Indian Statistical Institute Delhi Centre,

7 S.J.S Marg ,Katwaria Sarai, New Delhi-110016

NOTICE INVITING TENDER

Tender No. ISID/EMU/AC/2017-18 / 43 / Date: 26/12/2017

Online bids are invited for the Supply Installation Testing and Commissioning (SITC) of packaged Air Conditioner as per the details enclosed from the reputed, established and competent vendors / suppliers in two bids – technical and financial. The details of tender documents are as follows:-

SCHEDULE OF e-TENDERING

A)	**Date & Time of uploading NIT and other documents**	**26.12.17 (After 3 PM)**
B)	**Downloading of Tender Documents from website of www.eprocure.gov.in**	**27.12.17 (after 11 AM onwards)**
C)	**Date & Time of online submission of technical and financial bid**	**27.12.17 (after 11 AM onwards)**
D)	**Closing date for submission of Technical and Price Bids**	**19.01.18 (up to 11 AM)**
E)	**Date & Time of Opening of Technical Bid**	**21 .01.18 (after 11.30 AM)**
F)	**Date & Time of opening of Price Bid**	**within ten days after opening technical bid**

1	Name of office inviting tender	Indian Statistical Institute, Delhi Centre, S.J.S Marg ,Katwaria Sarai, New Delhi-110016
2	Name of the equipment	Air Cooled Package Air Conditioner 11 TR
3	Specifications of the equipment	Can be obtained / downloaded from our website address: www. isid.ac.in / Announcements/Tender
4	Eligibility of bidder to participate in the tender	Original Equipment Manufacturer (OEM) or its Sole Authorized Business Distributor/Dealer shall be able to bid with original authorization from OEM. No assemble or reseller shall be considered.

5	Documents to be attached along with the tender	i. Authorization Certificate of OEM/Authorized Distributor/ Authorized Dealer ii. Copy of PAN No. and GSTIN certificate iii. Copy of Income Tax Return Acknowledgement for the last three years iv. Experience Certificate of similar work
6	Method of Submission of Bids	Bids shall be submitted online only at (e-procurement)CPPP website: www.eprocure.gov.in

This Centre will not be responsible for postal or any other delay and the Authority of the Centre reserves the right to accept or reject any or all tenders without assigning any reason thereof.

Tenders / offers sent by Post / Couriers / fax / email or manually will not be considered and would be rejected.

Officer on Special Duty,
ISI DELHI CENTRE

General Terms & Conditions:

1) The tenderer should have high technical, financial reputation with sufficient experience and capable enough for satisfactory supply of similar type of equipment to actual users. Documentary evidence should be submitted in this respect with the technical bid.

2) Technical Bid should be complete in all respect indicating detailed technical specifications of the offered items, make, model, duties, taxes, delivery period, gross and net weight of the consignment, together with the descriptive leaflet/catalogue/pamphlet/manufacturer's brochure, etc.

3) The offers shall remain valid at least for a period of 30 days. The period starts from the date of closing of tender submission.

4) The Institute shall not be responsible for delay, loss or non-receipt of the tender through post/Air Mail

5) The aforesaid Open Tender is being issued with no financial commitment and purchaser reserves the right to change / vary any item or items thereof at any stage.

6) No tenderer shall be entitled for any compensation what so ever for rejection/non consideration of their tender.

7) Invitation of tender does not constitute any right or claim for issue of purchase order to the tenderer.

8) The Centre will not be responsible for any misprinting by the newspapers concerned and inaccessibility of the downloading facility for any reason whatsoever and in that case

the tenderer(s) should contact to the tendering authority to verify the fact in case of confusion.

9) If any information furnished by the tenderer is found incorrect or false at a later stage he shall be liable to be debarred from awarding the contract.

10) A copy of full tender document is to be submitted along with technical bid duly signed & stamped on all pages as an acceptance of all terms & conditions mentioned in tender documents.

11) a) Payment term: 90% of order value will be paid after safe delivery at site and satisfactory inspection conducted by us and successful completion of entire works. The balance 10 % will be withheld as security deposit till the warranty period of one year OR will be released against the submission of bank guarantee from any nationalized bank.

12) **EARNEST AND SECURITY MONEY:**

EMD of Rs. 8000/- shall be submitted in the form of Demand Draft obtained from any nationalized bank in favor of "INDIA STATISTICAL INSTITUTE" payable at New Delhi.

No interest will be paid on the EMD. The EMD will be forfeited, if the supplier withdraws his tender during the validity period of the bid and the successful tenderer fails to sign the contract agreement within stipulated period . Offer without EMD fee will be rejected summarily .

The earnest money of the lowest tenderer shall be released at the time of signing of the agreement with ISI Delhi Centre. The EMD should be sent in a separate envelop to OSD , ISI Delhi Centre , 7 S J S Marg , New Delhi 110016 so as to reach us on or before the closing date of the Tender .

19 . Arbitration:-

All disputes or differences whatsoever arising between the selected bidder and the Institute out of or in relation to the construction, meaning and operation or effect of the contract, with the selected bidder, or breach thereof shall be settled amicably. If, however, the parties are not able to resolve any dispute or difference aforementioned amicably, the same shall be settled by arbitration with the rules of arbitration of the Indian Council of Arbitration and the award made in pursuance thereof shall be binding on the parties. The arbitrator/arbitrators shall give a reasoned award.

Work under the contract shall be continued by the selected bidder during the arbitration proceedings unless otherwise directed in writing by the Institute unless the matter is such that the work cannot possibly be continued until the decision of the arbitrator, or of the umpire, as the case may be, is obtained and saved as those which are otherwise explicitly provided in the contract, no payment due or payable by the Institute, to the bidder shall be withheld on account of ongoing arbitration proceedings, if any, unless it is subject matter or one of the subject matters thereof.

The venue of the arbitration shall be at DELHI, INDIA.

Annexure I

System Description of Air Cooled Package Air Conditioner 11 TR System

The proposed air-conditioning system is for the **ISI Delhi centre New Delhi -110016** which has to work single shift for Library building.

The technical schedules giving the zone wise areas and their air conditioning load with equipments suggested are indicated load each as per the technical details in the table I where normal air conditioning is required.

The Air conditioning system air cooled packaged units with scroll compressors and will be located in designated (AHU / Packaged unit) room in the respective wing with the air cooled condensers located outside close to the packaged unit room. The packaged units shall be vertical with fan having upward discharge for feeding in to area to be air conditioned through ducts fabricated out of galvanized steel sheets. Each wing will have designated number of packaged unit connected to common main ducting or supply air plenum and cooled air will be distributed through the ducting and ceiling outlets as well as side through Grilles. Return air collected above the void back to the packaged unit room /AHU room.

Entire cavity between the false floor and floor is treated as the supply plenum and supply air is discharged through floor grills /diffusers at appropriate points with return air collected directly by the units. The return air may also be collected back into the AHU room by having Louvered door/ return air grills in the false ceiling as per site condition.

The air cooled condensers shall be kept on the external walls with suitable brackets duly FRP coated steel frame for corrosion protection.

The a/c installation will be complete to the standard needs as under:

Basis of design:
The air conditioning plant shall be designed on the parameters as detailed below:

1.1	**Outside Design Conditions:**	
		Summer
	Dry bulb Temperature °C	46
	Wet bulb Temperature °C	10
1.2	**Inside Desired Conditions**	
	For common areas	**18°C ±1°C with RH around 60 %.**
1.3	**Area to Air conditioned**	2000 sqft (Approx)
1.5	**Fresh air**	5 cfm per person and 0.06 cfm per square feet or 2 air changes per hour which ever is greater to meet the latest Indoor Air quality /ASHRAE standards.
1.8	Fire Protection:	Supply and Return Fire dampers working on fusible link in the AHU room side wall and for the area where fire rated wall are there (Only if called for in the BOQ).

SCOPE OF WORK.

The contractor's scope of work covers delivery, installation, commissioning and testing of the complete air conditioning system.

SERVICES TO BE PROVIDED BY THE PURCHASERS:

a) False floor/ceiling and duct concealment works. Necessary frames shall be provided by the false floor/ceiling contractor, on to which the grills/diffusers etc. are to be fixed.

b) Incoming power supply, with MCB for each unit near the control panel will be terminated by the other agency at respective packaged unit room.

The air conditioning contractor shall provide all other works, including making openings in walls/floor for taking piping, ducting etc.

WORKING PERMITS:

The contractor shall obtain all work permits/licenses required for the personnel employed at the work site and shall obey all rules & regulations of the purchaser. All statutory rules like PF, minimum wages etc., are to be followed strictly and registers maintained at site.

TECHNICAL DATA:

The tenderers must submit the technical data for all the items quoted quantity along with their tenders. Failure to furnish technical data with tender may result in rejection of tenders.

QUIET OPERATION AND VIBRATION ISOLATION:

All equipment shall operate under all conditions of load without any sound or vibration, which is objectionable in the opinion of the purchaser. In case of rotating machinery sound or vibration noticeable outside the room in which it is installed, shall be considered objectionable. Such conditions shall be corrected by the contractor at his own expenses.

ACCESSIBILITY:

The contractor shall verify the sufficiency of the size of the shafts and openings, clearance in cavity walls and piping. His failure to communicate in sufficiency of any of the above shall constitute his acceptance of sufficiency of the same. The contractor shall locate all equipments, which must be serviced, operated or maintained in fully accessible positions. The exact location and size of all access panels, required for each concealed control damper, valve or other devices requiring attendance, shall be finalized and communicated in sufficient time, to be provided in the normal course of work, failing which the contractor shall make all the necessary repairs and changes at his own expenses.

MATERIALS AND EQUIPMENT:

All materials and equipment shall conform to the relevant Indian standards and shall be of the approved make and design. General specifications for the various equipments / works are enclosed. Wherever these are not totally clarified, the construction shall be carried out as per IS specifications.

MANUFACTURER'S INSTRUCTION:

Where manufacturer have furnished specific instructions relating to the material and equipment used in this job, covering points not specifically mentioned in these documents, such instructions shall be followed in all cases.

INSPECTION & TESTING:

The purchaser's authorized representative shall have full powers to inspect drawings & any portion of the work, examine the materials. Workmanship and getting the materials / equipments tested at the contractor's works or at any other place from where equipments / materials are no way relieve the contractor of his responsibility for meeting the requirements of the specifications and it will be the contractor's responsibility to rectify / replace such works/equipments at his cost.

All the testing and measuring instruments and labour required shall be provided by the contractor at his cost. The contractor shall also calibrate the instruments used for testing at reputed calibration centres.

BALANCING, TESTING AND COMMISSIONING:

Balancing of all air water systems and all tests as called for in the specifications shall be carried out by the contractor in accordance with the specifications and relevant local codes.

The results of these testing shall be submitted for scrutiny. Four copies of the certified manufacturer's performance readings for each piece of equipment shall be submitted along with the test results. The contractor shall also provide four copies of record of all safety and automatic control settings for the entire installation.

The contractor shall arrange all necessary balancing and testing equipment, instruments, material accessories, refrigerant and the requisite labor. Any defects in materials and / or in workmanship detected in the course of testing shall be rectified by the contractor entirely at his own cost, to the satisfaction of the purchaser. The installation shall be tested again after removal of defects and shall be commissioned only after approval of the purchaser. All tests shall be carried out in the presence of purchaser's representative.

Rejecting of the equipment and work, which are found to be unsuitable during the progress of work.

SERVICES TO BE PROVIDED DURING GUARANTEE/AMC PERIODS:

a) Providing the services of the technical and supporting staff as and when required.
b) Providing all labour, materials, tools &tackles, scaffoldings etc.
c) Repairing to the satisfaction of the owners or replacing any defective equipment and components. This shall include all electrical components, parts subjected to wear and tear, lubricating oils and grease, refrigerant gas, V belts, carbon brushes, contractors, relays, indicating lamps, safety cutouts etc.
d) Renewal of air filters at every AMC year.
e) Providing 4 service calls per year and any number of break down calls.
f) Any other related services, reasonably expected during the above periods.

GUARANTEE PERIOD AND DEFECTS LIABILITY PERIOD.

The contractor shall guarantee that all equipment shall be free from any defect due to defective materials and bad workmanship and that the equipment shall operate satisfactorily and the performance and efficiencies of the equipment shall not be less than the guarantee values. The guarantee shall be valid for a period of 12 months after taking over and any parts found defective shall be replaced free of all costs by the contractor. This period shall be known as the defects liability period and shall be reckoned from the date the consultant certifies the plant taking over as laid down in clause " Taking over of plant " hereinafter. The services of the contractor's personnel if requisitioned during this period for such work shall be available free of any cost to the over.

If the defects were not remedied within a month of their occurrence, the Owner may proceed to do as to the contractor expenses, to be mutually agreed upon, without prejudice to any other rights.

The plant when erected at site shall be deemed to have been taken over by the owner when the consultant will have certified, in writing that the plant has fulfilled the contract conditions.

If for any reason the plant is out of operation for one month or more during the defect's liability period, then the twelve months defects liability period would automatically get extended by that period of time for which the plant is out of order.

HANDING OVER

The plant shall be deemed as handed over only when certified as so in writing. Such certification will be available only when the contract requirement includes submission of Manuals for Operation and Maintenance, etc., and totally fulfilled.

The Vendor's scope of work shall include for but not be restricted to the supply installation testing and commissioning along with carrying out ancillary works as described under BOQ as detailed in annexure.

All prices shall be inclusive of all taxes, duties and service tax as applicable in the state of Delhi NCT.

TECHNICAL SPECIFICATIONS

1.0 PACKAGED TYPE AIR CONDITIONER

1.1 INDOOR UNIT

1.1.1 Casing – Panels are single skin construction fabricated out of sheet steel duly Powder coated or pre-painted sheets with adequate thickness, the unit capacity shall be as specified elsewhere. The unit shall be suitable for Floor mounting.

1.1.2 Compressor – The compressor shall be Scroll and of hermetic or semi-hermetic design. The driving motor shall be suction gas cooled. The whole casing shall be suitably sealed against dirt and moisture. Compressor shall have all safety controls such as HP /LP Cutout, Thermal overload, and suction valve &discharge valve for isolation. Crankcase heater as required.

1.1.3 Fan – The evaporator fan should be statically and dynamically balanced and make shall be **Krueger / Nicotra / Comefri / Flatwoods**. They should be of the double inlet, forward curve blade centrifugal type. The fan bearing should be "life lubricated type ball bearings. The fan motor shall be TEFC and resilient mounted. The fans should be suitable for the final filters if and when specified.

1.1.4 Fan Motor – The fan motor shall be totally enclosed and sufficient capacity not to over load and operate for extended periods on low voltage (400V/3PH).

1.1.5 Cooling Coil – The cooling coil of evaporator should be of copper tubes with Aluminum fins. The fins should be bonded to the coil under hydraulic pressure or mechanical tube expansion. The evaporator-cooling coil is of copper tube with aluminum fins in two sections each section of not less than 4.5 Square feet face area. Distributor & orifice for each section of the coil to be included. Along with Thermostatic expansion valves.

1.1.6 Outlet Damper – The fan outlet should be provided with a damper particularly for multi unit applications.

1.1.7 Filters – The unit filters should be of the Synthetic HDPE, cleanable. Filters – where specifically called for, filter boxes shall be furnished with Synthetic type filters with hinged access doors to filter on both sides of the unit – i.e. air inlet and air outlet.

1.1.8 Piping – The refrigerant circuit should be factory piped and transported complete with initial charge of gas and oil. Toping up should be carried out in keeping with current practices. Strainer and de-hydrator. The protection should be from High and Low pressure cutouts with manual reset only.

1.1.9 Controls – The machine should run automatically on a built in thermostat. The switching circuit should be such as to permit the running of the fan, first, independently. The compressor can be cut in subsequently. Compressor motors and fan motors should be protected against overloads and under voltages. The above equipment will be interlocked with the condenser fan.

1.2 AIR COOLED CONDENSER -OUTDOOR UNIT.

1.2.1 General – The contractor shall furnish and install where shown on plans, Propeller fan air-cooled condenser, of size and capacity indicated. The operating conditions

and limitations as shown on the plans shall not be exceeded. Propeller fans may be offered giving specific recommendation, with low noise as it should not affect the neighbors. etc.

1.2.2 Casing – Unit shall be steel, reinforced and braced with a steel angle framework. Casing can be sectionalized with separate fan and coil section. Coils shall be removable through the top or bottom. Removable panels shall be provided in the casing for access to all internal parts. Casing and accessories shall be chemically cleaned, phosphatized and coated with a baked enamel primer finish before assembly. Finish coat of air dry enamel shall be applied to all exterior surfaces after final assembly.

1.2.3 Condenser Fans – Fans shall axial flow fans with 3 phase motors of suitable capacity and shall operate with acceptable noise levels.

1.2.4 Coil – Condensing coils shall be constructed of aluminum fins mechanically bonded to copper tubes, tested at 425 psig air pressure, tested with refrigerant, and then sealed with holding charge of dry nitrogen. All coils shall have an integral sub-cooling circuit for a minimum of 15'F sub cooling and external liquid receiver, where desired.

1.2.5 Noise control – It shall be the unit manufacturer's responsibility to ensure that the unit operating noise level of the equipment is reasonable. Fan curves and sound power data may be put in as part of submittal data.

1.2.6 Controls – The condenser shall be matched to the evaporator set out earlier in the packaged unit and both units shall be electrically controlled from a remote control box located on the packaged unit which will be wired to both equipment and control both sequentially. In the case of a power failure the units shall have facility to come on automatically with the desired time delays, etc. sequentially.

6.1.1 **Refrigerant pipe insulation:** Shall be with 13mm thick closed cell nitrile foam tubular insulation (vidoflex) stuck with suitable synthetic adhesive. The above shall be finished with poly shield coating to prevent damage of the insulation.

VIBRATION ELIMINATION

All mechanical equipment shall be mounted on in accordance with specifications detailed below.

All machinery and equipment shall be installed on a 100 mm thick RCC house keeping pad to be provided by the Owner.

The vibration isolation equipment will be supplied by the contractor to suit his equipment. The supply should include all unit isolators, complete with rails, equipment bases and structural steel forms for concrete inertia blocks, where required.

Wherever rotational speed is recognized as the disturbing frequency, the lowest such speed shall be taken for calculation purposes. All isolation devices shall be selected for uniform static deflection, according to distribution of weight.

Vertical limit restraints shall be built in to all units bases, which support equipment whose weight varies with the addition or removal of large amounts of water such as cooling towers boilers, and for equipment on roof tops subject to wind load.

All isolators subject to corrosive action, like those installed out doors will be protected as follows:

Steel parts other than the springs to be hot dip galvanized; springs shall be cadmium plated or coated with neoprene. Outdoors isolator shall be equipped with vertical limit restrainers to resist the effect or wind load.

Calculation for vibration elimination equipment should take into account the following factors.

1. Vibration isolation efficiency
2. Natural frequency Vs disturbing frequency relationship
3. Size of the equipment
4. Static deflection
5. Floor span

Piping and ducting should be also isolated for at least the lengths of the first four supports from any equipment that has been mounted on vibration elimination mounts.

ELECTRICAL EQUIPMENT

Ratings and Standards

Ratings of the motors shall be as indicated under the equipment schedule. Where the equipment supplied needs a higher rated motor, the contractor shall point out the same clearly and make his offer for the higher motor required by this equipment. Ratings shall be on the basis of the specified ambient temperatures, and without exceeding the maximum temperatures specified in I.S.325 – 1961 amended up to date.

Unless otherwise stated Indian Standard specifications shall apply. Where I.S. Specifications are not available the relevant British Standard Specifications shall be followed.

Induction Motors

All motors 15 hp and below shall be TEFC type with class 'E' insulation conforming to I.S.37, unless otherwise as specified.

The motor shall be statically and dynamically balanced.

Bearings shall be combination ball and roller bearings with limit lubrications.

Ventilation shall be by means of shaft-mounted fans designed to give maximum ventilation with a minimum of noise.

Terminals shall be of ample size housed in terminal box. The terminal box shall be suitable for cable or conduit entry as required. Two earth terminals shall be provided.

Testing Motors shall be tested in accordance with the relevant I.S. Specifications and test certificates furnished for the routines, type and high voltage tests. This shall include for all motors where ever they are used including ones in monoblock pumpsets, etc.

ELECTRICAL WIRING AND SWITCH BOARDS

Electrical wiring for the air conditioning equipment shall be the responsibility of the buyer. He will wire his equipment to the switchboard, and carry out all ancillary work as is required by the electrical inspectorate. He will be responsible for obtaining the necessary certification from the inspecting authorities and commissioning the equipment in time.

PIPING

Refrigerant Piping

Refrigerant piping shall be of hard drawn(19 G thickness) copper pipe preferably hard drawn, Brass fittings shall be forged and suitable for welding / brazing.

Suction lines shall be insulated with Vidoflex-Nitrile rubber tubular insulation of 13 mm thick finished with Poly shield coating.

Water Piping

Water piping shall be M.S tube medium class to I.S.S 1230 –1958 and shall be hot dip galvanized for use in the condenser water system, as also the drain water piping.

Fittings shall be screwed type with Teflon sealant except wire mating flanges are to be provided. Flanged joints shall have 4mm, 3-ply rubber gaskets, piping above 2 ½ " diameter may be of welded construction.

Mounting Plate: The mounting plate shall be the manufacturer's standard size and shall be of a size ample to fit the openings provided. The orifice ring shall be correctly formed by spinning or stamping to provide easy passage of air without turbulence and to direct the air stream. The thickness of the plate shall be not less than the following:

TECHNICAL DATA TO BE FURNISHED BY THE TENDERER AIR COOLED PACKAGED UNIT.

The following technical specifications must be furnished for each of the item of equipment offered. If this information is not furnished offers are likely to be rejected.

I. CONDENSING UNIT(AIR COOLED)-OUTDOOR

1.1	Make	
1.2	Overall size	(mm x mm x mm)
1.3	Weight	(Kg)
1.4	Coil face area	(sq,m)
1.5	Rows deep	
1.6	Fin spacing	(fins/cm)
4.5	Tube diameter	(mm)
4.6	Tube pitch	(mm)
4.7	Tube length	(mm)
4.8	Tube material	
4.9	Fin material	
4.10	Blower make	
4.11	Number of blowers	
4.12	Type of blower	
4.13	Size of blower	
4.14	Total air quantity	(m^3/hr)
4.15	External static pressure	(mm)
4.16	Motor make	
4.17	Motor size	(Kw)
4.18	Motor type	
4.19	Motor voltage characteristics	
4.20	Motor protection	
4.21	Type of drive	

V	COMPRESSOR	
5.1	Make	
5.2	Model	
5.3	Bore/stroke	(mm/mm)

5.4	Operation speed	(rpm)
5.5	Type of construction	
5.6	Refrigerant	
5.7	Quantity in each unit	
5.8	Voltage characteristics	
5.9	Condensing temperature	(°c)
5.10	Suction temperature	(°c)
5.11	Power consumption	(kw)

TEST READINGS-AIR COOLED DX SYSTEMS

The following minimum test readings will be taken to access the performance of the plant.

Sr No.	Item	Test Readings
1	Compressor	Refrigerant gas Suction Pressure (psi) Refrigerant gas Suction Temperature (°C) Refrigerant gas Discharge Pressure (psi) Refrigerant gas Discharge Temperature (°C) BHP consumption – 100% load 75% load 50% load
2	Condenser	Refrigerant Condensing Pressure (psi) Refrigerant Condensing Temperature (°C) Air Temperature – entering (°C db/wb) Air Temperature – leaving (°C db/wb) Air Pressure – entering (mm) Air Pressure – leaving (mm)
3	Motors	Amperage Voltage Single phase trip time Power factor

(Kaisar Alam)
Officer on Special Duty

Financial Bid
Estimate of Package Air Conditioner

Sr.No	Description of Material	Qty	Unit	Rate in Rs.	Amount in Rs.
1.	SITC of air cooled package Air Conditioner Capacity : 1x11 Tr, Power supply : 230V/50 HZ, Operation : LCD display, Refrigerant : R-22, R410A Compressor : Scroll, Condenser fan : Propeller, out door units : 415 v, 50 HZ Make : Voltas/Blue star/Carrier	1	Nos.		
2	Supply and fixing of Copper pipe	20	Mtrs		
3	Old A/C Buyback	2	Nos.		

(Kaisar Alam)
Officer on Special Duty