

**ANNEXURE - LIST OF MAKES FOR HVAC SYSTEMS**

		<b>VRV SYSTEMS</b>			
		<b>EQUIPMENTS(VRV)</b>			MAKE
1		Supply, installation, testing & commissioning of Modular type outdoor units with top discharge fans ,equipped with highly efficient scroll/rotary compressors with inverter type compressor (s) , special acryl precoated, error auto address setting, with multiple outdoor units of capacities and quantities as mentioned below . Cost shall include pressure testing,vacuumizing,gas charging(R-410A),electrical wiring etc, all complete as required			DAIKIN/MITSUBISHI
a		28 HP For Stilt and First floor			
		Supply	1	Nos	
		Installation	1	Nos	
b		24 HP For Typical floors			
		Supply	3	Nos	
		Installation	3	Nos	
2		Supply, installation, testing & commissioning of <b>VRV CASSETTE TYPE</b> (4 Way) indoor unit complete with cooling coil, washable type filter, multispeed fan motor, electronic expansion valve, drain pump arrangement with necessary supporting arrangement, controls, decorative panel all complete as required. The blower shall be dynamically balanced and designed for silent operation ,The cost shall include power wiring from nearest power socket and control wiring from indoor unit to out door unit.Actual cooling capacity at designed operating conditions			DAIKIN/MITSUBISHI
a		1.5TR Cassette unit			
		Supply	3	Nos	
		Installation	3	Nos	
b		2 TR Cassette unit			
		Supply	40	Nos	
		Installation	40	Nos	

3		<p>Supply, installation, testing &amp; commissioning of <b>VRV High Wall</b> indoor unit complete with cooling coil, washable type filter, multispeed fan motor, electronic expansion valve, drain pump arrangement with necessary supporting arrangement, controls, decorative panel all complete as required. The blower shall be dynamically balanced and designed for silent operation</p> <p>The cost shall include power wiring from nearest power socket and control wiring from indoor unit to out door unit Actual cooling capacity at designed operating conditions</p>			DAIKIN/MITSUBISHI
		1 TR High wall Unit			
		Supply	16	Nos	
		Installation	16	Nos	
4		Supply and fixing of chorded remote for High wall unit/cassette units	59	Nos	
5		<p>Supply, installation, testing &amp; commissioning of Refrigerant piping with Nitrile Rubber Tubular insulation of necessary thickness and Refnet joints / Branch Distributors for Indoor &amp; Outdoor units</p> <p>Note: bidder to consider the quantity as per tender drawing / site condition</p> <p>Note: No extra claim is allowed. a) Costs should include MS support for copper piping. b) Wherever the copper piping is running in the shafts, consider plastic wire wrapping. c) Wherever the copper piping is running exposed to atmosphere , consider PVC pipes for protection. (Approximate 600rmt)</p>	1	Lot	As per OEM

6	<p>Supply and fixing of Touch Screen type Central Controller System Unit capable of controlling the Indoor and outdoor units (atleast 100 numbers) with interface modules connecting each outdoor unit. The cost should include the control wiring (of 600 Rmt) from outdoor , indoor units to the central controller through conduits(Cost shall include conduit cost).The cost shall include commissioning of the system / ensuring connectivity with all the units. Complete controll features of this unit to be furnished, Memory in control unit, software necessary to connect PC and other necessary data to filled up with quotation.Should have emergency stop function with simple contact interface,should have power distribution report and all necessary as required.</p>		1 Nos	DAIKIN/MITSUBISHI
	<p><b>EQUIPMENTS(DX) For Room Treated fresh Air</b></p>			
7	<p>Supply, installation, testing and commissioning of ceiling suspended air cooled ductable split air-conditioning unit consisting: Outdoor unit - the hermetically sealed scroll compressor with necessary safety devices, condensor fan of adequate capacity connected to adequate capacity motor.All mounted on M.S frame and enclosed with all weather type enclosure to protect the electrical circuit, and fan winding.Installation to include copper refrigerant piping as per site condition, from multiple outdoor unit to AHU with all necessary fittings and accessories ,breaking walls for refregerating piping and making good walls all necessary as required.Following are the capacity of units.</p>			DAIKIN/MITSUBISHI
	<p>a. 5.5 TR , ODU for All the Office area TFA unit</p>			
	<p>Suplly</p>		4 Nos.	
	<p>Installation</p>		4 Nos.	

8	<p>Supplying installing, testing and commissioning of draw through type sectionalised construction. DOUBLE SKIN AHU complete with filter section with 10micron filter, DX cooling coil of copper tube aluminum fin construction, with SS304 insulated drain pan, squirrel cage induction TEFC motor, Kruger / Nicotra fans , belt drive and vibration isolators connected to DX outdoor unit. All air handling unit shall be suitable for 415+/- 10% volts, 50 cycles, 3 phase power supply. Coil shall be selected on a maximum face velocity of 2.5m/s.Minimum 6 Row deep coil to be considered, however coil selection should be furnished before supplying the unit.The starter to be Star-Delta / DOL Starter complete with SPP &amp; O/L relay. Upto 5.5 KW DOL &amp; beyond 5.5KW Star-Delta starters to be included in the cost.</p>			ETHOS/WAVES/EQUIVALENT
	a. 5.5 TR , 700 cfm, TS 40mm Rooms TFA (For all 4 floors )			
	Suplly	4	Nos.	
	Installation	4	Nos.	
9	<p>Supply and installation of Refrigerant Copper piping insulated with Nitrile Rubber Tubular insulation and covered with polyshield Note: Contractor to specify quantity considered as per tender drawing Note: bidder to consider the quantity as per tender drawing / site condition Note: No extra claim is allowed (Approximate 200rmt)</p>	1	Lot	As per OEM
	<b>INSULATION</b>			
10	<p>Supply and fixing of under deck insulation with 50 mm thick TF quality EPS insulating material. The insulation shall be suitably secured to 50 mm wide GI grid frame and laced with GI wire using GI washers, Screws</p>	350	Sqm	Beardsell/Equivalent
	<b>VENTILATION FAN</b>			

11	<p>Supplying installing, testing and commissioning of axial flow fan direct driven type for exhaust application. Complete with double flanged casing of MS / GI,with totally enclosed class F motor to a min. IP54 protection, fans of Nicotra / Kruger make , and vibration isolators. All units shall be suitable for 415+/- 10% volts, 50 cycles, 3 phase power supply.Fan shall be selected for maximum 1000 rpm. All complete as required. The inline fan shall have aluminium casted hub with provision to vary the blade pitch angle at site. All blades should be non-metallic construction, however for kitchen exhaust application blades to be metallic construction.</p> <p>Air moving capacity shall be as follows:</p>			Ostberg/Nadi
	First floor to fourth floor			
	200 cfm , TS - 20mm WC(Exhaust)	8	Nos.	
	First floor to fourth floor			
	500 cfm , TS - 20mm WC(Exhaust)	5	Nos.	
12	<b>MISCELLANEOUS</b>			
12a	Electrical work shall include inter connecting the outdoor unit with indoor units( VRV, DX and Ventilation units). The compressor panel shall house adequate capacity, contactor to start and stop the unit through remote switch. The cost shall also include works like cabling, earthing etc (Approximate 750rmt)	1	Lot	As per approved make in Part IV page 9 & 10
13	CONDENSING DRAIN PIPES: Providing and fixing in position the following size of PVC (UPVC quality) pipes, cut in required lengths and joined with PVC cement and also providing and fixing in position the necessary "U" trap elbows, tees, and reducers			As per approved make in Part IV page 9 & 10
13a	a. 20mm dia pipe (NB)	450	Mtrs	
13b	b. 25mm dia pipe (NB)	150	Mtrs	
	<b>MAKE FOR VRV SYSTEM: DAIKIN AND MITSUBISHI</b>			
	<b>GRAND TOTAL - HVAC</b>			