

Annexure - 1 : Datasheet of 12 HP VRF (To be filled in by Bidder)

Sr. No.	Description	Required - System Parameters	To be filled by the Bidder
1	Type of VRF	VRF	
2	Make of VRF	Mitsubishi Heavy / Daikin / Toshiba / O General	
3	Model Name / Number of VRF	To be specified by the Bidder	
5	Rated Power Input	Below 8.66 KW	
6	EER	Above 13.20	
7	COP @ 100%	Above 3.868	
8	Power Supply	390-440V /3Ph/50 Hz	
9	Refrigerant	R-410a	
10	Factory Pre-Charge	Yes, Required	
11	Refrigerant Gas Pressure	To be specified by the Bidder	
12	Noise Level at 1 Meter distance	Below 60 db	
13	External Wired Controller	VRF must be having provision of Common wired controller for 1 to 10 Nos. VRFs by looping in common communication cable	
14	Remote Operation	Remote Operation should be possible	
15	Diamensions in MM (LXWXH)	To be specified by the Bidder	
16	Weight (Kg)		

Evaporator

1	Type	To be specified by the Bidder	
2	Material	To be specified by the Bidder	

Condenser

1	Condenser Type / Tube Material	Inner Groove Type / Copper Tube	
2	Fins Material	Aluminum	
3	Number of Rows	Minimum 3	
4	FPI	Minimum 18	
5	Fins Area	To be specified by the Bidder	

Sr. No.	Description	Required - System Parameters	To be filled by the Bidder
6	Condenser Heat Exchange Area	To be specified by the Bidder	
7	Noumber of Tubes	To be specified by the Bidder	
Condenser Fan			
1	Type / Drive	Propeller / Direct	
2	Quantity of Condenser fan		
3	Blade Material	To be specified by the Bidder	
4	Motor Poles	To be specified by the Bidder	
5	Air Volume	minimum 11000 m3/hr	
6	Fan Motor Wattage/Kw	KiloWatt	
7	Fan Speed High & Low (RPM)	To be specified by the Bidder	
Compressor			
1	Type of Compressor	DC Inverter Scroll	
2	Quantity per VRF	To be specified by the Bidder	
3	Each Compressor Capacity in TR	TR	
4	Compressor speed	Minimum & Maximum	
5	IP	IP55	
6	Insulation Grade	F	
7	Flow Control	EXV	
8	No of Refrigerant Circuits	To be specified by the Bidder	
9	In built Protection Devices	High Pressure Switch	
10		Low Pressure Switch	
11		Thermal Proctector	
12		Overload Protector	
13		Phase Sequencer	
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Annexure - 2 : Compliance Datasheet of 10 HP VRF (To be filled in by Bidder)

Sr. No.	Description	Required - System Parameters	To be filled by the Bidder
1	Type of VRF	VRF	
2	Make of VRF	Mitsubishi Heavy / Daikin / Toshiba / O General	
3	Model Name / Number of VRF	To be specified by the Bidder	
5	Rated Power Input	Below 6.75 KW	
6	EER	Above 14.15	
7	COP @ 100%	Above 4.15	
8	Power Supply	390-440V /3Ph/50 Hz	
9	Refrigerant	R-410a	
10	Factory Pre-Charge	Yes, Required	
11	Refrigerant Gas Pressure	To be specified by the Bidder	
12	Noise Level at 1 Meter distance	Below 60 db	
13	External Wired Controller	VRF must be having provision of Common wired controller for 1 to 10 Nos. VRFs by looping in common communication cable	
14	Remote Operation	Remote Operation should be possible	
15	Diamensions in MM (LXWXH)	To be specified by the Bidder	
16	Weight (Kg)	To be specified by the Bidder	

Evaporator

1	Type	To be specified by the Bidder	
2	Material	To be specified by the Bidder	

Condenser

1	Condenser Type / Tube Material	Inner Groove Type / Copper Tube	
2	Fins Material	Aluminum	
3	Number of Rows	Minimum 3	
4	FPI	Minimum 18	
5	Fins Area	To be specified by the Bidder	

Sr. No.	Description	Required - System Parameters	To be filled by the Bidder
6	Condenser Heat Exchange Area	To be specified by the Bidder	
7	Noumber of Tubes	To be specified by the Bidder	
Condenser Fan			
1	Type / Drive	Propeller / Direct	
2	Quantity of Condenser fan	To be specified by the Bidder	
3	Blade Material	To be specified by the Bidder	
4	Motor Poles	To be specified by the Bidder	
5	Air Volume	minimum 10400 m3/hr	
6	Fan Motor Wattage/Kw	KiloWatt	
7	Fan Speed High & Low (RPM)	To be specified by the Bidder	
Compressor			
1	Type of Compressor	DC Inverter Scroll	
2	Quantity per VRF	To be specified by the Bidder	
3	Each Compressor Capacity in TR	TR	
4	Compressor speed	Minimum & Maximum	
5	IP	IP55	
6	Insulation Grade	F	
7	Flow Control	EXV	
8	No of Refrigerant Circuits	To be specified by the Bidder	
9	In built Protection Devices	High Pressure Switch	
10		Low Pressure Switch	
11		Thermal Proctector	
12		Overload Protector	
13		Phase Sequencer	
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Annexure - 3 : Compliance Datasheet of 4500 CFM AHU (To be filled in by Bidder) - For 2 Nos. x 10 HP VRV/VRF System

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	Make	Edgetech / Stulz / Systemair / Trane	
2	CFM AS PER BOQ	4500	
3	TSP AS PER BOQ	Yes	
4	INNER SKIN	0.8 MM PLAIN GI	
5	OUTER SKIN	0.8 MM PRECOATED GI	
6	PANEL INSULATION	ROCKWOOL WITH DENSITY OF 96 ± 2 KG/M3 DENSITY	
7	PANEL THICKNESS	46 ± 2 mm	
8	THERMAL BREAK PROFILE WITH INTERNAL COVING	Yes, Required	
9	MIXING BOX WITH FA & RA DAMPER WITH EXTENDED SHAFT	Yes, Required	
10	INTAKE SECTION WITH 600MM	Yes, Required	
11	ACTUATOR	Yes, Required	
12	PREFILTER -	50MM THICK BOX TYPE	
13	PREFILTER EFFICIENCY -	90% DOWN TO 10MICRON	
14	COIL ROW DEEP-	8 RD	
15	COIL DIA-	DIA : 9.5 MM, TUBE THICKNESS-0.3 MM	
16	COIL FINS-	11-13 FPI	
17	AL FINS	0.15 MM THICK	
18	COIL CASING & BLANK OFF	SS304	
19	UV LAMP	Yes, Required	
20	MODULATING TYPE THYRISTOR HEATER WITH CONTROLLER	Yes, Required	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
21	SPACE FOR HEATER -	600 MM	
22	HEATER MODULATION SHOULD BE THROUGH KW MODULATION BASED ON 0-10V SIGNAL	Yes, Required	
23	SMART PANEL PROTECTION-IP55	Yes, Required	
24	PLC WITH 7" DISPLAY	Yes, Required	
25	SENSOR IN SCOPE-SA & RA TEMP;DP SWITCH ACROSS EACH FILTER;DPT ACROSS FAN	Yes, Required	
26	FAN SECTION EC FAN	Yes, Required	
27	FAN EFFICIENCY	IE5	
28	AMCA CERTIFIED EC FAN	Yes, Required	
29	RIGID MEDIA FINER FILTER AFTER FAN	Yes, Required	
30	FILTER EFFICIENCY	95% DOWN TO 5 MICRON	
31	SA AL EXTRUDED DAMPER WITH EXTENDED SHAFT.	Yes, Required	

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Annexure - 4 : Compliance Datasheet of 7500 CFM AHU (To be filled in by Bidder) - For 3 Nos. x 10 HP VRV/VRF System

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	Make	Edgetech / Stulz / Systemair / Trane	
2	CFM AS PER BOQ	7500	
3	TSP AS PER BOQ	Yes	
4	INNER SKIN	0.8M M PLAIN GI	
5	OUTER SKIN	0.8 MM PRECOATED GI	
6	PANEL INSULATION	ROCKWOOL WITH DENSITY OF 96 ± 2 KG/M3 DENSITY	
7	PANEL THICKNESS	46 ± 2 mm	
8	THERMAL BREAK PROFILE WITH INTERNAL COVING	Yes, Required	
9	MIXING BOX WITH FA & RA DAMPER WITH EXTENDED SHAFT	Yes, Required	
10	INTAKE SECTION WITH 600MM	Yes, Required	
11	ACTUATOR	Yes, Required	
12	PREFILTER -	50 MM THICK BOX TYPE	
13	PREFILTER EFFICIENCY -	90% DOWN TO 10MICRON	
14	COIL ROW DEEP-	8 RD	
15	COIL DIA-	9.5 MM;TUBE THICKNESS-0.3 MM	
16	COIL FINS-	11-13FPI	
17	AL FINS	0.15 MM THICK	
18	COIL CASING & BLANK OFF	SS304	
19	UV LAMP	Yes, Required	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
20	MODULATING TYPE THYRISTOR HEATER WITH CONTROLLER	Yes, Required	
21	SPACE FOR HEATER -	600 MM	
22	HEATER MODULATION SHOULD BE THROUGH KW MODULATION BASED ON 0-10V SIGNAL	Yes, Required	
23	SMART PANEL PROTECTION-IP55	Yes, Required	
24	PLC WITH 7" DISPLAY	Yes, Required	
25	SENSOR IN SCOPE-SA & RA TEMP;DP SWITCH ACROSS EACH FILTER;DPT ACROSS FAN	Yes, Required	
26	FAN SECTION EC FAN	Yes, Required	
27	FAN EFFICIENCY	IE5	
28	AMCA CERTIFIED EC FAN	Yes, Required	
29	RIGID MEDIA FINER FILTER AFTER FAN	Yes, Required	
30	FILTER EFFICIENCY	95% DOWN TO 5 MICRON	
31	SA AL EXTRUDED DAMPER WITH EXTENDED SHAFT.	Yes, Required	

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Annexure - 5 : Compliance Datasheet of 10000 CFM AHU (To be filled in by Bidder) - For 3 Nos. x 12 HP VRV/VRF System

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	Make	Edgetech / Stulz / Systemair / Trane	
2	CFM AS PER BOQ	10000	
3	TSP AS PER BOQ	Yes	
4	INNER SKIN	0.8 MM PLAIN GI	
5	OUTER SKIN	0.8 MM PRECOATED GI	
6	PANEL INSULATION	ROCKWOOL WITH DENSITY OF 96 ± 2 KG/M3 DENSITY	
7	PANEL THICKNESS	46 ± 2 mm	
8	THERMAL BREAK PROFILE WITH INTERNAL COVING	Yes, Required	
9	MIXING BOX WITH FA & RA DAMPER WITH EXTENDED SHAFT	Yes, Required	
10	INTAKE SECTION WITH 600MM	Yes, Required	
11	ACTUATOR	Yes, Required	
12	PREFILTER -	50 MM THICK BOX TYPE	
13	PREFILTER EFFICIENCY -	90% DOWN TO 10MICRON	
14	COIL ROW DEEP-	8 RD	
15	COIL DIA-	9.5MM;TUBE THICKNESS-0.3MM	
16	COIL FINS-	11-13 FPI	
17	AL FINS	0.15 MM THICK	
18	COIL CASING & BLANK OFF	SS304	
19	UV LAMP	Yes, Required	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
20	MODULATING TYPE THYRISTOR HEATER WITH CONTROLLER	Yes, Required	
21	SPACE FOR HEATER -	600 MM	
22	HEATER MODULATION SHOULD BE THROUGH KW MODULATION BASED ON 0-10V SIGNAL	Yes, Required	
23	SMART PANEL PROTECTION-IP55	Yes, Required	
24	PLC WITH 7" DISPLAY	Yes, Required	
25	SENSOR IN SCOPE-SA & RA TEMP;DP SWITCH ACROSS EACH FILTER;DPT ACROSS FAN	Yes, Required	
26	FAN SECTION EC FAN	Yes, Required	
27	FAN EFFICIENCY	IE5	
28	AMCA CERTIFIED EC FAN	Yes, Required	
29	RIGID MEDIA FINER FILTER AFTER FAN	Yes, Required	
30	FILTER EFFICIENCY	95% DOWN TO 5 MICRON	
31	SA AL EXTRUDED DAMPER WITH EXTENDED SHAFT.	Yes, Required	

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Annexure - 6 : Compliance Datasheet of HVAC Duct (To be filled in by Bidder)

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	Product	Rectangular Ducts	
2	Make of material	To be specified by the Bidder	
3	Material coating	180 GSM Zinc Coating both side	
4	Pressure class of ducts	2" WG as per IS-655 Standards (500 Pascals)	
5	Applicable standard	IS-655	
6	Pressure class in Pascals	500 Pascals	
7	Duct construction / enclosure	TDF Rectangular GI Ducts	
8	TDF flange system	TDF Flange	
9	TDF corner type	20G TDF Corners for duct sizes up to 1800 mm as stated	
10	TDF corner type for ducts above 1800 mm	18G TDF Corners	

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Annexure - 7 : Compliance Datasheet of ESD Vinyl Mat (To be filled in by Bidder)

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	Electrostatic Discharge Vinyl Mat	3 Layered	
2	Governing Specifications :	BS 2050 / 1978IS 3462 / 1986	
3	Material	Homogeneous composition with Black conductive layer sandwiched between two antistatic Layers.	
4	Thickness	3mm $\pm$ 0.1mm (0.5mm sandwiched conductive layer)	
5	Tensile Strength	More than 25mj/m ³ exceeds	
6	Flexibility	Does not break or show any Sign of Failure	
7	Sound Reduction Factor	3 db	
8	In flammability	Self extinguishing as per RDSO C – 8515	
9	Water Absorption	At room temperature for 24 hrs is less than 0.1%.	
10	Heat Aging Exudation :	No surface cracking or Exudation takes place, as per IS:3462-1986.	
11	Standard Supply	2.0 Mtrs width x approx. 15 Mtrs Running length	
12	Dimension Tolerance	$\pm$ 5%.	
13	Surface resistivity of top surface layer:	10 ⁶ – 10 ⁹ Ohms/sq	
14	Surface resistivity of middle layer:	10 ³ - 10 ⁵ Ohms/sq	
15	Decay Time	Less than 2 seconds.	

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Annexure - 8 : Compliance Datasheet of PIR Wall Panel (To be filled in by Bidder)

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	Panel thickness	80 mm	
2	Panel type	Factory-made PIR insulated sandwich panel	
3	Core material	Polyisocyanurate (PIR)	
4	PIR core density	Minimum $40 \pm 2 \text{ kg/m}^3$	
5	Outer/inner skin	PPGI sheet	
6	GI skin thickness	0.5 to 0.6 one Side , 0.5 to 0.6 mm One Side	
7	Paint coating	25 micron cleanroom-grade chemical-resistant polyester paint PPGI	
8	Fire property	Fire-retardant & self-extinguishing	
9	Fire classification	Class B1 / B-S1 as specified	
10	PIR certification	FM-approved core	
11	Thermal conductivity	0.022 W/m·K	
12	Water absorption	< 1%	
13	Refrigerant/blowing agent	Free from CFC/HFC	
14	Joint system	Factory-formed tongue & groove	
15	Joint gasket	Integrated EPDM gasket	
16	Airtightness	Airtight assembly	
17	Thermal bridge	Thermal-bridge-free assembly	
18	Surface finish	Flush and seamless	
19	Dimensional Stability test		
20	Temp @ 100°C for 24hrs.	1.20%	
21	Temp @ -20°C for 24hrs	< 1 %	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
22	Self-Extinguishing characteristics against fire	As per FM Standard 4880 -Class 1	
23	FM Approval Classification	FM Approved – Class 1 as per FM Approval Code 4880	
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Annexure - 9 : Compliance Datasheet of PIR Ceiling Panel, Door & Accessories (To be filled by Bidder & submit with the Technical Bid)

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
B. CEILING PANELS			
1	Ceiling panel thickness	50 mm	
2	Core	PIR insulated	
3	Core density	Approx. 40 ± 2 kg/m ³	
4	Inner skin	0.5 to 0.6 mm GI / approved cleanroom finish	
5	Outer skin	0.5 to 0.6 mm GI / approved cleanroom finish	
6	Fire property	Fire-retardant & self-extinguishing	
7	Suspension	Concealed suspension/support grid	
8	Perimeter support	Perimeter angles included	
9	Hanging system	Hangers included	
10	HEPA cut-outs	Provision for HEPA filter openings	
11	Lighting cut-outs	Provision for light fittings	
12	Fire alarm cut-outs	Provision included	
13	Ceiling finish	Rigid, level & washable	
14	Airtightness	Ceiling assembly airtight	
15	Colour	As approved by client	
C. SUSPENSION SYSTEM			
1	Ceiling hanging system	Complete supply & installation	
2	Turnbuckles - MOC GI	Yes, Required	
3	Threaded rods- 12 mm GI Rod	Yes, Required	
4	Nuts & bolts - GI	Yes, Required	
5	T-grid Aluminium Powdercoated material with 5mm thickness	Yes, Required	
6	Accessories	Complete accessories included	
D. WALL TRACK			
1	Wall panel track	For 80 mm wall panel	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
2	GI thickness	1.2 mm	
3	Finish	Powder coated	
4	Fixing holes	Necessary holes to be provided	
E. COVINGS			
1	Wall-to-ceiling coving	R90 enlarged clip-on type	
2	Wall-to-wall coving	R90 enlarged clip-on type	
3	Material	Extruded aluminium	
4	Finish	Powder coated	
5	Wall-to-floor coving	R70 enlarged clip-on type	
6	Floor coving scope	Standard	
F. CORNERS			
1	Corner profiles	2D / 3D corners	
2	Quantity	Verify from drawings/BOQ	
G. SEALING			
1	Panel joints	Class B1 Fire rated Silicone sealant	
2	Coving joints	Class B1 Fire rated Silicone sealant	
3	Light cut-outs	Class B1 Fire rated Silicone sealing	
4	Other penetrations	Check and include wherever required	
H. ELECTRICAL CONDUIT			
1	Conduit	PVC pipe	
2	Diameter	25 mm	
3	Installation	Supply & installation	
I. CUT-OUTS			
1	Grill cut-outs	Site/factory-made	
2	Light cut-outs	Site/factory-made	
3	Pass box cut-outs	Site/factory-made	
4	Electrical socket cut-outs	Site/factory-made	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
5	Other openings	Verify drawings & MEP requirements	
A. RISER PANEL / MODULE			
1	Riser panel type	Riser duct panel with coupling to main HVAC ducting	
2	Material	SS 304	
3	Panel construction	Suitable for cleanroom application	
4	Fixing frame	SS 304 fixing frame	
5	Gasket	Gasket included	
6	Accessories	All necessary accessories included	
7	Grill panel	Removable / openable push-fit type	
8	Grill panel application	Suitable for cleanroom areas	
9	Filter compatibility	Suitable for G-4 filter installation	
10	Installation height	150 mm above FFL	
11	VCD	Front-access volume control damper	
12	VCD accessibility	Accessible from front	
13	Duct connection	Top flange provided	
14	Top flange	Suitable for connection to ducting	
15	Stiffeners	Adequate stiffeners provided	
16	Buckling prevention	Construction to prevent panel buckling	
17	Dimensions	As specified in tender/drawings	
18	Installation	Complete supply & installation	
B. RETURN AIR RISER MODULE – 1			
1	Module size	900 × 80 mm	
2	Filter size	820 × 220 × 20 mm	
3	Filter type	Pre-filter / G4 filter	
4	Filter mounting	Confirm proper filter holding arrangement	
C. RETURN AIR RISER MODULE – 2			

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	Module size	750 × 80 mm	
2	Filter size	680 × 220 × 20 mm	
3	Filter type	Pre-filter / G4 filter	
4	Filter mounting	Confirm proper filter holding arrangement	
D. RETURN AIR GRILLES			
1	Grille type	Perforated return-air grille	
2	Material	SS 304	
3	Application	For above risers	
4	Grille size – 1	950 × 350 mm	
5	Grille size – 2	820 × 350 mm	
6	Finish	Confirm SS 304 cleanroom-compatible finish	
7	Fixing	Confirm fixing arrangement/accessories	
A. GENERAL DOOR CONSTRUCTION			
1	Door type	Scientific metallic door	
2	Application	Flush installation in wall panel system / brick wall	
3	Wall condition	Door to fit flush on both sides	
4	Frame skin	1.2 mm GI plain skin-pass sheet	
5	Frame finish	Epoxy powder coated	
6	Frame profile	Single rebate profile	
7	Maximum bending radius	1.2 mm	
8	Frame construction	Knock-down form	
9	Frame assembly	Butt-jointed / insert-type assembly	
10	Shutter sheet	0.8 mm GI sheet	
11	Shutter construction	Press-formed	
12	Shutter thickness	46 mm	
13	Shutter type	Fully flushed double-skin shell	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
14	Edge construction	Lock-seam joints at stile edges	
15	Internal core	Honeycomb kraft paper core	
16	Core purpose	Structural strength & flatness	
17	Cleanroom finish	Flush construction	
B. VISION PANEL			
1	Vision panel provision	Door frame/shutter to accommodate vision panel	
2	Vision panel size	350 × 700 mm	
3	Vision panel type	Double glazed	
4	Vision panel frame	Confirm cleanroom-compatible flush frame	
C. HARDWARE			
1	Hardware make	Dorset / Yale	
2	Hinges	Stainless steel hinges	
3	Handle	Handle with push plate	
4	Lock	Morticed dead lock	
5	Lock operation	One-side key	
6	Door closer	Standard arm door closer	
7	Double-door hardware	Concealed tower bolt	
8	Bottom seal	Automatic drop seal	
9	Kick plate	Kick plate	
10	Hardware provisions	Door to have provisions for specified hardware	
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Annexure - 10 : Compliance Datasheet of Air Shower (To be filled by Bidder & submit with the Technical Bid)

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	Scope of Supply	Supply, installation, testing & commissioning of complete SS 304 Air Shower suitable for cleanroom entry, including all accessories, controls, electrical works and necessary installation hardware.	
2	Overall Size	1800 (W) × 1800 (D) × 2100 (H) mm	
3	Construction	Double-skin construction using SS 304 sheets/panels, suitable for cleanroom application. Internal surfaces shall be smooth, seamless/crevice-free and easy to clean.	
4	Panel Insulation	50 mm thick PUF insulation, density approximately 40 kg/m ³ , sandwiched between SS 304 sheets.	
5	Internal Finish	Smooth, hygienic, crevice-free, low-particle-generating and easy-to-clean internal surfaces. No exposed insulation or particle-shedding materials.	
6	Entry Door	SS 304 glazed door, complete with required hardware.	
7	Exit Door	SS 304 glazed door, complete with required hardware.	
8	Door Interlocking	Electromagnetic interlocking system to prevent both doors from being opened simultaneously.	
9	Emergency Release	Emergency door-release provision from inside the air shower for personnel safety.	
10	Blower	High-pressure centrifugal blower suitable for achieving specified air velocity and airflow requirements.	
11	Air Nozzles	Adjustable SS 304 air nozzles provided on side walls and ceiling. Nozzles shall be suitably distributed for effective personnel air showering.	
12	Air Velocity	Air velocity at nozzle outlets: 20–25 m/s. Bidder shall submit supporting performance data/calculation.	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
13	Pre-Filtration	Pre-filter shall be provided upstream of HEPA filter to protect the HEPA filter and blower system.	
14	HEPA Filtration	H13 HEPA filter, minimum efficiency 99.97% at 0.3 micron. Filter shall be suitably sealed and accessible for maintenance/replacement.	
15	Filter Access	Suitable filter access arrangement shall be provided without compromising cleanroom integrity.	
16	Flooring	SS 304 perforated/grating floor suitable for air return and personnel movement.	
17	Floor Load Capacity	Floor shall have suitable structural/load-bearing arrangement for the intended personnel load. Bidder shall specify rated load capacity.	
18	Air Return	Suitable air return path/arrangement shall be provided to ensure effective air circulation and showering.	
19	Control System	PLC/digital control panel with complete control logic for blower, timer, door interlocking and safety functions.	
20	Shower Timer	Adjustable digital shower timer with user-adjustable operating duration.	
21	Door Control	Automatic/electromagnetic door interlocking integrated with PLC/control system.	
22	Safety Controls	Complete safety controls, including emergency release and suitable fault/alarm indication.	
23	Control Panel	Cleanroom-compatible control panel with necessary switches, indicators, relays/contactors, PLC, power supply and control accessories.	
24	Lighting	Flush-mounted cleanroom LED light fixture, suitable for the application and easy to clean.	
25	Differential Pressure Gauge	Differential pressure gauge/manometer for monitoring filter pressure drop shall be provided.	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
26	SS 304 Hardware	All exposed internal hardware, fasteners and accessories shall be SS 304 or suitable cleanroom-compatible material.	
27	Electrical Accessories	Complete electrical wiring, cables, terminals, protection devices, control accessories and interconnections required for safe operation shall be included.	
28	Earthing & Safety	Proper electrical earthing and electrical safety provisions shall be provided as per applicable standards.	
29	Cleanroom Compatibility	Air shower shall be designed for cleanroom entry applications and shall minimize particle generation and contamination ingress.	
30	Workmanship	All joints, corners and interfaces shall be properly finished, sealed and free from sharp edges, gaps and particle traps.	
31	Testing – Construction	Verification of dimensions, SS 304 construction, panel finish, doors, floor and workmanship after installation.	
32	Testing – Air Velocity	Air velocity at air nozzle outlets shall be verified and recorded as 20–25 m/s.	
33	Testing – HEPA Filter	HEPA filter installation and integrity/installation condition shall be verified. Relevant test certificate shall be submitted where applicable.	
34	Testing – Interlock	Functional testing of electromagnetic door interlocking and emergency release arrangement.	
35	Testing – Controls	Functional testing of PLC, timer, blower controls, alarms/safety controls and sequence of operation.	
36	Testing – Lighting	Functional testing of flush-mounted LED lighting.	
37	Commissioning	Complete testing and commissioning at site, including demonstration of satisfactory operation to the purchaser/end user.	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
38	Documentation	Submit GA drawing, equipment specifications, electrical/control drawings, wiring diagram, O&M manual, filter certificates and test/commissioning reports.	
39	Warranty	Bidder shall specify warranty period covering equipment, controls, blower, electrical components and workmanship.	
40	Training	Basic operation and maintenance training shall be provided to the purchaser's nominated personnel.	
NOTE : 1) The bidder should fill-in all the data in above format only. If above required data is not filled properly or partially filled tender shall be liable to rejection.			
NOTE : 2) OFFERS with “INCOMPLETE INFORMATION” ARE LIABLE TO BE REJECTED, which may be noted.			
Seal & Signature of Bidder			

Annexure - 11 : Compliance Datasheet of CCTV System- OEM Eligibility Criteria (To be filled by Bidder & submit with the Technical Bid)

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	The OEM shall ensure that the MAC addresses assigned to the Cameras and NVRs are valid and officially registered in the name of the OEM. Valid documentary evidence of such registration shall be submitted along with the bid	Yes, Required	
2	The OEM shall have an established manufacturing facility in India along with the necessary infrastructure and technical support capabilities to ensure timely after-sales service	Yes, Required	
3	OEM company for Camera & NVR should have its own company registered in India since last 10 year. Any representation through a Dealer/ Distributor/ Joint Venture/ Subsidiary/ consortium shall not be treated as OEM. This has to be supported by necessary statutory documents. OEM should be a registered business entity in India with their own office in India. Submit Certificate of Incorporation under the provisions of companies Act, 1956.	Yes, Required	
4	The offered CCTV Cameras shall support ONVIF Profiles S, G, and T. The offered model shall be listed on the official ONVIF website and a valid ONVIF conformance/test report for the offered model shall be submitted along with the bid.	Yes, Required	
5	The OEM of the CCTV Surveillance System shall maintain an integrated management system to ensure quality, environmental sustainability, information security, IT service management, and occupational health & safety in the manufacturing, development, and support of CCTV Cameras and NVRs. Accordingly, the OEM shall possess valid certifications for ISO 9001:2015, ISO 14001:2015, ISO/IEC 27001:2022, ISO/IEC 20000-1:2018, ISO 45001:2018, ISO/IEC 27032:2023. All the CCTV Components (Camera, NVR, etc.) should be from same OEM for seamless integration and ease of operation.	Yes, Required	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
6	The Intellectual Property Rights (IPR) of all manufactured final product and source code of all software including firmware should not reside in countries sharing land borders with India, until unless specifically allowed by the Government of India and is registered with the Competent Authority of Government of India. Proof of IPR & source code residing in which country and requisite permission & registration with Competent Authority of Govt. of India, as applicable to comply with the above, shall be provided by the OEMs.	Yes, Required	
7	CCTV cameras must comply with the MEITY guidelines "Public Procurement (Preference to Make in India) Order 2017-Notifying CCTV/Video Surveillance dated 6th March 2024, Essential Requirements (ERs) for security, to ensure the security of CCTV systems. The OEM must submit a security testing report issued by an STQC lab.	Yes, Required	
8	Cameras OEM should have valid EPR from Central Pollution Control Board for Electronic Waste.	Yes, Required	
9	OEM should not be blacklisted by any Central/State Govt. Organization, PSU, Public Listed Company or Indian Army.	Yes, Required	
10	With reference to Order (Public Procurement No. 1) issued vide No. F.No.6/18/2019-PPD dated 23rd July, 2020, OEM and Bidder should not be from such a country that shares Land Border with us. OEM and Bidder should submit the declaration against this clause.	Yes, Required	
11	The CCTV products should qualify under CLASS- I LOCAL SUPPLIER as per Preferential Market Access (PMA) and Public Procurement Policy (PPP) Make In India (MII) scheme of the Govt. of India dated. 04.06.2020 with 50% or latest applicable local content as per the Govt. norms.	Yes, Required	
12	OEM to confirm that the CCTV Cameras are not installed with standards like -GB28181, GB/T28181-2011, GB/T 28181-2011, GBT 28181- 2011, GBT28181- 2011,GB/T28181-2016, etc., protocols/standards which allow certain organizations to bypass all security parameters and look into the devices directly.	Yes, Required	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
13	Video Management software should be cyber secured (OWASP) by STQC.	Yes, Required	
NOTE : 1) The bidder should fill-in all the data in above format only. If above required data is not filled properly or partially filled tender shall be liable to rejection.			
NOTE : 2) OFFERS with “INCOMPLETE INFORMATION” ARE LIABLE TO BE REJECTED, which may be noted.			
Seal & Signature of Bidder			

Annexure - 12 : Compliance Datasheet of Outdoor type (IP 55) Panels (To be filled by Bidder & submit with the Technical Bid)

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	Minimum Eligibility Criteria	Panel builder must have workshop with latest ISO 9001 Certifications & shall have Calibrated testing setup for Routine test of LT Panels as per IEC standards Contractor to provide panel builder documents for verification.	
		All the type test reports must be from OEM only. For LT panels, all the type tested certificates must be submitted by the Panel Manufacturere/OEM and issued in the Panel Manufacturer/OEM's name, in compliance with IEC standards. (For verification purposes, the contractor must make available the documentation from the panel builder and the OEM).	
A	Operating Conditions		
1.0	Altitude	Max 1000 Mtr above Sea level	
2.0	Ambient Temperature	45 Deg as per OEM design, however temp rise to be limited to 90 Deg C	
3.0	Humidity Level	Average 95 %	
4.0	Degree of Pollution	Dusty	
5.0	Installation Type	Outdoor	
6.0	Rated Continuous Operating Voltage	415 +/- 10% Volt	
7.0	Rated frequency	50 + 3 % Hz	
8.0	Reference Standard:	Relevant latest IS and IEC Standards	
9.0	Fault Level	Min. 36kA for 1 Sec	
10.0	Auxiliary Supply Voltage		
a	AC in V - 230V	For Operation & Indications.	
B	PANEL DATA		

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
11.0	Panel Make	Pratik Systems, SM.BE.Electrical, HTS Switchgears, Arrow, Zenith	
12.0	Panel Installation and Type	Outdoor, Double Door Type	
13.0	Reference standard	BS & IEC standards	
14.0	Phase, Frequency (Hz)	3 Phase + N, 50 Hz	
15.0	Insulation level 1 min. 50 Hz, voltage withstand kV rms.	2.5 KV	
16.0	Metal enclosed Construction? Yes/No	Yes	
17.0	Form of Panel	Form 3 B Minimum	
18.0	Degree of Protection		
a	Degree of Ingress Protection	IP55	
19.0	Cable Entry - I/C & O/G	Bottom	
20.0	Neutral Link	To be provided for each breaker and rating shall be 100 % of Rated current capacity	
21.0	MCCB	Siemens/Legrand//Schneider/ LK	
22	Short circuit current rating		
a	Panel Main busbar	36 KA Icw 1 Sec	
23	Busbars - (3P+N+E)		
a	Make	Bidder to specify	
b	Material & Grade	Aluminum Grade E91E of IS:5082, Grade Bidder to specify	
c	Reference standard	As per relevant IS/IEC standard	
d	Bus-bar sizes for neutral busbar (N)	As per OEM design – to be specified by the Bidder	
e	Busbar Shape	As per OEM design – to be specified by the Bidder	
f	Cross sectional area Sq. mm	As per OEM design – to be specified by the Bidder	
g	No. of bars per phase	As per OEM design – to be specified by the Bidder	
h	Current density, A/Sq. mm	0.8 A per Sq. mm for Aluminium	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
i	Support spacing	As per OEM design – to be specified by the Bidder	
j	Current ratings	As per OEM design – to be specified by the Bidder	
k	Temperatures rise over ambient	As per IEC standards	
l	(i) For rated current	To be specified by the Bidder	
m	(ii) For short circuit current	To be specified by the Bidder	
n	Ground Bus Material	Aluminum Grade E91E of IS : 5082	
o	Bottom Plate	3 mm	
p	Base Channel	100 mm height 6mm thick, Black colour	
24	Dimension of vertical section in mm (LxDxH)	To be specified by the Bidder	
25			
26	Equipment completely assembled, wired and tested at factory?	Yes, Required	
27	Space heater rating	Required, To be specified by the Bidder	
28	Test certificate and compliance as per IEC standards	Required Along with Technical Bid.	
29	All type test certificates as per IEC standards	Required Along with Technical Bid - all reports/certificates must be in the name of OEM	
30	IP 55 Certification	Required from authorized agencies along with Technical Bid for IP55 enclosure	
31	Routine test certificates	Required as per applicable IS/IEC standard	
32	Painting – Powder coated	As per Client's requirements	
33	Minimum clearance of bus bars and connections as per IEC standards		
i	Phase to phase in mm	To be specified by the Bidder	
ii	Phase to ground in mm	To be specified by the Bidder	
34	CURRENT TRANSFORMERS :		
i	Make	To be specified by the Bidder	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
ii	Type	To be specified by the Bidder	
iii	Applicable standards	To be specified by the Bidder	
iv	Ratio	To be specified by the Bidder	
v	Accuracy class	0.5S	
vi	Rated burden	To be specified by the Bidder	
35	Indications		
i	Incomer Side	R, Y, B, On, Off, Trip	
ii	Outgoing Feeders	On, Off, Trip	
36	Panel Mounting	MS fabricated stand mounted	
37	Other Equipment's		
i	Space Heaters to be provided in each panel.	To be provided	
ii	Thermostat with each Heater	To be provided	
iii	Toggle switch for heater ON/OFF	To be provided	
38	Cubicle Illumination		
i	Light fitting in in Control and Cable compartment	LED fitting must be provided	
ii	Control switch for light fitting.	To be provided	
iii	Door Switch for light fitting	To be Provided	
39	Fittings and accessories		
i	3 Pin Socket	One number per cubicle.	
ii	Handles and Keys	To be provided	
40	Drawings & Inspection		
i	Tentative GA drawing with offer	Required Along with Technical Bid	
ii	Approximate weight of total Panel including switchgears and Cubicle in Kg	To be specified by the Bidder	
iii	3 Sets of Drawing submission to Client within 10 days from date of PO for approval and to obtain manufacturing clearance	To be complied	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
iv	3 Sets of corrected Drawing (as per comments) submission to Client within 15 days from date of Mfg Clearance for record and reference.	To be complied	
v	Inspection & Tests	Required Factory inspection & routine tests before dispatch	
vi	Witness of acceptance test by IUCAA	Yes,at OEM factory and site	
vii	No. of units on which acceptance tests are to be carried out	All panels offered for inspection and routine testing	
viii	Routine Tests - For all Feeders	As per IS / IEC	
ix	Type Tests	Only certificate to be provided,	
x	Submission of Type Test Certificates	Along with Tender Technical Bid	
xi	Dispatch / Delivery Clearance	Dispatch/Delivery Clearance to obtain from IUCAA after inspection with submission of compliance	
xii	Lifting location and weight markings on packings	To be marked.	
xiii	Final AS BUILT DRAWING & Operation and Maintenance Manual for equipment's as well as for Bought out items, Test Certificates - submission	To be complied	
41	Warranty	30 Months from Dispatch or 24 Months from Commissioning.	
NOTE : 1) The bidder should fill-in all the data in above format only. If above required data is not filled properly or partially filled tender shall be liable to rejection.			
NOTE : 2) OFFERS with “INCOMPLETE INFORMATION” ARE LIABLE TO BE REJECTED, which may be noted.			
Seal & Signature of Bidder			

Annexure - 13 : Datasheet of Hepa Filter (To be filled in by Bidder)

Sr. No.	Description	Required - System Parameters	To be filled by the Bidder
1	Hepa Filter Make	Spectrum / Freudenberg / AAF / Honeywell	
2	Dimensions	610 mm × 610 mm × 150 mm	
3	Rated Airflow	1000 CFM	
4	Filter Class according to H14 according to EN 1822 / ISO 29463	H14	
5	Filtration Efficiency (MPPS)	≥ 99.995%	
6	Filter Media	Deep Pleat Micro-Glass media	
7	Seal / Gasket Type	Gel seal	
8	Frame Material	Extruded anodized aluminum	

NOTE : 1) The bidder should fill-in all the data in above format only. If above required data is not filled properly or partially filled tender shall be liable to rejection.

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Seal & Signature of Bidder

Annexure - 14 : Compliance Datasheet of Air Curtain - 1800 mm (To be filled by Bidder & submit with the Technical Bid)

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	Scope of Supply	Supply, installation, testing & commissioning of SS 304 with 1.2mm thickness Air Curtain suitable for cleanroom entry, complete with all accessories, sensors and controls. Stainless Steel Air Curtain is built for Cleanroom entrances of 1800 mm wide	
2	Overall Size (Width)	1800 mm Entrance	
3	Construction	SS 304, suitable for cleanroom application. Internal surfaces shall be smooth, seamless/crevice-free and easy to clean.	
4	Blower Material	Galvanise Steel / SS 304	
5	Air Velocity	Air velocity- 21 to 25 m/s. Bidder shall submit supporting performance data/calculation.	
6	Control System	Complete control logic for blower, timer, door interlocking and safety functions.	
7	Shower Timer	Adjustable digital shower timer with user-adjustable operating duration.	
8	Noise Level	Not more than 70 db	
9	SS 304 Hardware	All exposed internal hardware, fasteners and accessories shall be SS 304 or suitable cleanroom-compatible material.	
10	Electrical Accessories	Complete electrical wiring, cables, terminals, protection devices, control accessories and interconnections required for safe operation shall be included.	
11	Earthing & Safety	Proper electrical earthing and electrical safety provisions shall be provided as per applicable standards.	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
12	Commissioning	Complete testing and commissioning at site, including demonstration of satisfactory operation to the purchaser/end user.	
NOTE : 1) The bidder should fill-in all the data in above format only. If above required data is not filled properly or partially filled tender shall be liable to rejection.			
NOTE : 2) OFFERS with “INCOMPLETE INFORMATION” ARE LIABLE TO BE REJECTED, which may be noted.			
Seal & Signature of Bidder			

Annexure - 15 : Compliance Datasheet of Air Curtain - 1200 mm (To be filled by Bidder & submit with the Technical Bid)

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	Scope of Supply	Supply, installation, testing & commissioning of SS 304 with 1.2mm thickness Air Curtain suitable for cleanroom entry, complete with all accessories, sensors and controls. Stainless Steel Air Curtain is built for Cleanroom entrances of 1800 mm wide	
2	Overall Size (Width)	1200 mm Entrance	
3	Construction	SS 304, suitable for cleanroom application. Internal surfaces shall be smooth, seamless/crevice-free and easy to clean.	
4	Blower Material	Galvanise Steel / SS 304	
5	Air Velocity	Air velocity- 21 to 25 m/s. Bidder shall submit supporting performance data/calculation.	
6	Control System	Complete control logic for blower, timer, door interlocking and safety functions.	
7	Shower Timer	Adjustable digital shower timer with user-adjustable operating duration.	
8	Noise Level	Not more than 70 db	
9	SS 304 Hardware	All exposed internal hardware, fasteners and accessories shall be SS 304 or suitable cleanroom-compatible material.	
10	Electrical Accessories	Complete electrical wiring, cables, terminals, protection devices, control accessories and interconnections required for safe operation shall be included.	
11	Earthing & Safety	Proper electrical earthing and electrical safety provisions shall be provided as per applicable standards.	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
12	Commissioning	Complete testing and commissioning at site, including demonstration of satisfactory operation to the purchaser/end user.	
NOTE : 1) The bidder should fill-in all the data in above format only. If above required data is not filled properly or partially filled tender shall be liable to rejection.			
NOTE : 2) OFFERS with “INCOMPLETE INFORMATION” ARE LIABLE TO BE REJECTED, which may be noted.			
Seal & Signature of Bidder			

Annexure - 16 : Compliance Datasheet of Air Curtain - 900 mm (To be filled by Bidder & submit with the Technical Bid)

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
1	Scope of Supply	Supply, installation, testing & commissioning of SS 304 with 1.2mm thickness Air Curtain suitable for cleanroom entry, complete with all accessories, sensors and controls. Stainless Steel Air Curtain is built for Cleanroom entrances of 1800 mm wide	
2	Overall Size (Width)	900 mm Entrance	
3	Construction	SS 304, suitable for cleanroom application. Internal surfaces shall be smooth, seamless/crevice-free and easy to clean.	
4	Blower Material	Galvanise Steel / SS 304	
5	Air Velocity	Air velocity- 21 to 25 m/s. Bidder shall submit supporting performance data/calculation.	
6	Control System	Complete control logic for blower, timer, door interlocking and safety functions.	
7	Shower Timer	Adjustable digital shower timer with user-adjustable operating duration.	
8	Noise Level	Not more than 70 db	
9	SS 304 Hardware	All exposed internal hardware, fasteners and accessories shall be SS 304 or suitable cleanroom-compatible material.	
10	Electrical Accessories	Complete electrical wiring, cables, terminals, protection devices, control accessories and interconnections required for safe operation shall be included.	
11	Earthing & Safety	Proper electrical earthing and electrical safety provisions shall be provided as per applicable standards.	

Sr. No.	Description	IUCAA Requirement	To Be Filled By the Bidder
12	Commissioning	Complete testing and commissioning at site, including demonstration of satisfactory operation to the purchaser/end user.	
NOTE : 1) The bidder should fill-in all the data in above format only. If above required data is not filled properly or partially filled tender shall be liable to rejection.			
NOTE : 2) OFFERS with “INCOMPLETE INFORMATION” ARE LIABLE TO BE REJECTED, which may be noted.			
Seal & Signature of Bidder			

BOQ - SITC of Class 1000 and Class 10000 Cleanroom Facility at IUCAA, Pune

Sr. No.	Item Description	Unit	Qty.
1	SITC of modular type Variable Refrigerant Flow/Variable Refrigerant Volume aircooled Outdoor units suitable for cooling only, having all hermetically sealed inverter type Scroll Compressor(s), microprocessor based Controller, top discharge type condensing unit(s), with R410a Refrigerant, vibration isolators with suitable foundation etc. complete as required. The unit shall deliver the rated capacity at AHRI Conditions and work even at 52°C ambient temperature without tripping. The unit shall be suitable to work on 415V ± 10%, 3 Phase, 50Hz AC power supply. - The COP at AHRI conditions shall be as mentioned below. ODU Capacity Control must be minimum 13%. Compatible to sync with Fire Protection Systems and BMS system. Unit shall include support stand with two coat of enamel paint as per specification. The offered ODU model shall comply with all given technical specifications and technical specified specified in Annexures 1 & 2. BMS compatible to sync with Fire Protection Systems. SITC work include lifting, shifting, assembling & positioning of the equipment comprising of the following and complete as per specification/drawings. Sussecfull OEM has to confirm on the capacities as per their design & connected circuit IDU's. The unit shall be filled with first charge of the refrigerant and ready for use as required. The condenser should be coated with a hydrophilic film to prevent water accumulation on the surface of the heat exchanger, enhance water dispersion, and reduce the risk of degradation, thereby improving overall performance and durability. For each ODU, the bidder is required to supply a 4-pole 100/300 mA ELMCB with an IP65 enclosure of the suitable current rating, along with all necessary cabling, cable glands, lugs and end terminations etc. complete.		
1.1	Outdoor Unit - 10 HP Top Discharge	Nos.	5
1.2	Outdoor Unit - 12 HP Top Discharge	Nos.	3
2	SITC of factory build outdoor type Smart AHU Units including heaters/dehumidifier. The required conditions for the cleanroom are a temperature of 22°C ± 1°C and a relative humidity (RH) of 50% ± 5%. The AHU must feature BMS connectivity and include a 'manual operation' option as a standard feature. The inner skin 0.8 mm plain GI & outer skin 0.8 mm pre coated GI construction with 46 ± 2 mm thick and density of 96 ± 2 kg/m3 Rockwool insulation panel with internal coving & Thermal break profile. The coving should be an integral part of the frame and not applied separately. AHU shall be Thermal break. Frame work : Minimum 2 mm thick thermal break aluminium profile. Unit Base, Mixing Box for Return Air & Fresh Air, EU-4 - 90% down to 10 micron (IPD - 40 PA & Recommended FPD - 150 PA), AHU Supply fan shall be with Multipal electronically commutated (EC) motor & Fan, mounted on common antivibration base frame. Fan motor shall be suitable for BMS application. It shall consist of IES EC motor, TEFC, IP55. Motor insulation shall be class F. High Efficiency Type with an operating Temperature range of 0 to + 80 Deg. C. Fan shall be as per AMCA latest standard including BMS ready programable controller. AHRI certified heat transfer coil. Dx/VRF Coil section with 8 row deep along with suitable VRF coil kit copper tubes and aluminium fins to be provided. The coil shall be pitched in the unit casing for proper drainage with Insulated 1.2 mm thick SS-304 drain tray with 13 mm thick insulation. Each coil shall be factory tested at 21 Kg/cm² (300 Psig) air pressure under water. Tube shall be mechanically expanded for minimum thermal contact resistance with fins. Fin spacing shall be 10 to 12 fins per inch (4 to 5 fins per cm). Minimum 600 mm mixing box be provided before cooling coil for access door & cleaning purpose of filter & coil. Tube Dia (mm / inch) : 9.5 mm for DX coil; Thickness of tube (mm) : 0.3 mm, Header Material: Copper, Thickness & Material of fins 0.15 mm Plain Aluminum, Coil Casing / Blank offs : SS-304, UV Light Provision Section + Cleaning Space Between coil & Heater Section with Space around 600 mm Electric Heaters. RIGID MEDIA Fine filter section EU5 Filter - 95% down to 5 µ of 305 mm thick filter after fan section. Fresh air, Supply, Return & Bleed air dampers shall be Aluminium Aerofoil opposed blade compatible for motorized operation (along with knob for manual operation), DP switch across each filters for measuring the pressure drops across the filters, Standard accessories like FLP Bulk head lamp, FLP limit switch. AHU should be provided with in-built IP55 smart power panel with PLC, HMI display, supply & returns air sensor, Air inlet & outlet sensor, RH Sensor, DP switch across prefilter and DPT across fan, arrangement Modulate the heater through inbuilt thyristor controller per set RH%. Heater with all inbuild safety accessories, thermostat etc. NOTE- HEATER MODULATION SHOULD BE THROUGH KW MODULATION BASED ON 0-10V SIGNAL Suitable arrangement to integrate with VRF / VRV AHU Kit and Outdoors. The panel should be BMS compliant and also to be provided with ports for integration with fire panel. The mentioned static is tentative, vendor should be select the same as per site requirement.		
2.1	AHU of 4500 CFM, Re-heat 8 kW (Heater 2 KW x 4 Nos) - with 180 mm Static Pressure EC Fans with 400 cfm De-Humidifier - 10 HP x 2 Nos. of CKT.	Nos.	1
2.2	AHU of 7500 CFM, Re-heat 18 kW (Heater 3 KW x 6 Nos) - with 180 mm Static Pressure EC Fans with 800 cfm De-Humidifier - 10 HP x 3 Nos. of CKT.	Nos.	1
2.3	AHU of 10000 CFM, Re-heat 24 kW (Heater 3 KW x 8 Nos) - 180 mm Static Pressure EC Fans with 1000 cfm De-Humidifier - 12 HP x 3 Nos. of CKT.	Nos.	1
3	Supply, installation, testing and commissioning of AHU Electronics Expansion and Control Kit supplied by VRF / VRV OEM only as per required ODU capacity with all required accessories complete.	Nos.	8
4	The remote Control panel wall mounted in Lab 1 / 2 / 3, It shall be fabricated from 18 G MS CRCA sheet, duly powder coated, with seven tank process, with vermin proof gasketed doors. Following operation are required from remote panel - AHU and VRF system shall be start/stop in sequence with single ON/OFF switch. ON/OFF/TRIP status on panel. Actual temperature display for return air duct. Suitable duct type temperature sensor shall be provided by bidder. Panel should have bottom entry for cable connection. GA drawing for panel to be submitted to IUCAA for approval before fabrication.	Set	3
5	Supply, Installation, testing and commissioning including vaccumiazation and Nitrogen testing of required sizes of soft/ hard drawn copper refrigerant piping for DX/VRV/VRF system, complete with fittings, with suitable adjustable ring type hanger supports, jointing/ brazing including accessories, insulated with 32 mm XPLE Class-O tubular insulation/ with Class-O closed cell elastometric nitrile rubber tubular sleeves sections of specified thickness as given below for Suction and Liquid lines, all accessories as per specifications etc. as required. Note-1) 100% Piping pair shall be laid with suitable size 18G perforated Cable Tray. The All Outdoor exposed piping must be provided with tray cover. 2) The Copper Piping & Piping Circuit should be with Minimum Number of joints, which shall be attained by : (i) Using One End Expanded Tubes (ii) Bending the tubes instead of using elbow joints wherever 90 degree bending is required. (3) Piping should be routed at site in such a manner, that brazed joints in the refrigeration piping are kept to a minimum. (4) The makes of tube fittings shall be same as that of tubes. (5) The thickness of fittings used shall be same as that of the pipe. (6) All insulation joints must be covered with EPDM Rubber Tape	Rmt	300
6	SITCof hot dipped galvanised perforated type cable tray manufactured from 16 SWG (1.6 mm thick) GI sheet of 300 mm width & 75 mm height complete with necessary coupler plates & hardware.for copper piping. Tray shall be covered with cover made from GI. Tray shall be fixed and laid properly along the wall / Floor with MS Hanger supports.	Rmt	150

BOQ - SITC of Class 1000 and Class 10000 Cleanroom Facility at IUCAA, Pune

Sr. No.	Item Description	Unit	Qty.
7	SITC of 3/4 Core x 1.5 Sq mm copper shielded cable, between AHU and ODU, between remote panel and AHU, between temp sensor & remote panel, AHU limit switches, etc. for necessary communication and controls. Cable of appropriate size and specifications to be selected as per recommendations from OEM. Cable shall be laid through 25 mm PVC HMS FRLS conduit with all required accessories.	Rmt	400
8	SITC of 50 mm dia UPVC drain pipe with fittings, supports & 9 mm Nitrile Rubber Insulation having pressure holding of 10 kg/cm ² . Drain piping complete with all accessories. U-PVC drain pipe with all necessary fittings and Pipe to be installed properly using supports/saddles.	Rmt	90
9	Provide and install galvanized MS stand for VRF outdoor units, minimum 450 mm above FFL. Structure must include anti-vibration pads and be anchored using fasteners. All components must be corrosion-resistant. Stand shall be painted with two coats of primer and two coats of enamel paint.	Nos.	8
10	Anti vibration Shore hardness rating of 45 to 65 durometer, engineered for optimal static deflections capable of handling loading pressures from 40 up to 180 PSI (2.8 to 12.6 kg/cm ²) without collapsing or bottoming out for Minimum vibration and noise insertion loss of 65 to 25 dB, matching or exceeding industrial compliance standards	Nos.	60
11	Nitrogen testing and vacuuming of entire refrigerant piping as per OEM recommendation for 24 Hrs @ 600 Psi	Set	8
12	Charging of suitable refrigerant gas after vacuuming of system @ 500 Microns, as per OEM recommendation	Kg	100
13	SITC of 22 Gauge rectangular GI sheet metal ducting minimum 180 GSM zinc coating both sides, fabricated to IS-655, 100% MS/TDF angle-flange joints, 3 mm neoprene/fire-retardant gasket, silicone sealed airtight joints, reinforcement, turning vanes, splitters, VCDs, access doors and supports. No slip joints. Include leakage test at minimum 500 Pa with results within approved limits. GI hardware, necessary supports etc. for connecting duct branches with AHU supply air planum, return air box and any other misc as per the site requirements. Flanges are to be fabricated as per SMACNA standard and sealed with silicon. Duct to be designed by contractor as per site condition. Earthing jumper links to be provided at each ducting joint and SITC of RTV Silicone Sealant for all duct joints	Sq. Mtr.	580
14	SITC of 20 Gauge rectangular GI sheet metal ducting minimum 180 GSM zinc coating both sides, fabricated to IS-655, 100% MS/TDF angle-flange joints, 3 mm neoprene/fire-retardant gasket, silicone sealed airtight joints, reinforcement, turning vanes, splitters, VCDs, access doors and supports. No slip joints. Include leakage test at minimum 500 Pa with results within approved limits. GI hardware, necessary supports etc. for connecting duct branches with AHU supply air planum, return air box and any other misc as per the site requirements. Flanges are to be fabricated as per SMACNA standard and sealed with silicon. Duct to be designed by contractor as per site condition. Earthing jumper links to be provided at each ducting joint and SITC of RTV Silicone Sealant for all duct joints	Sq. Mtr.	440
15	Supply, Installation testing and commissioning of MS Flanges 40 x 40 x 5mm thick for rectangular GI ducting with anchor fasteners, hardware, necessary supports etc. for connecting duct branches, planum, return air box and HEPA Filters as per the site requirements. Flanges are to be fabricated as per SMACNA standard and sealed with silicon	Kg	1950
16	SITC of thermal insulation of Ducting, with cross linked polyphenolic backed by GC Cloth on one side class 'O' Class 25 mm thickness and other side with suitable adhesive at site SR505/SR998. Joints are overlapped with aluminium foil self adhesive aluminium tapes.	Sq. Mtr.	810
17	Supply, Installation, Testing & Commissioning of thermal Insulation of 32 mm nitrile rubber insulation, class 'O' for fire, with factory fitted aluminium foil, bonding with class 'O' adhesive. Further it shall be covered with 0.5 mm thick aluminium cladding. This is to be used for the main ducting located outside the laboratory and exposed to the atmosphere.	Sq. Mtr.	210
18	SITC of 16 gauge Alluminium profile volume control dampers. Air volume control dampers shall be of the aerofoil, double skin, opposed blade type with low pressure drop and noise regeneration characteristics. Blades shall be of hollow section constructed from the same material of the ductwork or of stainless steel encapsulating an internal double contoured stud longitudinal reinforcing bar, mounted on square section steel spindles. Bearings shall be of nylon material and the units shall be of low-leakage design by incorporation of synthetic trailing edge seals and a peripheral gasket. All manually and automatically operated dampers shall include a means for indicating externally the position of the blades. Manual dampers shall include a device for positioning and locking the damper blades. VCDs shall have open/close positions marked clearly.	Sq. Mtr.	6
19	SITC of Fire (Smoke) Damper UL 555 Stamped with spring return actuator of appropriate size of duct. Operation of AHU shall be interlocked with the Fire Damper.	Sq. Mtr.	6
20	Suitable Actuators with Control Panel and Fire Sensor for Item No. 19	Nos	6
21	Supply, Installation, Testing of 125 mm deep antivibration flexible joints at the outlet of air handling units. Flexible connections shall be constructed using imported fire retardant fabric with extruded aluminium frame/flange on both sides.	Nos.	6
22	Providing & Fixing suitable size of MS stand / supports for AHU, ducting, piping, any additional supports. MS supports shall be duly painted with one coat of zinc oxide, primer and two coats of oil enamel paint.	Kg	1500
23	SITC of H14 terminal HEPA filter, minimum 99.995% efficiency at MPPS, deep-pleat micro-glass media, individually tested/certified, gel/gasket seal, low-leakage cleanroom construction, test port and initial pressure-drop/airflow certificate. Include installed integrity/leak testing. 610 x 610 x150 mm - Supply 1000 CFM	Nos.	22
24	Supply and installation of supply air terminal module made out of 18G SS-304 construction with filter fixing from bottom side DP checking port and canvas connection. The module gasketed/gel-seal compatible, cleanroom flush diffuser face, test port, access/inspection provision, suspension/support hardware and sealed ceiling interface - 610 x 610 x 450 mm - Supply 1000 CFM (Side Connection)	Nos.	22
25	Supply and installation of 1 mm thick latch type SS 304 perforated/louvered flush diffuser face with adjustable airflow provision where applicable, removable for filter access, smooth non shedding finish. grill for supply HEPA terminal box	Nos.	22
26	Low-leakage motorized GI dampers with suitable actuator, manual override, end-position indication, fail-safe action where required and BMS/DDC interface.	Sq. Mtr.	6

BOQ - SITC of Class 1000 and Class 10000 Cleanroom Facility at IUCAA, Pune

Sr. No.	Item Description	Unit	Qty.
27	Suitbale Actuator and Control Panel for Item No. 26	Nos	6
28	SITC of Differential pressure monitoring system for AHU consists of magnehelic gauges with 0-100 Pa range	Nos	3
29	SITC of High accuracy digital room temperature and RH indicator with transmitters cleanroom-compatible mounting, calibration certificate	Nos.	3
30	SITC of Differential pressure monitoring system for Rooms consists of magnehelic gauges with 0-100 Pa range complete with all required accessories	Nos	4
31	Supply and installation of cleanroom-compatible SS 304 Garment Cubicle (Size: 900 W x 600 D x 2100 H mm). Fabricated from 1.2 mm thick SS 304 with brushed finish, crevice-free welded joints, full-length mirror, hanging rods, and integrated shoe rack. Complete with floor/wall anchoring, adjustable levelling feet, and cleanroom grade silicone perimeter sealing.	Nos	1
32	Clean Room Panel programming & integration : Complete programming and integration of AHUs, VRV/VRF, dehumidifier, heater bank, dampers, sensors, alarms, interlocks, schedules, sequences, graphics and trends. Include point-to-point testing and functional performance testing.	Job Work	1
33	Validation & Documentation : Duct leak test, HVAC documentation including DQ, IQ, OQ & PQ Certificates of all manufactured items and validation, training & final handover, includes - a) Air balancing, b) Air velocity, c) Particle count At rest condition, d) Recovery test, e) Air flow pattern and video graphic, f) HEPA Filter Integrity test	Job Work	3
34	SITC of 80 mm thick, factory-made Polyisocyanurate (PIR) insulated sandwich wall panels having Fire-retardant and self-extinguishing Class B1 properties, core density approx. 40±2 kg/m³ comprising an FM-approved, self-extinguishing PIR rigid foam core, laminated between two 0.5 mm to 0.6 mm thick pre-painted galvanized iron (PPGI) skin sheets coated with 25 microns of cleanroom grade, chemical resistant polyester paint. The panels must feature a precise, factory-formed tongue-and-groove interlocking mechanism with integrated EPDM gaskets to ensure an airtight, thermal-bridge-free assembly, delivering high thermal efficiency, Thermal Conductivity must be 0.022 W/mK, a Class B1, fire rating, Water absorption must be under 1% to prevent moisture degradation, free from CFC/HFC and a completely flush, seamless surface, (Colour: As approved by IUCAA)	Sq. Ft.	3500
35	SITC of 50 mm insulated PIR ceiling panels matching wall construction, having Fire-retardant and self-extinguishing Class B1 properties, core density approx. 40±2 kg/m³, double skin 0.5 to 0.6 mm inner and 0.5 to 0.6 mm outer pre-coated GI (PPGI) cleanroom finish, concealed suspension/support grid, perimeter angles, hangers, service cut-outs for HEPA Filters /light fittings / fire-alarm openings, sealants and trims. Rigid, level, washable and airtight with complete installation and testing. The panels must feature a precise, factory-formed tongue-and-groove interlocking mechanism with integrated EPDM gaskets to ensure an airtight, thermal-bridge-free assembly, delivering high thermal efficiency, Thermal Conductivity must be 0.022 W/mK, a Class B1, fire rating, Water absorption must be under 1% to prevent moisture degradation, free from CFC/HFC and a completely flush, seamless surface, (Colour: As approved by IUCAA)	Sq. Ft.	3150
36	Supply of Scientific metallic doors designed to fit flush in the wall panel system or Brick walls on both sides with 1.2 mm thick Galvanised Plain Skin Pass sheets duly epoxy powder coated formed to Single rebait profile with maximum bending radius 1.2 mm. Door frames to be supplied in knock down form, Butt jointed for insert each other assembly a side. The shutters to be constructed from 0.8 mm thick Galvanised steel sheet press formed to provide a 46 mm thick fully flushed double skin shell with lock seam joints at style edges. The internal construction to behoney comb core paper craft for structural strength and flatness. The frames & shutters should have provisions for receiving all specified hardware and vision panels 350 x 700 (Double glazed). The Door to be provided with following dorset/yale make Hardware, 1. Stainless steel hinges 2. handle with push plate, morticed dead lock one side key, Standard arm door closer, Concealed tower bolt (for double door), Bottom auto drop seal and kick plate. Note that air curtains are to be installed above all the doors.		
36.1	Single Door 1200 x 2100 mm for Class 1000 Cleanroom Entrance	Nos.	1
36.2	Double Door 1800 x 2100 mm for Class 1000 Material Gate Entrance	Nos.	2
36.3	Cleanroom-rated insulated airtight Emergency Exit Door with GI approved frame, perimeter gasket, drop seal, closer and panic/emergency hardware required; complete installation and functional testing - Single Door 900 X 2100 mm - Near Fire Exit Door	Nos.	2
37	SITC of ESD Vinyl Mat flooring 3 mm thick, Static dissipative vinyl mat (3 Layered) Material : Homogeneous composition with Black conductive layer sandwiched between two antistatic Layers. Thickness : 3 mm +/- 0.1 mm, Surface resistivity of top surface layer : 10 ⁶ – 10 ⁹ ohms/sq. Surface resistivity of middle layer : 10 ³ - 10 ⁵ Ohms/sq. Standard Supply - 2.0 Mtrs width X approx. 15 Mtrs Running length. Governing Specifications : BS 2050 / 1978IS 3462 / 1986. Two male and two female (i.e. total 4 connectors) with all required accessories one at each corner of the mat shall be provided. Static dissipative vinyl mat suitable for laboratory environments complete with conductive primer, copper grounding strips, and earthing connections. The flooring shall be low-VOC, low-dusting, impervious, chemically resistant, abrasion-resistant, and capable of controlled static charge dissipation. The system shall comply with applicable ESD standards, with electrical resistance and grounding performance as per approved manufacturer specifications.	Sq. Ft.	3300
38	Supply and installation of a 100 mm high, 50 mm to 75 mm radius flush-integrated seamless ESD Vinyl coving at corners & junctions	RFt	520
39	Supply and installation of ceiling panel hanging system with necessary accessories like turn buckles, theared rods, nut and bolts, T- grid etc. for all 3 Cleanrooms	Job Work	1
40	Supply and installation of Track for 80 mm wall panel made with 1.2 mm thick GI sheet and powder coating and necessary holes for fixing	Rmt	140
41	Supply & Fixing of extruded aluminium powder coated clip on type R 90 covings (Enlarged type) for the entire wall to ceiling and wall to wall.	Rmt	310
42	Supply and installation of 2D / 3D Corners including all required material & accessories	Nos	52
43	Supply and applying of Class B1 fire rated silicone sealants for all the panel joints, coving, light cutouts for all 3 Cleanrooms	Job Work	1
44	Supply and Installation of Electrical Conduits with 25 mm dia HMS PVC pipe	Rmt	200
45	Site / factory made cutouts for Grills, Light, Pass box & HEPA terminals	Nos	80
46	Site / factory made cutouts for Electrical Points, Data & Light Points, DB etc.	Nos	100
47	Site / factory made cutouts for Doors, View Panel, Air shower	Nos	10

BOQ - SITC of Class 1000 and Class 10000 Cleanroom Facility at IUCAA, Pune

Sr. No.	Item Description	Unit	Qty.
48	Supply and Installation of L/C-Cap for covering cutouts of lighs, module, doors etc.,	Rmt	250
49	Riser duct panels with coupling to the main HVAC ducting, including removable openable push-fit type grill panels for cleanroom areas, fabricated from SS 304 complete with SS 304 fixing frame, gasket, and all necessary accessories, suitable for G-4 filter installation. Panels shall be installed 150 mm above finished floor level (FFL) and provided with front-access volume control dampers. A suitable top flange shall be provided for duct connection, with adequate stiffeners to prevent buckling. Sizes shall be as specified.		
50	Return Air Riser Module Size : 600 MM W x 150 MM D x 3000 MM L	Nos	22
51	Pre - Filter Size : 600 x 300 x 50 MM	Nos	22
52	Perforated SS 304 Return air grilles for above Risers, Grill Size : 600 x 300 MM	Nos	22
53	Supply, installation, testing & commissioning of SS 304 with 1.2 mm Sheet thickness, Air Shower suitable for cleanroom entry, complete with all accessories, sensors and controls. 1. Size: 1800(W) × 1800(D) × 2100(H) mm. OUTER Size 2. Construction: Double - Skin SS 304 panels, smooth and cleanroom-compatible. 4. Doors: Two SS 304 glazed doors with electromagnetic interlocking and emergency release. 5. Air System: High-pressure centrifugal blower with adjustable SS 304 air nozzles on side walls and ceiling. 6. Air Velocity: 20–25 m/s at nozzle outlets. 7. Filtration: Pre-filter followed by H13 HEPA filter, minimum 99.97% efficiency at 0.3 micron. 8. Floor: SS 304 perforated/grating floor with suitable load-bearing arrangement. 9. Controls: PLC/digital control panel with adjustable shower timer, door interlocking and safety controls. 10. Lighting: Flush-mounted cleanroom LED light. 11. Accessories: Differential pressure gauge, SS 304 hardware and complete electrical/control accessories. 12. Finish: Smooth, crevice-free, easy-to-clean and low-particle-generating internal surfaces.	Nos	2
54	Supply, installation, testing & commissioning of SS 304 with 1.2mm thickness Air Curtain suitable for cleanroom entry, complete with all accessories, sensors and controls. Stainless Steel Air Curtain is built for Cleanroom entrances of 1800 mm wide, Body Material : SS304 With 6 blowers and 3 motors, 1490 CFM, Air velocity of 21 to 25 m/s, Max. Noise Level : not more than 70db, Blower Material : Galvanise Steel / SS304, built to maintain consistent air velocity across wide openings, Effective Height – Below 11 Feet, Finish : Smooth, crevice-free, easy-to-clean and low-particle-generating internal surfaces.	Nos	2
55	Supply, installation, testing & commissioning of SS 304 with 1.2mm thickness Air Curtain suitable for cleanroom entry, complete with all accessories, sensors and controls. Stainless Steel Air Curtain is built for Cleanroom entrances of 1200 mm wide, Body Material : SS304 With 4 blowers and 2 motors, 1100 CFM, Air velocity of 21 to 25 m/s, Max. Noise Level : not more than 70db, Blower Material : Galvanise Steel / SS304, built to maintain consistent air velocity across wide openings, Effective Height – Below 11 Feet, Finish : Smooth, crevice-free, easy-to-clean and low-particle-generating internal surfaces.	Nos	1
56	Supply, installation, testing & commissioning of SS 304 with 1.2mm thickness Air Curtain suitable for cleanroom entry, complete with all accessories, sensors and controls. Stainless Steel Air Curtain is built for Cleanroom entrances of 900 mm wide, Body Material : SS304 With 3 blowers and 2 motors, 825 CFM, Air velocity of 21 to 25 m/s, Max. Noise Level : not more than 70db, Blower Material : Galvanise Steel / SS304, built to maintain consistent air velocity across wide openings, Effective Height – Below 11 Feet, Finish : Smooth, crevice-free, easy-to-clean and low-particle-generating internal surfaces.	Nos	2
57	SITC of Recess Mount Bottom Opening Clean Room LED Luminaire 60/80 Watt with SS304 Bottom frame, neutral white, IP65, 240 volt, 50 Hz, mounting provision through adjustable mounting clamps 4 Nos., including LEDs ,driver and all required accessories mounted and pre-wired up terminal block etc.	Nos.	32
58	Supply, Installation, Testing and Commissioning of an addressable Fire Alarm Control Panel (FACP) including battery backup set expandable upto 4 Loop in one enclosure equipped with a high-resolution, high-contrast graphic Blue LCD display of 240X64 pixel with 7 character in line. The panel must have two built-in inputs, two built-in NAC's and operate on 100-250V AC with 50-60 Hz and an inbuilt charger. The FACP should have sufficient loop numbers with 10% spare capacity and built-in loop isolators at both ends. It should have a loop load current capacity of 900mA, capable of supporting 250 devices with 125 addresses per loop using smart addressing. The system should support a maximum of 32 FACP and 128 loops in the entire network. The FACP should have redundant communication ports for networking and support peer-to-peer multimaster networking with RS422/485, TCP/IP, MM Fiber, mix interface (fiber optic and 422) with a single or dual ring or mesh network communication platform. It must support broadcast options to transmit the configuration file to all available panels in the network. The system should allow for monitoring and viewing of each device from other panels connected in the network with seamless connectivity throughout. It should have a single processor for each 512 devices as per EN54 standards. The FACP shall support third party BMS/SCADA/DCIM facility using RS232, RS422, FO, TCP IP interface with Modbus RTU, ESPA protocol. It should support an inbuilt or external printer if required and shall be suitable for a single FACP or network for 384 zones, 512 I/O groups output groups with shared cause and effect on the network. The FACP should have optional provision of NFC Key for evacuation, disable the selected detectors, user-level access, reset and disablement features. It must support free license for the configuration software on MAC, windows 8, 10 & 11 higher based platform without any dongle support. The panel should have an inbuilt mini USB (type B) Port to upload and download the configuration and log entries. It should support soft tools to view and extract all history events, and the panel shall be suitable for a minimum of 10,000 log event record facility. The FACP must be forward and backward compatible with older devices of the same make.	No.	1

BOQ - SITC of Class 1000 and Class 10000 Cleanroom Facility at IUCAA, Pune

Sr. No.	Item Description	Unit	Qty.
59	Supply, Installation, Testing & Commissioning of intelligent Addressable Multisensor (Smoke & Heat combined) detector with mounting base having capacity of min 125 detectors per loop. The detector must be polarity insensitive & smart addressable type. Detector must have insect protection facility for aints and flies with extra metallic mesh pattern. Operating temperature (Transient) -10°C to 85°C & Humidity 0-95% (Non-condensation or icing). The detector should have dual polling 360 degree viewable LED with class approved response modes for smoke & response heat modes as per the EN54 part 5 & 7 approval. The detector should trigger heat alarm to 55, 65, 75 or 85°C. The detector shall have facility to mount in different comprehensive environment like Hostile environment, Precious and normal working environments. The detector should have self locking mechanism, which can be easily removed. The detector must have non volatile memory to feed the installation date & site codes. It should be made up of ABS material -Flame retardant 94V0 rated & should melt above 200 degree C. The terminals for the base and the detector must be nickel plated steel to avoid the corrosion and to ensure the connectivity. The detectors must be openable for the cleaning whenever required. All the other specs should be as per the specification attached.	Nos.	35
60	Supply, Installation, Testing & Commissioning of Loop isolation module which consists of amber LED. This LED shall be mounted with in a round polycarbonate enclosure. The isolator should responds if there short ckt on In side or out side with different LED'S All the other specs should be as per the specification attached.	Nos.	3
61	The addressable wall mounted Open Area Sounder with Beacon shall provide an output of 100dB at 1 meter and should have a low current consumption. The light intensity of the beacon should be 15 Cd. It should have choice to setup 4 tones. It must have shadow mode where sounder will not occupy any address on addressable loop. Sounder must have group addressing capability with shadow mode. IP Rating : Minimum IP 21C. Sound level must be 100 dB(A). Operating temperature : -10 to 70 degree C. The sounder must be made up ABS material (Flame retardant 94 V0 rated). Humidity 0-95%.(Non-condensation or icing). All the other specs should be as per the specification attached.	No.	2
62	Supply, Installation, Testing & Commissioning of Dust and Vermin proof analogue addressable Indoor Manual call point with hinged cover having enhance front reset mechanism with 170° viewable LED which can be visible from the minimum distance of 7 M. operating temperature from -10°C to 55°C to initiate audio visual alarm in case of Human detection of fire. The manual call point must be indoor type with IP 24D as per BS5839 standards. The Manual call point must be resatable type without breakglass. The MCP must be made up ABS material (Flame retardant 94 V0 rated) & should melt above 200 degree C. All the other specs should be as per the specification attached.	No.	3
63	Supply and laying of 2 C x 1.5 Sq. mm, PVC insulated LSZH armoured copper cable with screen SLC Loop & Power Supply, confirming to BS 6387 category C standards and specifications including terminations, connections & all labour and required accessories/material etc. complete as required (For fire detection signal).	Mtrs.	250
64	SITC of Access Control & Attendance IP-based access control and time-attendance terminal featuring a minimum 3.2" TFT color display with a capacitive touchscreen interface, an IP65-rated ABS enclosure, and a scratch-resistant 500 DPI optical fingerprint sensor. The terminal accommodates minimum 40,000 user profiles, stores up to 500,000 event transaction logs, and supports authentication modes including Card Only, Finger Only, Card + Finger. Depending on the internal module configuration, its built-in RF card reader supports MIFARE, HID iCLASS, HID Prox, and EM Prox cards. Connectivity options include TCP/IP Ethernet, Wiegand (IN/OUT), RS-485/RS232, PoE (IEEE 802.3af), Wi-Fi, Bluetooth (BLE), and 3G/4G/GPRS, operating on a 12V DC / 2A power supply or PoE.	No.	5
65	Smart MiFare Cards	Nos.	100
66	SITC of Electromagnetic Lock - 600 LBS with all required accessories/hardware etc. complete	No.	5
67	SITC of Egress Switch (Exit Switch) with all required accessories	No.	5
68	SITC of 8 core twisted pair sheilded cable with all required accessories	Mtrs.	150
69	SITC of 5 Mega Pixel Indoor Dome camera with IR; Upto 5 MP HD Dome; Day & Night 1080P HD ; Focal Length – 2.8 ~ 12mm; Scanning System - Progressive Scan CMOS; Infrared Cut Filter - Auto / Schedule / Day (Color) / Night (Mono); Minimum Illumination - 0.01 Lux at F1.2 (Low Light Mode) ; Horizontal field of view : 95° to 31°, Vertical field of view : 50° to 18°, Diagonal field of view : 114° to 35°; IR Range-Up to 45 meter; Wavelength - 850 nm; Video Compression - Main stream : H.265/H.264Sub-stream : H.265/H.264/MJPEG; Max. Resolution-1920×1080; Image Enhancement - BLC, 3D DNR; Image Setting-Rotate mode, saturation, brightness, contrast, sharpness, AGC, white balance adjustable by web browser; Region of Interest-1 fixed region for main stream; Day/Night Switch - Day/Night/Auto/Schedule/Triggered by Alarm In (1in/1out); Network Storage - Support Micro SD/SDHC/SDXC card slot (512GB), Local storage and ANR; Alarm Trigger - Motion detection, video tampering detection, network disconnected, IP address conflict, SD cards full, SD card error; Protocols - TCP/IP, ICMP, HTTP, HTTPS, FTP, DHCP, DNS, DDNS, RTP, RTSP, RTCP, NTP, UPnP, SMTP, IGMP, 802.1X, QoS, IPv6, UDP, Bonjour; General Function One-key reset, mirror, password protection, privacy mask, API-ONVIF (PROFILE S, PROFILE G), Simultaneous Live View Up to 6 user; SMART STREAMING, ADAPTIVE STREAMING, reset Button, User/Host-Up to 10 users, 3 levels : Administrator, Operator and User; Web Browser - IE8+, Chrome 31.0-44, Audio- Built-in mic; Communication Interface-1 RJ45 10M/100M self-adaptive Ethernet port; Alarm 1 alarm input, 1 alarm output; On-board storage Built-in micro SD/SDHC/SDXC slot, up to 512 GB; Environment Noise Filtering - Yes, Audio Compression - G.711u/G.726 Operating Conditions - 30 °C to 45 °C, Humidity : 95% or less (non-condensing); Power Supply -12 VDC ± 25%, PoE (802.3af, class 3), Protection Level - IP66, IK10, STQC, UL, NDA, NEMA 4X	Nos.	12
70	SITC of NVR 16 Channel ; upto 02 SATA interfaces; 16 to 18TB capacity per HDD; USB 3.0; OnVif Compliant; HDMI output upto 1920x1080P resolution; H.264/H.265 Compression; Support Multiple VCA events; Network Interface : 1 port Ethernet (RJ-45) 10/100/1000Mbps, Alarm 2 in / 1 out, Operating Temperature 0°C to +50°C, Power Input Adapter 12V DC, Multiple Camera Viewing Through Cascading (up to 20 Devices), camera wise recording retention, Camera initiation, Instant calling from mobile App	No.	1
71	SITC of 16 TB Capacity Surveillance Hard Disk of Continuous Duty Type, multi camera support,	Nos.	1
72	SITC of Cat 6 UTP Jack with Strain relief and bend limiting boot & Shutter -White Camera / NVR Side	Nos.	24
73	Supply , Laying & Saddling of CAT 6A , U/UTP 23AWG, LSZH, 4 Pair Network Cable, Conductor dimension (mm) - 0.57 +/- 0.01 mm, Insulation Material - HDPE, Filler - Special Filler LSZH, Rated temperature: 75 °C, Smoke Density – IEC 61034, Flammability Test – IEC 60332-1, PH and Toxicity Index – IEC 60754 P I & II. Note that the laying is to be done inside Ducts / Ceiling / Inner & Outer Walls at any heights / Rain Water Gutters/ Trenches etc. Rate should include resurfacing of damage or cutting of any civil structure or surface with painting etc and upto satisfaction of IUCAA supervision.	Mtrs.	305

BOQ - SITC of Class 1000 and Class 10000 Cleanroom Facility at IUCAA, Pune

Sr. No.	Item Description	Unit	Qty.
74	SITC of 16-Port POE Switch with all required accessories	No.	1
75	SITC of Accessories (PVC Box, RJ Conn, flexible pipe, 6 UTP Jack, Cable Manager, fitting etc.)	Lump sum	1
76	Supplying and laying HMS uPVC conduit FRLS grade 25 mm dia. with necessary accessories in RCC work/false ceiling/false flooring/wall/flooring including core cutting/drilling in RCC Slab/Concrete wall etc. as per site requirements.	Mtrs.	200
77	SITC of 9 U Network Rack with all standard accessories , shelves, PDUs, Cable Manager etc.	No.	1
78	SITC of required Software and integration of CCTV System	Job	1
79	SITC of LCD HD Ready resolution Monitor 22" with HDMI & VGA Ports with HDMI Cable of suitable length to view the CCTV recording With required Brackets & Supports and Power Cable	No.	1
80	SITC of Outdoor type IP55 Panels as per IEC standards and given specifications - Panel should be fabricated with CRCA sheets with 14 Gauge thickness, 2mm Load bearing and 1.6mm Non load bearing sections, 2.2mm Doors, 3mm Gland plate, Dust and vermin proof, Outdoor Installation, IP55, with minimum seven tank process powder coated with approved colour shade, Floor/Wall mounted, Bottom Cable entry, 3 phase, 50 Hz. 415 V with required switchgear, Protection, MFM, RYB/ON/OFF/TRIP LED Indicating Lamps for input & ON/OFF/TRIP LED Indicating Lamps for all outgoing branches, selector Switches etc. Abnormal voltage protection, etc. with 250 Amp. four pole MCCB with spreader links as main incomer and 11 Nos. four pole 25 to 63 Amp current rating MCBs for Each branch protection (Suitable current rating for ODU as per OEM's recommendations). The bidder shall arrange and bear all costs associated with the required testing of the panels at the factory prior to dispatch and again at the work site following installation. All tests shall be conducted in accordance with the applicable standards, specifications, and approved procedures. Panel builder must have workshop with latest ISO 9001 Certifications & shall have Calibrated testing setup for Routine test of LT Panels as per standards. Contractor to provide panel builder documents for verification. For LT panels, all the type tested certificates must be submitted by the OEM and issued in the OEM's name, in compliance with IEC standards. (For verification purposes, the contractor must make available the documentation from the panel builder and the OEM).	Nos	1
81	SITC of Outdoor type IP55 Panels as per IEC standards and given specifications - Panel should be fabricated with CRCA sheets with 14 Gauge thickness, 2mm Load bearing and 1.6mm Non load bearing sections, 2.2mm Doors, 3mm Gland plate, Dust and vermin proof, Outdoor Installation, IP55, with minimum seven tank process powder coated with approved colour shade, Floor/Wall mounted, Bottom Cable entry, 3 phase, 50 Hz. 415 V with required switchgear, Protection, MFM, RYB/ON/OFF/TRIP LED Indicating Lamps for input & ON/OFF/TRIP LED Indicating Lamps for all outgoing branches LED Indicating Lamps, selector Switches etc. Abnormal voltage protection, etc. with 250 Amp. four pole MCCB with spreader links as main incomer and 9 Nos. four pole 16 to 63 Amp current rating MCBs for Each branch protection (Suitable current rating for AHU/Dehumidifier/Heater as per OEM's recommendations). The bidder shall arrange and bear all costs associated with the required testing of the panels at the factory prior to dispatch and again at the work site following installation. All tests shall be conducted in accordance with the applicable standards, specifications, and approved procedures. Panel builder must have workshop with latest ISO 9001 Certifications & shall have Calibrated testing setup for Routine test of LT Panels as per standards. Contractor to provide panel builder documents for verification. For LT panels, all the type tested certificates must be submitted by the OEM and issued in the OEM's name, in compliance with IEC standards. (For verification purposes, the contractor must make available the documentation from the panel builder and the OEM).	Nos	1
82	SITC of 3.5C X 150 sqmm FRLS XLPE Insulated Aluminium armoured cable laying in Existing RCC Pipe including removing/breaking of cement concrete, lifting/shifting of Heavy duty 1.2 Meter X 1.5 Meter RCC covers and restore again complete work as required. Consider crane/JCB expenditure as required.	Mtr	280
83	SITC of End Termination of 3.5C X 150 sqmm FRLS XLPE Insulated Aluminium cable with required material Lugs, double compressed Glands, Nut-Bolts & accessories etc. complete	Nos	4
84	SITC of FRLS XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 Core 10 Sq. mm. copper multistrand conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as required complete	Mtr	60
85	SITC of End Termination of 4C x 10 Sq. mm Copper multistrand cable with required material Lugs, double compressed Glands, Nut-Bolts & accessories etc. complete	Nos	6
86	SITC of FRLS XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 Core 6 Sq. mm. copper multistrand conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as required complete	Mtr	150
87	SITC of End Termination of 4C x 6 Sq. mm Copper multistrand cable with required material Lugs, double compressed Glands, Nut-Bolts & accessories etc. complete	Nos	12
88	SITC of FRLS XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 Core 4 Sq. mm. copper multistrand conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as required complete	Mtr	60
89	SITC of End Termination of 4C x 4 Sq. mm Copper multistrand cable with required material Lugs, double compressed Glands, Nut-Bolts & accessories etc. complete	Nos	6
90	SITC of FRLS XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 Core 2.5 Sq. mm. copper multistrand conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as required complete	Mtr	60
91	SITC of End Termination of 4C x 2.5 Sq. mm Copper multistrand cable with required material Lugs, double compressed Glands, Nut-Bolts & accessories etc. complete	Nos	6
92	SITC of FRLS XLPE insulated, galvanised steel formed wire armoured (strip) cable 1100 V, 4 Core 1.5 Sq. mm. copper multistrand conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as required complete	Mtr	100
93	SITC of End Termination of 4C x 1.5 Sq. mm Copper multistrand cable with required material Lugs, double compressed Glands, Nut-Bolts & accessories etc. complete	Nos	10
94	SITC of 40 X 5 mm Copper earthing strip with Epoxy Resin Support Insulator, Wall Mount type, rated voltage - 1.1 kV, Creepage Distance - 50mm mounting on PIR wall panel at every 0.75 Mtr. with all required hardware/accessories as complete.	Mtr	100

BOQ - SITC of Class 1000 and Class 10000 Cleanroom Facility at IUCAA, Pune

Sr. No.	Item Description	Unit	Qty.
95	SITC of FRLS XLPE insulated cable 1100 V, 1 Core 70 Sq. mm. copper multistrand (Green colour) conductor complete erected with glands & lugs, on wall/ trusses/ pole or laid in provided trench/ pipe as required complete	Mtr	160
96	SITC of End Termination of 1C x 70 Sq. mm Copper multistrand cable with required material long barrel bimetallic Lugs, double compressed Glands, Nut-Bolts & accessories etc. complete	Nos	12
97	Disconnecting terminated cables/wires, removing existing DB panels from the wall, mounting the removed DB panels onto the cleanroom PIR panel wall, and re-terminating the disconnected cables/wires including tasks such as cutting/slotting and airtight sealing with Class B1 fire-rated silicone gel as required complete	Job Work	7
98	Disconnecting terminated cables/wires, removing existing raw / UPS Power Points and Lighting Switchboards from the wall, mounting the removed Power Points and Lighting Switchboards onto the cleanroom PIR panel wall, and re-terminating the disconnected cables/wires including tasks such as cutting/slotting and airtight sealing with Class B1 fire-rated silicone gel as required complete	Job Work	70
99	Disconnecting terminated CAT6A cables & Telephone wires, removing existing Data & Telephone points/boards from the wall, mounting the removed Data & Telephone points/boards onto the cleanroom PIR panel wall, and re-terminating the disconnected CAT6A cables and Telephone wires including tasks such as cutting/slotting and airtight sealing with Class B1 fire-rated silicone gel as required complete	Job Work	16