EN

Indian Institute of Technology Hyderabad Kandi
502 285, Telangana, India
Phone: 040-23016042: Fax: 040-, 23016032
E-Mail: pur_rd@iith.ac.in

Enquiry No. **IITH/CE/SURENDRA/2019/T043** **Date: 26.12.2019**

NOTICE INVITING TENDER (NIT)

To

Dear Sir/Madam,

Sub: Quotation for Supply, Installation & Commissioning of Smart Rack Power Backup & Cooling System-Reg.
Last date & time for submission of offer: 10.01.2020 by 03.00 P.M.
Date & Time of Tender Opening : 10.01.2020 by 03.30 P.M.

This Institute is interested in purchase of the following material as per the enclosed terms and conditions.

S.No.	Description	Qty. No's.
1.	Supply, Installation & Commissioning of **Smart Rack Power Backup Cooling System** (Specifications as per ANNEXURE-I of NIT)	01 No.

For any technical query related to enquiry you may feel free to contact
Dr. Surendra Nadh Somala, Phone: +91 40 2301 8457, Email: surendra@iith.ac.in.

Kindly acknowledge receipt.

Yours faithfully,

SURESH NAIR
Assistant Registrar

TERMS & CONDITIONS:

1.	We are interested in the material available from **Ready Stock**.
2.	The rate quoted should be **free delivery at IITH Stores, Kandi 502285 / FOR Imports up to CIP Hyderabad Airport basis.**
3.	The complete offer should be typed in the letterhead of the tenderer. The offer should be signed & stamped by Company's authorized signatory.
4.	Rates quoted in the tender should be **exclusive** of GST, and should be valid for 90 days. Breakdown details of packing, forwarding, freight and insurance charges in percentages should be shown separately. The goods should be insured in our favor against all risks from Warehouse to warehouse.
5.	The rate of GST should be clearly indicated wherever chargeable. However, the concessional rate of GST admissible to research institutes on purchase of scientific equipment's is applicable to this Institute.
6.	The Delivery period should clearly have indicated and strictly adhered to in the event of an order is placed against your offer. Late delivery will attract liquidated damages @1 % per week subject to a maximum of 10% of the total value of supply order.
7.	Incase any of the items mentioned on pre-page is on the current rate/running contract please quote the DGS&D rate contract reference and also send a copy of the latest R.C.
8.	**Payment** for the supply will be made by Cross Cheque/RTGS/NEFT through State Bank of India, IIT Hyderabad Branch, Hyderabad, 502 285 **within 30days from the date of receipt and** acceptance **of material** and your bill in triplicate original signed over a revenue stamp affixed. In case of Equipment/Instruments the payment will be made after installation of the material. No Payment in Advance will be done.
9.	Quotation erased & overwritten will be summarily rejected unless corrections are authenticated with the tenderer's signature.
10.	The Offer should be submitted strictly as per the terms and conditions failing which the offer will be liable for rejection. In the event of the tenderer remaining silent on any terms& conditions of the NIT, it will be presumed that the tenderer(s) have accepted such terms and conditions in the event of any order/contract on them.
11.	**No deviation of the terms and conditions is acceptable. Terms and conditions which are in deviation of the tender terms are liable for rejection without making back reference to the tenderer.**
12.	**Conditional tenders will not be accepted**.
13.	Quotation should be sealed & addressed to **The Director, Indian Institute of Technology Hyderabad, Kandi 502285, Telangana. India**. The cover should be sealed and super scribed as per subject and enquiry No. mentioned on pre page. Quotation delivered personally should be delivered to the Receipt & Dispatch Section of IIT Hyderabad. Late & Delayed tenders will not be considered
14.	IIT Hyderabad does not take any responsibility for loss of tender in transit.
15.	The tender(s) should enclose the list of similar item(s) if supplied to any of the IIT Laboratories for the past three years with complete address, telephone /Fax No. and the contact person to whom they have supplied and installed similar item(s)with their tenders along with the prices finally paid.
16.	**Warranty & Maintenance contract**: The supplier shall **warranty** equipment, system components for a minimum period of **Standard OEM warranty** following satisfactory installation and commissioning. The defects, if any, during the guarantee/warrantee period are to be **rectified free of charge by arranging free replacement wherever necessary**. **Any expenditure including government levies on account of the replacement are to be borne by the supplier/agent.** The supplier shall offer an annual test & maintenance agreement for three years, consisting of the following: Regularly and systematically examine, test and adjust all system components. Submit test reports that certify all components have been tested and the system is in proper working order and functions in accordance with this specification.

17.	Please submit & confirm the following that will be complied with by the vendor during supply of the system. a) **Spares & service Support**: Please certify that the instrument supplied shall be of latest technology and model, so that you would support with onsite service and spares for next 07years or Standard OEM. b) Exhaustive soft and hard copy of installation operation, users, applications manuals, maintenance & service manuals shall include system interconnection diagram, general arrangement of equipment drawing, complete circuit diagram, trouble shooting tips & diagnostic methods. c) Standard toolkit shall be provided for general maintenance service. d) Recommended essential spare parts and consumables with budgetary price. e) Complete system pre-installation requirements.
18.	**Installation & Testing:** The installation shall be completed **with in a week** from the date of intimation regarding the arrival of the equipment in the institute. A Penalty equivalent to 1% of the value of the goods will be levied for every week's delay in installation. The installed system shall be performance tested at our premises in accordance with the manufacturer's/supplier's recommendation/specifications. Tests shall demonstrate the proper operation of the instrument and all components.
19.	**Commissioning & Training:** The supplier shall perform on site installation, commissioning & startup of all system components in order to provide fully functional; system. The supplier shall train onsite institute's personnel on the operation and maintenance of the system framework. The supplier shall perform system check-out /start-up and /or training functions **free of cost**.
20.	The Director, IIT Hyderabad reserves the right to reject or accept or withdraw the tender in full or part and to increase or decrease the quantity without assigning reason thereof.
21.	The quotations are liable to be rejected if any of the above conditions are not complied with. The quotations should be complete in all respects duly signed wherever required. Incomplete and unsigned offers will not be considered. Quotations that are unclear leave room for interpretation will be considered non-responsive and will not be evaluate.
22.	**ARBITRATION: a)** Unless otherwise specified, in all cases of disputes which cannot be settled by mutual negotiations, the disputes or differences shall finally be settled and binding on both parties by arbitration in conformity with the rules of Indian Arbitration Act, 1940. All disputes or differences what so ever arising between the parties out of relating to the construction, meaning and operation or effect of the general terms and conditions including the Purchase Order or the breach thereof shall be settled by Arbitration Act, 1940 and the award made in pursuance thereof shall be binding on the parties. **b)** Performance of the purchase order shall continue during arbitration and any subsequent proceedings. **c)** The Jurisdiction and Venue of arbitration shall be Hyderabad. The Arbitrator will be the Director, IIT Hyderabad, or his nominee.
23.	**RISK PURCHASE:** If you fail to deliver the ordered material within the maximum delivery period stipulated in the purchase order, we may procure the same items in such a manner as it deemed appropriate for us. And, if we happen to incur any additional cost in the process of our procurement of similar materials you are liable to pay the same.
24.	**FORCE MAJURE:** If the performance of the obligation of either party is rendered commercially impossible by any of the events herein-after mentioned, the same party shall notice of 15 days from the date of such an event in writing to the other party. **i)** Government regulation; **(ii)** Legislation; **(iii)** Natural disasters; **(iv)** Strikes; **(v)** Lockout; **(vi)** Act of God.

ASSISTANT REGISTRAR

Technical Specification of Smart Rack Power Backup & Cooling System.

DETAILED SPECS OF COMPONENTS

1. Uninterrupted Power Supply (UPS) System

Configuration: 1 x 10 kVA

General Description:
Supply, install, test and commissioning of one numbers of true online, double conversion, high efficiency, high power factor Uninterruptible Power Systems (UPS) rated at 10 KVA with battery backup support for 5 minutes on full load. The backup batteries should be supplied with the necessary arrangements to mount inside the cabinet.
Scope:

- The scope shall include design, supply, installation, testing and commissioning of the complete UPS system and related accessories including:
- All Server racks will get power feed from two independent 2 x 7 KVA PDU to ensure redundancy.
- All systems should be tested in factory as per the manufactures recommended procedure for all operating parameters and the test results should be provided during the installation.
- Delivery at site, unloading, handling, installation of complete system including interconnection from the UPS system to batteries and to input / output panels switches. All interconnections shall be done using multi-strand Flexible Copper conductor cables of appropriate sizes.
- Scope includes battery bank connections and providing safety barriers for all bus bars and cable connection leads on battery racks.
- Energizing of UPS and Battery bank commissioning.
- UPS control parameters setting and complete testing of system on load.-
- Service backup by engineer till system is fully operational and subsequently training is to be provided to the concerned persons of the Institute. –
- Any upgrade of the system hardware and associated other software during the warranty period should be supplied at free of charge. –
- Acceptance tests will be carried out after installation and the systems will be taken over only after successful completion of the acceptance tests. –
- Operation and service manuals of the systems containing technical / Electronic drawings / circuit diagrams complete in all respects should be supplied.

Specification / features of the Each UPS system are as follows:

- True Online Double conversion Rack Mount
- User friendly LCD display
- Output power factor 0.9
- 50 Hz / 60 Hz frequency convertor mode
- Emergency Power Off (EPO) function
- ECO mode operation for energy saving (ECO)

10KVA UPS other Technical Specification:

10 kVA UPS Technical Specification		
OUTPUT PARAMETER		Compliance
Capacity	10 kVA / 9000W	
O/P Power Factor	0.9	
Wave Form	Pure Sine Wave (On line Double Conversion)	
Nominal Voltage	230 V	
O/P Voltage THD	≤2% max Full linear load, ≤5% max on non-linear load	
Frequency Regulation	±0.5 %	
Output Frequency	50Hz	
Crest Factor	3:01	
AC-AC Efficiency	93%	
Transfer Time Mains-Battery	0	

Transfer Time Inverter-Bypass	4 m sec	
INPUT PARAMETER		
Configuration	1 Ph , L-N + PE	
Nominal Voltage	230 V rms	
I/P Voltage Range	176V-288V at 100% Load and 120V-288V at 60% Load	
Input Frequency	50Hz / 60 Hz	
Frequency Range	45 to 65 Hz, ±0.2 Hz	
I/P Power Factor	≥ 0.99	
Overload Performance	105%-125%; 5 Mins, 125%-150%; 1Min	
BATTERY CHARGER		
Nominal Voltage Float (LB)	163.2 Vdc	
Max. Charging Current	2 A (Standard model)	
BATTERY PARAMETER		
Type	SMF	
Min. No. of Battery Block	16	
ENVIORNMENTAL PARAMETER		
Operating Temperature	0 to 40 deg	
Storage Temperature	-20 to 50 deg	
Humidity	20%-90% non condensing	
Noise Level	50 dBA max	
MECHANICAL PARAMETER		
Product Size (DxWxH)	435x640x85 mm [2U]	
Weight	21.5kg	
Color	RAL 7001	
Protection	IP20	
Communication Port	RS232 , USB	
EPO	Yes	
STANDARDS		
EMI	EN62040-2 : 2006	
Safety	EN62040-1-1:2003	
Performance	IEC / EN 62040 - 3	

Installation:

(i) The entire system shall be installed as per manufacturer's recommendations & instructions including all interconnections for supply & control circuits.

(ii) All components shall be clearly identified using labels including battery cells individually.

(iii) Services of authorized representative or manufacturer for supervision of installation, connections, testing, & adjustments shall be provided.

Testing& Commissioning:

(i) Under supervision of manufacturer's representative all system functions, operations, protective features shall be checked & preset to ensure compliance or specifications.

(ii) Test the system as per recommendations & test listed bellow using pre-calibrated instruments.

1. Load simulation.
2. Simulation of malfunctions to verify protective device operations.
3. Duration of supply on emergency. Low battery voltage alarm & shutdown, transfer & restoration of normal supply.
4. Remote status & alarm tests.

In case of test any shortfalls / faults, the same shall be rectified & test procedure shall be again repeated to establish satisfactory performance.

Cleaning:

On completion of installation, testing of the system all components, cabinets etc. shall be cleaned & unwanted material, debris shall be removed from site. Scratches dents if any shall be cleaned & touched up to match the original finish.

Drawings & Manuals for UPS

Following drawings & manuals / information shall be submitted in at least THREE copies at appropriate stages & for handing over the system.

i Manufacturer's data for product, features, components & performance along with the offer.

ii Operation & maintenance manual with;

1. List of recommended spares & replacement components.
2. Detail operating instructions covering operations in normal & abnormal conditions.
3. Shop drawings showing detail fabrication, assembly of components, internal & interconnecting wiring, dimensions, plans & views, installation details access & clearance etc for approval.
4. Product certificates for Brought out items.
5. Factory test certificates & Inspection report.
6. Field test reports.

2. Rack Mount Air Conditioning System

a. **Configuration:**

i. Supply, installation, testing and commissioning of 7 kW rack cooling Type Air-conditioning Units designed specifically for high sensible heat ratio with cooling techniques to match the low latent loads of systems to be installed in the integrated cabinet for effective and uniform distribution of cooling.

ii. Cold air will be supplied to the cold aisle containment of the integrated cabinet and the hot air will be taken from the hot aisle containment of the cabinet.

7 kW Cooling Unit Technical Specification:

Specification	Compliance
High sensible cooling unit with 100% duty cycle	
Cooling capacity of 7 kW	
Split indoor & Outdoor unit design	
Cooling Unit integrated in rack, 19" mountable not more than 6U	
Digital Scroll compressor for high reliability	
Electronically commutated centrifugal evaporator fan for high energy efficiency	
Air flow suitable to rack equipment from bottom to top discharge in vertical direction	
Thermal insulation on indoor unit	
Under voltage and Overvoltage protection for equipment safety	
High Pressure & Low Pressure protection for safe operation	
Washable filter with 80% efficiency down to 20 micron rating and HDPE media	
Flare type Thermostatic Expansion Valve for easy serviceability	
Refrigerant R407/410 compatible	
Hydrophilic evaporator coil	
Individual breakers at indoor and outdoor unit for protection	
Flexible Cu piping for easy indoor to outdoor connection at rack level	
ON/OFF switch at indoor unit for emergency purpose	

Scope of work:

a. Mounting of RCU (01 no.) in a rack space (6U)
b. Laying gas pipe line & water drainage line.
c. Outdoor unit location will be provided by customer outside room and distance between indoor to outdoor unit must not exceed 20 mtrs.
d. Powering the device for indoor as well as outdoor unit along with necessary cable connectivity & insulation material
e. Installation, refrigerant charging, testing & commission under vendor scope.

3. Rack & Accessories

Supply and installation of high density IT Rack with containment, having 42U as standard, complete with keyboard trey, cable manager & blanking panels with basic PDU and rack accessories.

Rack & Accessories Technical Specification:

a. Rack is 42 U 19" mounting type with 2000 (Height) x 800 (Width) x 1000 (Depth).
b. Rack design is sturdy frame section, corners are stiffened with welded MS die cast.
c. Rack frame is, scalable and modular with safe load carrying capacity of 1400 Kg on enclosure frame and 1000 Kg on 19" mounting angles.
d. Base plinth with 100 mm height
e. Cut outs with rubber grommet on top and bottom plate for cable entry.
f. Cable entry provision from top & bottom both.
g. Vertical Cable manager on both LHS & RHS on rear side.
h. Front Glass door for complete 42U height visibility and rear plane door with stiffener for strength.
i. Thermally insulated cold aisle chamber.
j. Blanking panels to prevent air mixing.

4. Monitoring

Supply and installation of Liebert RDU system which, continuously collects critical information from network connected devices, temperature, humidity, door sensors and other dry contact monitoring. Based on pre-set parameters, automated email alerts are sent to the intended recipients.

Monitoring Technical Specification:

a. Intelligent Rack environment remote monitoring.
b. Modbus 485 Communications
c. SNMP Communication.
d. Single window for monitoring all sensors.
e. Data and logs of historical information of alarms and notification.
f. Temperature & Humidity Sensor, with LCD display and RJ45 connector.
g. Door opening sensor with RJ 45 connector.
h. Water leak detection sensor with RJ45 connector.
i. Smoke detection sensor with RJ45 connector.
j. Alarm device with LED flash and sound option.

5. Rack Power Distribution Unit (Socket Strip)

Supply and installation of vertical rack mount power distribution unit (zero U).

a. Each rack shall have two vertical PDU's having IEC C13 x 12 nos. C-19 x 04 nos. Sockets with 32 Amp MCB with indicator.

6. Electrical System (POD Device):

Supply and installation of electrical distribution system.

a. 19" rack mountable Power Output Device with essential breakers to be mounted in the rack. Consumes only 2U space of rack height.
b. Main Incomer- 80 Amp 4 Pole MCB with suitable provision of terminal blocks for connections.
c. UPS I/P - 2 nos. of 32 Amp SP MCB for UPS Supply.
d. Cooling I/P - 2 nos. of 32 Amp DP MCB for Cooling Unit Supply.
e. Spares -1 no. of 6 Amp MCB for spares.
f. All input supply cables from POD unit to equipments are connected with industrial socket (male - female) with suitable rating.

SCOPE:

1.1 This specification covers intelligent integrated/inbuilt infrastructure, standalone system design, engineering, manufacture, assembly, testing at manufacturer's works, supply, delivery at site, unloading, handling, proper storage at site, erection, testing and commissioning at site of complete infrastructure for the proposed *Data Centre* to be installed by **Indian Institute of Technology** at **Hyderabad** as detailed in the specification, complete with all accessories required for efficient and trouble free operations.

2 The detail specifications of the intelligent integrated/inbuilt infrastructure, standalone system shall be in adherence to data center guidelines thus shall be composed of dual active power and cooling distribution paths, but only one path active. Shall have redundant components.

3 The Intelligent Integrated Infrastructure essentially includes internal redundant or backup power supplies, environmental controls (e.g., rack mount air conditioning, smoke detection, Water leak detection, temperature & humidity sensor, door status sensor etc), security devices etc. Critical systems like UPS system can have N + N (Internal UPS + External UPS) topology respectively.

4 The Intelligent integrated infrastructure shall be having foot print approximately 10 Sq. Ft which shall have min 24 U usable space (1 rack), to accommodate IT and network equipment & devices.

5 The Intelligent integrated infrastructure would provide many functionality and some of the key functionalities are Cold Contained Front Aisle & Rear Contained Hot Aisle, insulation, remote management and single point of service.

6 All Critical components like UPS, PAC, Rack & environ monitoring system should be from a single OEM.

7 Bidder/ OEM should have supplied & executed similar kind of minimum two projects of Smart and Integrated Data center in any of the IITs across India.

8 OEM should have a local service centers with the availability of spare parts.

9 The Intelligent Integrated Infrastructure shall have following components: -

9.1 Rack Mount Air conditioner with Digital Scroll Compressor, of capacity 7 kW (2 Tr.) 01 no. to cater IT load approximately 7 kVA for total 1 rack.

9.2 10 KVA – rack mount UPS 1 no. with output P.F. up to 0.9 & efficiency more than 93%. There should be 5 min battery back-up. UPS & Battery should be mounted inside the cabinet only.

9.3 Smoke detectors, Access Control System, Temperature & Humidity sensor, Door sensor and alarm beacon. 1 set

9.4 42 U racks of dimension 800 mm x 1000 mm 1 number; Front glass door & rear plain door.

9.5 Monitoring system – capable for Email alerts

9.6 Optional Pin type / Biometric access control system which should be control by access control panel. 1 set

9.7 Optional, Novec 1230 Gas based fire suppression system as per NFPA guidelines

9.8 32A Vertical Rack mount PDU of type IEC C13 x 12 sockets & IEC C19 x 4 sockets combination, Each rack shall have two such PDU's.

9.9 Electrical system with essential MCB for UPS & Cooling unit input supply.