

**TECHNICAL  
SPECIFICATIONS**

**Scope :** All the clauses/sub-clauses of this specification should be read in conjunction with schedule 'B' and relevant standards/codes.

**CLAUSE NO.1:**

**Technical Specification of Split Air-conditioner:**

**1.0 SCOPE:**

This specification covers supply, installation, testing, commissioning and warranty of high wall mounted split air conditioners of 2.0TR capacity. The split air conditioners shall be suitable for following duties –

- (i) Cooling
- (ii) Dehumidification
- (iii) Air filtration
- (iv) Air circulation

**1.2 Technical details:**

Each unit shall consists of one number of indoor unit with suitable mounting arrangement, one number of outdoor unit having copper condenser coil, one number of cordless remote control and suitable for following:

<b>Sr. No.</b>	<b>Description</b>	<b>Rating of Split Air Conditioner</b>
1.	Nominal Cooling capacity in TR (Btu/hr)	2 TR (24000)
2.	Type of compressor	Rotary/Scroll
3.	Refrigerant	R-22
4.	Condenser & Evaporator Coils	The condenser and evaporator cooling coil of the Split ACs should be fabricated out of copper tubes of suitable size. <b><u>Aluminium coils shall not be accepted.</u></b>
5.	No. of Fan speed (indoor unit)	As per manufacturer's standard
6.	Power supply	230±10% V, 50 c/s
7.	BEE Star Rating (Minimum)	3 Star
8.	Air filter	
8.1	Type	Washable
8.2	Material	Nylon/PP
9.	Panel display	Electronic
10.	Voltage & Overload protection	Required
11.	Remote Control	Cordless with LCD or LED display
12.	Total copper pipe length in meter	Suitable for maximum 20 meter

**1.3 Applicable standards and codes:**

Split air conditioners shall be supplied as per IS: 1391-1992 Part – II.

**1.4 Material Specifications:**

i.	Split Air Conditioner	Reputed Brand
ii.	Compressor	The hermetically sealed compressor for the machines should be of rotary/scroll type of reputed brand.
iii.	Explosion proof metallic capacitor (Starting, running & motor capacitor)	<b>The running/starting and fan motor capacitors provided on the machines must be having highest level of safety protection as per IEC 60252-1-2001-02 standard i. e. P2 protected with self healing properties and overpressure disconnection device. Life expectancy (10,000 h) and component (10,000 AFC up to 450V) shall be as per EN 60252 2001 and UL 810 standards. Capacitor should be of metallic canister with explosion proof features of reputed brands.</b>
iii.	Copper tube	Reputed Brand
iv.	Thermal Insulation for copper tube	Tubular nitrile rubber of class ‘O’ from Reputed Brand.

**1.5 Inspection:**

**Inspection of split air conditioners shall be carried out by departmental representative at manufacturer’s works/contractors godown (not in warehouse) before delivery.**

**1.6 Warranty:**

The supplier has to give comprehensive **onsite warranty of minimum one year**. The supplier has to mention period of warranty in their offer.

**CLAUSE No. 2**

**Accessories including necessary works required for complete installation, testing and commissioning of split air conditioners:**

**CLAUSE NO. 2.1**

**Copper tubing and insulation:**

- i) Soft drawn copper tubing of good refrigerant quality as per following specification along with sleeve type insulation of preferred make and of minimum 10 mm thick completely wrapped with monsoon tape shall have to be used :
  - a) Tube shall be made of de-oxidized high Phosphorized copper (DHP grade) material having chemical composition of Copper - 99.9 %; Phosphorus - 0.015 to 0.040 %.
  - b) Soft copper tubes, shall be bright annealed (mirror finish).
  - c) Tubes should have 360 degree concentric wall thickness along its entire length.
  - d) The contractor has to take care of proper storage to maintain the temper of the tubes. Any abrasion on ends/surface, or any ingress of dirt/dust must be avoided. Proper Polyethylene

sheets should be used for covering the tubes. Cleaned tubes end shall be sealed with plastic caps.

- e) To avoid exposure to atmosphere and moisture, keep the tubes in packed condition till it is required for use at the installation.
- f) After delivery and before installation at site the contractor has to get it approved by department failing which replacement, if required, shall be done by the contractor at his own expense.
- g) The copper tubing will be clamped on the wall by means of aluminum strips.
- h) **The copper tubing used for liquid & gas line shall be generally in one piece and no joints/brazing in copper tubing will be accepted except those places where it is difficult to lay the same in single piece after taking permission from Engineer-in-Charge.**
- i) The copper tubing will be clamped by means of aluminum strips in a PVC trunk of suitable size.

## **CLAUSE No. 2.2**

### **Electrical Cable :**

All electrical cable shall be of POLYCAB/FINOLEX make of three/four core x 2.5 mm<sup>2</sup> /4.0 mm<sup>2</sup>. Contractor has to supply and lay electrical cable along with necessary works, all required fittings etc. as per site requirement without any extra cost.

## **CLAUSE No. 2.3**

### **PVC Condensate drain pipe :**

Good quality PVC drain pipe of 25 mm diameter shall have to be supplied and installed along with all necessary works and materials without any extra cost. Drain pipe shall be of reinforced flexible/ rigid type depending upon site condition/requirement.

## **CLAUSE No. 2.4**

### **PVC Casing & Capping :**

Good quality casing & capping of 100mm x 50 mm cross sectional size to enclose copper tubing with insulation, drain pipe, electrical cable are to be supplied and installed along with all necessary works and materials without any extra cost.

## **CLAUSE No. 2.5**

### **M.S. Stand:**

- a) Outdoor unit shall have to be mounted on stand to be made out of MS angle of 50 x 50 x 5 mm size of suitable dimension (depending upon make of split AC & site condition).
- b) The MS stand shall be painted by two coats of red oxide followed by two coats of synthetic enamel paint (black colour) or as instructed by Engineer-in-charge.

**General Requirement** – Following works are deemed to be included in the contractor scope of work without any extra cost for satisfactory installation, testing and commissioning of split air conditioners at site :

**Civil work:**

Minor civil works required for the installation and commissioning of the units is included in the bidder's scope of work without any extra cost. All wall openings for taking out the copper tubing etc. shall be made by the bidder and the same should be made good by using sand-cement mixture after completion of the installation work.

**Pressure testing, vacuumising and gas charging**

After completion of installation work, each unit shall have to be tested for leakage in copper tubing/joints by pressurizing with dry nitrogen gas followed by vacuumising by two stage rotary vacuum pump. After successful leak testing, refrigerant gas has to be charged. In case of long pipe length refrigerant gas is to be topped up by the contractor as per manufacturer's recommendation without any extra cost.

After installation at site the **split** air conditioners will be tested for its performance. Full **payment shall be released only after satisfactory performance at site.**