

**DINING & GYM - SBILD MASULIPATTINAM**

**Design, Manufacture, Supply, Erection, Testing, Commissioning, Maintenance of Airconditioning system with Ceiling Suspended High static Ductable Indoor unit and Inverter Ductable Outdoor Unit.**

**BILL OF QUANTITIES**

S.No.	DESCRIPTION	QTY	UNIT	UNIT RATE ₹	AMOUNT ₹
<b>A</b>	<b>Ceiling Suspended High Static Unit &amp; Inverter Ductable Outdoor</b>				
1	<p><b>Supply of ceiling mounted ductable Air-conditioner with highly efficient Inverter compressors, R410A / R32 refrigerant and High static machines.</b></p> <p><b>Indoor unit</b> - Indoor unit (IDU) shall be GI draw through type sectionalised construction, DX cooling coil of 100% copper tube aluminum fin construction, insulated drain pan, low noise condensor motor / blower, vibration isolators, filter section with 10 micro washable filter, special acrylic precoated heat exchanger, auto check function for connection error, auto address setting, indicators for temperature &amp; mode, remote control with display, automated drain pump, etc. complete set as per the design of OEM.</p> <p><b>Outdoor</b> - Outdoor unit (ODU) comprising of compressor, copper condenser coil with fan &amp; motor, interconnecting refrigeration piping, starters, controls, cutouts, relays etc., complete set mounted inside a powder coated sheet metal cabinet as per the design of OEM and duly treated for corrosion protection.</p> <p>Makes: As per NIT.</p>				
a	Capacity of 8.0TR ceiling mounted ductable inverter Air-conditioner	2.00	Nos		0.00
b	Capacity of 5.0TR ceiling mounted ductable inverter Air-conditioner	1.00	Nos		0.00
2	<p>Supply of <b>Cassette Inverter</b> air-conditioning units with <b>R410A/R32 gas</b> complete as under:</p> <p>- Indoor unit comprising copper cooling coil, evaporator fan with motor, filters, insulated drain pan etc.</p> <p>- Outdoor unit comprising hermetic compressor, copper condenser coil with fan &amp; motor, interconnecting refrigeration piping, starters/ controls/ cutouts/ relays etc., mounted inside a powder coated sheet metal cabinet of 2mm thick, duly treated for corrosion protection with standard installation kit (Standard 3 Mtr copper pipe, drain pipe and electrical cable).</p> <p>NOTE: The outdoor unit shall not be placed over sunshade or the roof.</p> <p>Acceptable makes: <b>As mentioned in NIT. (All machines must be inverter 3 star and above rated copper coil)</b></p>				
a	3.0 TR <b>Four way</b> Cassette type units. 3 star and above with copper coil	2.00	Nos	₹	-
<b>A</b>	<b>TOTAL</b>				<b>0.00</b>
<b>B</b>	<b>ANCILLARY WORKS</b>				
	<b>AIR DISTRIBUTION SYSTEM:</b>				
1	SITC of Rectangular / Spiral Galvanized Steel Sheet Ducting made of Lock-forming quality GSS Class VIII; complying with IS: 277 and having 120 GSM coating classification with GI full threaded rods and GI slotted channel support /hangers with bolts, nuts neoprene fire retardant gaskets and sealed with RTV / silicon sealant, elbows, turning vanes, slip on flanges, in accordance with the approved shop drawings and specifications , sizes and quantities as below. The rate shall include all accessories, hardwares, powder coating for ducts/ brackets/ steel supports, suitable mounting GI brackets / supports, all related civil / welding works, etc. complete as per the requirement at site				
1.1	22G G.I Sheet Rectangular duct for Plenum & AHU Mouth connection	20.00	Sqm		0.00
1.3	24G G.I Sheet Rectangular duct	170.00	Sqm		0.00
2	<b>THERMAL INSULATION S.AIR DUCT OUTSIDE DUCT</b>				
2.1	SITC of thermal insulation on the external surface of ducts using Aluminium Faced closed Cell nitrile rubber joints sealed with self adhesive tape and <b>(19mm Thick closedcell class 0 rating nitrile rubber).</b>	140.00	Sqm		0.00
3	<b>ACOUSTIC INSULATION DUCT INSIDE:</b>				
3.1	SITC of Acoustic insulation for Supply air duct using <b>10 mm thick class 0 rating Open cell nitrile rubber</b> elastomeric insulation with density of 140 - 180 kg / m <sup>3</sup> . The insulation manufactured as per BS 476 Part 7 & which should also meet UL 94test supplementary materials for air distribution system which should not absorbs less 0.2% water by volume (ASTM c 209), should not support microbial growth (ASTM 2180, G21, G22) and should not emit objectionable odors (ASTM C 665) and should have thermal conductivity of 0.04W/m K @ 20 degC as per DIN EN 12667. and water vapor permeance of 0.10. Adhesive shall be used additionally with VOC level not exceeding 50 grms / Litre.	50.00	Sqm		0.00
3.2	SITC of Underduct insulation in ceiling using 50mm thick TF quality thermacole using cold bitumen with corner round wheels	350.00	Sqm		0.00
4	SITC of aluminium powder coated <b>Supply air grill</b> with collar damper matching to the interior colour for the following qty with the necessary fittings and arrangements.	6.00	sqm		0.00

5	SITC of aluminium powder coated <b>Return air grill</b> with collar damper matching to the interior colour for the following qty with the necessary fittings and arrangements.	6.00	sqm		0.00
6	SITC of GI Volume control opposed blade Duct Damper for the following qty with the necessary fittings and arrangements.	2.00	Sqmt		0.00
7	SITC of Sound Attunator GI construction with Insulation size of 1050mm x 800mm x 950mm	3.00	Nos		0.00
8	Synthetic Fire proof Canvas connection in all Ceiling Suspanded Mouth	3.00	Nos		0.00
9	Installation, Testing and Commissioning of above Ceiling Suspanded Ductable including shifting, lifting, fixing of Inverter ductable outdoor units, first fill of refrigerent gas, neccessary civil work, transportation, as per GFC, Vaccumising, Pressure Testing and Commissioning etc. complete. The work shall be carried out in all aspects as required by the Bank & OEM.	3.00	Nos		0.00
a	Capacity of 8.0TR ceiling mounted ductable inverter Air-conditioner	2.00	Nos		0.00
b	Capacity of 5.0TR ceiling mounted ductable inverter Air-conditioner	1.00	Nos		0.00
c	Capacity of 3.0TR Casette Ac	2.00	Nos		0.00
10	<b>REFRIGERANT PIPING :</b>				
	Supply, Installation and Testing of Refrigerant piping, fittings and Y Branch with suitable thick tubular nitrile rubber insulation. The workmanship for the piping shall be carried out as per the recommended practice of the OEM. The piping to be vacuum tested and leak tested. Scope includes all refrigerant pipes shall be properly supported and anchored to the building structure using steel hangers, anchors, brackets and supports, etc. which shall be fixed to the building structure by means of inserts or expansion shields of adequate size and number including Hi Tech Supports for Refrigerant pipes (Like rods, Anchor bolts, Threaded rods, etc.). The rate shall include all neccessary cost towards, supports, hardwares, neccessary civil work, etc. The work shall be carried out in all aspects as required by the Bank.				
	a 1 1/8" (28.58 mm) with 19 mm tick insulation.	40.00	Rmt		0.00
	b 7/8" (22.2 mm) with 19 mm tick insulation	20.00	Rmt		0.00
	c 1/2" (12.7 mm) with 19 mm tick insulation.	40.00	Rmt		0.00
d 3/8" (9.52 mm) with 13 mm tick insulation	20.00	Rmt		0.00	
11	Supply, installation, testing and commissioning 20gauge Refrigerant SOFT COPPER piping with 13mm thickness nitrile rubber insulation, joint to be sealed 3mm thick black tape and exposed pipe to be covered with vapor barrier , supported by split clamps at frequent interval as per standard and all necessary accessories etc. (1M = 1 M suction line + 1 M liquid line) - <b>For Casette Ac</b>	25.00	Rm		0.00
12	Supply & laying of power cable in 25 mm dia. 2 mm thick rigid PVC conduit pipe complete with all accessories from outdoor unit to indoor units. The power wiring to the compressor motor , condenser fans/ evaporator fan and the control wiring shall be with suitable rated copper conductors.- <b>For Casette Ac</b>	30.00	Rm		0.00
13	Providing structural supports for the outdoor units (1 set = 2 brackets) <b>For Casette Ac</b>	2.00	Nos		0.00
14	Copper pipe protection finish for the exposed pipes : supply and application of one coat of Weatherprotekt coating, fixing 10 mil woven glass cloth, again one coat of Weatherprotect coating and when finally dry complete with final coat of Weatherprotect Coating.	60.00	Rmt		0.00
15	Supply and installation of communication cable as per the specification of the OEM including PVC conduit between AHU Starter Panel to outdoor unit 6core x 4sqmm	80.00	Rmt		0.00
16	<b>DRAIN PIPING :</b> Supply, Installation and Testing of UPVC heavy class drain piping insulated out of 13 mm thick Class O closed cell elastomeric nitrile rubber material of approved make as per specification complete with supports, consumables, fittings, pipe sleeves, U trap & leak arresting of following sizes.				
a	32 mm	60.00	Rmt		0.00
<b>B</b>	<b>TOTAL</b>				<b>0.00</b>

<b>C</b>	<b>COMPREHENSIVE AMC FOR 4 YEARS AFTER WARRANTY</b>				
20	The warranty period shall be one year from the date of handing over. Under the warranty period (FIRST YEAR), the contractor shall provide four free services on quarterly intervals. After the warranty period is completed the contractor shall take the CAMC of the above units and should maintain the same as per the rates quoted below.				
20.1	2nd year CAMC charges	1.00	JOB		0.00
20.2	3rd year CAMC charges	1.00	JOB		0.00
20.3	4th year CAMC charges	1.00	JOB		0.00
20.4	5th year CAMC charges	1.00	JOB		0.00
<b>C</b>	<b>TOTAL</b>				<b>0.00</b>
<b>Grand Total (Excluding GST)</b>					<b>0.00</b>