



Indian Institute of Technology Bhilai
District-Durg, Chhattisgarh, India – 491002
www.iitbhilai.ac.in

Enquiry No. IITBh/Goods/EE/2024-25/611

Dated: **04-03-2025**

Notice Inviting Quotation (NIQ)

Sub: Inviting Quotation for Supply and Installation of Four Quadrant Chopper Trainer at IIT Bhilai.

Department of Electrical Engineering, Indian Institute of Technology Bhilai, would like to procure the following item. Bidders are advised to submit duly filled bids in the following format:

S. No.	Quotation Required For	No. of Units	Total Price in Rupees
1.	Supply and Installation of Four Quadrant Chopper Trainer (Specifications as per Annexure-1)	01	
2.	Packing & Transportation Charges, if any		
3.	Any other charges, if any (Mention clearly)		
4.	GST in Rs.		
	Total of 1 to 4		

Note: GST should be quoted as per the Government norms, In case due to any error/ oversight, the GST quoted by the bidder is less than the actual rate as per tariff, the bidder will not be permitted to rectify the error/oversight. The orders/ contract will be placed for the total amount including the (lower) rate/s quoted by the bidder, with reduced basic amount to the extent of difference in tax amount, so that the total amount (basic + actual rate as per tariff), remains same(quoted basic + quoted rate). The difference amount payable, if any, between the quoted rate and actual rate as per tariff shall be borne by the bidder.

We are inviting the detailed quotations for the above items in sealed envelopes to be submitted on or before 11-03-2025 by 3.00 PM at Department of Electrical Engineering, IIT-Bhilai.

Terms and Conditions:

1. The bidder who is meeting the above specifications and quoting the lowest rate for supply of required item will be awarded the contract.
2. Total value wise evaluation will be applicable to decide the lowest bid.
3. Prices should be in Indian Rupees and should be inclusive of all Taxes, Duties & FOR IIT Bhilai.
4. The items shall be required to be delivered to the office of Dr. Shailendra Kumar, Department of Electrical Engineering through Stores & Purchase Section of IIT Bhilai at the risk and cost of the bidder, if applicable.
5. Your Quotation must be valid for minimum of 90 days from the date of opening of tender.
6. The items should be as per the standard quality of material as mentioned in technical specifications.
7. The required items should be shared with the indenter before supplying the same to IIT Bhilai. Any request for a change should be acceptable to the supplier.
8. Warranty should be of 01 year from the date of supply & installation.

9. Delivery & Installation should be completed within 15 days from the date of purchase order.
10. GST Number should be clearly mentioned in your offer, failing which your offer may not be considered.
11. Advance payment is not admissible. Payment shall normally be made within 30 days subject to receipt and acceptance (as per Work Order Terms) of the ordered materials/items.
12. Any other information that you may like to obtain, you are free to contact IIT Bhilai through mail at sp@iitbhilai.ac.in before submission of quote.
13. IIT Bhilai reserves the right to accept and/or to reject the bid without assigning any reason.
14. If the Seller/Service Provider fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract, the Buyer will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% of the contract value of delayed quantity per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value of delayed quantity without any controversy/dispute of any sort whatsoever.
15. Tender may please be submitted in (closed and sealed Envelope) addressing as below, on or before 11-03-2025 by 03:00 PM in sealed cover only, super scribed with Enquiry No. & last date of receiving & subject as mentioned in NIQ.

Stores and Purchase Section
Indian Institute of Technology, Bhilai
Village-Kutelabhata, District-Durg,
Chhattisgarh, India 491002

Sr.	Items Specifications	Compliance
1	<p>Four Quadrant Chopper Trainer Technical Specifications:</p> <p>FEATURES</p> <ul style="list-style-type: none"> • Facilitates easy & safe wiring by students due to 4mm sturdy shrouded banana patch cords & shrouded socket arrangement to try out different topologies for high voltage circuits. • Each panel has ABS molded plastic sturdy enclosure, & colorful screw less overlays showing circuit diagram & its connection tag numbers for easy understanding, connections & servicing by swapping at site. • Study of different types of choppers i.e. Type-A, Type-B, Type-C, Type-D & Type-E (first quadrant to fourth quadrant). • Set of Instructor Guide & Student Workbook. • Inbuilt IC based PWM control with variable duty cycle & variable frequency (1-20KHz). • 4 independent IGBTs with built in driver & 2KV isolation provided for TTL level driver. Thus easy for site servicing, 2 hall current sensors one for load & one for source supplied. <p>TECHNICAL SPECIFICATIONS:</p> <p>A] Aluminum profile modular flat demo panel rack (4X2) system, carrying various high voltage components housed in plastic enclosures (panel) to minimize shock possibility.</p> <p>Instrumentation Power supply cum Multichannel DPM panel</p> <ul style="list-style-type: none"> • $\pm 12V/500\text{ mA}$, $+5V/300\text{mA}$, Unregulated $17V\text{ dc}/750\text{ mA}$, line synchronizing signal, $13V / 3\text{ Amp}$. • Multi channel DPM for digital display of parameters. • 20 pin FRC power bus to supply power to neighboring panel. <p>4IGBT/MOSFET power & sensing panel</p> <ul style="list-style-type: none"> • $1200V/40A$ IGBT with isolated (IV) TTL compatible isolated driver circuit & individual heat sink 4 nos. • Current measurement DC (2 nos.) $0.5E/5W$ series resistor default or using hall sensors (Max I/P up to $20A$, $50/60\text{Hz}$), isolation up to $2KV$, O/P = $0-3V$ for controller feedback. • Voltage measurement DC (1 no.) MC DC meter / ammeter default or using hall sensor (Max I/P $10-500V$, $50/60\text{Hz}$), isolation up to $2KV$, O/P = $0-3V$ for controller feedback. • IC3525 based PWM control with variable duty cycle (5%-90%) & variable frequency (1-20KHz) • Power supplies isolated 2 nos. $24V@3A$ & $12V@750\text{mA}$ with loading resistors provided to prevent voltage built up. • $2.5\text{mH}@5A$ inductor as load supplied. • Panel consist of diode bridge ($1000V/35A$), capacitors (0.1 & $2.5\mu\text{F}$) & resistors ($0.5E/5W$ & $5E/20W$) . <p>DC Voltmeter & Ammeter panel</p> <ul style="list-style-type: none"> • Voltmeter ($300V-0-300V$) & Ammeter ($2A-0-2A$) <p>DC Voltmeter & Ammeter panel</p> <ul style="list-style-type: none"> • Voltmeter ($30V- 0-30V$) & Ammeter ($2A-0-2A$) <p>PMDC motor with loading arrangement</p>	

PMDC Motor Specifications:

•200V/200W/2000RPM Chasis mounted table top with spring balance loading arrangement [10kg]10V/1000RPM. Weight : 12 Kg.

Variable AC & DC supply panel:

Variable output : AC 0-270V/3A

Variable output : DC 0-250V/3A

Resistive load:**DC Resistors:**

750E/600E/300E/212E/162E/125E/112E/100E/400W/8taps+OFF+separate 60E tap for DC series Gen.

List of Experiment:

1. Study of first quadrant chopper or Type-A chopper.
2. Study of second quadrant chopper or Type-B chopper.
3. Study of two quadrant type-A chopper or Type-C chopper.
4. Study of two quadrant type-B chopper or Type-D chopper.
5. Study of fourth quadrant chopper or Type-E chopper.
6. Four quadrant 200V/200W PMDC motor chopper drive.
7. Resonant converter

Accessories

- 1) Single IGBT module mounted on 140x40mm heat sink.
- 2) Single phase rectifier pack mounted on heat sink.