

HVAC BOQ - SBI VASHI TURBE BRANCH

SR. NO.	AC UNIT SPECIFICATION	UNIT	QTY.
A	VARIABLE REFRIGERANT FLOW SYSTEM WITH OZONE FRIENDLY REFRIGERANT GAS. Make : Daikin, Mitsubishi Heavy, TOSHIBA,HITACHI, BLUE STAR, Mitsubishi Ele.		
	Supply of the following:		
	Variable Refrigerant Flow modular type airconditioning system complete with indoor and out door units with individual controller as per detail given in specifications and having following items :		
	The vendor can select their configuration based on their product configuration and performance. However,the selection capacity of the outdoor unit should be in line with the specification and concept briefed in the tender document/drawing.		
	Modular type outdoor units equipped with highly efficient scroll compressors,with all inverter type compressor(s),special acrylic baked coating for top coat and corrosion protection for heat exchanger, welded parts, fan guard, fin guard and other major parts. precoated heat exchanger,low noise condenser fan,auto check function for connection error, auto recharge (e.g. after power cut), auto address and multi connection piping kits and any other related items as per the manufacturers standards & specifications to be included in the quote. The quoted price shall be inclusive of full charge of refrigerant gas.		
	Heat Exchanger fins shall be precoated aluminum Blue fins in high anticorrosion specification.		
1	VRV OUTDOOR UNITS		
1.1	26 HP VRV System (16HP+10HP)	Nos.	1
2	VRV INDOOR UNITS (IDU)		
	Indoor Units of Ductable / Cassette / Hi-wall type)		
	Ceiling mounted Ductable, Cassette & Hi-wall type indoor units with , fan of whisper quietness, compact cooling coil, electronic expansion valve, suction air grill, drain pump,woven type filters etc. Remote controller, Cabling in between the indoor units and the sensors have to be included and necessary cabling if any. Canvass connections with zip should be included in quoted price.		
	All the valve packages to be included in the quotes		
	Supply of below mentioned capacity		
2.1	Cassette Units		
2.1.1	2.6 TR / 830 CFM	Nos	7
2.1.2	1.65 TR / 770 CFM	Nos	1
2.1.3	1.3 TR / 510 CFM	Nos	2
2.1.4	1.0 TR / 450 CFM	Nos	2
3	Supply, Installation, Testing & Commissioning of Intelligent Control System for monitoring, scheduling and operation of all Indoor units / Out-door units.	Set	0
4	Cordless Remote controllers	Nos	12
	SUB TOTAL " A "		
B	DX CONVENTIONAL SYSTEM		
	Supply of Air Cooled Conventional Type Wall mounted Split Units, make : Daikin / Mitsubishi / Toshiba / hitachi		
	Supply of split type airconditioning units, each comprising of an outdoor and single/double indoor unit. Condensing unit shall be complete with Scroll / rotary compressor/s & air cooled condenser with fan. Evaporating unit shall consist of a fan section with dynamically balanced centrifugal fans driven by FHP motor, multirows deep cooling coil of Copper tubes and aluminium fins, thermostatic expansion valves etc. Additional treatment for corrosion protection apoxy coating shall be included. The evaporating unit shall be equipped with synthetic fibre filters, insulated drain pan, safety controls, thermostat all complete in a unit.The enclosure shall be factory painted to a smooth finish. The quoted price shall be inclusive of full charge of refrigerant gas. Machine Shall have refrigerant piping limitation up-to 15 mtr.		

	Single phase ductable split units :		
1	1.0 TR Hi-Wall split units	Nos.	1
	SUB TOTAL " B "		
C	LOW SIDE WORK OF VARIABLE REFRIGERANT FLOW SYSTEM WITH OZONE FRIENDLY REFRIGERANT GAS. Make : Daikin, Mitsubishi, TOSHIBA,HITACHI		
	Lifting , Shifting , Installation, Testing & Commissioning & Handing over of the following:		
	Installation, charging and commissioning of the VRV / VRF systems with the R-410 A refrigerant for all outdoor units as per the specs. This shall include the nitrogen leak testing, oil charging, vaccumisation, and other accessories as per the specs along with lifting & shifting.The contractor shall protect the outdoor unit from any scratches or damages during installation, in case of any damages they should be repaired carefully as per manufacturers guidelines or outdoor units should be replaced as deemed fit by the Project Manager.The quoted price shall be inclusive of full charge of additional refrigerant gas, Following machines (Indoor / out-door) including lifting, shifting, supply, fabrication, installation of MS base platform for indoor/outdoor unit complete with epoxy painting, vibration isolation pads, support hangars, railing, brackets etc shall be included in quoted price.		
1	VRV OUTDOOR UNITS		
1.1	30 HP VRV System (20HP+10HP)	Nos.	1
2	VRV INDOOR UNITS (IDU)		
	Indoor Units of Ductable / Cassette / Hi-wall type)		
	Ceiling mounted Ductable, Cassette & Hi-wall type indoor units with , fan of whisper quietness, compact cooling coil, electronic expansion valve, suction air grill, drain pump,woven type filters etc. Remote controller, Cabling in between the indoor units and the sensors have to be included and necessary cabling if any. Canvass conections with zip should be included in quoted price.		
	All the valve packages to be included in the quotes		
	Supply of below mentioned capacity		
2.1	Cassette Units		
2.1.1	2.6 TR / 830 CFM	Nos	7
2.1.2	1.65 TR / 770 CFM	Nos	1
2.1.3	1.3 TR / 510 CFM	Nos	2
2.1.4	1.0 TR / 450 CFM	Nos	2
3	Installation, Testing & Commissioning of Intelligent Control System for monitoring, scheduling and operation of all Indoor units / Out-door units.	Set	0
4	Cordless Remote controllers	Nos	0
5	Supply, Installation, Testing & Commissioning of Refrigerant Joints for Indoor and Outdoor Units		
5.1	For Indoor	Nos	10
5.2	Outdoor Units	Lot	1
5.3	Supply, fabrication, installation of MS base platform for VRF indoor/outdoor unit complete with epoxy painting, vibration isolation pads, support hangars, railing, brackets etc	Lot	1
6	Electrical works of VRV system		
6.1	COPPER Refrigerant Piping of make : Mandev / Nissan / Rajco / Mexflow		
	Copper Ref.piping of the required sizes for all the units with refnets as per specs. The insulation shall be of 19mm thick Armaflex make through out the running length of Ref. piping. The piping shall be well supported at specific intervals with GI supports with insulated PUF saddles and installed on GI cable trays supported from wall / roof with anchor fasteners & C type ms angle.		
	The pipe sizes are tentitive , the vendors have to consider as per their manufacturing standards. (Rmt indicates circuit of supply & return line)	Rmt	120

7	Perforated GI tray for Refrigerant piping / Cabling		
	Provide adequate size enclosed perforated GI cable tray of 18 Gauge to cover and protect the refrigerant pipes and cabling for all the VRV units. Provide necessary sleeves for all wall and roof penetrations along with UV protection to prevent degradation. The same shall be with polyshield coating of atleast 2 coats of resin & hardner (ploybond make / equivalent).		
7.1	12"x2"x2"	Rmt.	0
8	Control Wiring of make : Polycab / CCI / RR		
	Control cabling from Indoor to outdoor unit for all the units with the necessary fittings. The cabling shall be FRLS weather proof type as most of the cabling will have open exposure to atmosphere. The cabling shall be bundled properly and shall be neatly aligned with the Refrigerant piping. The cabling shall be well supported at specific intervals and & similar to refrigerant piping.		
	(2 core x 0.75 Sq mm cu.cable)	Rmt	215
9	Control cabling for corded Remotes thru PVC Conduit of make : Polycab / CCI		
	(2 Core x 1.0 sqmm)	Rmt	0
10	Power Cabling for VRV Indoor units of make : Polycab / CCI /RR		
	FRLS Power cabling with earthing for indoor units from power point provided within 2mtrs. of unit		
	(2 Core x 2.5 sqmm)	Rmt	25
11	Power Cabling for VRV Outdoor units of make : Polycab / CCI / RR		
	Power cabling with earthing from MCB to outdoor unit by means of GI cable trays of the required gauge as the cabling will have open exposure to atmosphere. The cabling shall be well supported at specific intervals with GI cable tray & angles frame work and screwed to wall with anchor fasteners. 5mtrs. of unit considered		
	(4 Core x 8/10/12 sqmm)	Rmt	10
12	Supply, installation, testing & commissioning of following MCB with ELCB in 16 SWG sheet steel enclosure duly painted and gasketed of IP-55 construction suitable for outdoor installation with provision for terminating of incoming and outgoing cables. Make : Legrand / L&T / Schneider.		
	a. For VRV outdoor units . Amp rating of required size (in electrical scope)	Nos.	0
	SUB TOTAL " C "		
D	DX CONVENTIONAL SYSTEM		
1	Installation Testing & Commissioning of Air cooled Inverter Ductable / split units, make : Daikin / Mitsubishi / Toshiba / hitachi		
	Installation, charging and commissioning of the Rotary / Scroll type split AC systems with refrigerant for all outdoor units as per the specs. This shall include the nitrogen leak testing, oil charging, vaccumisation, and other accessories as per the specs along with lifting & shifting.The contractor shall protect the outdoor unit from any scratches or damages during installation, in case of any damages they should be repaired carefully as per manufacturers guidelines or outdoor units should be replaced as deemed fit by the Project Manager.The quoted price shall be inclusive of full charge of additional refrigerant gas, Following machines (Indoor / out-door) including lifting, shifting, supply, fabrication, installation of MS base platform for indoor/outdoor unit complete with epoxy painting, vibration isolation pads, support hangars, railing, brackets etc shall be included in quoted price.		
	Three phase ductable split units :		
1.1	1.5 TR Hi-Wall split units	Nos.	1
1.2	supply, fabrication, installation of MS base platform for indoor/outdoor unit complete with epoxy painting, vibration isolation pads, support hangars, railing, brackets etc.	Nos.	1
2	Copper Refrigerant Piping & Cabling for Air cooled ducable split units.		

	Supply, Installation, Testing and Commissioning of hard/soft copper refrigerant piping complete with fittings between indoor units and remote condensers. Refrigerant piping complete for all circuits with suction line insulation of min. 9 mm thick Armaflex make & electrical cabling & conduiting with proper supporting arrangement @ every 4 feet..		
2.1	1.5 TR Hi-Wall split units		
2.1.1	Refrigerant piping. make : Mandev / Nissan / Rajco / Mexflow (Circuit length)	Rmt.	10
2.1.2	FRLS Power cabling. Make : Polycab / CCI / RR	Rmt.	3
2.1.3	FRLS Control cabling. Make : Polycab / CCI / RR	Rmt.	13
2.1.4	Isolator switch of IP-55 construction near outdoor/indoor unit. Make : Legrand / ABB / Schneider.(in electrical scope)	Nos.	0
3	Drain Piping Make : Supreme / Prince		
	Drain Piping shall be Hard PVC.32mm dia for single unit, 40mm dia for two units and 50mm dia for 3 units. Drain Piping shall be insulated with 12mm Armaflex.	Rmt	130
4	SEQUENTIAL TIMER CONTROLLER		
	Supply, Installation & Testing of Sequential Timer controller including wiring as per following configuration. It shall be compatible to connect BMS system.		
4.1	For 2 nos 1.5 TR Split units (1 Working + 1 Standby)	Set	0
SUB TOTAL " D "			
E	VENTILATION FANS		
1	Supply, Installation,Testing & Commissioning of circular / rectangular inline fans as shown on drawings, complete with sheet metal casing, direct driven centrifugal fan, motor with proper protection & flexible connection. Fan should be suitable for operation on 230 volts, 50Hz, supply as required. Fan shall be suitable for installation in shaft or as shown on drawings and shall be of following capacities. Necessary electrical cabling from power supply to unit to be included in quoted price (max 2 mtr). Make : Knauer / System Air / Carvaire		
	The fan shall have low sound level exceeding not more than 40 DB at three metre distance.		
1.1	Fresh Air Fans with cowl & bird screen		
1.1.1	Fresh Air In-line Type fan with filter of 250 CFM @ 10 mm SP.	Nos,	1
1.2	Exhaust Air Fans with cowl & bird screen		
1.2.1	Exhaust Air In-line Type fan with filter of 375 CFM @ 15 mm SP.	Nos,	1
SUB TOTAL " E "			
	Supply, Lifting , Shifting , Installation, Testing & Commissioning & Handing over of the following:		
F	Ducting & Insulation		
1	SHEET METAL DUCTING & INSULATION		
1.1	Rectangular ducting – Factory Fabricated complete with splitter dampers, turning vanes, access doors, supports, air tight joints applied with sealant etc. as per drawings (Rolastar / Zeco / SA Enterprises / Nutech Make) (Make for GI Sheet :- Jindal / Sail)		
	Where ever ducts pass through brick or masonry openings, it shall be provided with 25mm thick TF quality expanded polystyrene around the duct and totally covered with fire barrier mortar for complete sealing. Duct leak pressure testing cost shall be included in the ducting.		
1.1.1	Thickness 0.63 mm sheet (24 G)	Sqm	30
1.1.2	Thickness 0.80 mm sheet (22 G) - Plenum	Sqm	0
1.1.3	Thickness 1.00 mm sheet (20 G)	Sqm	0
1.1.4	Thickness 1.25 mm sheet (18 G)	Sqm	0
1.2	Supply & installation of Insulated flexible duct with Jubilee clips & aluminum foil tapes Make : Cosmic / Seven Star / Equivalent.		
1.2.1	100 mm dia	Rmt.	10
2	DUCT ACOUSTIC INSULATION		

remove exhaust & consider in elect

2.1	Acoustic Insulation with 13 mm thick self adhesive nitrile rubber (arma sound) as shown in the drawing (Arma Cell / K Flex / Equivalent.make.)	sq.m	0
3	DUCT THERMAL INSULATION		
3.1	Thermal Insulation with self adhesive 9 mm thick nitrile rubber & all joints of the insulation shall be further covered with 50mm wide 3mm thick self-adhesive tape made of similar material of (Armacell / K flex / Equivalent.make.)	sq.m	22
SUB TOTAL F			
G	Air Distribution Works		
1	Supply & Installation of exhaust air Aluminium extruded Powder Coated square grille with end flanges & damer of size : 150 X 150. (Make : Cosmos / Dynacraft / Komalco Systems / Air Product)	Nos.	5
2	Volume Control Dampers made out of 100 x 40 x 1.55 mm thick galvanized steel frame and with opposed blades of 1.55 mm galvanized sheet steel. (Make : Sachin Impex / Dynacraft / Komalco Systems / Air Product)	sq.m	1
3	Supply, Installation of Fresh air intake / exhaust outlet connections with rain protection louvers, bird screen (Al. 26 G min.) & volume control damper gear operated type. Make : Cosmos / Air Products / Equivalent.	Nos.	1
SUB TOTAL G			
GRAND TOTAL A+B+C+D+E+F+G			

Notes :

All Taxes & duties shall be extra.

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