



Department of Electrical Engineering
Indian Institute of Technology Madras
Chennai – 600 036, India

Prof. Krishna Vasudevan
Electrical Engineering Department

Ref: No. EE/KV/PQM /2017

DATE: 5.4.2017

Due date : 25.04.2017

Dear Sir,

1. Quotations are invited in duplicate for the various items shown below/overleaf/enclosed list.
2. The **quotations are to be in two parts as Technical Offer and as Commercial offer**: The two parts of the offer are to be clearly marked on the envelopes. The two parts of the offer in separate envelopes must be enclosed in the one bigger envelope duly sealed and super scribed with reference number and due date and must be addressed to the undersigned so as to reach him on or before the due date stipulated above.
3. **Fax and Email quotation are not acceptable.**
4. Quotations should be valid for 60 days from the due date and period of delivery required , warranty terms etc. should also be clearly indicated. A minimum of one year warranty is required from the date of commissioning.
5. Imported supplies should be quoted **for CIF Madras.**
6. Local firms to quote for free delivery to this Institute. If quoted for Ex-Godown delivery charges be indicated separately.
7. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples / machine/ equipment if called for should be submitted / demonstrated at free of charges, and collected back at the supplier's expenses. Compliancy certificate is to be provided indicating conformity to the technical specifications
8. Sales Tax/General Taxes/ED if applicable and such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. If this is not indicated no such claim will be admitted at any stage. The taxes leviable should take into consideration that we are entitled to have concessional Sales Tax applicable to Non-Government Educational Institutions run with no profit motive for which a concession is given. Sales Tax Certificate will be issued at the time of final settlement of the bill.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. If the item is under DGS&D Rate contract No. and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price (Please note that we are not Direct Demanding Officers). If so please send copy of the RC.
12. The Guarantee period of the item may be indicated clearly.
13. In case of LC. Payment, 90% of the payment will be made after completion of the supply. The balance 10% of the payment will be made after satisfactory installation of the equipment.
14. IIT Madras is exempt from payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand. IIT Madras will make necessary arrangements for the clearance of imported goods at the Airport/Seaport. Hence the price should not include the above charges.
15. **Acceptance and Rejection**:- I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.

Yours faithfully,


Prof. Krishna Vasudevan

Items required: Power Quality Meter as per specifications enclosed. – Qty Required -2 Nos.

Phone Nos.: (044) 2257 4428/ /5419 FAX: (044) 2257 4402, E-mail: krishna@ee. iitm.ac.in



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Technical Specifications for Power Quality Meters :

- 1) It should be powered from 230V AC supply
- 2) Measurement Input specification
 - a) It should be capable of accepting three phase inputs for measurements.
 - b) It should be capable of measuring the three phase voltages with reference to neutral and four currents (Three phase currents and a neutral current).
 - c) It should be capable of measuring the following quantities

Specifications	Tender requirement
Measurement methods class	Class - A (as per IEC61000-4-30)
Measurement accuracy class	Class - II (as per IEC61000-4-7)
Sampling frequency	≥ 200 kHz
Phase RMS Voltage	≥ 600 V
Peak voltage	≥ 1200 V
Half cycle RMS Voltage	≥ 600 V
Instantaneous voltage and current	Measurement possible
RMS current	500 A, 1000 A, 1500 A, 2000 A
Frequency	upto 69 Hz
Active power	Upto max feasible in above range
Reactive power	Upto max feasible in above range
Power factor	Both lead and lag
Displacement power factor	Measurement possible
Voltage Harmonics	Atleast upto 50th Harmonic
Current Harmonics	Atleast upto 50th Harmonic
Higher order voltage harmonics	Atleast upto 80 kHz
Voltage THD	Measurement possible
current THD	Measurement possible
Sag/swell	0.1 to 1.8 times nominal voltage
Flicker	0.2 -10 P_{st} (as per IEC 61000-4-15)
Unbalance	1%-5% U_2 (as per IEC 61000-4-30) 1% - 5% U_n (as per IEC 61000-4-30)
Transient Voltage	minimum 6000V peak



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- 3) Recording and trending
 - a) It should have data storage facility of minimum 8GB and desirable to have expandable storage.
 - b) All measurements listed above should be recorded.
 - c) It should be able to store trends of voltages, current of three phases as well as sag and swell.
- 4) Communication:
 - a) It should have Ethernet and USB access with built-in web server (HTTP server/ FTP server).
 - b) The recorded data should be transferable to any remote location through Ethernet and accessible from standard web browsers.
 - c) It should have facility for offline data analysis. If it requires any software it should be free.
- 5) Duration of record:

It should be capable of storing data for atleast 1 year at the highest sampling frequency.

All the supporting software and drivers with necessary connecting probes must be supplied along with the unit.

The price bid must contain:

Item a) price for the two sets of base equipment inclusive of standard accessories.

Item b) price for one set each of current sensors (4 in a set) with bandwidth greater

than or equal to 15 kHz as follows:

- (i) upto 500 A – 1 set
- (ii) upto 1000 A – 1 set
- (iii) upto 1500 A – 1 set
- (vi) upto 2000 A – 1 set

Item c) other optional accessories.

The quotes should be addressed To:

Prof. Krishna Vasudevan
Department of Electrical Engineering
Indian Institute of Technology Madras
Chennai – 600 036, India

If any quires and clarification should be addressed to:
Saravanan Sivanesan (ee11d022@ee.iitm.ac.in)