

NATIONAL INSTITUTE OF TECHNOLOGY

TIRUCHIRAPPALLI – 15

Department of Instrumentation & Control Engineering

Web: www.nitt.edu

Phone: 0431 - 2503387



TENDER DOCUMENT

Tender Notification No.: NITT/File No.028/CAP.EXP.35/2017-2018

Dated: 05-02-2018

Name of the component : **SPEED CONTROL SYSTEM**

Quantity required : **01**

EMD Amount : **Rs. 6,000/-**

Cost of the Tender Document : **NIL**

Delivery : **Within Two weeks**

Last Date of submission of Tender : **26-02-2018 up to 05.00 pm**

Address for submission of Tender : The Director,
National Institute of Technology- Tiruchirappalli,
Tiruchirappalli – 620015, Tamilnadu, India
Kind ATTN to: Dr.K.Dhanalakshmi
Associate Professor/ICE-NITT
Phone: 0431-2503357, 0431-2503387
Email:dhanlak@nitt.edu,visva@nitt.edu

Date of opening of technical bid : **27-02-2018 at 11. 30 am**



**NATIONAL INSTITUTE OF TECHNOLOGY
TIRUCHIRAPPALLI – 15**

DEPARTMENT OF INSTRUMENTATION & CONTROL ENGINEERING

Tender Notification No.: NITT/File No.028/CAP.EXP.35/2017-2018

Dated: 05-02-2018

NOTICE INVITING TENDER

The National Institute of Technology, Tiruchirappalli (NITT) is an autonomous body under MHRD, GOI, imparting Technical Education and engaged in Research Activities. It is proposed to procure the following component for the Departmental academic/research activities.

Sealed bids under **two bid system** are invited for the following component subject to the following terms and conditions, from the reputed manufacturers or their authorized dealers so as to reach this office on or before scheduled date and time. The technical cover will be opened on the same day in the presence of bidders or their authorized agents who may choose to be present.

Name of the component	: <u>SPEED CONTROL SYSTEM</u>
Quantity required	: 01
EMD	: Rs.6, 000/-
Cost of the Tender Document	: NIL
Time for completion of supply after placing purchase order	: Two weeks
Last Date of submission of Tender	: 26-02-2018

Address for submission of Tender: The Director,
National Institute of Technology- Tiruchirappalli,
Tiruchirappalli – 620015, Tamilnadu, India
Kind ATTN to: Dr.K.Dhanalakshmi
Associate Professor/ICE-NITT
Phone: 0431-2503357, 0431-2503387
Email:dhanlak@nitt.edu,visva@nitt.edu

Place, Date and time of opening of bid :

Date: 27-02-2018 Time: 11-30am Venue: CENTRAL STORE, MAIN OFFICE-NITT

Note: The Institute shall not be responsible for any postal delay about non-receipt / non delivery of the bids or due to wrong addressee.

INSTRUCTIONS TO BIDDERS

1. This document set contains the following:
 - a) Terms and conditions of the Tender b) Details of the Firm offering this Quote
 - c) Technical Compliance Form d) Quotation form (Price Bid)
 - e) Currency Form (quoted on behalf of the foreign suppliers) f) NIT-T's check list copy
 2. The bidder's copy is for your future records. Please fill in and return only NIT-T's copy.
 3. The bidder should give details of their technical soundness and provide list of customers of previous supply of similar items to Universities, Institutes or Government Departments/Undertakings/public sectors with contact details. The details of the agency/profile should be furnished along with the copy of all related documents.
 4. Read through the terms and conditions given and affix your signature and seal if you find them acceptable. Any deviations may be recorded. Read carefully list of specifications that we have enclosed.
 5. Fill in the questionnaire regarding the Firm.
 6. The downloaded documents '**Technical Compliance Form**' and '**Quotation Form (Price Bid)**' should be **TYPE WRITTEN USING CAPITAL LETTERS ONLY**. At the time of filling the "**Quotation Form (Price Bid)**" make sure that you have not missed anything. Specify the model number & specification for each item. The form should be filled item-wise. Do not leave blank fields. If you are not quoting for a specific item, you should specify "**NOT QUOTING**".
 7. **Do not use** ambiguous terms like "**yes**", "**complied**" or "**available**". Specifically mention the matching specification of the product offered by you. Make sure that you have affixed your signature with date and seal on all the documents.
 8. Please send the tenders in a sealed envelope superscribed as "**QUOTATIONS AGAINST TENDER NOTIFICATION NO: NITT/File No.028/CAP.EXP.35/2017-2018 Item No. "SPEED CONTROL SYSTEM"**" so as to reach "The Director, National Institute of Technology, Tiruchirappalli - 620 015, India" on or before 26-02-2018 at 05.00pm **along with a Softcopy of the Technical Compliance form (along with cover-2) and Quotation Forms (along with cover-3) in MS-Excel file format in a CD/DVD or USB drive.**
 9. For any further clarifications, contact by E-Mail: dhanlak@nitt.edu or by written request to "The Registrar, National Institute of Technology, Tiruchirappalli - 620 015, India"
 10. Pre-bid conference will be held on at.....
- Last Date for receipt of tender at NIT-T : 26-02-2018**
- Opening Date for technical bid : 27-02-2018**

- Note:** 1. "Cover" should contain the following:
- a. Form of "**Acceptance of Terms and Conditions**".
 - b. Form of "**Firm details**"

CHECKLIST TO BE FILLED IN BY BIDDER	
List of documents to be enclosed	Completed & Signed
1. Terms and Conditions form	YES / NO
2. Details of the Firm offering this Quote	YES / NO
3. NIT-T's Quotation form (Technical & Price Bid)	YES / NO
4. Currency Form(quoted on behalf of the foreign suppliers)	YES / NO
5. Other technical specifications & pamphlets	YES / NO

- c. Pamphlets, if any (in a separate sealed cover)
- d. Quotation Form (Technical, Price Bid and Currency Form)

Please retain this page with you for your future reference.

SECTION: 1 – TWO BID TENDER**Cover 1: EMD and Tender cost**

(Should be superscribed as 'EMD and tender cost cover' duly indicating the Tender reference No. and the due date of opening)

Earnest Money Deposit (EMD) and tender cost are to be submitted by way of Demand Draft/FDR drawn on any Nationalized bank in India in favor of "The Director, NIT, Trichy" payable at Trichy. The bids submitted without EMD or tender cost will be treated as non-responsive and will be rejected. EMD shall bear no interest.

Cover 2: Technical Bid

(Should be superscribed as 'Technical Bid' duly indicating the Tender reference No. and the due date of opening)

Should contain:

- a. Technical pamphlets
- b. Detailed technical specification
- c. Copy of license certificate for manufacture/supply of the item*
- d. Income Tax PAN Number & GST number.*
- e. Last three years balance sheet approved by the CA and the IT clearance certificate.*
- f. Warranty period offered for the tendered item to be specified. If the warranty period is not conforming with the schedule of requirements given in section 3 of the Tender document, the bid is liable to be treated as non-responsive and will be rejected.
- g. Duly filled up technical questionnaire, if any
- h. Duly filled up deviation schedules to technical specifications, if any
- i. Copy of supply orders completed during the last three years

* Appropriately pertaining to the country of origin.

Cover 3: Price Bid

(should be superscribed as 'Price Bid' duly indicating the Tender reference No. and the due date of opening)

Should contain:

- a. Price bid as per the format in Section-4 of the tender document
- b. Break-up price as per the format in Annexure-A

Note:

- a. If the prices are revealed in cover 1 or in cover 2, the offer will be summarily rejected.
- b. Each Cover shall be sent in a double sealed cover. The inner covers (Cover 1, Cover 2 and Cover 3) should be sealed individually with the Sellers's distinctive seal and superscribed with the tender reference No. and due date of opening. All inner covers shall be placed in a common outer cover which shall also be sealed with seller's distinctive seal and superscribed with the tender reference No. and due date of opening.
- c. Mention "Kind Attention: **Dr.K.DHANALAKSHMI** and submit at the address given in the Notice Inviting Tender.
- d. Cover 1 & 2 will be opened on the scheduled date and time mentioned in the tender enquiry.
- e. Cover 3 of the technically and commercially suitable offers alone will be opened on a date which will be intimated to the qualified bidders.

SECTION: 2 – TERMS AND CONDITIONS FORM

**IMPORTANT: READ THE FOLLOWING TERMS AND CONDITIONS AND
SIGN THE ACCEPTANCE CLAUSE FOLLOWING IT**

1. The offers should be addressed to “The Director, National Institute of Technology, Tiruchirappalli 620015, India” and should be sent in a sealed envelope superscribed **BID AGAINST TENDER NOTIFICATION No.:** NITT/File No.028/CAP.EXP.35/2017-2018 so as to reach us **on or before 26-02-2018 at 05-00 pm**
2. Each offer should be sent in a sealed cover with the tender documents. Tenders received through email or FAX will not be considered. **Softcopy of the Technical Compliance form and Quotation Forms should be submitted along with the tender in MS-Excel file format in a CD/DVD or USB drive. However, if there is any dispute between Hard copy and Soft copy, Hard copy will be taken.**
3. The tenders will be **opened on 27-02-2018 at 11.30 am** in the presence of the vendors present with authorization letter from the respective companies / firms. Suppliers intending to attend the tender opening should intimate us in advance.
4. Full technical specifications and pamphlets should be sent along with the tenders. **Offers without proper technical specifications will be rejected.**
5. The rate quoted should be on unit basis excluding Taxes. Taxes and other charges should be quoted separately, considering exemptions if any.
6. All offers should indicate unit price (excluding taxes and duties applicable), Taxes and other charges should be mentioned separately, if any. Additional charges for packing, forwarding, freight, insurance etc., if any, should be clearly mentioned. Clearance at Customs will be arranged by us.
7. NIT-T is paying concessional Customs & Excise duty under Government of India Notification No.51/96for Central Customs and 10/97 for Central Excise Duty vide Certificate No.TU/V/RG-CDE(183)/2011 dt.10.10.11. Currently the purchaser is paying 5% Basic Customs Duty, 2% Educational Cess on Basic Customs Duty, 1% Higher Education Cess on Educational Cess, and 4% Import Additional Duty. **This institute is exempted from payment of service tax as per Sl.no. 9 of Government notification No25/2012-ST dated 20th june, 2012.**The Institute is not authorized to issue C and D forms of Sales tax certificate.
8. In case the offered items are to be imported, the rates should be quoted in foreign currency on C.I.F. Chennai Airport basis, and it should include the Freight up to Chennai airport and the insurance cover should be up to National Institute of Technology, Tiruchirappalli. NIT-T shall pay Customs duty if any.
9. If the price quoted is in foreign currency and if the order value is more than US\$10,000 and requested by the bidder then 100% payment will be made through **Letter of Credit (LC) at sight on acceptance. The bank charges outside India should be borne by the Supplier / Beneficiary. Part shipment not allowed.**
10. If the price quoted is in Indian Rupees, then 100% payment will be made only after installation and commissioning. **No advance payment will be made.**
11. No revision of the price bid will be allowed once the price bids are opened. In case of foreign currency, the agency should mention the % of currency fluctuations they can bear.
12. No increase in price will be allowed after our firm orders are placed.
13. **Payment of GST (on ultimate products)** as applicable on the closing date of tender will be to the supplier’s / contractor’s account. Any statutory variation (both plus and minus) in the rate of GST after closing date of tender/revised price bid but before the expiry of the contractual delivery / completion period will be to the account of the office.
The bidder(s) should indicate, in their bid, the amount with exact rate of the GST on ultimate finished product, as applicable at tendering stage, separately in the bid. In case the above information subsequently proves wrong, incorrect or misleading (a) this Institute will have no liability to reimburse the excess in the difference in rates of the item under which the duty/tax assessed finally (b) this Institute will have the right to recover the difference in case the rate of duty / tax finally assessed is on the lower side. Any increase in GST during extended period of the contract / supply order will be to supplier’s / contractor’s account where such extension in delivery of the materials/completion of the project was on

the request of supplier / contractor. However, any decrease in GST during extended period of the contract / supply order, will be to the account of this Institute.

14. **This institute is exempted from payment of service tax as per Sl.no. 9 of Government notification No25/2012-ST dated 20th june, 2012. The tenderer should verify the excise duty exemption certificates of this institution and service tax rules before submission of the Bid. It will be assumed on the submission of bid that excise duty exemption will be provided and no other conditions after the issue of purchase order will be accepted. No service tax will be paid by this institute.**
15. The warranty period should be clearly mentioned. The maintenance charges (AMC) under different schemes after the expiry of the warranty should also be mentioned.
16. Quote should come from authorized dealer or distributor or reseller for each of the product quoted. An authorization letter should accompany your quote for each product quoted; otherwise it may lead to rejection.
17. The delivery period and other terms should be clearly mentioned.
18. **Eligibility:** Quotation from registered firms/company's / manufacturer under TNGST/CST / other statutory bodies alone will be considered. Any Manufacturer / Supplier / Dealer who has been declared ineligible by World Bank/Government of India shall not be eligible to participate in this bid. Any fraudulent practices including concealing of facts at the time of submission of bid and there after shall lead to disqualification. List of beneficiaries especially from Educational Institutions / R & D Institutions should also be enclosed with the quotations.
19. For those instruments Cost exceeding Rs. 5,00,000/- the company should have (i) Three similar works, each of value not less than 40% of the estimated cost put to tender, or (ii) Two similar works, each of value not less than 50% of the estimated cost, or (iii) One similar work of value not less than 80% of the estimated cost, all amounts rounded off to a convenient full figure, in the last 7 years ending on the last day of the month previous to the one in which the tenders are invited.
20. Complete user, technical and service documentation and spare parts catalogue are to be provided along with the supply of the item.
21. The vendors are informed that they should not call us over phone or contact us in person. All clarifications can be obtained through E-Mail/FAX/Post. Vendors shall not make attempts to establish unsolicited and un-authorized contact with us after the opening of the offers and prior to the notification of the award. Any attempt by any vendor to bring to bear extraneous pressures on us shall be sufficient reason to disqualify the vendor.
22. Delay / loss in postal transit or due to other reasons will not be NIT-T's responsibility.
23. We are not responsible for accidental opening of the covers that are not properly superscribed and sealed before the time scheduled for opening.
24. The tender should be made only on the FORM which is available in our website, otherwise it shall lead to rejection. The FORM should be duly filled up (preferably **TYPE WRITTEN IN CAPITAL LETTERS**) and should clearly mention the features offered by the bidder against each specification.
25. Authorized signatory should sign on all the pages. Bids without authorized signatures or seal of the firm will be rejected.
26. The manufacturers of the quoted make of the product must be of National / International repute and having ISO /BIS certificate.
27. **Liquidated damages:** If the bidder/supplier, after accepting the Purchase Order, fails to deliver any or all of the Goods within the period specified in the Order, NIT-T shall, without prejudice to its other remedies under the Rules of Purchase, proceed to cancel the order or agree to accept a delayed delivery on the condition of payment of liquidated damages by the bidder / supplier a sum equivalent to 0.50% of the total cost as indicated in the Purchase Order (which will be deemed as agreed price) for each week or part thereof of delay until actual delivery or performance is completed and such penal charges shall be limited to a maximum of 5% of the total cost. Once the maximum is reached NIT-T may proceed on its own to consider the termination / cancellation of the order.
28. **The vendors are informed that they should sign a stamp paper agreement with us, for Warranty, AMC, etc. before placing the final purchase order as per our terms & conditions and 5% -10% of purchase order value in the form of bank guarantee towards performance security. The bank guarantee will be returned to the supplier after the successful completion of supply, installation, and the warranty period.**
29. Failure to comply with all the terms and conditions mentioned herein would result in the tender being summarily rejected.

30. Vendors are informed that once the companies are shortlisted based on the technical specification, only then the price bids of the firms that meet NIT-T's Technical specification / requirements would be compared.
31. The order will be based on the actual requirement at the time of ordering, optional items may also be ordered based on the actual requirements at the time of ordering. Not quoting for this may result in disqualification.
32. NIT-T reserves the right to modify or alter the specifications after short listing of tenderers.
33. NIT-T reserves the right to change the order quantity or split the orders among multiple vendors without assigning any reason(s) whatsoever.
34. NIT-T reserves the right to reject any or all the tenders without assigning any reasons whatsoever.
35. NIT-T reserves the right to purchase decreased number of quantity of the item to be purchased.
36. The agencies should submit their rate as per the format given in Section 4 of the Notice Inviting Tender in this cover. All the pages of the bid should be signed affixing the seal. All corrections and overwriting should be initialed.
37. The tender will be acceptable only from the manufacturers or its authorized supplier.
38. The bid shall be in the format of price schedule given in Section 4. The contract form as per format given in section 5 shall be submitted. Incomplete or conditional tender will be rejected.
39. Details of quantity and the specifications are mentioned in Section 3 appended to this Notice Inviting Tender.
40. The item to be used is strictly according to the specification and subject to test by the Institute/concerned authorities. It must be delivered and installed in good working condition.
41. The Contractor/Supplier shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the work/supply in full but he did not derive in consequence of the foreclosure of the whole or part of the works.
42. In case of dispute, the matter will be subject to Tiruchirappalli, Tamil Nadu Jurisdiction only.

Release of EMD: The EMD will be released after receipt of performance security from successful bidder.

Validity of bids: The rate quote should be valid for a minimum of 120 days. No claim for escalation of rate will be considered after opening the Tender.

Imports: In case, goods are to be imported, the Indian agent should furnish authorization certificate by the principles abroad for submission of the bid in response to this Notice Inviting Tender.

Clarification of Tender Document: A prospective bidder requiring any clarification of the Tender document may communicate to the contact person given in this notice inviting tender.

Amendment of tender document: At any time prior to the last date of receipt of bids, Institute may for any reason, whether at its own initiative or in response to a clarification requested by prospective bidder, modify the Tender document by an amendment.

The Institute may at its own discretion extend the last date for the receipt of bids.

The bids shall be written in English language and any information printed in other language shall be accompanied by an English translation, in which case for the purpose of interpretation of the bid, the English translation shall govern.

The Institute reserves the right of accepting any bid other than the lowest or even rejecting all the bids without assigning any reasons therefor. The decision of the Institute Purchase Committee is final in all matters of tender and purchase.

The bidder should give the following declaration while submitting the Tender.

ACCEPTANCE

We accept the above terms and conditions and shall comply with them strictly.

NAME OF THE VENDOR:

ADDRESS:

Signature and seal

“DETAILS OF THE FIRM OFFERING THIS QUOTE”

(Write or print or type in block letters)

1. Name of the firm: _____
2. Date of incorporation: _____
2. Nature of the company (tick one): Government / Public / Private Company / Partnership / Proprietorship
3. Specify the number of years in this line of activity by the Company: ∴ _____
4. Quantity of sales in the last three years for the “.....” (same model that you have quoted):

2014-2015	2015-2016	2016-2017

5. Turnover in the last three years (Lakh Indian Rupees):

2014-2015	2015-2016	2016-2017

6. Provide the postal address, telephone & fax numbers, and email address of the nearest service center.
7. Number of service engineers in the above location trained on the product quoted along with their educational qualification, certification and designation (applicable only for instruments):
8. Assured response time for service calls in hours:
9. Delivery period from the date an official purchase order placed (in weeks):
10. Enclose the list of customers to whom you have supplied “.....” during the last 3 years ending 31/03/2013 with full postal address and name of the contact person with phone, FAX numbers, and E-Mail id. Certificate regarding satisfactory performance of the “.....” from the minimum three end users should be furnished.
11. Are you the authorized dealer or distributor or reseller for the products quoted?
12. Have you supplied “.....” to National Institute of Technology, Tiruchirappalli in the last 3 years? If yes, specify the quantity supplied in the last 3 years and last PO reference:
13. Was there any elapse or delay in supplying the goods ordered or any service related issue during the warranty period for the products ordered by NIT-T with your firm? If yes, provide details.
14. On Manufacturer’s Side to whom NITT have to contact in case of delayed in supply and other issues committed by the authorized dealer / distributor / reseller :

Contact Person Name: Address: E-mail ID :	Telephone / Cell Phone :
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DECLARATION

I/we have not tampered/modified the tender forms in any manner. In case, if the same is found to be tampered/modified, I/we understand that my/our tender will be summarily rejected and full Earnest Money Deposit (EMD) will be forfeited and I/we am/are liable to be banned from doing business with NIT, Trichy and /or prosecuted.

Signature of the Bidder :

Name and Designation :

Business Address :

.....

.....

Place:
Date :

Seal of the Bidder's Firm

SECTION: 3 – SCHEDULE OF REQUIREMENTS, SPECIFICATIONS AND ALLIED DETAILS

Name of the Component to be procured: **SPEED CONTROL SYSTEM:**

Sl.no	Name of the equipment/Item	Quantity
01	<p><u>1.SPEED CONTROL OF DC MOTOR :</u> Dspic 30f4011 controller: On chip peripherals</p> <ul style="list-style-type: none"> • Three 16 bit timers/counters • Four 16 bit capture inputs • Two 16 bit compare/PWM outputs • Six PWM inputs for motor control • One 3 channel QEP I/P • 6 channel 10 bit ADC of 500 MSPS conversion time • SPI, I2C, USTART <p>On- chip memory</p> <ul style="list-style-type: none"> • 48kb flash program memory • 1Kb data EEPROM • 2kb data RAM <p>Additional features</p> <ul style="list-style-type: none"> • One RS332 compatible opto isolated serial port & terminated with 9 pin D male connector. • 6 PWM and two capture input and two compare outputs are terminated at 34 pin FRC connector. • 2*16 LCD display • 3 switches for user function. <p>POWER CIRCUIT Single Quadrant Chopper FED DC Drive Specification MODEL-NO-(JSK-200w-1QCFD)</p> <ul style="list-style-type: none"> ❖ Two nos of 1200V/ 15A, Peak, Micro semi IGBT with driver circuit with proper heatsink and snubber circuit used to form power circuit ❖ 600v/30A diode with heatsink used for freewheeling ❖ Over Current Protection available. ❖ 2 nos of Driver & optical isolator used for field & armature control ❖ SKHI 22A R isolated driver used for all igbt pwm inputs ❖ One no hall effect CYHCSES5A current sensor used to sense the dc link current ❖ One no hall effect CYHVS10-20A current sensor used to sense the Armature current 	01

- ❖ waveforms
- ❖ Field Voltage can be control separately.
- ❖ Single Phase Input
- ❖ All I/p and O/P connectors terminated in front panel
- ❖ Pwm and current signals terminated in test points.user can view the waveforms
- ❖ 600V/35A Bridge rectifier used to convert Ac into DC Rail
- ❖ One no of 2200microfarad/450v dc link capacitor will be used
- ❖ INPUT VOLTAGE-----1PH 230V AC OR 300V DC
- ❖ OUTPUT VOLTAGE-----0-48V VARIABLE DC for Armature control
- ❖ OUTPUT VOLTAGE-----0-48V VARIABLE DC for FIELD CONTROL.
- ❖ O/P POWER -----200W

DC SHUNT MOTOR WITH SPRING BALANCE LOAD

MODEL NUMBER:(JSK-1HPDCSH-SBL)

POWER-----100W

VOLTAGE-----48VDC

SPEED-----1500rpm

LOAD-----spring balance load

SPEED SENSOR-----Proximity sensor used.

NOTE: 0-5v required from external for speed control.

02

2.SPEED CONTROL OF 3ph Ac induction MOTOR :

It consist of following Items:

- 1.DSPIC 30F 4011 BASED CONTROLLER---1
- 2.1Kw Igbt based voltage source Inverter.---1
- 3.0.5HP AC MOTOR WITH SPRING BALANCE LOAD-----1

Dspic 30f4011 controller:

On chip peripherals

- Three 16 bit timers/counters
- Four 16 bit capture inputs
- Two 16 bit compare/PWM outputs
- Six PWM inputs for motor control
- One 3 channel QEP I/P
- 6 channel 10 bit ADC of 500 MSPS conversion time
- SPI, I2C, USTART

On- chip memory

- 48kb flash program memory
- 1Kb data EEPROM
- 2kb data RAM

01

Additional features

- One RS332 compatible opto isolated serial port & terminated with 9 pin D male connector.
- 6 PWM and two capture input and two compare outputs are terminated at 34 pin FRC connector.
- 2*16 LCD display

3 switches for user function.

IGBT BASED THREE PHASE VOLTAGE SOURCE INVERTER:

Model no---(JSK-3PHVSI-500W)

This three phase voltage source inverter is capable to run the three phase induction motor, BLDC motor, PMSM motor and DC motor.

FEATURES:

- ❖ 1200V/ 60A, FAIRCHILD based IGBT module Used, Each module consist of 2 IGBTs .Each IGBT module separate snubber circuit will be provided
- ❖ One number of uncontrolled diode bridge rectifier will convert the input AC voltage into DC voltage, this DC voltage is displayed in the front panel with the help of voltmeter.
- ❖ The three phase IGBT based Voltage source inverter circuit is displayed in the front panel.
- ❖ This power module consists of over current protection.
- ❖ The protection circuit is enabled with one number of LED indications to indicate the over current.
- ❖ One number of reset key is provided to reset the power module for over current protection.
- ❖ One no of fuse is provided to avoid the over current problem.
- ❖ Over load trip circuit is provided to prevent the power module and the motor drive.
- ❖ All the test points are provided in the front panel so that the viewer can easily absorb all the waveforms.
- ❖ The PWM pulses are terminated in the front panel, so we can see the PWM pulses easily.
- ❖ 4 nos CYHCSES5A Hall effect current sensor used for DC link current and 3ph load current sensing.
- ❖ The six driver circuit is used and the six opto isolators are used to separate the low voltage and high voltage ground.
- ❖ SKHI 22A R isolated driver used for all IGBT PWM inputs
- ❖ The FRC connector is provided in the front panel to interface the PWM output from the digital processors like Micro controller/DSP/FPGA controllers.
- ❖ The banana connectors are terminated in the power module to connect the input and Output terminals.

<p>INPUT 230V,50Hz,AC Supply or 300vDC</p> <p>OUTPUT: 200V/5A (MAX), AC/DC on each Leg of 3 phase Bridge</p> <p>AC INDUCTION MOTOR WITH SPRING BALANCE LOAD</p> <p>MODEL NUMBER:(FMT-1HPAC-SBL)</p> <p>POWER-----0.5HP</p> <p>VOLTAGE----415AC STAR CONNECTION (OR)200V DELTA CONNECTION</p> <p>SPEED-----1440rpm</p> <p>LOAD-----spring balance load</p> <p>Speed sensor----PROXIMATEY sensor used.</p> <p>NOTE: 0-5v required from external for speed control.</p>	
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Quantity : 01

Any other details/requirement:

Warranty period required (years): One year

Delivery schedule expected after release of purchase order (in weeks): Two Weeks

EMD (in Rupees): 6,000/-

Performance Security to be given by the successful bidder after release of purchase order (in Rupees): **5** % of the total order cost

SECTION: 4 – PRICE SCHEDULE

To be used by the bidder for submission of the price bid

1. Component Name:
2. Specifications (confirming to Section 3 of Tender document-enclose additional sheets if necessary):
3. Currency and Unit cost (excluding Taxes):
4. Quantity:
5. Item cost (Sl.No.3 * Sl.No.4) (in Indian Rupee):
6. Taxes and other charges:
 - (i) Specify the type of taxes and duties in percentages and also in figures
 - (ii) Specify other charges in figures
7. Total cost (Inclusive of all taxes) :
8. Warranty period (confirming to the Section 3 of Tender document. This should be mentioned in Technical bid also in order to get qualified for price bid):
9. Delivery Schedule (confirming to the Section 3 of Tender document):
10. Name and address of the firm for placing purchase order:
11. Name and address of Indian authorized agent (in case of imports only):

Signature of the Bidder :

Name and Designation :

Business Address :

Place:

Date : **Seal of the Bidder's Firm**

(Note: All column should be filled. No column should be left blank. If any column is not filled-in properly or left empty then the bid will be rejected.)

SECTION: 5 – CONTRACT FORM

To be provided by the bidder in their business letter head

[Name of the Supplier’s Firm] hereby abide to deliver theby the delivery schedule mentioned in the Section 3 of the Tender document for supply of the items if the purchase order is awarded.

The item will be supplied conforming to the specifications stated in the tender document without any defect and deviations.

Warranty will be given for the period mentioned in the tender document and service will be rendered to the satisfaction of NIT, Trichy during this period.

Signature of the Bidder :

Name and Designation :

Business Address :

Place:

Date :

Seal of the Bidder’s Firm

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPALLI

Annexure-A

MODEL PRICE BID FORMAT FOR INDIAN BIDDERS

Tender No. & Date:

Bidder's Offer No. & Date:

S. No.	Description of item	Unit (SET /No)	QTY	Rate /Qty in Rs. (excluding of all taxes)	ED in %	GST In %	Service Tax in %	Total Value in Rs. (inclusive of all taxes)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Supply portion (The price indicated shall be exclusive of all accessories, spares etc. as given in the scope of supply)							
2	Other accessories /spares etc as given in scope of supply(Individual item-wise break-up price shall be attached as an annexure to this price bid format.)							
3	Installation & Commissioning (extra, if any)							
4	Packing & Forwarding charges (extra, if any)							
5	FOR Dispatching station value in Rs.							
6	Freight & Transit insurance charges, extra, if any							
7	Total all inclusive price delivered, installed and commissioned at NITT							
8	Value of Annual Maintenance Contract							
9	Net cost to be paid by NITT							

Signature & Seal of Vendor

Note: The price bid should be submitted only as per the above format. No row shall be left blank. Please indicate NA, in case the item is "Not Applicable". If this format is not used or any column is left blank, then the bid will be rejected.