

DAYALBAGH EDUCATIONAL INSTITUTE
DAYALBAGH, AGRA-282005

Notice Inviting Tenders

Limited tender No: DEI/Engg. /Elect. /FIST/AKS/2016-17/TDR-24

Date: 04.10.2016

Sealed tenders (limited) are invited from the Manufacturers/ Suppliers/Authorized dealers/ agencies or otherwise for the supply, of the following-

S. No.	Items	Quantity
1.	(a) 3- ph Power Quality Analyzer *	1
	(b) Power Quality Clamp meter *	1
2.	Digital Oscilloscope (CRO) *	1
3.	Solar Array Tester *	1

The tenderer shall be required to submit the Earnest Money Deposit (EMD) for an amount of **Rs. 18,000/-** by way of demand drafts/banker's cheque/FDRs which is refundable and a non-refundable tender fee for an amount of **Rs. 200/- (Rupees two hundred only)** by Demand draft. The demand drafts (validity 45 days beyond final bid) for earnest money deposit & tender fee must be enclosed in the envelope containing the bid documents, super-scribed with tender number, due date of submission on the envelop and addressed to :

“The Registrar
Dayalbagh Educational Institute,
Dayalbagh, Agra – 282005,
Uttar Pradesh”

Note: Central Purchase Organization, Small Scale Industries/ National Small Scale Industries Corporation shall be exempted from payment of Earnest Money Deposit. Tenderers seeking exemption should enclose a self attested photocopy of valid registration certificate with NSIC.

(The Earnest Money will be liable to be forfeited if quotation is not honored or if contract is not signed with the Institute, after the award is made to the Tenderer)

1. Time and last date of submission of the Bid: 1.30 pm on 25.10.2016
2. Time of Bid Opening: 3.00 pm on 25.10.2016
3. Venue of Bid Opening: Conference Hall , CAO, Dayalbagh Educational Institute.

Interested Manufacturers, Suppliers/Authorized dealers may put the tender document complete in all respect and other requisite documents in the tender box kept in the General Section, CAO, Dayalbagh Educational Institute, Dayalbagh, Agra- 282005. The tenders shall not be entertained after this deadline under any circumstances whatsoever. For more details please visit Institute's website <http://www.dei.ac.in>.

Registrar
Dayalbagh Educational Institute

*** Specifications:-**

1 (a) Power quality Analyzer

Display	
	Color transmissive LCD with 2 level backlight

Power supply	
	Battery type 1.5 V Alkaline AA MN 1500 or IEC LR6 x 6
Battery life typically	> 10 hours (backlight on full) > 12 hours (backlight reduced)
Battery Eliminator BE345	Input 110/230 V 50/60 Hz Output 15 V dc, 300 mA

Ambient conditions (For indoor use only)	
Reference conditions	All accuracies stated at 23°C ± 1°C (73.4 °F ± 1.8 °F)
Operating temperature	0 - 50 deg C
Temperature coefficient of current	≤ ± 0.15 % per °C
Temperature coefficient of voltage	≤ ± 0.15 % per °C
Maximum relative humidity	80 % for temperatures up to 31 °C (87 °F) decreasing linearly to 50 % relative humidity at 40 °C (104 °F)
Maximum operating altitude	2000 m

Electrical safety	
Maximum safe working voltages	Safety IEC 61010-1 600 V CAT IV double or reinforced insulation, pollution degree 2
	Protection IP40; EN60529
Current measurement	600 V ac rms or dc between uninsulated conductor and ground
Voltage measurement	600 V ac rms or dc between either input terminal and ground, or 825 V between energized phase voltages (delta power config.)

EMC	
Emission	IEC/EN 61326-1:1997 class A
Immunity	IEC/EN 61326-1:1997

Current measurement (dc, dc rms, ac rms)	
Measuring range	0 to 2000 A dc or 1400 ac rms
Autorange facility	40 A / 400 A / 2000 A
Resolution	10 mA in 40 A range 100 mA in 400 A range 1 A in 2000 A range
Accuracy: DC and dc rms	$I > 10 \text{ A}$: $\pm 1.5 \% \text{ rdg} \pm 5 \text{ digits}$ $I < 10 \text{ A}$: $\pm 0.2 \text{ A}$
Accuracy: AVG	$I > 10 \text{ A}$: $\pm 3 \% \text{ rdg} \pm 5 \text{ digits}$ $I < 10 \text{ A}$: $\pm 0.5 \text{ A}$
Accuracy: Pk	$I > 10 \text{ A}$: $\pm 5 \% \text{ rdg} \pm 5 \text{ digits}$ $I < 10 \text{ A}$: $\pm 0.5 \text{ A}$
Accuracy: AHR	$I > 10 \text{ A}$: $\pm 2 \% \text{ rdg} \pm 5 \text{ digits}$ $I < 10 \text{ A}$: $\pm 0.5 \text{ AHR}$
Accuracy: CF (Crest Factor)	$1.1 \leq \text{CF} < 3$: $\pm 3 \% \text{ rdg} \pm 5 \text{ digits}$ $3 \leq \text{CF} < 5$: $\pm 5 \% \text{ rdg} \pm 5 \text{ digits}$ Resolution: 0.01
Accuracy: RPL (Ripple)	$2 \% \leq \text{RPL} < 100 \%$: $\pm 3 \% \text{ rdg} \pm 5 \text{ digits}$ $100 \% \leq \text{RPL} < 600 \%$: $\pm 5 \% \text{ rdg} \pm 5 \text{ digits}$ Resolution: 0.1 % $I_{dc} > 5 \text{ A}$, $I_{ac} > 2 \text{ A}$
All measurements dc and 15 Hz to 1 kHz Maximum overload 10,000 A or rms x frequency < 400,000 Amps rms is a true-rms measurement (ac + dc)	

Voltage measurement (dc, dc rms, ac rms)	
Measuring range	0 to 825 V dc or ac rms
Autorange facility	4 V / 40 V / 400 V / 750 V
Resolution	1 mV in 4 V range 10 mV in 40 V range 100 mV in 400 V range 1 V in 750 V range
Accuracy: DC and dc rms	$V > 1 \text{ V}$: $\pm 1 \% \text{ rdg} \pm 5 \text{ digits}$ $V < 1 \text{ V}$: $\pm 0.02 \text{ V}$
Accuracy: AVG	$V > 1 \text{ V}$: $\pm 3 \% \text{ rdg} \pm 5 \text{ digits}$ $V < 1 \text{ V}$: $\pm 0.03 \text{ V}$
Accuracy: Pk	$V > 1 \text{ V}$: $\pm 5 \% \text{ rdg} \pm 5 \text{ digits}$ $V < 1 \text{ V}$: $\pm 0.03 \text{ V}$

Accuracy: CF (Crest Factor)	$1.1 \leq CF < 3$: $\pm 3 \% \text{ rdg} \pm 5 \text{ digits}$ $3 \leq CF < 5$: $\pm 5 \% \text{ rdg} \pm 5 \text{ digits}$ Resolution: 0.01
Accuracy: RPL (Ripple)	$2 \% \leq RPL < 100 \%$: $\pm 3 \% \text{ rdg} \pm 5 \text{ digits}$ $100 \% \leq RPL < 600 \%$: $\pm 5 \% \text{ rdg} \pm 5 \text{ digits}$ Resolution: 0.1 % Vdc > 0.5 V, Vac > 0.2 V
	All measurements dc and 15 Hz to 1 kHz Maximum overload 1,000 V rms Volts rms is a true-rms measurement (ac + dc)

Harmonics	
THD (Total Harmonic Distortion)	$1 \% \leq THD < 100 \%$: $\pm 3 \% \text{ rdg} \pm 5 \text{ digits}$ $100 \% \leq THD < 600 \%$: $\pm 5 \% \text{ rdg} \pm 5 \text{ digits}$ Resolution: 0.1 %
DF (Distortion Factor)	$1 \% \leq DF < 100 \%$: $\pm 3 \% \text{ rdg} \pm 5 \text{ digits}$ Resolution: 0.1 % $H02 \leq V_{\text{harm}} < H13$: $\pm 5 \% \pm 2 \text{ digits}$ $H13 \leq V_{\text{harm}} \leq H30$: $\pm 10 \% \pm 2 \text{ digits}$
	All measurements up to 30th harmonic (40th harmonic for 15 Hz to 22 Hz) Frequency range of fundamental F_0 15 Hz to 22 Hz and 45 Hz to 65 Hz Vacrms > 1V

Watts measurement (single- and three-phase) (dc, dc rms, ac rms)	
Measuring range	0 to 1650 kW dc or 1200 kW ac
Autoranging facility	4 kW, 40 kW, 400 kW, 1650 kW
Resolution	1 W in 4 kW 10 W in 40 kW 100 W in 400 kW 1 kW in 1200 kW
Accuracy	2.5 % rdg $\pm 5 \text{ digits}$ $W1\emptyset < 2 \text{ kW}$ $\pm 0.08 \text{ kW}$ $W3\emptyset < 4 \text{ kW}$ $\pm 0.25 \text{ kW}$

VA measurement (single- and three-phase) (dc, dc rms, ac rms)	
Measuring range	0 to 1650 kVA dc or 1200 kVA ac
Autorange facility	4 kVA, 40 kVA, 400 kVA, 1650 kVA
Resolution	1 VA in 4 kVA 10 VA in 40 kVA 100 VA in 400 kVA 1 kVA in 1200 kVA
Accuracy	VA > 2 kVA: 2.5 % rdg $\pm 5 \text{ digits}$

	VA < 2 kVA: ± 0.08 kVA
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VAR measurement (single- and three-phase)	
Measuring range	0 to 1250 kVAR
Autorange facility	4 kVAR, 40 kVAR, 400 kVAR, 1200 kVAR
Resolution	1 VAR in 4 kVAR 10 VAR in 40 kVAR 100 VAR in 400 kVAR 1 kVAR in 1200 kVAR
Accuracy	VAR > 4 kVAR: $\pm 2.5\%$ rdg ± 5 digits VAR < 4 kVAR: ± 0.25 kVAR
Power factor range	$0.3 < \text{PF} < 0.99$

Power factor (single- and three-phase)	
Measuring range	0.3 capacitive to 1.0 and 1.0 to 0.3 inductive (72.5° capacitive to 0° and 0° to 72.5° inductive)
Resolution	0.001
Accuracy	$\pm 3^\circ$
Frequency range	15 Hz to 1 kHz

Displacement power factor (single- and three-phase)	
Measuring range	0.3 capacitive to 1.0 and 1.0 to 0.3 inductive (72.5° capacitive to 0° and 0° to 72.5° inductive)
Resolution	0.001
Accuracy	$\pm 3^\circ$
Frequency range	15 Hz to 22 Hz and 45 Hz to 65 Hz

Kilowatt hour (kWhr)	
Measuring range	40,000 kWhr
Autorange facility	4 kWhr, 40 kWhr, 400 kWhr, 4,000 kWhr, 40,000 kWhr
Resolution	1 WHr in 4 kWhr Range 10 WHr in 40 kWhr Range 100 WHr in 400 kWhr Range 1 kWhr in 4,000 kWhr Range 10 kWhr in 40,000 kWhr Range
Accuracy	kWhr > 2 kWhr: $\pm 3\%$ ± 5 digits kWhr < 2 kWhr: ± 0.08 kWhr
All Watts /VA /VAR /PF measurements	Frequency range: DC and 15 Hz to 1 kHz

	Current range: 10 A to 1400 A rms Voltage range: 1 V to 825 V rms Maximum input: 825 V rms/1400 A rms Maximum overload: 1000 V rms/10,000 A All measurements dc and 15 Hz to 1 kHz. Maximum overload: Maximum overload 10,000 A or rms x frequency < 400,000
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Frequency measurement (from current or voltage sources)	
Measuring range	15 Hz to 1 kHz
Resolution	0.1 Hz
Accuracy	15 to 22 Hz $\pm 0.5\%$ rdg 40 Hz to 70 Hz $\pm 0.5\%$ rdg 15 Hz to 1000 Hz $\pm 1\%$ rdg
Current range	10 A to 1400 A rms
Voltage range	1 V to 825 V rms

Scope function	
Current measurement	Ranges: 10 A / 20 A / 40 A / 100 A / 200 A / 400 A / 1000 A / 2000 A Resolution: 1 A in 40 A 10 A in 400 A 50 A in 2000 A Accuracy: $\pm 3\%$ rdg ± 1 pixel Maximum overload: 10,000 A
Voltage measurement	Ranges: 4 V / 10 V / 20 V / 40 V / 100 V / 200 V / 400 V / 1000 V Resolution: 100 mV in 4 V 1 V in 40 V 10 V in 400 V 31.25 V in 1000 V Accuracy: $\pm 2\%$ rdg ± 1 pixel Maximum overload: 1000 V rms Frequency range: DC and 15 Hz to 600 Hz
Time base	2.5 ms, 5 ms, 10 ms, 25 ms, 50 ms/div
Refresh rate	0.5 seconds
Maximum sampling rate	15.625 kHz

Interface	
	USB Interface to a PC
	Power Log software for download, analysis and reporting

1 (b) Digital Three Phase Power Clamp Meter

To measure Power 3-Phase 3-Wire, 3-Phase 4-Wire, Single Phase Mode.

Instrument in Autorange and can measure True RMS Voltage, Current, Wattage, Apparant Power (VA), Reactive Power (VAR), Active Energy (KWh), Frequency and Power Factor.

Double display with two parameters on each menu and store groups of measurement parameter, with computer interface.

TECHNICAL SPECIFICATIONS

AC Current (A)	40/100/400/1000A $\pm 2\%$
AC Voltage (V)	100/300/600V $\pm 1.2\%$
Active Power (KW)	4/10/40/100/600KW $\pm 3\%$
Apparent Power (KVA)	4/10/40/100/600KVA $\pm 3\%$
Power Factor(PF)	0.3 cap to 0.3 ind ± 0.02
Reactive Power (KVAR)	4/10/40/100/600KVAR $\pm 4\%$
Active Energy (KWH)	10/100/1000KWH $\pm 3\%$
Frequency (Hz)	20 ~ 1000Hz $\pm 0.5\%$
Display	4 Digit, LCD Display 9999

2. DIGITAL OSCILLOSCOPE

Key performance specifications

- 200 MHz, 100 MHz, 70 MHz, 50 MHz bandwidth models
- 2- and 4-channel models
- Up to 2 GS/s sample rate on all channels
- 2.5k point record length on all channels
- Advanced triggers including pulse width trigger and line-selectable video trigger

Key features desirable

- Automated measurements and FFT analysis for simplified waveform analysis
- Built-in waveform limit testing
- Automated, extended data logging feature
- Autoset and signal auto-ranging
- Built-in context-sensitive help
- Probe check wizard

- Language user interface
- Active TFT/LCD color display
- Small footprint and lightweight
- USB 2.0 host port on the front panel for quick and easy data storage
- USB 2.0 device port on the rear panel for easy connection to a PC
- Including relevant software license for interface and evaluation preferably National Instrument's Lab VIEW.

3. Solar Array Tester

Specifications and features

- Measurements - I-V characteristic curve, short circuit current, open circuit voltage, power, MPP current, MPP voltage Global irradiation, module temperature, inclination angle
- Calculated values STC values (short circuit current, open circuit voltage, MPP current, MPP voltage), fill factor, MPP power, manufacturer's ideal characteristic curve
- Voltage measurement range 1.0...1000 V ($< \pm 1\%$) ($U_{oc} > 5\text{ V}$)
- Current measurement range 0.1...15.0 A ($< \pm 1\%$)
- Temperature measurement range – 0...100 °C ($\pm 3\%$ with reference to a black body)
- Irradiation measurement range – 100...1200 W/m² ($\pm 5\%$)
- Measuring connection Standard 4 mm test leads to PV module Infrared (contactless)
- Characteristic curve measurement duration approx. 15...30 seconds
- Storage space for measurement curves dependent on SD memory card size (> 1000 measurement curves per GB)
- Display - LCD color touch screen
- Power supply Lithium polymer accumulator, operating time approx. 8 hours Lithium polymer accumulator, operating time approx. 8 hours
- Auto-Power-Off adjustable (1...15 minutes)
- Interface Wireless connection to SENSOR, SD/SDHC memory card for PC Wireless connection to ANALYZER
- Ambient temperature 0 - 70 °C
- Protection degree IP20 Protection Class II
- Measurement category CAT II / 1000 V, CAT III / 600 V
- safety standards - EN 61010-1, EN 61010-31
- Reporting plant and maintenance certificates
- Performance comparison for a plant over several years
- Built-in battery allows measurement over several hours
- Measurement device and software including large module data base
- Module data base updates free of charge
- Warranty - At least 2 years

Scope of Supply

- Solar Analyzer and Sensor
- PV test leads (MC3, MC4 etc.)
- Sensor quick fix mounting
- SD card
- SD Card reader
- Chargers
- Manuals with evaluation software license

Kindly address the quotations to "**Registrar, Dayalbagh Educational Institute, Dayalbagh, Agra**" and dispatch in the properly sealed envelope at the following address or drop the tenders in the drop box kept in the Institute:

**Registrar,
Dayalbagh Educational Institute,
Dayalbagh, Agra 282005**

Also mark "Tender for 3-ph power quality analyzer, Power quality clamp meter, Digital CRO, Solar Array tester" at the top of the envelope.

Further, we wish to inform you that the D.E.I. is entitled to avail the **Excise Duty Exemption** under the DSIR Scheme. We will produce the necessary certificate when required. If any of the above items is excisable we would like to avail excise duty exemption.

For any clarification you may contact the following:
Prof. A.K. Saxena (ajay.saxena@dei.ac.in)

Terms & Conditions

Note: Bidders must submit the following primary information/documents with the quotation. Bidders will have to indicate these particulars in their quote failing which the offer may be rejected. Please do produce the related documents whenever required by the Institute.

1. Trade License/Company Registration No.
2. VAT / Service Tax Regn. No.
3. Income Tax PAN No.
4. Firm's Bank A/c details
5. Bidders are requested to quote rate(s) per unit(s) only in the recognized Accounting units otherwise your quotation will not be accepted.
6. Cost of items shall include supply, installation, support and troubleshooting.
7. Warranty and Support: for Hardware and Software should be explicitly mentioned.
8. Bidders should be OEM/Authorized partner/Authorized dealer of OEM.
9. Bidders should quote rates as per details/specifications mentioned in notice inviting Tender. The Institute reserves the right to place order for each job to single/separate vendor(s) if necessary.
10. Bidders should quote rates on FOR/Free Delivery at the sites specified in the Notice inviting Tender, inclusive of all charges else should mention estimated cost of packing, forwarding, insurance and freight by Rail/Road/Post etc. as the case may be.
11. Bidders must indicate if their rate is inclusive of VAT/Sales Tax and /or Excise Duty.
12. Quotation received after the closing date will not be entertained and revision in the price will render the bid invalid. Quotation should indicate clearly the period of Validity, preferably not less than 45 days.
13. In case of an offer for items having multiple options, you should clearly indicate item-specific price(s). Please quote separate item-wise rate(s), when quotation has been asked for so. For every offer, packing and forwarding charges, Sales/VAT/Service Tax etc. should be shown separately.
14. Bids will be evaluated after equated comparison of offers upon calculating all tax/duty/cess/surcharge/discount/packing/transportation costs, other charges with price and non-compliance of technical and commercial terms will render a bid liable for rejection.
15. Bidders will have to submit Bills/Invoices on dispatch of stores, if ordered, to this office in triplicate duly pre-receipted (and stamped for amount over Rs. 5000/-) and supported by the relevant delivery documents for audit and payment direct to you or to your bankers. Generally, payments can be expected within one month and are made against acceptance of supplies/jobs completed and in deserving cases, against shipment documents.
16. No insurance charges are allowed unless otherwise specified and agreed to by us. In the absence of any specific instructions, it will be the responsibility of the supplier to ensure a consignment against transit risk at his own expense if he so desires.
17. The Institute is not bound to accept the lowest rate or any other offer and the acceptance of the offer is entirely at the discretion of the Committee.
18. All purchases are subject to the approval of the Governing Body of the Institute.
19. The Institute reserves the right to select certain items in single or multiple units and reject the others or all as mentioned in the schedule and to revise or alter the specifications before

acceptance of any tender and accept or reject any or all tenders, wholly or partly or close the tender without assigning any reason whatsoever.

20. The Bidder shall be required to submit the amount of Earnest Money Deposit (EMD) Rs.18,000/- as mentioned in the Notice Inviting Tender which is refundable and a non-refundable tender fee for an amount of Rs 200/- (Rupees two hundred only) by way of demand drafts/banker's cheque / FDRs. The demand drafts shall be drawn in favour of "Registrar, Dayalbagh Educational Institute, Agra" payable at Agra. The demand drafts (validity 45 days beyond final bid) for earnest money deposit & tender fee must be enclosed in the envelope containing the bid.
- a.) The firm(s) that are registered with the National Small Industries Corporation (NSIC) / or Small Scale Industries (SSI) are exempted from furnishing the EMD. Self-attested photocopy of the valid registration certificate must be enclosed with their bid.
 - b.) Any technical bid is found without the demand drafts of EMD and tender fee will be rejected. The Institute will not be liable to pay any interest on such an amount. The EMD shall be forfeited, if the Bidder withdraws its bid during the period of validity of Tender.
21. Arbitration and Laws: In case of any dispute or difference arising out of or in connection with the tender conditions / order and Contract, the Institute and the Supplier will address the dispute / difference for a mutual resolution and failing which, the matter shall be referred for arbitration to a sole Arbitrator to be appointed by the Institute. The Arbitration shall be held in accordance with the provisions of the Arbitration and Conciliation Act, 1996 and the venue of arbitration shall be at Agra only. The resolution of the Arbitrator shall be final and binding on both the parties.
22. Jurisdiction: The courts at Agra alone will have the jurisdiction to try any matter, dispute or reference between parties arising out of this tender /contract. It is specifically agreed that no court outside and other than Agra court shall have jurisdiction in the matter.

Registrar, DEI