

المواصفات الفنية الخاصة بالمناقصة العامة

رقم المناقصة : (٢٠١٢/٧)

الخاصة بشراء وتوريد (٨٠) مكيف مختلفة القدرات مع

التدريب

المؤسسة العامة للاتصالات السلكية واللاسلكية

الإدارة العامة للمشتريات والمخازن

إدارة المشتريات - قسم العقود والمناقصات

Technical Specification For Air Conditioning Equipment

1- INTRODUCTION :-

This specification relates to the split system air condition to be provided in the Main data center the system should be heavy duty for industrial purposes and mainly covers the following functions :-

- Cooling function .
- Humidification .
- Dehumidification and reheat .
- Air filtration and ventilation .
- Supervision and control devices for humidity , temperature ,air distribution and air cleaning .

2- ELECTRICITY SUPPLY :-

All apparatus and wiring should be suitable for use with a 3phase ,4wire ,380 volt , 50HZ earthed neutral system . The equipment should work satisfactorily with 15% variation of voltage and 10% variation of frequency .

3- OPERATING CONDITIONS :-

The units should be capable of operation at places situated at various altitudes up to 3000 meters . the maximum outside temperature must be 45 C and the relative humidity must be 80%. The exchange room should be maintained between 15C and 20 C with a relative humidity between 35% and 60% .

4- COOLING CAPACITY :-

4.1 Depending on the heat load in the different exchanges , air-condition system with two or more units from the same capacity (circulation) .

4.3 the starting of the units has to be done sequentially through an adjustable time switch . the system has to get itself adjusted automatically to the cooling needs without manual intervention .

5- LOCATION OF THE COOLING SYSTEM :-

The Exchange equipment is contained in racks installed over the floor in the switch room . the large capacities of cooling system is placed in the Exchange switch room above the raised floor or in the ordinary floor . The air condition system for units more than five ton blowing cool air downwards through the raised floor into the space below for the sites with raised floor . Operating under the equipment racks permit to the upward passage of cool air through the racks . The hot air returns to the air conditioning system from the space above the racks and below the raised ceiling .

The air conditions of 2 & 3 tons capacity must be of the wall mounted type.

6- DUST FILTRATION :-

Dust extraction of filters should meet one the following specifications :-

- Particles of maximum size 1 micron : 5.106 particles per m^3
- Particles of maximum size 1.5 micron : 5.106 particles per m^3
- Particles of maximum size 5 micron : 3.104 particles per m^3

7- **THE DUST EXTRACTION FILTERS** must be easily accessible for cleaning and must be washable (metal frame hold clips)

8- SYSTEM DESCRIPTION :-

The split system consist of the outdoor condensing unit , the indoor cooling unit the connection pipes, and fittings .

- 8.1 The condensing units should be of the air cooled type . it should operate with R410a refrigerant , the unit should be completely weather proofed for out door installation .The condenser vines are preferred to be of the copper material other wise painted with anti corrosion paint .
- 8.2 All component units should properly assembled , internally piped and wired , thoroughly tested and partially filled with certain gas refrigerant . The units should comply with standard international industrial standard .
- 8.3 Pipe work for refrigerant systems should be of high refrigeration quality , fully an nealed .internally cleaned and not greased.
- 8.4 Joints in copper pipe should be flanged , brazed or copper welded .
- 8.5 Filter dryer should be provided close to the expansion valves of the cooling unit A sight glass must also provided .for small unit it should be in outdoor unit .
- 8.6 Drain pan should be of galvanized steel . the joints should be of the taper screw

type connected to rubber hose pipes .

8.7 Thermal insulation materials and finishes applied to refrigerant pipes should be inherently protected against rotten mould ,fungal ,growth and attack by vermin . They should be non-hygroscopic and fully suitable for use in the operating range of temperatures and environment .

8.8 All thermal insulation materials should be with non-combustible or with self-extinguishing type materials .

8.9 All instruments and other devices with indicated scales should be mounted at easily accessible places .

8.10 The humidification and dehumidification with reheat devices should be provided (built in the all units more than 3 ton)

9- All air-condition units should be equipped with all mechanical and electrical protection devices such as :

- Phase sequence protection .
- Short circuit protection .
- Under / over voltage protection .
- Under / over frequency protection .
- Fire protection (auto shut off unit)
- High pressure switch .
- low pressure switch .
- Solenoid valve .
- Safety valve .
- Service valve .
- Receiver.
- sight glass.

10- ESSENTIAL CONTROL & SUPERVISION:-

The following controls , indicators and supervision should be provided as essential :-

- Temperature setting facility (adjustable at site)
- Actual temperature reading
- Humidity setting facility
- Actual humidity reading
- High / Low temperature alarm
- High / low humidity alarm.
- Loss of air flow alarm .
- General cut-out in case of fire detection (Manual restart)

- The time the power supply is restored after a failure , the units should automatically restarted (in sequence).
- Operation controlling supervision of each unit and change over facility .
- High head pressure alarm and low pressure alarm .
- Transmission of alarms remote location , for this , voltage free , normally open loops should be provided for exchange .
- Document of three sets must provided of the following purpose (operation manual , installation manual , maintenance and repair manual)

11- PROTECTION :-

The surfaces of all ferrous metal work which are not to be insulated should be primed and finished with two coats of good quality non-metallic paint of approved colour . Surfaces of all coat of good quality paint .

12- DATA TO BE SUPPLIED BY VENDER :

Information to be supplied by vender :-

- Cooling capacity of the unit and the operation range for efficient operation .
- Power consumption in KW at:- 100%load , 50 % load , 30% load .
- Instantaneous current at start-up .
- Air flow range (cubic meters per hour)
- Dimension (W . D . H)
- Wight (Kg)
- Details of accessories
- Mounting stand (optional)
- Any de rating to be done for site location .

13- WARRANTY :-

The equipment should carry a warranty for period of 12 months from the date of receiving for any failure when operating correctly under the specified condition. If any failure is noticed during this period due to manufacturing or design defect the equipment should be replaced at supplied cost .

14- The vender should submit all his relevant standards specification and drawing for site engineering and installation .

15- Foreign costs should be minimum as possible and be quoted in US Dollars

16- The vender should quote for the following items :-

- 1-Cost of main air conditioning unit .
- 2- the cost of spare parts must be individually detailed for each item.
- 3- should specify the country of origin, company and the date of manufacturer.
- 4- must provide the certificates of origin country.
- 5- must provide all documents for operations, maintenance and Troubleshooting.

17- INSULATION EXPOSED TO WEATHER :-

Thermal insulation which is exposed to the weather , should be rigid and be rendered completely water proof by an external covering of galvanized sheet steel or similar sheeting at least 0.8 mm thick . The covering should not deteriorate with age or the effects of solar heat .

It should not applied using

an appropriate adhesive ends and edges of sheets should be lapped sufficiently to exclude water .

18- OTHER ITEM :-

Other parts not mentioned herein should be followed in accordance with the generally a knowledge standards and code practice for ventilation and air-conditioning and should be approved by the engineer .

19-Training:

The tenderer must offer training abroad for TOW PTC engineers.

The training program must be described in detail and specifying training course duration during in the manufacturing test.

The attached schedules should be filled by the venders .



Electrical protection for 3 ton AC

Technical specifications	P.T.C	Vender
Phase sequence relay	√	
Input (high/low) voltage relay	√	
Input (high/low) frequency relay	√	
Remote alarm	√	

Mechanical protection for 3 ton AC

Technical specifications	P.T.C	Vender
H.P switch(manually reset)	√	
L.P switch	√	
Sight glass	√	
Solenoid valve	√	
Safety valve	√	
Crank case heater	√	

Technical specifications for 3 ton AC

Technical specifications	P.T.C	Vender
Manufacturer Company		
Country of origin		
Model		
Power supply (v)	3phase , 4wire , 380 V	
INDOOR UNIT		
Model		
Power supply (v)	380v or 220v 15%	
Cooling capacity (kw)		
Nominal air flow (m ³ /h)	> 2000	
Nominal sound pressure (dB@1meter)		
Humidity %	55 → 50 %	
Air flow direction	In front or upflow	
Type of filter	washable	
Dimensions(L*W*H)mm		
Weight (kg)		
OUT DOOR UNIT		
Model		
Power supply (v)	380V 15%	
No. of fans		
Speed control	Pressure speed control	
Fans power(Kw)		
Type of vins	Cupper type or anticorrosion paint	
Dimensions(L*W*H)mm		
Weight (kg)		
COMPRESSOR		
No . of compressor	1	
Type		
Power supply (v)	380 V± 15%	
Power (Kw)		
Refrigerant type	R 410a	
Country of origin		
No .of cooling circuits	1	
FLA (A)		

High Level Requirements
for (AIR CONDITIONS 3phase 2 Ton , 3Ton)

المعايير الفنية الأساسية

- **THE SYSTEM** should be consist of two unit , Indoor unit may be floor standing or wall mounted (2 ton) , Outdoor unit consist of one or tow fans (Air cooled condenser)
 - **THE POWER SUPPLY** is 3phase ,4wire ,for outdoor unit(380V \pm 15% ,50 HZ \pm 10%)
 - Refrigerant type R410a
 - **THE COOLING CAPACITY** should be provided at operation condition .
 - **THE COOLING CAPACITY** should be 2 ton or 3ton as the requirement .
 - **THE DIRECTION** of cool air should be up ward or in front of
 - **THE ELECTRICAL AND MECHANICAL** protection should be provided .
 - **ELECTRICAL DIAGRAM** for all component
 - **SYSTEM REQUIREMENTS** a- Temperature setting
b- Humidity setting
- The manufacture company must be give an answer table for every item of the P.T.C specifications (item by item) and provide complete technical informations.



جدول الكميات للمكيفات

ملاحظات عامة	الإجمالي	سعر الوحدة	التوايح	الكمية	القدرة Ton
نوع التغذية 3PH وذات نوعية غاز تبريد R410A			مع جميع مواد وتوايح التركيب لكل مكيف	30	3
نوع التغذية 1PH وذات نوعية غاز تبريد R410A			مع جميع مواد وتوايح التركيب لكل مكيف	15	2
نوع التغذية 1PH وذات نوعية غاز تبريد R410A			مع جميع مواد وتوايح التركيب لكل مكيف	15	1.5
نوع التغذية 1PH وذات نوعية غاز تبريد R410A			مع جميع مواد وتوايح التركيب لكل مكيف	20	1.5 نافذة Window
			80 مكيف (مع كافة التوايح)		الإجمالي

ملاحظات

- 1 - يجب توفير جميع الملحقات اللازمة للتركيب مثل المواسير النحاسية والعوازل الخ
- 2 - توفير قائمة مستقلة بأسعار قطع الغيار.