of at least 60 days. If the Contractor terminates the agreement without prior notice of 60 days, then the entire security deposit will be forfeited.

21. PUBLICITY

Any publicity by the Contractor in which the name of THE BUREAU is to be used, should be done only with the explicit written permission of THE BUREAU.

22. JURISDICTION

No suit or other proceedings relating to performance or breach of Contract shall be filed or taken by the Contractor in any Court of law except the competent Courts having jurisdiction in New Delhi, where headquarter of THE BUREAU is located.

23. DISPUTE RESOLUTION - In case of any dispute that cannot be resolved amicably, the same shall be referred to the sole Arbitrator appointed by Director General, Bureau of Indian Standards, whose decision shall be final and binding upon both the Bureau as well as the Applicant. The provisions of the Arbitration and Conciliation Act, 1996, as amended from time to time, shall be applicable

24. MODE OF SERVING NOTICE

Communications between Parties which are referred to in the Contract are effective only when in writing. A notice shall be effective only when it is delivered. All notices shall be issued by the authorized officer of THE BUREAU unless otherwise provided in the Contract. In case, the notice is sent by registered post or speed post to the last known place or abode or business of the Contractor, it shall be deemed to have been served on the date when in the ordinary course of post these would have been served on or delivered to it.

25. GOVERNING LANGUAGE

Governing language for the entire contract and communication thereof shall be English and or or Hindi only. In case of any dispute, the English version shall prevail.

26. LAW:

The contract shall be governed and interpreted under Indian Laws.

27. STAMP DUTY

The Contractor shall bear and pay any stamp duty and registration charges if any, in respect of the agreement to be signed.

28. AUTHORIZED OFFICER:

The Authorized Officer on behalf of THE BUREAU shall be the Head(s), of the THE BUREAU Laboratory giving the purchase order. In case of repeat orders by any other THE BUREAU Laboratory, the Head of concerned THE BUREAU Laboratory placing the repeat order shall be deemed to be the Authorized Officer in respect of the said order.

29. STANDARD FORMS TO BE UTILIZED BY THE THE BUREAU AND THE CONTRACTOR:

Annexure-5	BANK GUARANTEE BOND
Annexure-6	CONTRACT AGREEMENT FORM

30. CONFIDENTIALITY

The bidder shall not divulge or disclose proprietary knowledge obtained while delivering Goods and services under this Contract to any person, without the prior written consent of the Bureau.

ANNEXURE-5
FORM OF BANK GUARANTEE BOND

1. In consideration of Bureau of Indian Standards (hereinafter called 'The THE BUREAU') having agreed to exempt _____

(hereinafter called "the said Contractor(s)") from the demand under the terms and conditions of an Agreement dated _____ made between _____ and _____ for _____

_____ (hereinafter called "the said Agreement of **Performance Security** for the due fulfillment by the said Contractor (s) of the terms and conditions contained in the said Agreement, on production of a Bank Guarantee for Rs. _____ (Rupees _____ -

_____ Only)
we, _____ {hereinafter referred to as (indicate the name of the bank) 'the bank'} at the request of _____

[(Contractor (s)] do hereby undertake to pay THE BUREAU an amount not exceeding Rs. _____ against any loss or demand caused to or suffered or would be caused to or suffered by the THE BUREAU by reason of any breach by the said Contractor (s) of any of the terms or conditions contained in the said Agreement.

2. We _____ do hereby indicate the name of the bank) undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the THE BUREAU of Indian Standards stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by THE BUREAU by reason of breach by the said Contractor (s) of any of the terms or conditions contained in the said Agreement or by reasons of the Contractor (s) failure to perform the said Agreement. 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.

3. We, undertake to pay to THE BUREAU any money so demanded notwithstanding any dispute or disputes raised by the Contractor (s) or Supplier (s) in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor (s) or Supplier (s) shall have no claim against us for making such payment.

4. We, _____ further agree that the Guarantee

(indicate the name of Bank)

herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of THE BUREAU under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till the authorized officer of the THE BUREAU (.....Laboratory) certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said

Contractor (s) and accordingly of the said Agreement have been fully and properly carried out by the said Contractor (s) and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before thewe shall be discharged from all liability under this guarantee thereafter.

5. Wefurther agree with the THE BUREAU that

(indicate the name of Bank)

THE BUREAU 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 Agreement or to extend time to performance by the said Contractor (s) from time to time or to postpone for any time or from time to time any of the powers exercisable by THE BUREAU against the said Contractor (s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor (s) or for any forbearance, act or commission on the part of THE BUREAU or any indulgence by THE BUREAU to the said Contractor (s) 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.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor (s) or Supplier (s).

7. We, lastly undertake not to revoke this

(Indicate the name of bank)

guarantee during its currency except with the previous consent of THE BUREAU in writing.

Dated the day of..... 20

For

(indicate the name of bank)

Annexure-6

CONTRACT FORM or AGREEMENT

THIS AGREEMENT made on this day of between Mors_____ (Name and Address of the Contractor) (hereinafter referred to as the CONTRACTOR, which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to mean and include its successors and assigns) of the ONE PART and the THE BUREAU of Indian Standards, 9-Bhadurshah Zafar Marg, New Delhi-110002 (hereinafter referred to as the THE BUREAU, which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to mean and include its successors and assigns) of the OTHER PART.

WHEREAS the Contractor is a manufacturorsor millsor authorized distributorsor dealers (Details of business)

AND WHEREAS THE BUREAU is a body corporate, enacted by Parliament . THE BUREAU intends to purchase _____, therefore, invited bids through Open Tender enquiry dated _____

WHEREAS the Contractor (successful bidder) submitted his bid vide _____ in accordance with the bid document and was selected as 'successful bidder' pursuant to the bidding process and negotiation on contract prices, awarded the 'Letter of Acceptance' (LoA) No. _____ to the Contractor on _____.

BOTH THE PARTIES HERETO agree to abide the terms and conditions as mentioned in:

“Part-III (Conditions of Contract) of Tender Document”.

(Signature of Contractoror
Authorized Representative)

Name _____

Designation_____

Address_____

Seal of the FirmorCompany

Witness:

(Signature)

Name of Witness_____

Address_____

(Signature of Authorized Officer of THE BUREAU)

Name _____

Designation_____

Address_____

Seal of THE BUREAU

Witness:

(Signature)

Name of Witness_____

Address_____

INTEGRITY PACT GUIDELINES

"The Bureau" and "The supplier" hereby agree not to indulge in any corrupt practices including without limitation any activity or action to influence the transaction on any aspect of contract and commit to take all measures necessary to prevent corruption maintaining complete transparency and fairness in all activities related to the Bureau. Users agree to follow and adhere with the Integrity Pact guidelines as under:

Preamble

The Bureau values full compliance with all relevant laws of the land, regulations, economic use of resources and of fairness or transparency in its relations with its Contractor (s).

Section 1 Commitments of the Bureau.

1. The Bureau commits itself to take all measures necessary to prevent corruption and to observe the following principles:

- (a) No employee of the Bureau, personally or through family members, will in connection with the bid for, or the execution of a person, any material or immaterial benefit which the person is not legally entitled to.
- (b) The Bureau will during the bid process treat all bidders with equity and reason. The Bureau will in particular, before and during the bid process, provide to all Contractor(s) the same information and will not provide to any supplier(s) confidential or additional information through which the supplier(s) could obtain an advantage in relation to the process or the contract execution.
- (c) The Bureau will exclude from the process all known prejudiced persons.

2. If the Bureau obtains information on the conduct of any of its employees which is a criminal offence under the IPC or PC Act, or if there be a substantive suspicion in this regard, the Bureau will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section 2 Commitments of the supplier(s)

1. The supplier(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the bid process and during the contract execution.

- (a) The supplier(s) will not, directly or through any other persons or firm, offer promise or give to any of the Bureau's employees involved in the bid process or the execution of the contract or to any third person any material or other benefit which he or she is not legally entitled to, in order to obtain in exchange any advantage before or during the execution of the contract.
- (b) The supplier(s) will not enter with other Bidders into any 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.
- (c) The supplier(s) will not commit any offence under the relevant IPC or PC Act; further the supplier(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the the Bureau as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

(d) The supplier(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2. The supplier(s) (s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 Disqualification from bid process and exclusion from future contracts

1. If the supplier(s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility in question, the Bureau is entitled to disqualify the supplier(s) from the bid process or take action as per the related provisions of the RFP document.

Section 4 Compensation for Damages

1. If the Bureau has disqualified the supplier(s) from the bid process prior to the award according to Section 3, the Bureau is entitled to demand and recover the damages equivalent to Earnest Money Deposit.

2. If the Bureau has terminated the contract according to Section 3, or if the Bureau is entitled to terminate the contract according to Section 3, the Bureau shall be entitled to demand and recover from the supplier damages of the amount equivalent to Performance Bank Guarantee.

Section 5 Previous Transgression

1. The supplier declares that no previous transgressions occurred in the last three years with any Government Organization that could justify his exclusion from the bid process.

2. If the supplier makes incorrect statement on this subject, he can be disqualified from the bid process and action can be taken as per the related provisions of the RFP document.

BUYER	BIDDERor SUPPLIER
BUREAU OF INDIAN STANDARDS,	SIGNATURE & SEAL
NEW DELHI	

Annexure 8

TENDER ACCEPTANCE LETTER
(To be given on Company Letter Head)

Date:

To,

Sub: Acceptance of Terms & Conditions of Tender.

Tender Reference No: _____

Name of Tender or Work: -

Dear Sir,

1. I or We have downloaded or obtained the tender document(s) for the above mentioned 'Tender or Work' from the web site(s) namely:

As per your advertisement, given in the above mentioned website(s).

2. I or We hereby certify that I or we have read the entire terms and conditions of the tender documents from Page No. _____ to _____ (including all documents like annexure(s), schedule(s), etc.), which form part of the contract agreement and I or we shall abide hereby by the terms or conditions or clauses contained therein.

3. The corrigendum(s) issued from time to time by your department or organization too have also been taken into consideration, while submitting this acceptance letter.

4. I or We hereby unconditionally accept the tender conditions of above mentioned tender document(s) or corrigendum(s) in its totality or entirety.

5. I or We do hereby declare that our Firm has not been blacklisted or debarred by any Govt. Department or Public sector undertaking.

6. I or We certify that all information furnished by the our Firm is true & correct and in the event that the information is found to be incorrect or untrue or found violated, then your department or organization shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.

Yours Faithfully,

(Signature of the Bidder, with Official Seal)

Annexure-C1

Sl.No.	Equipment Name	Specifications
1	Surge/Impulse Tester	<p>Standard: IEC61000-4-5</p> <p>Open-circuit voltage: 1.2/50 μs ,0.2 - \pm15kV</p> <p>Short-circuit current: 8/20 μs ,0.1 - \pm7.5kA</p> <p>Surge polarity: Positive/Negative/Asynchronism</p> <p>Phase: Synchronism 0° - 360 ° selectable, Asynchronism</p> <p>Output Complex impedance: 2 Ω, 12 Ω</p> <p>Coupling path: Three phase three lines, max. 32A</p> <p>Surge count: 1 - 9999</p> <p>Surge interval: 10 – 9999 s</p> <p>ISO 17025 accredited calibration certificate</p>
2	CE / RE / Radiated Immunity/ Disturbance Power Measurement	<p>Chamber : Anechoic Chamber (4 m height scanning should be possible)</p> <p>Field power Amplifier : IEC 61000-4-3 test system 80 MHz-6 GHz</p> <p>10 V/m</p> <p>30 V/m for 1 m test distance</p> <p>Chamber Calibration Measurement Field Uniformity Area 1.5m x 1.5m (16 points), 0.5m x 0.5m (4 points)</p> <p>0.8m above ground level, Uniformity: 0db to 6db at 75% of all points</p> <p>Receiver: 1m to 3m test distance EMI test receiver 9 kHz to 6 GHz (ISO 17025 accredited calibration certificate)</p> <p>LISN: Line V-Network, 9kHz to 30 MHz, 32A continuous current, for disturb. voltage measurements with calibration</p> <p>RF Antenna - 0.8 to 6 GHz (Log Periodic Antenna & Biconical log-periodic antenna)</p> <p>Disturbance Power Measurement : Coupling Clamp (As per IS 6842)</p>
3	Electric Fast Transient Burst	<p>EFT/Burst Generator as per IEC (EN) 61000-4-4</p> <p>Output Voltage: 0.2 - \pm 5KV</p> <p>Coupling Path CDN: Built-in,</p> <p>Three phase five lines, AC&DC Max 32 A</p> <p>(including ISO 17025 Accredited Calibration)</p> <p>Capacitive Clamp as per IEC (EN) 61000-4-4</p> <p>Additional CDN for current measurement (6 lines) up to 100 A</p>
4	Conducted Susceptibility	<p>Conducted Immunity Test System (IEC 61000-4-6)</p> <p>Frequency Range: 150 kHz – 80 MHz</p> <p>Level: 10 Vrms</p> <p>including -</p> <p>Spectrum Analyzer Module 9 KHz-230 MHz</p> <p>Signal Generator Module 9 KHz-230 MHz</p> <p>Power Amplifier Module 150 kHz- 80 MHz / 100W</p> <p>COSAT or any other test automation software</p> <p>RF CDN M5 power line 25 amp</p> <p>RF CDN USB A</p> <p>RF CDN USB B</p> <p>BCI Clamp and Monitoring Clamp</p> <p>Cable and Adapter Set</p>

6	Electro Static Discharge	<p>Output voltage: 0.2-- \pm 20kV \pm 5%</p> <p>Output polarity: Positive / Negative / Switchable</p> <p>Discharge capacitor: 150pF</p> <p>Discharge resistor: 330 Ω</p> <p>Current rise time: 0.7 \sim 1ns</p> <p>Working form: Discharge interval 0.05 \sim 99.99s, Testing form 20PPS Discharge ;</p> <p>Setting less than 0.05s, be called single discharge</p> <p>Testing functions: Contact Discharge, Air</p> <p>Discharge times: Pre-setting times 1-9999 or infinite times</p> <p>Trigger mode: 1. Automatic 2. Manual</p> <p>3. automatic voltage rises</p> <p>Working power supply: AC 220V \pm 10%, 50 Hz</p> <p>Ambient temperature: 15 $^{\circ}$C - 35 $^{\circ}$C</p> <p>Outline dimensions and weight: 50\times360\times175 mm / \sim10kg</p>
7	Damped Oscillatory Wave Generator	<p>Damped oscillatory waves immunity test</p> <p>The test shall be carried out according to IEC 61000-4-18, under the following conditions:</p> <p>Only for transformer operated meters;</p> <p>Tested as table top equipment;</p> <p>Meter in operating condition:</p> <ul style="list-style-type: none"> - Voltage and auxiliary circuits energized with reference voltage; - With rated current I_n and $\cos\phi$ resp. $\sin\phi$ according to the value given in the relevant standard <p>Test voltage on voltage circuits and auxiliary circuits with a reference voltage > 40 V:</p> <p>Common mode: 2.5 kV;</p> <p>Differential mode: 1.0 kV;</p> <p>Test frequencies:</p> <p>100kHz, repetition rate: 40Hz;</p> <p>1 MHz, repetition rate: 400Hz;</p> <p>Test duration: 60s (15 cycles with 2 s on, 2 s off, for each frequency)</p> <p>During the test the behavior of the equipment shall not be perturbed and the variation in error shall be within the limits as specified in the relevant standards.</p>

Annexure-C2

Test for Vibration Test as per IS 13779:1999, IS 16444, IS 15884 and IS 14697

Sl. No.	Details of equipment required
1.	<p>Programmable Vibration Test Apparatus:</p> <p>According to IS 9000 (Part 8)</p> <p>Accuracy as per IS 9000 (part 8)</p> <p>Range: 10-150-10 Hz</p> <p>Transition frequency: 60 Hz</p> <p>Acceleration: 2g ($g=9.8\text{m/sq. second}$)</p> <p>Amplitude of movement:0.15mm</p> <p>Single point control</p> <p>No of sweep cycles per axis: 10</p> <p>Horizontal sweep table required</p>

Technical Specification

Test for Shock Test as per IS 13779:1999, IS 16444, IS 15884 and IS 14697

Sl. No.	Details of equipment required
2.	<p>Programmable Shock Test Setup: Please take at least –</p> <p>According to IS 9000 : Part 7 : Sec 1 to 5</p> <p>Table size : 400 mm x 400 mm</p> <ul style="list-style-type: none">- Max mass of DUT : 50 Kg- Acceleration (Shock) : 3g – 1200g- Pulse Duration : 1 ms to 60 ms- Max Velocity Change : 11.5 m/s w/o load and 8.4 m/s with max load- Accelerometer- Controller- Software along with waveform monitor- Pure half sine wave shock (with Pre-shock and after shock) <p>Shall be able to perform bump test as well</p>

Annexure-C3

EQUIPMENT/SPECIFICATION CODE	WROL/E/Socket-plugs/2019-20/1
NAME OF THE EQUIPMENT	Test set up to carry out Breaking Capacity Test as per CI 20 of IS 1293 : 2019 and Normal Operation Test as per CI 21 of IS 1293 : 2019 on Plugs and Socket outlets
PROPOSED FOR BIS LABORATORY	WROL - ELECTRICAL
TOTAL QUANTITY REQUIRED	One Set

- 1) Purpose : Test set up to carry out Breaking Capacity Test as per CI 20 of IS 1293 : 2019 and Normal Operation Test as per CI 21 of IS 1293 : 2019 on Plugs and Socket outlets (Flush type and surface type, semi flush type, panel type, architrave type, Portable type Table Type (single/ multiple) floor recessed type, appliance type, with shutters and without shutters combined, according to Plugs of Class I and Class II, rewirable & non-rewirable, rated voltages up to 250 and rated current up to 16A.
- 2) Test set up shall consist of three parts : i) Control panel, ii) Electrical Load bank as per CI 20 and 21 of IS 1293 : 2019. and iii) Test fixture (endurance test Machine to operate Plugs / Socket (IS 1293) specimens under test.
- 3) Technical Requirements :

i)Control panel:

- A.** The machine shall be capable for testing either three, two pin Plugs (rewirable / Non-rewirable specimen (2.5A, 6A and 16A) or 2p, 2p + earth socket-outlet (2.5 A, 6A, 16A or 6/16A combined for all type of specimen as mentioned above (as per CI 20 and 21 of IS 1293) and voltages 230V/240V/250V. And shall have facility to test three specimen of plugs / socket outlets.
- B.** The complete test set up shall be capable of operating on normal supply voltages 440 volts, AC, three phase.
- C.** Control panel shall have three stations to test three specimens powered by each phase.
Each station shall have:
Digital Voltmeter (single phase) Range: 0 to 600V, LC : 0.1 V , Accuracy 1 % or better,
Digital Ammeter: Range: 0-100A, L.C.; 0.1A, Accuracy; 1% or better,
Digital Power factor meter: 0 to 1, L.C 0.01, Accuracy; 1% or better,
Digital counter: 0-999999 with presetting and memory
Power ON indicator, Test ON indicator, Specimen failed Indicator with audio buzzer with resetting facility or by pass facility.

Facility to adjust test voltage, Selector switch to Adjust the test current with both fine and course adjustments, Selector switch to select Power factor 0.6 and 0.8 as per CI 20 and CI 21 of IS 1293: 2019

Facility to indicate force applied on plug / socket during engagement.

Contact open / contact weld Fault indicator with audio / visual indication shall be provided. In case of any specimen failure (Contact open/ contact weld), machine shall stop operating. The counter of that particular failure specimen shall stop counting. There shall be the facility of bypassing the failure specimen/ station so that remaining station shall continue testing.

Control panel shall have facility of data logger for each parameter to record the data. Control panel shall be micro-processor based and shall be proved with facility to transfer the data to LIMS through lan or wi-fi.

ii) Electric Load Bank:-

- a) Three separate Electric loads for three stations shall be provided by using three phase supply.
- b) Electric Load Conditions as per Cl. 20 of IS 1293 : 2019 :- Refer Circuit diagrams as per Fig 20 of IS 1293:2019. Test voltage is 1.1 times the rated voltage and test currents are 1.25 times the rated current. Accessories (specimens) are tested using an alternating current ($\cos \phi = 0.6 \pm 0.05$) No current is passed through the earthing circuit, if any.

Resistors and inductors are not connected in parallel, except that if an iron core is used, a resistor, taking approximately 1 percent of the current through inductors connected in parallel with it. Iron- core inductors may be used, provided the current has substantial sine waveform. Accessible metal parts and any metal frame supporting the base of flush type socket outlet are connected through selector switch C (Fig 20 of IS 1293: 2019), for 2 pole accessories, to one of the poles of supply for half number of strokes, and to the other pole for remainder, for three pole accessories, they are connected consecutively to each pole of the supply for one third of number of stroke.

Electric Load Condition as per Cl. 21 of IS 1293 : 2019 :- Refer fig 20 of IS 1293 : 2019. The test specimens are tested with rated alternating current 2.5A, 6A, 16A (as per rated current) and rated voltages 230V or 240V or 250V (as per the rated voltage of the specimen), in a circuit $\cos \phi = 0.8 \pm 0.05$. The test current is passed during each insertion and engagement of the plug. Test is made with the connection as prescribed in Cl 20.

iii) Test fixture (Endurance machine) to operate Plugs / Socket outlets (IS 1293) specimens under test.

- a) Test fixture shall be Pneumatically operated PLC based (Endurance machine) to

operate three socket-outlet specimens (all type as mentioned above) or Three plug with 2p or 2p + earth (rewirable/ Non-rewirable) (2.5A / 6A / 16A).

b) Specimen mounting arrangement shall be such that it shall be possible to test three Socket-outlets or Plugs of different shapes (ISI marked normally available in market) at a time. Test specimen mounting arrangement shall be feasible easy to fit the specimen.

c) Test Plugs (as per CI 20) shall be provided to test Socket-outlet specimen of different ratings (6A and 16A). The dimensions and material of test plugs (Brass pins) shall be as mentioned in CI 20 of IS 1293 : 2019. Brass Pins of Test Plugs shall be replaceable.

d) The length of the stroke of the apparatus shall be between 50 mm and 60 mm.

e) The plug inserted into and withdrawn from the socket-outlet at a rate 30 strokes per minute (A stroke is an insertion or a withdrawal of the plug)

f) The period during which the test current is passed from engagement of the plug until the subsequent disengagement shall be 1.5 ± 0.5 s

0

g) Digital Stroke counter shall be provided on the Test Fixture with presetting and memory .

h) Timer shall be provided to measure current passing time from engagement of the plug until the subsequent disengagement.

j) Facility to measure the force applied on test specimen for engagement of Plug and socket shall be provided.

k) Facility to control and measure the air pressure / pneumatic pressure used for operating the fixture shall be provided.

l) Provision of Air compressor for pneumatic operating system shall be provided with test set up.

m) Test specimen (Plug/ Socket outlet) mounting arrangement shall be flexible and easily to mount the test specimen (under test) of different shapes and sizes (available in market ISI marked) on the test fixture.

n) Pneumatic operating system shall be controllable through software.

D. All measuring instruments shall be calibrated for full range from laboratory accredited as per ISO/IEC 17025.

E. The protocol for validation of DAS shall be provided and same to be verified at the time of installation.

F. The equipment shall comply to the requirements of IS 1293 (with latest version and amendments) in all respects.

- G.** There shall be suitable arrangement for over load protection in case of abnormal condition or variation in input supply.
- H.** The cable size used for main wiring / internal wiring of panel shall of capacity of carrying at least 30 A current for each station.
- I.** Cooling arrangement wherever required shall be provided, especially for Electric load bank etc.
- J.** Complete test set up (Control Panel, Electric Load bank and Test Fixture), enclosure shall be rigid, sturdy and powder coated (corrosion resistant).
- K.** Rolling wheels along with locking arrangement shall be provided for easy movement of Electric load bank, Control Panel and test fixture.
- L.** There shall be arrangement of rigid earthing to the complete set up.
- M.** Fixture, jigs and tools required for fitting / mounting of Test specimens etc shall be provided.
- N.** Electrical Drawings, operating manual etc shall be provided.

--XXXX--

Technical Specification of Making and Breaking capacity test and Normal operation test equipment for Switches as per IS 3854:1997

Purpose:

- 1) Test set up shall also have facility to test Switches having rated current 6A, 16A, 20A, 25A, 32A, 40A and 63A. and Rated currents 1A, 2A, and 4 A for push-button switches
- 2) Test set up shall also have facility to test Switches with single pole and double pole.
- 3) Test set up shall also have facility to test Switches: Tumbler, Rocker and Push-button type activation.
- 4) Test set up shall have facility to test switches as per Cl 18.1, 18.2, 19.1 and 19.2 for all ratings (current and voltage).
- 5) Test set up shall also have facility to indicate failure of Test Specimen through visual and audible alarm.

Requirements:

1. The Equipment shall be capable to test the switches for Making & Breaking capacity test (Cl.18.1 of IS 3854:1997) at controlled/adjustable number of operations, speed, voltage, current & power factor. One operation consists of “transfer of the moving contacts from one operating positions to another”.
2. The Actuating Mechanism shall have controlled speed ranging from 5 to 50 operation / minute.
3. After completion of Making & Breaking Test the equipment shall be capable of switching over to Normal Operation Test (Cl. 19.1 of IS 3854:1997) manually at controlled / adjustable Number of Operation, Speed, Voltage, Current and Power Factor.
4. TEST VOLTAGE, CURRENT AND POWER FACTOR.
 - I) For Normal Operation Test – Test voltages are 230 V, 240 V and 250 V ac and Test currents are 6 Amp, 10Amp, 16Amp, 20Amp and 32 Amp., ac at power factor 0.6 ± 0.05 . The tolerance for the test voltage is + 5 % & - 0 %.
 - II) For Making & Breaking Capacity Test – at 1.1 times the test voltages stated at serial no. 4(I) and 1.25 times to the test current stated at serial no. 4(I) at power factor 0.3 ± 0.05 .

The system shall put the switches ‘ON’ and ‘OFF’ for adjustable time-period for the operation i.e. 50% ‘ON’ & 50% ‘OFF’ for Making & Breaking Capacity Test and 25% ‘ON’ & 75% ‘OFF’ for Normal Operation Test as per the following table.

Rating of switches of all varieties	Sample size	Operation per min.	ON Time	OFF Time	Remarks/Reference
Making & Braking Test	6 Amp 10Amp 16 Amp 20Amp 32Amp	30 30 15 15 7.5	2 sec 2 sec 4 sec 4 sec 8 sec	2 sec 2 sec 4 sec 4 sec 8 sec	Please see clause 18 of IS 3854:1997
Normal Operation Test	6 Amp 10Amp 16 Amp 20Amp 32Amp	30 30 15 15 7.5	1 sec 1 sec 2 sec 2 sec 4 sec	3 sec 3 sec 6 sec 6 sec 12sec	Please see clause 19 of IS 3854:1997

5. The 'ON' period shall be (25 % +5% -0) of the total cycle and the 'OFF' period shall be (75 % -5% +0) for normal operation test.
6. The test system shall be capable to monitor/control/display/each switch separately at the time of operation/completion of test.
7. The system shall be capable to stop testing after completion of number of operation at 'OFF' position only.
8. The apparatus shall have the provision to mount / fix the Switches as in normal use without using special type of tools.
9. The system should be safe from dust, corrosion and electric shock and have adequate mechanical strength.
10. The Equipment shall have Digital Ammeter, Voltmeter, Power Factor meter and Counter for each switch separately of accuracy class 1.0. These instruments shall be detachable / portable to facilitate their calibration/repair/replacement.
11. The test system shall be capable to test simultaneously 6 Nos. of switches for the 6 Amp,10Amp rating and/or 6 Nos. of switches of 16 Amp,20Amp and 32Amp rating in a three phase balanced load system. The switches shall be operable pneumatically through a module controlled by separate microprocessor.
12. The system shall be capable to test the samples of different ratings (Current / Voltage) and types as per clause 7.1.6 of IS 3854:1997.
13. The System shall have manual controls for carrying out Normal Operation and Making & Breaking Capacity Test. The system shall comply with all the provisions of Cl. 18.1, 18.2 & 19.1 & 19.2 of IS 3854:1997.
14. The system shall have Integrated PLC controlled mechanism to operate switches as per the requirement of standard's clause with touch screen and multiple status display.
15. All measuring instruments shall be supplied with calibration certificates from NABL approved Calibration Agency.
16. The supplier shall provide all the literature related to the system such as Operation/Instruction Manual, Circuit Diagram, trouble shooting etc.
17. Service repair backup of the test system should be available in / around Delhi.
18. DAS shall log of the values as Current, Voltage and No. of operation with a capability to collect and store the data of 4 days and record of the same.
19. The device shall have Network cable (Ethernet)/ USB and LAN for PC communication.
20. The device shall have electro pneumatic system for operation and controllable through software.

Calibration and validation

- a) All measuring instruments shall be calibrated for full range from laboratory accredited as per ISO/IEC 17025.
- b) The protocol for validation of DAS shall be provided and same to be verified at the time of installation.
- c) The equipment shall comply to the requirements of IS 3854 (with latest version and amendments) in all respects.

Annexure-C5

Specification of Computerized Tensile Testing Machine (Horizontal)

Specifications	
RANGE	Capacity / Force: 2500 kN, L.C. 0.01 kN
Holding Jaws grips & shapes	Compression type dead end clamp; V-grip: suitable size range to cover size upto 30 mm diameter
Digital Extensiometer	Variable length with self setting Elongation Speed : Variable using VFD Elongation Measurement : Using Digital sensor. Least Count: 0.1 mm
Drive	Servo drive Motor : 2 Hp standard motor with gearbox.
Cross beam separation	Upto more than 12 meter (adjustable compression type end clamp)
Safety features	Emergency stop, Over-travel protection, Electronic overload protection, Overheating of oil and contamination of oil protection, Oil level indicator etc.
Load arrangement	Load Measurement : Using a 'S' Type Load cell Axial load arrangement (with customized computer program for loading in steps of 500 kg for 10 second as per below stated Indian standards.
Interface with PC	Display: 7" Proface Touch Screen HMI Controls : Using PLC Software : Dedicated software to Plot load, elongation and calculated tensile force. Wi-Fi/GSM based system for status update of the various parameters. Fitted with latest PC with adequate software that shall be able to integrate with LIMS (Lab software for online reports preparation); Windows based Software customized to our needs (with Elongation at break, load at break, stress rate, separation speed, graph facility, with different units, sample codes, data saving and retrieving etc. features) Result : Separate result screen which can be saved on pen drive in BMP format to be printed or saved for later.
Calibration	Machine shall be supplied with calibration certificate from laboratory accredited as per ISO/IEC 17025

Tensile testing machine (Horizontal) to be used for Surface condition test (Cl. 13.9 of IS 398-2), Ultimate breaking test (Cl. 13.10 of IS 398-2), Stress-strain test (Cl. 13.11 of IS 398-2), Breaking load on complete conductor (Cl. 13.5 of IS 398-5), Surface condition test (Cl. 13.10 of IS 398-5)

Technical Specification for Data Acquisition System:**MODULAR SYSTEM FOR MONITORING & REPORTING OF TEST PARAMETERS FOR STORAGE WATER HEATER AS PER IS 2082:2018**

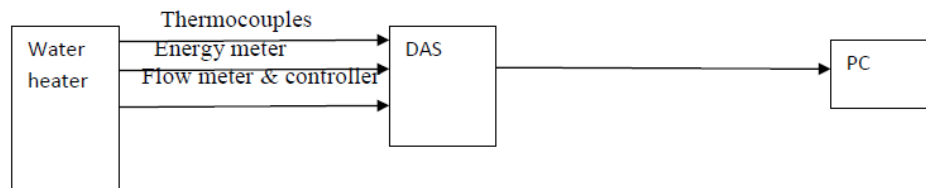
The system shall be modular type and shall consist of Data Acquisition System (DAS) along with Energy meters and water flow meters & controllers. One module shall be able to cover the test parameters as prescribed in 5.0 below for one water heater. The system shall be able to test eight water heaters at a time in a Single module or multiple modules. The output of the modules should be accessible by PC, Digital Display & Memory System and which should be able to calculate various parameters for water heaters as specified in 5.0 as per IS 2082:2018 (latest version with all amendments) and display the results in tabulated form and graphical form.

1.0 Data Acquisition System (DAS):

1.1 The equipment (DAS) should be able to collate data on a standalone basis without using the PC and additionally, should be able to integrate with PC by LAN and also by other suitable means. One DAS module may collect data for one water heater and thus multiple DAS may be required to test multiple water heaters or one DAS may collect data for multiple water heaters. It is required that in case one DAS collects data from multiple water heaters, it shall be able to collect data from at least eight water heaters at a time.

1.2 The DAS shall be able to take input from the thermocouples (multiple input channels i.e. four thermocouples for each water heater) at fixed selectable intervals (minimum 1 second or better) and should integrate the input to give output in the form of graph given at 5.6 below. The DAS may also be able to take inputs from energy meters (i.e. one energy meter of each Water Heater) and flow meters and integrate the same for specified period of time. The output of energy meter may also be given directly to PC which shall then correlate the data of DAS, energy meter and flow meter to give desired result as per ISS. The connection for one unit is explained schematically as follows:

Facility to connect DAS through UPS shall be provided. In case of power failure, DAS's capacity to function at least for 30 minutes should be provided and Data should be stored in permanent memory.



Schematic Diagram for one module when DAS collects data for energy and flow

1.3 The DAS should have on board user function keys to set up actions using the Event/Action function. It should also have analog Inputs for Analog Universal Input Modules.

1.4 The thermocouple to be used with DAS (to be declared), shall preferably be of Type J or K; with precision and accuracy of measurement of $\pm 0.5^{\circ}\text{C}$ of reading or better. Additional 12 Stem type thermocouples (Steel stem of dia. approximately 4 mm) of approx length of 50 cm each and with wire length of 5 m each shall also be provided. Additional 100 m length of Thermocouple wire of the same type and Spot Welding Machine to fuse the junction shall be provided.

1.5 Data storage in the in-built Card with adequate memory to prevent Data Loss of measurements for at least four sets comprising eight Water Heaters each. DAS shall have a USB port through which the data can be transferred to PC. DAS shall have also the provision of LAN interface, Network cable (Ethernet).

1.6 Data recovery: If a power failure occurs during recording, the data up to the failure should be restored upon recovery from the failure.

1.7 Provision of relevant Mathematical & Statistical functions shall be available in the system as per ISS. Programming provisions for Data Acquisition shall be available to initiate, continue and end the complete testing as per 5.0 below.

1.8 Status indication of measuring, recording, computation, receiving data etc shall be provided.

1.9 Automatic File Transfer Functions: The Stand-alone system must support Built-in File Transfer Protocol to facilitate and transfer of recorded data from its memory to PC at pre-defined intervals.

1.10 Generic Monitoring Function from PC / workstation: System software pre-installed and configured for the following features:

1. Real time monitoring, Data archiving, Historical viewing
2. Display in multi display modes
3. Configuration of Hardware
4. MATH functions / Computation functions

2.0 Digital energy meter (incorporated in DAS or separate):

2.1 The digital energy meter shall be Single phase, 230V, 50 Hz suitable for upto 5kW load. The digital energy meter shall be of accuracy class 0.5 or better, with a least count of 0.01 kWh. It shall be able to record the energy consumed by the water heater continuously and integrate the same to give energy consumed for specific time.

2.2 It should also have a USB port, Network cable (Ethernet) and LAN for PC interface for recording the data.

2.3 One energy meter shall be provided for each water heater. The output of the energy meter shall be given to the DAS or to the PC (as per the design) which shall indicate the energy consumed in required time as per the requirement of the Indian Standard.

3.0 Digital Display and Memory System:

3.1 Testing System shall provide Digital Display of acquired Data individually for each module or for all eight modules in one system and it shall store Data for analysis, calculations, graphical display, tabulation and facilitate transferring, printing by the means of LAN and USB port. If such a system requires special Software, it shall be integrated in the system.

3.2 Arrangement to prevent Data Loss in case of Mains Power Supply Failure shall be suitably provided such that a minimum of 30 minutes data is acquired and stored in memory.

3.3 In case PC is provided for Digital Display & Memory System, it shall have MS Windows (latest version), preloaded MS Office (latest version) with minimum 4 GB RAM and 1TB HDD configured on Intel Quad Core Processor or better and with an LED Monitor.

4.0 Flow meter and Controller:

Two flow meter cum controller (digital with connection to DAS or PC) for each Water Heater shall be provided (one at input & one at output). The flow meters and controllers shall have the capability for adjustment as per the requirements of ISS for Hot water output test and mixing factor test. The capacity of drawing water from water heater under test through flow meter cum controller shall be adjustable manually as well as through DAS/PC.

5.0 Tests required to be conducted:

5.1 Storage water heater is required to be tested for the following tests as per IS 2082:2018:

- Clause 11: Measurement of stored water temperature
- Clause 13: Measurement of Energy consumption
- Clause 15: Standing loss per 24 hours
- Clause 16: Hot water output
- Clause 17: Reheating time
- Clause 18: Mixing factor
- Clause 20: Cyclic temperature variation

5.2 The water temperature is to be measured as per Clause 11 of IS 2082:2018.

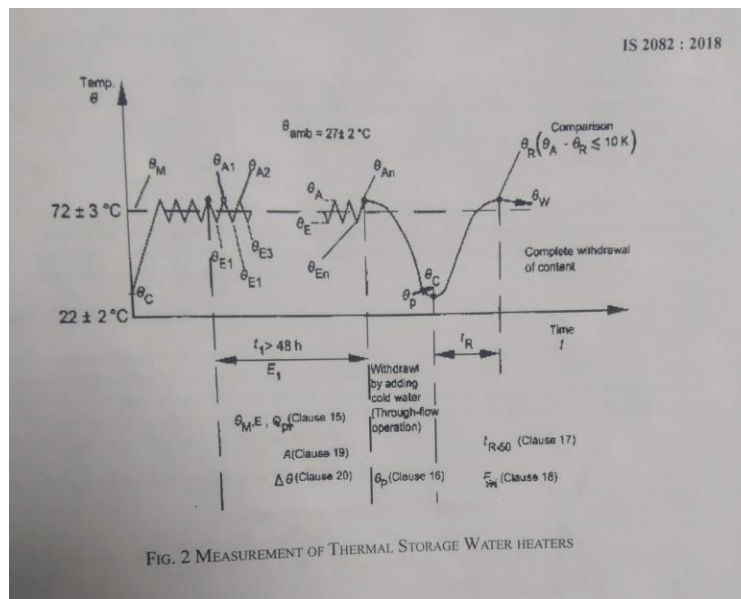
5.3 The DAS should be able to log in the temperature at the set time interval and then integrate the temperature readings to give the temperature of thermostat cut in and cut out. Later for the specific tests as per Cl. 11, 13, 15, 16, 17, 18 and 20. The DAS should give calculated temperature readings as required by these clauses.

5.4 It should be possible to get the calculated temperature on DAS where all such calculations are done by the system.

5.5 In addition to above DAS should have following provisions:

- i) Display of Energy measured of eight Storage Water Heaters,
- ii) Display of Voltage applied to Storage Water Heater,
- iii) Arrangement to control and measure the rate of flow of water at inlet and outlet of Storage Water Heaters,
- iv) Arrangement to measure reheating time of water of Storage Water Heaters,
- v) Arrangement to record the identity of sample in following manner;
 - a) Date of start of test and finish,
 - b) Code of individual sample, and
 - c) Specifications of Storage Water Heater.

5.6 Temperature for tests as above shall be logged in the following way:



6.0 Safety Features

It shall have the following safety features:

- a) Power supply $230\text{V} \pm 10\%$ @ 50Hz .
- b) System should be shock proof.
- c) The test device shall be made of materials not causing corrosion.

Annexure-C7

Tentative Specification of Computerized TTM

Specifications	
RANGE	0-2 kN/ 0-10 kN/ 0-100 kN with deferent load cell
LC	0.1 N / 1 N / 5 N
Digital Extensimeter	Variable length with self setting (Laser sensor)
Power Input	230 V, AC (50 Hz)
Cross beam separation	600 mm
Jaw separation speed (with digital display)	10 to 500 mm/min. (adjustable); Different speed setting for up and down movement of jaw
Displacement resolution	0.01 mm
Working temperature	10-35 °C
Holding Jaws grips & shapes	Hydraulic type jaws; Flat grip and V-grip: suitable size range to cover size upto 16 mm diameter
Drive	Servo drive
Safety features	Emergency stop, Over-travel protection, Electronic overload protection, Overheating of oil and contamination of oil protection, Oil level indicator etc.
Interface with PC	Fitted with latest PC with adequate software that shall be able to integrate with LIMS (Lab software for online reports preparation); Windows based Software customized to our needs (with Elongation at break, load at break, stress rate, separation speed, graph facility, with different units, sample codes, data saving and retrieving etc. features)
Calibration	Machine shall be supplied with calibration certificate from laboratory accredited as per ISO/IEC 17025

Technical Specification of Profile Projector

Purpose: To measure thickness and spot impression.

Type of Equipment: Digital profile projector

Control: Computer controlled and Manual controlled

Reference of IS: IS 10810 (Pt-6):1984

X-Y Range: 75mm x 75mm (Resolution – 0.001mm or better)

Screen Diameter: 400mm or more

Magnification: 10X minimum or better

Magnification Accuracy: ± 0.1 % or better

Optical Distortion: Below 0.1% or better

Rotation Range: 0°-360° with 90° cross line (Resolution 1° or better)

Movement: Automatic and Manual

Operating Temperature: 10 °C to 60 °C or better

Power Source: Single Phase ac supply of 50 Hz

Operation: Single push Button Operation

Illumination: Halogen Lamp with easy replacement facility

Illumination Intensity: Provision of increasing or decreasing of Illumination Intensity.

Memory Storage: Internally store up to 1500 test results.

Features:

- Single or continuous measurements with automatic data storage.
- Machine must have inbuilt PC interface and test results recording system to save data, transfer data and print data.
- Profile projector must have facility to interface with PC with USB and Network cable (Ethernet)/ LAN.
- In case failure of software, there shall be provision to operate the equipment manually.
- Whenever there is revision in software version of the equipment, the supplier shall provide the same free of cost.
- The Machine must be capable of measuring thickness of various cables and spot impression of various materials.
- There shall be automatic provision to present a clear focused image of test specimen.
- Rotary measuring stage should be provided.
- Calibration from laboratory accredited as per ISO/IEC 17025.

Accessories:

- Instruction/Operating manual.
- Extra sets of lens shall be provided with magnification 20X, 50X, 100X, 200X with software support
- Relevant software for data exchange.
- Set of slip gauge and angle gauge should be provided for intermediate check purpose (at least 5 gauges covering entire range).

Annexure-C9

Tentative Specification of HV, RIV tester.

Specifications	
RIV (Radio interference Voltage) tester	
Fixing arrangement of conductor as per Cl. 13.10, Cl. 13.11, Cl. 13.12 of IS 398-5 (latest version).	
Voltage measurement	Voltage measurement: Up to 750 KV(rms) with digital display
RIV value	Upto 10000 μ V Error rate $\pm 5\%$ or better
Frequency	1MHz (Range 0.5 MHz to 2 MHz) also power frequency with digital display
Standard resistance	300 Ω and adjustable
Characteristics	RI characteristics Plotter as per IS 8263 (latest version).
High voltage source	
Voltage measurement	Upto 1000 kV with digital display
Timer	0-9999.99 Minute
Voltage application	Gradual and steps voltage increased and decreased facility as per IS 398-5, IS 1554-2, 7098-2.
Computer and software	Fitted with latest PC with adequate software that shall be able to integrate with LIMS (Lab software for online reports preparation). The data observations with instrument(s) shall be saved in the system.
Calibration	Machine shall be supplied with calibration certificate from laboratory accredited as per ISO/IEC 17025
	Shielded room requirement is not a part of this tender Insulator set of ratings available from 11 KV to 750 KV, required Duty Cycle: as per standard specifications Capacitive load components for testing of cables/conductors required

High voltage upto 1000 kV and RIV tester for conductor as per Cl. 13.11 & Cl. 13.12 of IS 398 (part 5).

Technical Specification:

For Complete set of Thermostatic Stability test on Electric Irons with Data logger

1) Purpose :

To carry out Thermostatic Stability test on Electric Irons as per IS 366: 1991.

2) Technical Requirements :

A test panel with the following:

- a. Digital Power meter (0-600V , 0- 20 A , 0- 10kHz) Accuracy 0.5 % of reading or better
- b. Preset Timer, Range – 5 digit timer (000hour:00minute)-10Nos.
- c. Variac for each station (i.e. 10 Nos.) which can raised to voltage – 500 volts.
- d. Each station shall be provided with suitable individual constant voltage transformer ($\pm 1\%$ or better) and shall be so connected that output of the variac is applied at the input of the CVT and output of the CVT is applied to Load via 6 pin 6/16 A sockets with 1 pole MCB protection – 10 Nos.
- e. The ON – OFF operation of Iron will be detected by current sensing or temperature sensing on the digital display. In case the welding of contact i.e., it is ON for long time without off condition or for contact i.e., no current for long time. The test will be terminated declaring failed.
- f. Data Recording 250 Hours.
- g. PC with UPS.
- h. There should be an arrangement to placed the iron on the three metallic supports and a thermocouple is attached at the midpoint of the sole plate. The temperature of this thermocouple should be recorded and stored through data logger up to 250 hours. The data logger should have the facility to transfer the store data in other storage device and also have the facility of back up of power supply.

3) Control : Data logger 10 channel

- a. Data Logger should have the facility of recording and storage of data of Time up to 250 Hours.
- b. Data Logger should have the facility to transfer the stored data in other storage device.
- c. Data Logger should have the facility of Backup of power supply.
- d. The device shall have Network cable (Ethernet), USB and LAN for PC communication.
- e. The PC shall be provided with the system by supplier.

a. Safety Features :

It shall have the following safety features:

- a. System should be shock proof.
- b. The test device shall be made of materials not causing corrosion.

4) Calibration and validation

- a) All measuring instruments shall be calibrated for full range from laboratory accredited as per ISO/IEC 17025.
- b) the protocol for validation of DAS shall be provided and same to be verified at the time of installation.

Technical Specification of Skewing Machine

1) Purpose :

To reduce the thickness and to obtain parallel smooth surfaces of specimen of PVC, XLPE and Elastomeric rubber material according to IS 694, IS 1554 (P1), IS 1554 (P2), IS 7098 (P1), 7098 (P2), IS 9857, IS 9968 (P1), IS 9968 (P2), IS 14255, IS 14494

2) Technical Requirements :

- a. Skewing machine / Slicing machine shall be capable of reducing the thickness of the above mentioned materials having thickness from 0.7mm to 12.0mm into reduced thickness ranging from 0.6 to 2.0mm (according to Cl.6.4.2.3 of IS 10810 (Part 7): 1984, Cl. 6.1(a) of IS 10810 (Part 10): 1984 and Cl.6.1 (b) of IS 10810 (Part 33): 1984 with Amendment no 2).
- b. Blades shall be capable for reducing the thickness of PVC, XLPE, PE and Elastomeric rubber material.
- c. Blades shall be capable of removing semiconducting coating.
- d. Machine shall have a provision of cutting the material into smooth and parallel surface without burrs and without heating the specimen.
- e. The skewed/sliced surface shall be smooth and care shall be taken not to overheat or otherwise to damage the specimen during the machining operation.
- f. The machine shall have provision to accommodate specimen of 25mm width minimum.
- g. All parts of machine including accessories shall be corrosion free and rust free.
- h. One extra set of blade shall be provided.
- i. Machine shall have facility for easy replacement of its accessories.
- j. Operating manual, instructions and description of parts of the machine shall be provided with the machine.
- k. There shall be provision to set required thickness of specimen (i.e. 0.6 to 2.0 mm) by automatic or manual operation.

Technical specification for Power analyzer:

Purpose: To measure Power input, Electrical energy, Voltage, Current and Power Factor for Electrical Appliances as per IS 302-1:2008.

S.No.	Components/ Fixtures/ Accessories/ Spare parts/ CRMs etc.	Requirement
(1)	(2)	(3)
1.	Suitability	Suitable to measure Voltage(LC-1V), AC (rms and peak) and DC Input Current(LC-0.1 A), Power(LC-1W), Energy Consumption (LC-1WH), Power factor(LC-0.01), Current and Voltage frequency, Crest Factor of voltage and current with 100 ms to 10 sec auto ranging for integration purpose and display update rate from 500 msec onwards and auto ranging of integration feature with range monitor indicator. Simultaneous display of mean and rms value of voltage and current.
2.	Display	5 digit with LED/LCD
3.	Front panel	All parameters shall be display individually (Power, Energy consumption, Voltage, Current, Frequency, and Power Factor).
4.	Frequency response	Up to 100kHz
5.	Accuracy	0.2 % or better
6.	Input ratings and type	Isolated, floating, unbalanced with line filter function, 25 Ampere AC / DC or better, current and 300 Volt AC/ DC or better, 1 phase 2 wire system. External current sensor input available for High current measurement with 100:5 CT (accuracy class 0.2 or better). Harmonics measurements up to 50 th order (THD) or better.
7.	Input Other attributes	Power & Current values integrated separately for positive & negative polarities. averaging function & moving average up to 64 numbers. The device shall have Inbuilt Network cable (Ethernet), USB and LAN for PC communication. The device shall have capable of storing data (sets of measurements) or saving the data through software.
8.	Other requirements	Voltage test leads with alligator clip adapter and other suitable leads shall be provided (2 Sets each). Operating manual shall be provided.
9.	Safety Features	It shall have the following safety features: <ol style="list-style-type: none"> Power supply 230V \pm10% @50Hz. System should be shock proof. The test device shall be made of materials not causing corrosion. It should be portable in nature, user friendly in operation and easy to read display.

		e) Operating temperature : 27 +- 5 degree C and humidity 35% to 70% RH.
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Technical Specification of Impulse Tester

1) Purpose :

To measure Impulse withstands voltage test as per IS 60898:1:2015, IS 12640 (Part 1): 2016, IS 12640 (Part 2): 2016 and Transient over voltage as per IS 302-1:2008 and impulse test as per IS 13779, IS 15884 and IS 14697.

2) Technical Requirements :

- a. Nature of Impulse wave: No load wave shape corresponding to 1.2/50 μ s specified in IS2071 (Part 1): 2016.
- b. Range of Impulse test voltage should be 0-5kV and 0-15kV, adjustable with both polarities, Least count 0.01kV for both range. The voltage shall be increased in step of 20 to 50 volts. A separate knob shall be provided for this.
- c. The impulses given by a generator producing positive and negative impulses having a front time of 1.2 μ s, and a time to half value of 50 μ s, the tolerances being as follow: $\pm 5\%$ for the peak value, $\pm 30\%$ for the front time, $\pm 20\%$ for the time to half value as per IS/IEC60898:1:2015.
- d. The surge impedance of the test apparatus shall have a nominal value of 500 Ω .
- e. Programmable and fully automatic test sequence
- f. LCD Display for indication of test parameters and result.

3) Safety Features :

It shall have the following safety features:

- a. Short Circuit/ Overload protection with MCBs.
- b. Withstand Voltage fluctuations of $\pm 10\%$
- c. System should be shock proof.
- d. The test device shall be made of materials not causing corrosion.

4.0 Calibration and validation

a) All measuring instruments shall be calibrate for full range from laboratory accredited as per ISO/IEC 17025.