



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

Prof. Mahesh Kumar
Electrical Engineering Department

Ref: No. IITM/MK/18-19/ PV Emulator

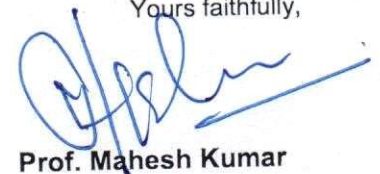
DATE: 7.11.2018

Due date : 16.11.2018

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. Mahesh Kumar

Items required: PV Emulator as per specifications enclosed. Qty Required – 1No.

Phone Nos.: (044) 2257 4429/ /5419 FAX: (044) 2257 4402, E-mail: mahesh@ee.iitm.ac.in

**Detailed Specifications:
General Features**


1. **Output Voltage:** 1000 V DC
2. **Output Current :** 10 A
3. **Output Power:** 10 kW
4. **Control:** Separate coarse and fine Control for voltage and current
5. **Line Voltage:** 415 Vac, 3 Φ (operating range 373 - 456 Vac)
6. **Metering:** 3 Digit DPM to indicate O/P voltage and current separately
7. **Mode of Operation:** CV, CC mode with LED indication, PV emulation
8. **Regulation**
 - (i) **Line: Voltage Mode:** $\pm 0.004\%$ of full scale
Current Mode: $\pm 0.02\%$ of full scale
 - (ii) **Load: Voltage Mode:** $\pm 0.01\%$ of full scale
Current Mode: $\pm 0.04\%$ of full scale
 - (iii) **Ripple and Efficiency:** 350 mVrms and 88 %
9. **Protection:** Overload and short circuit
10. **Operating Temperature Range:** 0 – 50 degree Celsius
11. **Remote Sensing:** 3% maximum voltage drop from output to load

Photovoltaic Power Profile Emulation (PPPE) Specifications/Features:

1. **Bandwidth :** With High Slew Rate Output (+HS) Option: 15 Hz
Standard Models: 2 Hz
2. **Communication Protocols Supported:** RS232, LXI TCP/IP Ethernet, IEEE 488 GPIB, USB
3. **Minimum Time Between Sequential Profiles:** 2 sec
4. **Number of profile Sequences:** Unlimited
5. **Minimum Voc and Isc:** 10% of the power supply's rated voltage and current
6. **Maximum Profile Slope:** $(\Delta I/\Delta V) \times (I_{max} / V_{max}) \leq -0.05$
7. **Instantaneous Load Change to Short-circuit:** Supported with High Slew Rate Output (+HS) option
8. **Necessary software, cables and accessories** should be supplied as part of equipment.

The quotes should be addressed To:

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

 Yours faithfully,
Prof. Mahesh Kumar