



**NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA-769008 (ODISHA)**

e-Notice Inviting Tender(e-NIT)

TENDER NOTICE NO:- .NITR/PW/CC/2020/48

Dt: 19/03/2020

TENDER FOR HIGH PERFORMANCE SPLIT AIR-CONDITIONER

Bids are invited for supply of High Performance Split air-conditioner at Computer Center, NIT Rourkela. Details of tender can be found from institute website "www.nitrkl.ac.in" under the head "Jobs and Tenders"

Last date of Submission of Bid : 13/04/2020 by 03:00 PM

Opening date of Techno-commercial Bid: 14/04/2020 at 03:00 PM

Availability of tender documents on website :

https://nitrkl.ac.in/OldWebsite/Jobs_Tenders/9Equipment/Default.aspx

Bidding Through: e-Procurement Portal of Ministry of HRD, Govt. of India

<https://mhrd.eunivizarde.com/>

Contact: Prof. Bibhudatta Sahoo, Head, CC;

Ph:.0661-2462671,

email : bdsahu@nitrkl.ac.in

Sd/-
Registrar

An Institute where everyone strives to attain his Potential.



**NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA – 769 008, ODISHA**

Advertised Tender Enquiry

Department: Computer Centre

Tender Notice No: NITR/PW /CC/2020/48

Dated: 19/03/2020

To

Bidding through

e-Procurement Portal of

Ministry of HRD, Govt. of India

(e-wizard)

<https://mhrd.euniwizarde.com/>

Important Dates

Event	Date	Time
Pre-bid Conference	NA	NA
Last Date of submission of bid	13/04/2020	03:00 PM
Date of opening of techno-commercial bid	14/04/2020	03:00 PM

Dear Sir,

We intend to purchase the commodities specified below and invite quotations in accordance with the terms and conditions detailed in the bid document. If you are interested, kindly send your offer with prices and complete terms within the time mentioned above.

For any query, you may contact

Attention:-

Prof. Bibhudatta Sahoo

HOD, Computer Centre

NATIONAL INSTITUTE OF TECHNOLOGY

ROURKELA – 769 008, ODISHA

Phone : (0661) – 246-2671

E-mail: hod-cc@nitrkl.ac.in/

Yours sincerely,

Sd/-

Prof. Bibhudatta Sahoo

HOD, Computer Centre

Encl:

- (1) Schedule of requirement, specifications, dates etc.**
- (2) Bid document containing detail terms and conditions.**

1. Schedule of requirements

Sl. No.	Description of Goods/Service	Quantity
01.	INDUSTRIAL AIR CONDITIONER (as per detail Annexure-I)	4

2. Specifications and allied Technical Details

As per Annexure – I

3. Format of Quotation

It is a two-part bid with separate techno-commercial and price bids.

4. The bid should be submitted through <https://mhrd.euniwizarde.com/HomePage/ebidSites?siteName=mhrd>

5. Quotations should be valid for a period of 90 days from the date of opening of techno-commercial bid.

6. Some important dates:

- | | | |
|---------------------------------------|------------------|----------------|
| i. Pre-bid Conference | Date: NA | Time: NA |
| ii. Last date for submission of bid | Date: 13/04/2020 | Time: 03:00 PM |
| iii. Opening of Techno-commercial bid | Date: 14/04/2020 | Time: 03:00 PM |

7. **Warranty:** 5 years comprehensive warranty from OEM.

8. **Technical Evaluation Criteria:** As per the detailed equipment technical specifications given in Annexure –I. If required, the bidder may be asked to provide clarification regarding the technical aspects.

9. Other Qualification criteria:

Eligibility of Bidders:

- i. Firms should quote products that are not expected to go into end of sale in next 3 years and end of support in next 5 years
- ii. The bidder must have valid authorization from the OEM specific to this tender. Documentary proof regarding this must be attached.
- iii. The bidder should have GST registration. GST details should be submitted.
- iv. The bidder/ OEM must have supplied & installed similar solution i.e. load balancer in any Govt./PSU/Education Institute/Corporate in India in last 5 years ending on 31st March, 2019. Copy of the PO & Installation report to be submitted.
- v. Considering primary support from the bidder, the bidder should have office cum service support setup of 24X7 customer support service form smooth support in Eastern India. Supporting documents like office address and phone no. should be submitted.
- vi. The OEM should have valid ISO 9001 certifications. Copy of the same to be submitted.
- vii. Bidders must submit a declaration on their letter head that they are not black listed in any Govt. body, undertaking, and PSU or Autonomous bodies. If found the declaration is false their offer will be out rightly rejected and their EMD amount will be forfeited.
- viii. The Vendor shall provide the following information with the bid to provide background information on vendor to Tender Committee.
 - a. **The list of clients** (contact details of a person phone/ mob. no. with e-mail ids should be attached) where the bidder/OEM had supplied the similar type of materials (as mentioned in schedule of requirements) with successful installation in last three years.
 - b. **Quality certificate** from a recognized institution for their manufacturing/ assembly/ system integration facilities anywhere located in India or abroad.

- c. **Delivery period** from the date of placement of the Purchase Order.
 - d. **Customer support** strength by the vendor.
 - e. Possible quicker **availability** of the vendor when problem occurs.
 - f. **Mode of handling complains** (whether by fault ticket/complain even by email or by phone etc.)
 - g. **Validity period** of cost of equipment.
 - h. **Necessary documents** as mentioned in **Annexure -II**
 - i. Any other points may deemed fit by the committee at time of technical evaluation of bid documents.
 - j. Details of Hardware included in offer.
 - k. Details of Technical Specification and other specifications so as to enable technical assessment of the proposal. Unpriced bid document exactly same as the price bid with full break up without the costs mentioned.
- 10. Financial Bid Evaluation Criteria:** The comparison will be made for the award of contract on the overall price basis.
- 11.** (a) All prices to be quoted for/ upto (NIT Rourkela) in INR.
- (b) GST: GST should be charged at applicable rates against DSIR certificate.
- 12. Bid Security (EMD) and Tender Cost:** EMD (Earnest Money Deposit) need to be submitted through online portal only for **INR 60,000/- (Rupees Sixty Thousand only)** and Tender cost (Non-refundable) through online mode for **INR 1,000/- (Rupees One Thousand only)**. The EMD (Earnest Money Deposit) of unsuccessful bidders should be returned to them at the earliest and latest on or before the 30th days after the award of the contract. EMD shall bear no interest. Any bid without accompanying with EMD & Tender Cost is liable to be treated as non-responsive and rejected.
- 13. Performance Security: 5% of contract value** in shape of Bank Guarantee/Demand Draft (DD) in favor of Director, NIT Rourkela payable at Rourkela from any Scheduled Commercial Bank except Co-operative and Gramin bank. Performance security should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the supplier including warranty obligation. Performance Security should be submitted within 15 days from the date of receipt of Order. And EMD (Earnest Money deposit) amount of successful bidder will be returned after the receipt of performance security in case of award of contract to successful bidder.
14. Please send your quotations through <https://mhrd.euniwizarde.com/HomePage/ebidSites?siteName=mhrd>
15. For technical details, you may contact

<p>Prof. Bibhudatta Sahoo HOD, Computer Centre National Institute of Technology, Rourkela – 769 008 Ph. No: 0661-246-2671 Email Id: bdsahu@nitrkl.ac.in</p>

NB: *Please furnish your Dealership Certificate (must) and Proprietary Nature Certificate (If applicable)*



NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA – 769 008, ODISHA

BID DOCUMENT

1. Instructions to the bidders

- 1.1 Bids are invited on behalf of the Director, National Institute of Technology (NIT), Rourkela – 769008, Odisha, from the intending bidders for supply of the goods/stores/ equipments for the Institute as detailed in the enquiry letter.
- 1.2 The bidders should quote their offer/rates in **BOQ** in clear terms without ambiguity.
- 1.3 In case of any discrepancy between the rates in figures and that in words, the rate in words will be accepted as correct.
- 1.4 The last date for receipt of the bid is marked in the enquiry.
- 1.5 The Bid should be uploaded in <https://mhrd.euniwizarde.com/> Please follow the guideline of the site.
- 1.6 If a prospective bidder requires any clarification in regard to the bidding documents, he may make a request the concerned officer or faculty member at least 15 days before the deadline for receipt of bids.
- 1.7 Bids received after the deadline of receipt indicated in Para 1.4 above shall not be taken into consideration.
- 1.8 Each bidder shall submit only one bid. A bidder, who submits more than one bid, shall be disqualified and considered nonresponsive.
- 1.9 (In respect of high value plant, machinery etc. of a complex and technical nature). The bids may be submitted in two parts, viz., techno-commercial bid and financial bid.
- 1.10 The bidder has to sign in full at all pages of the scanned part of the bidding document. No over-writing in those pages are acceptable.
- 1.11 Bidders registered with any of the following agencies/ bodies as per Public procurement policy for Micro & Small Enterprises (MSE) order 2012 are exempted categories from payment of EMD provided that the registration Certificate issued by any one of these below mentioned agencies must be valid as on close date of tender. Micro small or medium enterprises who have applied for registration or renewal of registration with any of these agencies/bodies but have not obtained the valid Certificate as on close date of tender are not eligible for exemption.
 - i) Khadi and Village Industries Commission (KVIC)
 - ii) National Small Industries Corporation (NSIC)
 - iii) Any other body specified by Ministry of MSME/GOI

2. INSTRUCTIONS FOR ONLINE BID SUBMISSION

The bidders are required to submit soft copies of their bid electronically on the e-Wizard Portal (<https://mhrd.euniwizarde.com/>) using valid Digital Signature Certificates. Below mentioned instructions are meant to guide the bidders for registration on the e-Wizard Portal, prepare their bids in accordance with the requirements and submitting their bids online on the e-Wizard Portal. For more information, bidders may visit the e-Wizard Portal <https://mhrd.euniwizarde.com/>

2.1 REGISTRATION PROCESS ON ONLINE PORTAL

1. Bidders to enroll on the e-Procurement module of the portal <https://mhrd.euniwizarde.com> by clicking on the link "Bidder Enrollment". Enrolment on the e-wizard Portal.
2. The bidders to choose a unique username and assign a password for their accounts. Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the e-Wizard Portal. Bidders to register upon enrolment their valid Digital Signature Certificate (Only Class III Certificates with signing + encryption key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / TCS / nCode / eMudhra etc.), with their profile.
3. Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSCs to others which may lead to misuse. Foreign bidders are advised to refer "DSC details for Foreign Bidders" for Digital Signature requirements on the portal.
4. Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / eToken.
5. Bidders must ensure that they have the latest version of Java installed in their local system.
6. The scanned copies of all original documents should be uploaded in pdf format on portal <https://mhrd.euniwizarde.com>
7. After completion of registration payment, you need to send your acknowledgement copy on our help desk mail id ewizardhelpdesk@gmail.com for activation of your account.

2.2 TENDER DOCUMENTS SEARCH

1. Various built in options are available in the e-Wizard Portal to facilitate bidders to search active tenders by several parameters. These parameters include Tender ID, organization, location, date, value, etc.
2. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender published on the Online Portal.
3. Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the Online Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
4. The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

2.3 BID PREPARATION

1. Bidder should take into account any corrigendum published on the tender document before submitting their bids.
2. Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid.

3. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
4. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / PNG etc. formats. Bid documents may be scanned with 100 dpi with black and white option.

2.4 BID SUBMISSION

1. Bidder to log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
2. The bidder to digitally sign and upload the required bid documents one by one as indicated in the tender document.
3. Bidder to select the payment option as Online" to pay the tender fee/ EMD wherever applicable and enter details of the instrument.
4. A standard BoQ format has been provided with the tender document to be filled by all the bidders. Bidders to note that they should necessarily submit their financial bids in the prescribed format and no other format is acceptable. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BOQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BOQ file, open it and complete the unprotected cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BOQ file is found to be modified by the bidder, the bid will be rejected.
5. The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
6. All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data, which cannot be viewed by unauthorized persons until the time of bid opening.
7. The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
8. Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
9. Kindly add scanned PDF of all relevant documents in a single PDF file of compliance sheet.

2.5 AMENDMENT OF BID DOCUMENT

At any time prior to the deadline for submission of proposals, the institutions reserve the right to add/modify/delete any portion of this document by issuance of a Corrigendum, which would be published on the website and will also be made available to the all the Bidder who have been issued the tender document. The Corrigendum shall be binding on all bidders and will form part of the bid documents.

2.6 ASSISTANCE TO BIDDERS

1. Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.
2. e-Procurement support any queries relating to the process of online bid submission or queries relating to e-Wizard Portal in general may be directed to the **24x7 e-Wizard Helpdesk. The contact number for the helpdesk is 011-49606060, 23710092, 23710091, Er Sanjeet Kumar Jha (+91-8882495599), 9355030626. Amit Kumar Jha 9355030627, 9205898226**

Email Support:

For any eProcurement Application Service Requests and Technical issues related to Document Uploads, Tender Publishing, Issue of Corrigendum, Encryption/Decryption Key issues, Bid Evaluation, Bidder Login issues, New Registration issues, Key Uploads, DSC Key installation, Bid Submission, system users may please mail to Sanjeet Kumar Jha ewizardsanjeet.kumar@gmail.com

3. Conditions of the bid

- 3.1 The rates quoted should preferably be net, inclusive of all taxes and duties, packing, forwarding, freight, Insurance and all other incidental charges. In case these charges are quoted extra in addition to the quoted rates, the amount thereof or Ad Valorem rate must be specified. Packing, forwarding, freight etc., when quotes separately are reimbursable at actuals. If external agencies are employed, their receipts must be enclosed with the invoice.
- 3.2 Duties and Taxes are to be quoted separately. Ad Valorem rates thereof should be clearly indicated with reference to the relevant Acts and Rules.

It may be noted that the Institute is availing custom duty exemption in terms of Notification No. 51/96 – Customs dt. 23.07.1996, Notification No. - 47/2017- Integrated Tax (Rate) dt. 14.11.2017 and Notification No- 45/2017 – Integrated tax (Rate) dt. 14/11/2017 & Notification No. - 45/2017- Central tax (Rate) dt. 14.11.2017, Notification No. - 45/2017- Union Territory Tax (Rate) dt. 14/11/2017 [Vide DSIR, Ministry of Science and Technology, Government of India, Registration No.: TU/V/RG- CDE (227)/2016, dated: 13.11.2018]

- 3.3 The goods are required to be delivered at the indenting Department of NIT, Rourkela, and must be reached within **90 days** from the date of placement of the supply of order under the risk and arrangement of the bidder and offers with delivery beyond the above period shall be treated as unresponsive. In case the delivery time is higher, the same must be mentioned clearly in the quotation.
- 3.4 The bid should remain valid for a period of **90 days** from the date of opening. In case your offer has a different validity period that should be clearly mentioned in the quotation.
- 3.5 Conditional discount, if any, offered by the bidder shall not be considered at the time of evaluation.
- 3.6 The goods offered should strictly conform to the specification and technical details mentioned in Annexure-I.
- 3.7 The Institute may like to conduct pre-dispatch inspection of goods, where applicable.
- 3.8 Period of guarantee/warranty, where applicable, should be specified in the bid.
- 3.9 If the successful bidder, on receipt of the supply order, fails to execute the order within the stipulated period, in full or part, it will be open to the Director, NIT Rourkela to recover liquidated damage from the firm at the rate of 1 percent of the value of undelivered goods per month or part thereof, subject to a maximum of 5 percent of the value of undelivered

goods. Alternatively, it will also be opened to the Director, to arrange procurement of the required goods from any other source at the risk and expenses of the bidder.

- 3.10 The successful bidder may be required to execute a contract, where applicable.
- 3.11 The bidder has to furnish up to date Income Tax Clearance Certificate along with the bid.
- 3.12 Payment (100 percent) will be made by Account Payee Cheque/Bank Draft, within 30 days from the date of receipt of the goods in good condition or receipt of the bill, commissioning of the equipment, where applicable, whichever is later/latest.
- 3.13 In case of Advance payment, the payment will be made on either in Foreign Demand Draft or Wire Transfer only. The proforma invoice copy need to be sent for advance payment.
- 3.14 In the event of any dispute arising out of the bid or from the resultant contract, the decision of the Director, NIT, Rourkela shall be final.
- 3.15 The bid document/resultant contract will be interpreted under Indian Laws.

General Clauses:

1. Firms should quote products that are not expected to go into end of sale in next 3 years and end of support in next 5 years.
2. **Warranty:** 5 years comprehensive warranty from OEM.

SCOPE OF WORK

The Scope of Work covers the supply, installation, commissioning and warranty of High Performance Split air-conditioner and services provided for the same.

TECHNICAL SPECIFICATION

1. Design Requirements

The environmental control system will be a High performance factory assembled split air-conditioning unit designed to work 24x7 operation. It will be wall mounted, optimized for maximum cooling capacity and high Airflow rate to match sensible load in technology room . This unit should be designed for service from the front of the unit.

The Air-cooled High Performance Split AC unit shall be designed as per following conditions:

- Inside Design condition : 27 Deg C \pm 2 Deg C and Max 50% RH
- Ambient air design temperature : 43 Deg C
- Actual Capacity : 2 TR
- Air Quantity : 500 to 600 CFM / TR
- Filters Efficiency : 90% efficiency down to 10 Microns.
- Type of load : High sensible heat load (Sensible heat factor above 0.90)

2. Quality Assurance

The system will be designed and manufactured according to world-class quality standards. The manufacturer should be ISO 9001 certified.

3. Cooling Circuit

The refrigeration system shall consist of a R407C/R410A based Scroll compressor, hydrophilic coated evaporator coil, condenser coil, thermostatic expansion valve and filter drier. The compressor should have a suction gas cooled motor, vibration isolators, internal thermal overloads, manual reset high pressure switch, low pressure and high pressure transducer.

4. Fan section

The unit will be equipped with a direct drive electronically commutated radical fan with high efficiency and high reliability. The unit are designed with draw-thru airflow having fans in downstream of the coil.

5. Cabinet and Frame

The exterior should be steel panels, custom powder coated to protect against corrosion. The wall constructed side, bottom and rear panels separated with insulation from the airstream. The unit should be provided with perforated inlet and outlet panels and same should have more than 65% open area.

6. Air Filtration

The unit will be equipped with one set of HDPE air-filter having filtration efficiency of 90% down to 10 micron and same to be located within the cabinet and accessible from the front of the unit. The filter can be washed repeatedly.

7. Air Cooled Condenser

The condenser should be with fan modulation kit. Condenser should be able to work -5 deg C to 45 deg C ambient temperature without tripping. The condenser frame will be made up of a sturdy G.I. structure. The protection level of the outdoor unit will be IP54. The air-cooled condenser coil is constructed of mechanically expanded copper tubes in enhanced surface aluminium fin with Hydrophilic coating.

8. Unit Controls

1.8.1 Microprocessor Controller

Unit should be controlled by intelligent control board. The control board should be microprocessor based. The controller should allow setting and monitoring of the room parameters.

The controller allows setting and monitoring of the following space parameters:

- Return Temperature set-point
- Actual Room temperature
- Indoor Fan speed Range
- Mode of Operation
- Unit Number
- Active Alarm

Example of available warnings / alarms:

- Power fail
- High Return temperature
- Loss of airflow
- Compressor Low Pressure
- Compressor High Pressure
- High discharge temperature

Following features will be incorporated in the controller:

- Sequencing and auto-rotation of units upto 6 numbers in connection.
- Fault Failure Switch in sequence
- Automatic restart will be provided after a power failure.

1.8.2 Displays versions:

The unit should be provided with corded remote controller with LCD screen and keypad. It will provide multiple-level password protection to prevent unauthorized operation effectively. The operation time of components should be available through the menu. A led indication in case of the 'Warning' or 'Alarm' event. The screen will display the current temperature, unit output status (Cooling, fan, free cooling), unit mode (Single, lead, standby), unit operation status (Running, standby, locked), alarm information, and current date & time. More detailed operating status and alarm information will be available from the Main Menu screen.

9. Monitoring

The control board should provide an RS485 port, and the standard protocol will be MODBUS. This should be standard feature of the product.

Sl. No.		Page No. of the Bid Document
1	Eligibility:	
a.	Firms should quote products that are not expected to go into end of sale in next 3 years and end of support in next 5 years	
b.	The bidder must have valid authorization from the OEM specific to this tender. Documentary proof regarding this must be attached.	
c.	The bidder should have GST registration. GST details should be submitted.	
d.	The bidder must have supplied & installed similar solution i.e. load balancer in any Govt./PSU/Education Institute/Corporate in India in last 5 years ending on 31 st March, 2019. Copy of the PO & Installation report to be submitted.	
e.	Considering primary support from the bidder, the bidder should have office cum service support setup of 24X7 customer support service form smooth support in Eastern India. Supporting documents like office address and phone no. should be submitted.	
f.	The OEM should have valid ISO 9001 certifications. Copy of the same to be submitted.	
g.	Bidders must submit a declaration on their letter head that they are not black listed in any Govt. body, undertaking, and PSU or Autonomous bodies. If found the declaration is false their offer will be out rightly rejected and their EMD amount will be forfeited.	

2	Technical Specification of Industrial Air Conditioner	Compliance(YES/No) Mention Page No. of the Bid Document
a.	The Air-cooled High Performance Split AC unit shall be designed as per following conditions	
i.	Inside Design condition:27 Deg C ±2 Deg C and Max 50% RH	
ii.	Ambient air design temperature :43 Deg C	
iii.	Actual Capacity:2 TR	
iv.	Air Quantity:500 to 600 CFM / TR	
v.	Filters Efficiency: 90% efficiency down to 10 Microns.	
vi.	Type of load: High sensible heat load (Sensible heat factor above 0.90)	
b.	Cooling Circuit: The refrigeration system shall consist of a R407C/R410A based Scroll compressor, hydrophilic coated evaporator coil, condenser coil, thermostatic expansion valve and filter drier. The compressor should have a suction gas cooled motor, vibration isolators, internal thermal overloads, manual reset high pressure switch, low pressure and high pressure transducer.	
c.	Fan section The unit will be equipped with a direct drive electronically commutated radical fan with high efficiency and high reliability. The unit are designed with draw-thru airflow having fans in downstream of the coil.	
d.	Cabinet and Frame The exterior should be steel panels, custom powder coated to protect against corrosion. The wall constructed side, bottom and rear panels separated with insulation from the airstream. The unit should be provided with perforated inlet and outlet panels and same should have more than 65% open area.	

e.	Air Filtration The unit will be equipped with one set of HDPE air-filter having filtration efficiency of 90% down to 10 micron and same to be located within the cabinet and accessible from the front of the unit. The filter can be washed repeatedly.	
f.	Air Cooled Condenser The condenser should be with fan modulation kit. Condenser should be able to work -5 deg C to 45 deg C ambient temperature without tripping. The condenser frame will be made up of a sturdy G.I. structure. The protection level of the outdoor unit will be IP54. The air-cooled condenser coil is constructed of mechanically expanded copper tubes in enhanced surface aluminum fin with Hydrophilic coating.	
g.	Displays versions Unit should be provided with corded remote controller with LCD screen and keypad. It will provide multiple-level password protection to prevent unauthorized operation effectively. The operation time of components should be available through the menu. A led indication in case of the 'Warning' or 'Alarm' event. The screen will display the current temperature, unit output status (Cooling, fan, free cooling), unit mode (Single, lead, standby), unit operation status (Running, standby, locked), alarm information, and current date & time. More detailed operating status and alarm information will be available from the Main Menu screen.	
h.	Monitoring The control board should provide an RS485 port, and the standard protocol will be MODBUS. This should be standard feature of the product	
i.	Unit Controls The controller allows setting and monitoring of the following space parameters:	
i.	Return Temperature set-point	
ii.	Actual Room temperature	
iii.	Indoor Fan speed Range	
iv.	Mode of Operation	
v.	Unit Number	
vi.	Active Alarm	
j.	Warnings / Alarms:	
i.	Power fail	
ii.	High Return temperature	
iii.	Loss of airflow	
iv.	Compressor Low Pressure	
v.	Compressor High Pressure	
vi.	High discharge temperature	
k.	Controller should incorporate following features:	
i.	Sequencing and auto-rotation of units upto 6 numbers in connection.	
ii.	Fault Failure Switch in sequence	
iii.	Automatic restart will be provided after a power failure.	