

TECHNICAL SPECIFICATION FOR VRF / VRV SYSTEM (Annexure-VII)

HEAT LOAD DETAILS OF NIELIT, KOLKATA CENTER AT BF-267, SALT LAKE Kolkata-700064

SL. NO.	DESCRIPTION	AREA IN SQ.METER. (APPROX)	AREA IN SQ.FT. (APPROX)	Dehumidified CFM	AC TR	ELEC LOAD FOR AC	AC TR (ROUNDED)	ODU CAPACITY IN HP	ODU SIZE	IDU CONFIG	IDU SIZE	IDU TR	ODU ELEC LOAD IN KW	IDU ELEC LOAD
SECOND FLOOR PLAN														
1	SERVER ROOM	9.92	106.78	256.27	0.85	0.85	1.00	12.00	978 X 800 X 1950 (VRF)	1 TR HI WALL	800 X 188 X 275	1.00	9.12	0.10
2	DIRECTOR'S ROOM	38.27	411.94	988.65	3.30	3.30	3.50			2 TR HI WALL + 1.5 TR HI WALL	1045 X 235 X 315+ 940 X 205 X 275	3.50		0.35
3	OFFICE	21.59	232.39	557.75	1.86	1.86	2.00			2 TR HI WALL	1045 X 235 X 315	2.00		0.20
4	CLASS ROOM 1	57.22	615.92	1478.20	4.93	4.93	5.00			3 TR CASSETTE + 2TR CASSETTE	840 X 840 X 300	5.00		0.50
5	CLASS ROOM CENTRE	65.47	704.72	1691.33	5.64	5.64	6.00	12.00	978 X 800 X 1950 (VRF)	3TR CASSETTE + 3TR CASSETTE	841 X 840 X 300	6.00	9.12	0.60
6	PA ROOM	8.89	95.69	229.66	0.77	0.77	1.00			1 TR HI WALL	800 X 188 X 275	1.00		0.10
7	LAB	20.77	223.57	536.56	1.79	1.79	2.00			2 TR HI WALL	1045 X 235 X 315	2.00		0.20
8	LOBBY	33.12	356.50	855.61	2.85	2.85	3.00			2 X 1.5 TR HI WALL	940 X 205 X 275	3.00		0.30
Total of Second floor		255.25	2747.51	6594.03	21.98	21.98	23.50					23.50	18.24	2.35

THIRD FLOOR PLAN														
1	LAB TEACHER'S ROOM	24.50	263.72	632.92	2.11	2.11	2.00	12.00	978 X 800 X 1950 (VRF)	2 TR HI WALL	1045 X 235 X 315	2.00	9.12	0.20
2	CLASS ROOM 1	42.18	454.03	1089.66	3.63	3.63	4.00			2 X 2 TR CASSETTE	840 X 840 X 300	4.00		0.40
3	CLASS ROOM 2	57.23	616.02	1478.46	4.93	4.93	5.00			2 TR CASSETTE + 3 TR CASSETTE	840 X 840 X 300	5.00		0.50
4	LAB	20.77	223.57	536.56	1.79	1.79	2.00	12.00	978 X 800 X 1950 (VRF)	2 TR HI WALL	1045 X 235 X 315	2.00	9.12	0.20
5	LOBBY	33.12	356.50	855.61	2.85	2.85	3.00			2 X 1.5 TR HI WALL	940 X 205 X 275	3.00		0.30
6	CENTRE CLASSROOM M	65.47	704.72	1691.33	5.64	5.64	6.00			3TR CASSETTE + 3TR CASSETTE	840 X 840 X 300	6.00		0.60
Total of Third floor		243.27	2618.56	6284.54	20.95	20.95	22.00					22.00	18.24	2.20

TOTAL VRF UNITS = 2

NO. OF HI WALL I.D.U = 12 (of different capacities)

NO.OF CASSETTE = 10 (of different capacities)

General

Scope of this section comprises of design, supply, erection, testing and commissioning of ALL Inverter Scroll VRF type system. The VRF product must be manufactured at ISO 9001-2008 certified factory only, supporting document to be provided (if asked for).

FULL INVERTER VRF SYSEM- TECHNICAL SPECIFICAION

- i. The Air cooled direct expansion type VRF outdoor unit shall be factory assembled, powder coated GI sheet metal cabinets, all hardware of anti rust quality, conformal coating on PCB to protect from duct & humidity, hydrophilic blue fin material for better corrosion resistance, top discharge type with Brushless DC Motor only. Outdoor Units must be Hot Air Top Discharge Type, as per site requirement.
- ii. The Top Discharge type VRF ODU must have bigger condenser coil face area with higher CFM (400 CFM/TR) fan resulting in improved efficiency, less duration due to higher ambient temperatures.
- iii. The ODU capacity must be delivering actual capacity at 42 deg C, no unloading upto 48 deg. C. Please note, the mentioned capacity is actual capacity.
- iv. The Outdoor unit must consists of Scroll Compressor only. Tender BOQ specified VRF ODU must be having multiple Scroll compressors. There should not be any fixed compressor.
- v. The VRF system must compatible with R410A green Refrigerant only. System must be pre-charged at Factory. If required additional, based on the site, then it will be charged additional at site.
- vi. The advantage of scroll compressor (in VRF Outdoor) for maximum efficiency, low starting current and thus will help optimize electrical requirements (i.e. Generator, cable etc.)
- vii. Condenser Heat exchanger made of copper tubes, are inner grooved for high heat transfer. The condenser fans are fitted with high efficiency BLDC motor that regulate air flow depending on demand resulting more power saving. The special design result High Integrated Part Load Value (IPLV) of 6.2 or more at 42 Deg C only, it must as per GB (Guobiao) international Standard only.
- viii. The VRF system must be designed to operate across a WIDE Voltage range 415V \pm 10% resulting in high uptime even in such erratic power conditions.
- ix. ALL VRF must be designed with the new generation Refrigerant Cooled PCB, which helps maintain the drive within allowable temperature range. It enhances the reliability of the system when it is working under very high ambient conditions.
- x. VRF (Full Inverter Type) must be designed with twin large accumulator & and an efficient oil recovery management system, hence allow the system to be set up with long & flexible piping. That is
 - a. Max. actual piping length - 180 Rmt
 - b. Max. total piping length - 1000 Rmt
 - c. Max. Level difference between ODU-IDU - 90 rmt
 - d. Max. level difference between IDUs - 40 rmt
- xi. Each Indoor unit must be connected (with VRF outdoor unit) by means of individual Copper Refrigerant network or Y distribution joints only. The mentioned "Y" joint or refnet joints must factory-made & tested by

OEM. The individual size, of refnets or “Y” joints , connecting to individual indoor units, to be calculated & supplied by OEM / Bidder / OEM approved bidder only. Bidder must upload design - drawing, showing IDU ODU location, piping layout, drain piping, with actual sizes also to be shown as per site requirement. Bidder to visit the site for drawing/design preparation.

- xii. All Inverter VRF should have emergency back operation. In-case of double compressor ODU, it must operate or function even is there is a failure or maintenance downtime of one compressor.
- xiii. In modular VRF, where multiple units have been combined to run, as one larger unit, the system must operate even in case of failure or maintenance downtime or shutdown of one VRF ODU. It will help to ensure that cooling/heating remains LARGELY un-effected even during servicing.
- xiv. As all the Indoor units are interconnected by the communication cable, if there is any break in any communication cable, subsequent IDUs are affected and must not function. By activating the IDU emergency operation on the Next Generation All Inverter VRF, the other IDUs must function despite of such break.