कारागार के सुरक्षा उपकरणों का सार-संग्रह

Compendium of Security Equipment used in Prisons

Bureau of Police Research and Development

Ministry of Home Affairs, New Delhi

Compendium of
SECURITY EQUIPMENT
used in Prisons

Bureau of Police Research & Development
Ministry of Home Affairs, Government of India
NH-48, Mahipalpur, New Delhi-110037

Disclaimer :

This document is only a compilation of information received from various Police Forces, Prison Administration of different States/UTs and System Intergrators. The contents have not been independently verified and these do not purport to be comprehensive, or to contain all the information. No responsibility or liability is or will be accepted by BPR&D or by any of its officers or employees in relation to the accuracy or completeness of this document.

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Introduction

The MHA vide OM No. V- 17013/23/2021- PR dated 04/03/2022 assigned to the BPR&D, the task of Technical/Scientific evaluation of Security Equipment used in Prisons to facilitate procurement by States/UTs.

The process of incarceration imposes certain restrictions on prison inmates in custody and at the same time, the objective of reformation and rehabilitation are also required to be achieved within the framework of the prison rules. For this purpose, appropriate security measures have to be ensured according to the specific requirements of inmates of each prison.

Technology plays an important role in prison administration in general and prison security, in particular. The intelligent use of technology in prison management has been proved to be a facilitator in efficient prison management and effective rehabilitation process.

The BPR&D has prepared this report containing the technical specifications of the security equipment useful for prison. During the finalization process of the specifications, the BPR&D consulted and shared the details of the specifications of security equipment presently being used in prisons, with different States/UTs and CAPFs. The draft specifications were also uploaded on the BPR&D website for obtaining the comments/views of Prisons, Vendors, System Integrators, Original Equipment Manufacturers (OEM), etc. All the equipment (96 Nos.) have been specified into 5 categories viz. Security, Surveillance, Information Technology, Communication, and Miscellaneous.

Feedback and suggestions on this document will be highly appreciated.

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MESSAGE

The Government of India entrusted the mandate relating to Correctional Services to BPR&D in the year 1995. Since then, BPR&D is constantly committed towards the efficient management of prisons. The Research and Correctional Administration division of BPR&D engages proactively in conducting prison training courses, conferences, workshops, webinars etc.

As per the Prison Statistics India, 2021, the prisons across India have 30% inmates in excess as compared to their capacity to accommodate. Against this backdrop, the management of prisons, the regulation of prisoners and undertaking of correctional activities have their own inherent challenges. Technological interventions can be an effective tool to counter them. Technology, while being a force multiplier, also has the potential to bring forth transparency and efficiency in correctional services.

BPR&D, along with other stakeholders, has undertaken an exercise on the compilation of the technical specifications of security equipment useful for prisons. This Compendium has 96 equipment, which have been grouped under 5 categories viz. Security, Surveillance, Information Technology, Communication and Miscellaneous.

The draft specifications have been given wider publicity by uploading them on the BPR&D website for obtaining the comments/views from Prisons, Vendors, System Integrators, Original Equipment Manufacturers, etc. BPR&D has also consulted and shared the details of these specifications with States/UTs in order to obtain their feedback. The Ministry of Home Affairs by way of providing Annual Financial Grants under the Modernization of Prisons Scheme has supported these efforts.

The specifications of the security equipment will not only ensure standardization across the country but also provide the much-needed technical details for procurement of the same.

I am sure that this Compendium would be a very useful reference document to prison officers and BPR&D looks forward to use the constructive feedback from the stakeholders for value additions.

(Balaji Srivastava)

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MESSAGE

Prison departments across the country are continuously enhancing their capabilities to overcome the ever-growing challenges in prison administration. To achieve this, prison personnel have been procuring various kinds of equipment regularly. The endeavour of the BPR&D is to assist Prisons & Correctional Services of the States / UTs not only in capacity building of prison officers/ staff, but in technological upgradation of prisons as well.

To facilitate the Prison Organisations in their modernization efforts, the Bureau of Police Research and Development is publishing the Compendium of Security Equipment used in prisons. A consultative approach was adopted by the BPR&D in course of the finalization process of preparation of the specifications. The BPR&D consulted relevant stakeholders, drafted the specifications with their assistance and shared the draft details of the specifications of security equipment presently being used in prisons, with different States/UTs and CAPFs, for inputs from their side.

BPR&D is deeply grateful to all the Prison Authorities, CAPFs, and CPOs for their response in providing the requisite data, timely and offering their valuable suggestions. This collaborative partnership will also go a long way in further improving and upgrading the compendium to include contemporary technology in times to come.

(Anupama Nilekar Chandra)
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MESSAGE

BPR&D has been at the forefront of promoting good practices and standards in Prison and Correctional Administration. Prison staff are constantly upgrading themselves through capacity building activities and modernisation.

Security of prisons is a very important subject. It needs multidimensional and strategic approach. Technology plays a synergic role in enhancing the effectiveness of this approach. Comprehensive security, scalable system and easy integration are salient features of prison security management. BPR&D identified the relevant security related equipment and compiled the specifications.

This Compendium comprises of detailed specifications of 96 equipment used in prison security management.

I hope, this endeavour by the BPR&D would prove immense benefit to all the stakeholders to maintain the transparency and accountability in the procurement system. Suggestions from all the stakeholders for improving the content of this Compendium may be shared on the email Id – dirrd@bprd.nic.in.

Jai Hind!

(Ravi L. Joseph)

List of Abbreviations

Sl. No.	Abbreviation	Expansion
1.	ABS	Acrylonitrile Butadiene Styreneplastic
2.	AC	Alternating Current
3.	ACS	Automatic Configuration Server
4.	ADO	Active Data Objects
5.	AEL	Advance Estimated Location
6.	AERB	Atomic Energy Regulatory Board
7.	AES	Advance Encryption System
8.	AGC	Automatic Gain Control
9.	AH	Amp Hour
10.	AK-47	Avtomat-Kalashnikova 1947
11.	AM	Amplitude Modulation
12.	AMPF	Alarm Monitor Pulse Fence
13.	SMPS	Switched Mode Power Supply
14.	ANPR	Automatic Number Plate Recognition
15.	ANSI	American National Standards Institute
16.	API	Application Programming Interface
17.	BIS	Bureau of Indian Standards
18.	BLC	Back Light Compensation
19.	BLE	Bluetooth Low Energy
20.	BMP	Bitmap Image File
21.	BP	Bullet Proof
22.	BR	Bullet Resistant
23.	BRT	Barbed Tape
24.	BSP	Bright Source Protection
25.	CDMA	Code Division Multiple Access
26.	CE	European Conformity
27.	CFL	Compact Fluorescent Lamps
28.	CFSL	Central Forensic Science Laboratory
29.	Ch	Channel

30.	CMMI	Capability Maturity Model Integration
31.	CMOS	Complementary Metal Oxide Semiconductor
32.	CMS	Central Management System
33.	CSN	Chip Serial No.
34.	CSV	Comma- Separated Values
35.	dBi	Decibel Relative To Isotropic
36.	dBM	Decibels Relative To One Milli Watt
37.	DC	Direct Current
38.	DDR- RAM	Double Data Rate Synchronous Dynamic Random Access Memory
39.	DES	Data Encryption Standard
40.	DFMD	Door Frame Metal Detector
41.	DHCP	Dynamic Host Configuration Protocol
42.	DNR	Digital Noise Reduction
43.	DOA	Direction Of Arrival
44.	DPI	Dots Per Inch
45.	DPIIT	Department for Promotion of Industry and Internal Trade
46.	DSMD	Deep Search Metal Detector
47.	DSP	Digital Signal Processing
48.	DT	Desktop Version
49.	ECAC	European Civil Aviation Conference
50.	EM	Europay Master Cord
51.	EMI	Electro Magnetic Interference
52.	EN	European Norm
53.	EPABX	Electronic Private Automatic Branch Exchange
54.	ERP	Effective Radiated Power
55.	ETD	Explosive Trace Detector
56.	E-UTRA	Evolve Universal Terrestrial Radio
57.	EVA	Ethylene and Vinyl Acetylene
58.	FAP	Fingerprint Acquisition Profile
59.	FBID	Fingerprint Biometric Identification
60.	FCC	Federal Communications Commission
61.	Feli Ca	Felicity Card
62.	FOV	Field Of View
63.	FPA	Focal Plane Array

64.	FPS	Frames Per Second
65.	FRS	Facial Recognition Systems
66.	GFSU	Gujarat Forensic Science University
67.	GI	Galvanized Iron
68.	GigE	Gigabit Ethernet
69.	GPS	Global Positioning System
70.	GSM	Global System For Mobile Communication
71.	GPSM	Gram Per Square Meter
72.	GUI	Graphical User Interface
73.	HCN	Hydrogen Cyanide
74.	HD	High Definition
75.	HDPE	High Density Polyethylene
76.	HHMD	Hand Held Metal Detector
77.	HID	Hughes Identification Devices
78.	HLC	High Light Compensation
79.	HMX	High Melting Explosive
80.	HP	Horse Power
81.	HPBW	Half Power Beam Width
82.	HSC	Handgun Safety Certificate
83.	HT	High Tension
84.	HTML	Hypertext Markup Language
85.	https	Hyper Text Transfer Protocol Secure
86.	ICR	Infrared Cut Filter Removal
87.	IEC	International Electrotechnical Commission
88.	IEEE	Institute Of Electrical And Electronics Engineers
89.	IIS	Internet Information Service
90.	ILAC	International Laboratory Accreditation Cooperation
91.	IMEI	International Mobile Equipment Identity
92.	IMSI	International Mobile Subscriber Identity
93.	IP CCTV	Internet Protocol Closed – Circuit Television
94.	IPS	In- Plane Switching
95.	IPv4	Internet Protocol Version 4
96.	IR	Infrared
97.	IS	Indian Standard

98.	ISO	International Organization For Standardization
99.	ITMS	Ion Trap Mobility Spectrometer
100.	JPEG	Joint-Photographic Expert Group
101.	JSS	Jan Shikshan Sansthan
102.	KVA	KiloVolt-Ampere
103.	KW	KiloWatt
104.	LAN	Local Area Network
105.	LCD	Liquid Crystal Display
106.	LDAP	Lightweight Directory Access Protocol
107.	LED	Light-Emitting Diode
108.	LIU	Light Interface Unit
109.	LTE	Long Term Evolution
110.	LUX	Unit Of Illumination
111.	MAC	Media Access Control
112.	MCU	Multi Conference Unit
113.	MDA	Methylenedianiline
114.	MIFARE	Mikron Fare Collection System
115.	MINEX	Mobile Internal Network Exchange
116.	MP	Megapixels
117.	MPEG	Moving Picture Expert Group
118.	MTBF	Mean Time Between Failure
119.	NABL	National Accreditation Board For Testing And Calibration Laboratories
120.	NAS	Network Attached Storage
121.	NB	Nominal Bore
122.	NDA	Non-Disclosure Agreement
123.	NFC	Near Field Communication
124.	NG	Nitro Glycerin
125.	Ni-MH	Nickel Metal Hydride
126.	NLJD	Non-Linear Junction Detector
127.	NSA	Non-Stand Alone
128.	NTSC	National Television Standards Committee
129.	OEM	Original Equipment Manufacture
130.	ONVIFS	Open Network Video Interface Forum Software
131.	OS	Operating System

132.	PAL	Phase Alternate Line
133.	PCB	Printed Circuit Board
134.	PDF	Portable Document Format
135.	PETN	Penta Erythritil Tetra Nitrate
136.	PIDS	Perimeter Intrusion Detection System
137.	PIN	Personal Identification Number
138.	PIV	Personal Identity Verification
139.	PKI	Public Key Infrastructure
140.	PLC	Programmable Logic Controller
141.	POE	Power Over Ethernet
142.	POP	Point Of Presence
143.	PP	Poly Propylene
144.	PTZ	Pan- Tilt- Zoom
145.	PVC	Poly Vinyle Chloride
146.	QR Code	Quick Response Code
147.	RCA	Radio Corporation of America
148.	RCIED	Radio Controlled Improvised Explosive Device
149.	RDMS	Relational Data Base Management System
150.	RDX	Royal Demolition Explosive
151.	RFID	Radio Frequency Identification
152.	RH	Relative Humidity
153.	RHNC	Reference Hyper Netted-Chain
154.	ROHS	Restriction Of Hazardous Substance
155.	RS	Recommended Standard
156.	RTC	Real Time Clock
157.	RTF	Rich Text Format
158.	RTT	Round Trip Time
159.	SAR	Specific Absorption Rate
160.	SD	Standard Definition
161.	SDK	Software Development Kit
162.	SDR	Subscriber Details Record
163.	SFP	Small Form Factor Pluggable
164.	SFTP	Secure File Transfer Protocol
165.	SIM	Subscriber Identity Module

166.	SLR	Self-Loading Rifle
167.	SMTP	Simple Mail Transfer Protocol
168.	SP	Service Pack
169.	SQL	Structured Query Langrage
170.	STQC	Standardization Testing And Quality Certification
171.	TA	Terminal Adaptor
172.	TATP	TriAcetone TriPeroxide
173.	TBRL	Terminal Ballistics Research Laboratory
174.	TCP	Transmission Control Protocol
175.	TDD	Test-Driven Development
176.	TDOA	Time Difference Of Arrival
177.	TFT	Thin-Film Transistor
178.	THC	Tetra HydroCannabinol
179.	TIP	Threat Image Projection
180.	TNT	TriNitro Toluene
181.	TQC	Total Quality Control
182.	TSA	Transpiration Security Administration
183.	TTL	Transistor- Transistor Logic
184.	UAV	Unmanned Aerial Vehicle
185.	UHF	Ultra – High Frequency
186.	UI	User Interface
187.	UIDAI	Unique Identification Authority Of India
188.	UL	Underwriters Laboratories
189.	UMTS	Universal Mobile Telecommunication System
190.	UPS	Uninterrupted Power Supply
191.	USB	Universal Serial Bus
192.	UV	Ultraviolet
193.	UVSS	Under Vehicle Surveillance System
194.	VA-AI	Video Analytic Software- Artificial Intelligence Server
195.	VGA	Video Graphics Array
196.	VHF	Very High Frequency
197.	VMS	Video Management System
198.	VX	Venomous Agent X
199.	WAN	Wide Area Network

200.	WDR	Wide Dynamic Range
201.	Wi-Fi	Wireless Fidelity
202.	XBIS	X-Ray Baggage Inspection Systems
203.	XGA	Extended Graphics Array
204.	XHA	Extra High Amplitude
205.	XML	Extensible Markup Language
206.	3D	3 Dimensional
207.	36U	36 Rack Unit

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1.
SECURITY

1.1 Vehicle Scanning System

1.1.1 Under Vehicle Inspection Mirror

- Size: 300 mm x 300 mm.
- Feature: Light-weight maintenance free and easy to operate.
- Revolving adjustable torch mounting to be provided.
- Colour: Black or any colour prescribed by the user.
- Material: Polycarbonate.
- Permissible Weight: 6 Kg.(Max)

1.1.2 Under Vehicle Surveillance System (UVSS)

To inspect the undercarriage of the vehicles entering and leaving the jail premises. Keeps a record of all the vehicles along with the image of the under chassis.

Sl. No.	Specifications
Supply & installation of Under Vehicle Scanning System, to enable inspection of any vehicle's underside through a static composite image of the vehicle, as per the details given below: -	
1.	The UVSS should produce multiple angular views (Left View & Right View) of high-resolution COLOR images of the complete underbody of any vehicle passing over it using dual Area-scan camera-based technology.
2.	The UVSS should be capable of handling vehicles moving at different speeds ranging from Zero (0) to 25 Km/hr., while the morphed composite images so captured by it should be automatically and dynamically adjusted according to the speed of the vehicle using multiple induction loop-based sensors.
3.	Each of the dual imaging cameras should be of high-resolution Area- scan, GigE type with Minimum resolution of (1920 x 1200) or above.
4.	The UVSS should be capable of producing clear and undistorted images of the vehicle underside, even when a vehicle completely stops / halts over the scanning unit for approx. 2-3 Seconds, i.e. it must be able to produce seamless and perfect composite images of the underside Irrespective of stoppage or non-uniform motion of the vehicle over the scanner.
5.	The UVSS should not use either a digital Line-Scan camera-based technology or any type of Analog/Video cameras to form composite image without any distortions or Fisheye effect. Only Area Scan Cameras with output of about 500 FPS (Frames Per Second) to be used.
6.	The UVSS should enable detection of suspicious objects by the user that are hard to see via single view scanning systems, including visual access to cavities and niches, areas around suspensions, below the engine areas, side wall of fuel tanks & exhaust pipes etc.

7.	The UVSS must have a dynamic multi-view feature and it can be dynamically controlled by the user. (the operator should be able to view the underside by hovering the mouse from left to right of the image).	
8.	The UVSS must provide a 3D/MD Morphed Image and Two 2D images – From Left & Right Angle of the complete underside of any vehicle.	
9.	If found anything suspicious or any suspicious area of the under chassis which is not in sync with the normal Under Chassis image, the UVSS should have a feature to view 3D/MD video from left & right image in order to minimize the threat and give assistance to visually / manually search for any foreign objects by the user.	
10.	The UVSS should have a feature to magnify (zoom) the composite image (left & right) and 3D/MD video up to 8x in order to facilitate a closer view of any part of the composite image and 3D/MD video.	
11.	The UVSS should have a feature to play any particular/ specific zoom area of 3D/MD video.	
	i. Camera Type	Gigabit Ethernet progressive camera
	ii. Sensor	CMOS XGA resolution (1920 x 1200) or better
	iii. Field of View- Minimum	180 Degrees
	iv. Format	GigE
	v. Composite Image resolution of the underside	3 megapixels
	vi. Camera certification	CE
	vii. Camera casing ingress protection rating	IP 68 or better, duly certified by NABL accredited lab for Water and Dust Protection. Temperature rating of enclosure to be -20°C to +70°C Duly tested & certified by an NABL accredited Lab in INDIA.
	The UVSS should compare both (left & right) view with the help of license plate/Vehicle type database of underside images.	
12.	The underside illumination must be adequate and obtained through a dual array of long life, LED lighting modules. Halogen or CFL based array of lighting elements for the purpose of illumination of the underside will not be accepted.	
13.	The UVSS applications & operating software should preferably be based on open architecture on Latest Windows 10 Professional 64 Bit OS platform. It must have a user-friendly Graphical User Interface (GUI) with provision for multiple users logging of events and search facility. It should also have the latest version of Microsoft Office Installed with minimum 10- year License Updates.	
14.	The UVSS system must have a facility to take back-up of all the transactions to storage media.	
15.	The overall UVSS must be CE Certified. A certificate issued by a competent certifying agency, must be attached with the tender.	

16.	The underground cameras & lighting units of the UVSS must be enclosed in a suitable all-weather-proof housing of IP 68 Certified or higher standard. The main camera enclosure should have operating temperature range of -20ºC to +70ºC. A valid certificate in this regard, after requisite testing carried out, issued by a Govt. / NABL accredited Laboratory in India, must be attached with the tender, without which the bid is liable to be rejected.
17.	The overall installed unit should be properly designed, and its structure should be able to withstand a vehicle axle-load up to 40-Tons at any point over the structure, so as not to suffer any accidental physical damage to the unit and the components under the pit cover.
18.	The UVSS must be aesthetically designed so that it must blend seamlessly with the landscape, forming a natural look with no discomfort for the driver / passengers of the vehicle being scanned.
19.	The system should have a provision to generate in Current/Daily/Weekly/Monthly reports with a unique ID for each vehicle along with the time and date & related Images. Such data should be exported to a Microsoft Excel Spread Sheet at every instance of request
20.	The UVSS application and operating software should compulsorily be designed on Windows 10 Professional 64 Bit based front-end application with Microsoft SQL Server as the BACK-END DATABASE.

1.2 Visitor Management System

1.2.1 Contactless Mulakat System (Transparent Glass)

Sl. No.	Description
1.	To facilitate communication between prisoners & visitors through transparent channel(wall) without any physical connectivity.
2.	Contactless Glass also removes any chance of physical transfer of illegal products like mobile, drugs etc.
3.	Communication between prisoners & visitor through transparent glass without intercom by using a built in amplifier.
4.	System should equipped with an amplification system and transfer of sounds designed for optimum acoustic comfort (exclusive vibrating Membrane) without any power source.
5.	Frame of system should be of Aluminium or suitable material.
6.	Glass/glazing used should be manual attack resistant for Ballistic level to BR4 level according to EN 1063 Standard or better.
7.	Colour of frame: Grey or any colour defined by user.
8.	Clear Aperture (HXWXD): minimum 1000mm x 500mm x 75mm or better
9.	System should be installed with complete framing and separation system between prisoners and visitor.

1.2.2 Visitor Management System Software

Sl. No	Parameters	Specifications
1.	**System overview**	
I.		The Visitor Management System shall allow the user to track visitors, employees, assets and deliveries as they enter and exit the facilities. The system shall also support printing of custom designed visitor passes with details like expiration date, visit area, host being visited and visit purpose. In addition, shall allow the user to: • Keep track of contractors and consultant timesheets. • Track which employees have regular personal visitors. • Secure visitor log. • Clearly identify visitors by category, to restrict access to vulnerable good and information. • Designate special areas for visitors with custom badges. • Process most visitors in 20 seconds.

		• Track and print temporary parking passes. • Print vehicle window stickers. • Use self-expiring badges to tighten security. • Generate end-of-day reports to ensure regulatory compliance. • Label information packets with personalized customer information.
II.	Visitor pre-registration	
		• The system shall support: Visitor pre-registration to include security level, length of stay, and maximum entries. • Visitor pre-registration by using FrontDesk, Microsoft® Office Outlook® Calendar or through Web- based application. • Group/Event pre-registration, pre-loading of visitor picture, badge pre-printing and arrival instructions. • Complete visitor registration processing within 20 seconds.
III.	Visitor information capture	
		• The system shall support: • Quick and complete capture of visitor information as an essential component for proper record keeping and security checks. • Capture of visitor information using various hardware devices. The tasks that can be performed include scanning business cards, scanning driver license, capturing visitor photo, capturing visitor signature, and 2D barcode scanning of driver licenses. • Quick processing of large groups of visitors through queuing of captured data.
IV.	Visitor authentication	
		• The system shall support: • Recalling previous visit information (including pictures) when a visitor revisits. • Detecting each attempted visit and deterring potential security breaches before they affect the user facilities. • Importing guests ranging from disgruntled ex-employees to known felons into the watch list to alert personnel of a potential threat to the organization. • Authenticating a person as having proper identification and determining that he or she is who they claim to be.
V.	Visitor authorization	
		• The system shall support: • Enforcing visitor authorization prior to printing a badge, entering the premises, authorizing visits at reception, security lobby or remotely by the host employee. • Delegating authorization responsibility to specific individuals. • Providing a denied visitors list.

VI.	Visitor badges generation	
		• The system shall: • Provide quick, cost-effective and individualized badging as an essential component of proper visitor identification. • Allow printing of individualized visitor badges containing name, picture, expiration date and valid access areas. • Customize badge templates for visitors, VIPs and contractors. • Print badges using: • Thermal label printers • Dymo 400, Dymo 450, Dymo 450 Turbo – thermal paper labels • Dye sublimation – PVC cards • Ink/laser printer – Regular card stock • Supports tight integration with ACS Security systems that allow the assignment of access control privileges via barcode or card to visitors
VII.	Host notification	
		• The system shall notify host: • Of a visitor's arrival by e-mail messages or real-time network messaging. • When a visitor does not sign out.
VIII.	Visitor tracking	
		• The system shall: • Track events automatically by an accurate log as they relate to the visitor's activities on site. • Track the number of times the visitor signs in and signs out. • Support quick sign in and out using a barcode scanner. • Provide proactive checking for expired visits and network notification to hosts and visitors of expired visits. • Provide web access to the visitor manifest.
IX.	Security policies	
		• The system shall: • Provide accurate and consistent application of security policies. • Provide a means to view picture and a person's attributes, reason for being on the watch list and the action to be performed upon visitor's arrival. • Check each visitor against his/her previous visit information. • Ensure that visitors sign out by tracking expired visits and informing their hosts. • Allow host to extend a visit or assign host responsibilities to another employee.

X.	Host management	
		• The system administrator shall: • Assign the capabilities available to employees based on their requirement. • Differentiate permanent and temporary employees; limit the number of daily and concurrent visitors per host. • The Front Desk operator shall: • Assign temporary day cards in ACS for ACS employees who have forgotten their card. • Have an option to assign either ACS access privileges to match their permanent card or a visitor privilege. The permanent card is automatically disabled while the temp card is active. • Be able to do a visual verify of the employee to their photo at the Front Desk.
XI.	Traffic reporting	
		• Visitor traffic reports shall be available to plan resource allocation and measure productivity and facility utilization. The system shall generate: • Traffic reports – per station, per building, per company, per employee and per department. • Detailed visit reports. • Time and attendance reports for contractors and other visitors. • Reports on demand, or schedule reports for regular generation and e-mail delivery.
XII.	Assets and deliveries	
		• The system shall: • Track assets and deliveries as they arrive and depart premises. • Generate asset and delivery tags and scan assets and deliveries in and out with a barcode scanner. • Provide e-mail notification of delivery recipient for unreturned assets.
XIII.	Self-registration kiosk	
		• The system shall: • Provide a fully featured visitor kiosk to handle visitor registration needs in a busy or unattended lobby. The Kiosk shall be used to perform touchscreen visitor registration using a visitor's business card or driver license. • Allow to sign visitors in and out with voice agent scripted behavior, voice and text message prompts. The Kiosk shall be used to take picture of visitors for true visitor identification, as well as display visitation rules/ non-disclosure agreement.

		• Print a visitor badge at the self-registration station or at a remote FrontDesk and allow for remote authorization of the visit by the host or security desk. The Kiosk shall notify the hosting employee when their visitor arrives.
XIV.	Security audit compliance	
		• The system shall provide necessary tools to perform security and compliance audits including: • Secure database • Audit log • Tamper proof visitor records • Audit reports • Backup and restore capabilities
XV.	Installation	
		• The system shall provide a simple installation process, including wizard-based installation, attended and unattended installation support, and batch import of employee data.
XVI.	Flexibility	
		• The system shall be designed to meet the needs of large and small companies in many industries. The system shall support: • Configuration as a standalone or networked solution, single or multi-tenant facility, or single or multiple facility company. • Tailoring badge templates, notification rules, and security policies for each visitor category. • Customizing the data being tracked for each visitor category and customized report templates. • Synchronizing with online employee list through automated file import, Active Directory. • Configuring user interface including, but not limited to data views, actions, field names/types/default values, custom categories, and visit types, required or read-only fields
XVII.	System Philosophy	
		• The proposed Visitor Management System shall be latest and state of the art capable to be scalable; open to offer below functional & operational features - • Can be configured for mobile based visitor registration interfaces. Shall offer mobile based visitor invitation through mobile &/or web enabled interfaces; • Shall offered self-registration through Mobile UI; QR Code based prior access rights

		• Shall offer touch less QR Code based encrypted & verified access at designated points; host notification; FRS &/or biometrics based access & complete touch less regulated access through policies including two person rule for access & route paths etc. • Shall offer complete supervision through contact tracing; complete visitor watch list; audit trail; video integrated access transactions; reporting & customized notification workflow.
XVIII.		• The proposed Visitor Management will offer: • The ability to send an invitation to guests • The ability to allow guests to self-register for the visit prior to arrival at the location • Complete pre-requisite documentation including health screening and NDA agreements • Touch less check-in and host notification • Badge printing including visitor photo • QR Code as an access credential • Custom watch list and notification workflows for restricted guest Reporting and Audit Trail
XIX.		• The proposed Visitor Management System shall offer customized & flexible configurations pertaining to – • Definition of retention rules to be in line with company / organisation policy and/or GDPR need • Managing stand and tablet kiosks • Supporting multiple kiosk as per company / organization needs Pre-view of kiosk and guest layout
XX.		• The proposed Visitor Management System shall offer complete Kiosk based Visitor Management features including the below minimum or better at site – • Kiosk / Tablet / Workstation: • On-Site Registration • Check-in • Host Badge Swipe based Check-in • Direct Check-in • Questionnaire and adjudication • Biometric and temp capture • Credentials issuance (QR) • Check-out • Administration: • Kiosk Configuration • Manual Registration of guests • Reporting and audit trail functionality

XXI.		• The proposed Visitor Management System shall offer complete touchless Visitor Management features including the below minimum or better at site or at remote through UI – • Registration: • Pre-Registration: • Email invitations to guests for pre-registration • Scan QR code provided when guests pre-register for check-in • On-site Registration • Connect organization hosts to guests • Print Guest badge • Administration: • Customization • Lobby application customization • Visit Forms customization • Badge Printing
XXII.		• The proposed Visitor Management System shall offer complete • Remote Locations Employee Management features including the below minimum or better at site or remote through UI - • Application access from Integrated Personnel administrative portal of Integrated ACS Database • Ability for internal employees to request access for physical spaces Dashboard for users and administrators • Access request Enhancements • Simplifying request (mobile/barcode) • Recent request transaction review • Resend request • Automatic cancellation on defined wait time • Email notification for approval • Partition Logic
XXIII.		• The proposed Visitor Management System shall offer complete Remote Locations Employee Management features including the below minimum or better at site or remote through UI - • Complete touchless online Vendor Application & required customization • Can be in Mobile form factor • Can be customized for partition logic • Automatic cancellation on defined wait time • Scheduling Badge Appt / Training • Approval process Tracking • Managing multiple vendors (multiple Access Control system) • Ability for vendors to request access for physical spaces

		• Independent Badging application • Badge Renewal Notifications • Vendor Reports • Compliance Audit
2.	**System software requirements**	
I.		• Network capabilities • The system shall support LAN and WAN between facilities in same continent and single time zone, and which requires connectivity speeds of 100 Mbps or greater on WAN.
II.	Concurrent licensing	
		• The system shall support concurrent client workstation licensing. The system application shall be installed on any number of client workstations, and shall provide the ability for any of the client workstations to connect to the database server as long as the maximum number of concurrent connections purchased has not been reached.
III.	Security key	
		• The system shall only require an electronic activation to be present on the database server for the system to operate. The security keys shall not be required at the client workstations. • Software License • Visitor Management must include full-featured visitor management with interfaces to cameras, signature pad, barcode scanner, business card scanner, driver license scanner, and card reader. Premier Edition can be networked with up to 20 additional licenses for Front Desk, Kiosk, or Reporter. Web Center for web-based pre-registration and Notify for real-time network notification are also available as options along with Premier Edition. 5,000 host licenses are included with Premier Edition. With add-on licenses, Premier Edition can support up to 50,000 hosts, unrestricted Notify clients, and 25 concurrent Web Center logons. • Relational database management system • The system shall support Microsoft SQL Server® 2005/2008 (32-bit) and Microsoft SQL Server 2005/2008 Express Edition. The software shall include Microsoft SQL 2008 Express on the product media.
IV.	Operating systems	• The system shall support Microsoft XP SP3 and Microsoft Vista Business Edition SP2 for clients/server and Microsoft Server 2003 for server.
V.	Web servers	• The system shall run on Microsoft IIS 5.1 and 6.0 web servers and shall be compatible with browsers IE6, IE7, and IE8.

VI.	Outlook Calendar integration	
		• The system shall provide the Microsoft Office Outlook Calendar integration to allow the pre-registration of the visitors by means of the appointments created in Microsoft • Outlook as retrieved from a Microsoft Exchange server.
3.	**Operational requirements**	
I.	Password	• The system shall support both system-managed password scheme and Windows user accounts and policies. Windows passwords shall abide by Windows policies regarding user accounts. The system-managed passwords shall be encrypted and will require both alpha and numeric characters.
II.	Information access	The system shall be capable of limiting operator access to sensitive information. The operators shall have proper authorization to edit the information.
4.	**Application**	
		• Front Desk • The system shall support a Front Desk Windows application for receptionist-assisted registration of visitors. For some installations, the organization may also decide to allow the Front Desk operator privileges to manage the list of hosts. • Hosts are those people at the site who may receive visitors.
	Features	
		• The Front Desk application shall support the following features: • **Visitor pre-registration** - The Front Desk application user pre-loads visitors expected for a future visit. The Front Desk user enters the visitor's name, contact details, date(s) of visit, and planned host. The visitor information is compared against the watch list, and if a match is found the Front Desk user may choose whether to continue with the registration or not. • **Visitor registration** - The Front Desk user can sign in expected (pre-registered) or unexpected visitors. If the visitor is unexpected, the Front Desk user enters the visitor's name, contact details, end date of visit, and planned host. The visitor information is compared against the watch list, and if a match is found the Front Desk user may choose whether to continue with registration or not. • **Visitor authorization** - The Front Desk application can automatically contact the host for visit authorization using the Notify application installed on each host's computer. The application runs as a service with an icon in the Windows notification area. • **Front Desk user-** assisted visitor sign in and sign out are supported for single visits and for visits that span multiple days. • Optional automatic sign out at the end of each day is supported through the Scheduler application.

		• Front Desk user can modify visit details during the visit, including duration and change of host. • **Group registration** - Front Desk operator can register a large number of people as a group and may add multiple visitors to the group. Front Desk operator may modify groups, delete groups, and import group members from a text file (.csv). • Default visitor searches support searching using the first name, last name, company name, sign-in date, and so on. • Front Desk users can add new search definitions to meet business needs. • Assets - Front Desk users can add or modify assets in the system. - Front Desk users can sign assets in and out. • **Watch list** • Front Desk user can add, modify, or remove visitors, hosts, or companies to/from watch list. • Each watch list entry may include validation of time (for example, establishing an end date). • **Hosts** • Front Desk user can add a new host during the registration process of a visitor to handle the unexpected cases of a missing host due to recent personnel changes. • Front Desk users can manage host list by adding, modifying, deactivating, and activating hosts. • Front Desk users can sign hosts out and in to reflect when they are in the facility and able to receive visitors. • Front Desk users can create, preview, and print host badges that can be used for temporary purposes. • Optional automatic e-mail or Notify notifications including register notifications, visitor sign-in notifications, and requests to authorize visits can be performed by Front Desk.
5.	**Kiosk**	
		• Front Desk user can use the notification history view to view the status of outstanding authorizations and to find out when the visitor notifications were sent out, in case the person has remained too long in the lobby. • **Operator log on** - authentication and Windows authentication (uses identity of Windows users currently logged in). • **Regional settings** - Supports default date and time format for India. • **Optional features**

		• Facility to: • Scan business cards or driver licenses to capture visitor's name and contact information from document in lieu of manual typing. • Capture the visitor's written signature for electronic records. • Capture the photograph. • Preview and print the visitor's badge when the visitor signs in for the first time. The Front Desk user can also reprint the badges or print a second badge for placement on the dashboard of the visitor's vehicle. • The system shall support a Kiosk touchscreen-based Windows application that allows visitors to self- register. • **Features** • The Kiosk application shall support the following features: • **Visitor Match** - Search name/host match - Search host name. • Not all hosts are displayed in the host list during the registration process due to security concerns. • Supports scanning of barcodes, business cards, and driver licenses. • Supports capturing of visitor and host photos. • Provides a UI interface that allows the organization to set up the Kiosk for a multi-company or a single company office-building scenario. • Supports category selection by visitor using organization-defined categories. • Maintain a watch list of suspicious visitors or companies. While registering a visitor, the operator is warned about watch list visitors or companies. • Allows the operator to check the validity of pre-registered visits. • Enables the employee to sign in to the premises using the temporary badge. • Allows the host or employee to authorize visitor registration. • Allows the host or employee to manually sign out the visitor. • Displays registered visit to host/employee. • Supports disabling of name matching to past visitors if desired for security. • **Kiosk machine log-on** - Requires valid account to authenticate to SQL database (governed by Microsoft SQL specs for log-on types). • **Employee Sign-In** - authentication, Windows authentication (uses identity of Windows user currently logged in), and LDAP authentication. • **Regional settings** - Supports default date and time format for India. • Reporter • The system shall support a Reporter application that permits the system administrator or operator to create reports of visit data. • Features • The Reporter application shall support the following features:

		• Report configuration setting option. • Ability to modify the existing Reports. • Ability to add/remove criteria from the list. • Ability to import or load a predefined report template. • Ability to modify the query used for retrieving the required data. • Reports for entities such as assets, deliveries, employee, visit, watch, and group. • Ability to specify additional Runtime filter options. • Ability to save a report in HTML, PDF, CSV or RTF formats. • **Operator log on-** authentication and Windows authentication (uses identity of Windows user currently logged in). • **Regional settings-** Supports default date and time format for India.
6.	**Badge Pre-Print**	
		• The system shall support a Badge Pre-Print application that allows the user to print visitor badges on a daily basis for the visitors expected during that day. Expected visitors are those who have been pre-registered. • Features • The Badge Pre-Print application shall support the following features: • Badge print option for pre-registered visitors prior to arrival. • Badge pre-print machine log-on requires valid account only to authenticate to SQL database (governed by Microsoft SQL specs for log-on types). • **Regional settings-** Supports default date and time format for India.
7.	**Scheduler**	
		• The system shall support a Scheduler application used for coordinating and executing automation activities within . It is set up by the system administrator and needs to be run 24/7 on either the server or a client machine that remains logged on to the system. In addition, a user must be logged on to Windows on that computer.
	Features	
		• The system Scheduler application shall support the following features: • Automated employee list synchronization with Microsoft Active Directory through manual or schedule job through LDAP queries on ADO.net. • Automatic expiration of the Temporary Host list. When creating a Temporary Host, the host expiration date is mandatory. When the Schedule Job runs, if the valid period has expired for the Temporary Host, the Temporary Host is deleted from the database. • Ability to close or sign-out the expired visit at the end of the day.

		• Calendar integration with POP3 and secure POP3 protocol support for Microsoft Exchange to allow hosts to pre-register visitors via calendar invite. • Automatic watch deactivation based on the duration specified. • Ability to automatically decline the visits pending more than specified time. • Automated report generation as per the specification, and with e-mail support. • Automatic backup of the database on a monthly basis. • Automatic incremental back up of the database on a weekly basis. • Ability to take any number of database backup schedules. • Scheduler machine log-on: Requires valid account only to authenticate to SQL database (governed by Microsoft SQL specs for log-on types). • **Regional settings-** Supports default date and time format for India.
8.	**Web Center**	
		• The system shall support a Web Center web application that hosts can use to pre-register visitors. The Web Center application can be accessed through Internet Explorer 6, 7 and 8 browsers.
8.1	Features	
		• The Web Center application shall support the following features: • Allows hosts to pre-register visitors with designated visit location and view active visitors. • pre-registered visitors are compared to the internal visitor watch list. • Host may add their own watched persons to the deny visitors list. • Host can designate two alternate hosts in their profile for use across all visitors in the case that the primary host is unavailable. Alternative hosts are unable to pre-register visitors or modify existing reservations of the primary host. • Administrator, Operator, and Host (employee) log-on: authentication and LDAP authentication. • Regional settings – Supports default date and time format for India.
9.	**Notify**	
		• The system shall support Notify application, which runs locally on host computers and provides notification of visitor arrival in the lobby. It can also be configured to require host approval before visitors are registered.
9.1	Features	
		• The Notify application shall support the following features: • Notification of up to two alternate hosts specified at the time of visitor registration if the primary host is not available. • Normal visitor notification with visit location displayed in the notification.

		• Handles lapsed visit support and allows the host/employee to confirm or cancel a visit. • Optionally, host/employee can opt to authorize or decline a visit. • Denied visitor list. • Administrator, Operator, and Host (employee) log-on: authentication and Windows authentication (uses identity of Windows user currently logged in). • **Regional settings-** Supports default date and time format for India.
10.	**Administrator**	
		• The system shall support an Administrator application used by the system administrator to configure the system, manage user accounts, and back up the database.
10.1	Features	
		• The Administrator application shall support the following features: • **Multisite version** - User can add n number of companies and companies can have n number of sites under them. Each company and its respective sites can be configured separately for business rules. All sites and server must be in the same time zone. • Employees can be added under companies/sites. Each employee can be assigned to a site. • Employees are displayed in form of pages. This takes the load away from administrator in displaying the employee details and improving performance. • Employee logins can be configured under company, site and building level, hence improving security. • Supports unique badges for each company. • Links can be configured at site level. • A workstation may be either unassigned and will register guests for any company/site or a workstation can be assigned to a site or building within a site. If the workstation is assigned at site or building level, then that operator using that workstation may only register visitors for that site/building. • Supports customization of custom company images and logos for Kiosk and Web Center. • Provides an interface for configuring and scheduling tasks. • SMTP email configuration. • Supports Front Desk UI XML configuration. • **Administrator role log on-** authentication and Windows authentication (uses identity of Windows user currently logged in). • **Regional settings-** Supports default date and time format for India.

1.3 Alarm System

1.3.1 Siren

Sl. No.	Parameters	Specifications
1.	Body Material	Aluminum Casting
2.	Power Supply, Frequency	Three Phase 440 V, 50Hz
3.	Fitment	Horizontal
4.	Mounting	Bubble Ended
5.	Weight	45 kilogram (Max)
6.	Colour	As defined by the users
7.	Warranty	12 months
8.	Speed, rpm	2880
9.	Range (Km)	8 radius
10.	Motor Rating, hp	5
11.	Sound level	150 dB

1.3.2 Panic Alarm System

Parameters	Specifications
Smart Addressable Safety Panel	• Wireless addressable zones 70 • 1 wired zone, 16 characters 2 line liquid crystal display ➢ Supports: wired/ wireless siren, system function; System arm/ Disarm & home arm, built in WiFi, Bluetooth, GSM 9 optional) ➢ CE, ROHS, ISO certified & Warranty will be minimum 3 years
Wireless Emergency Panic Button Mobile	• Power Supply: 12V, 27A, Battery Life: > 1 Year, Range: 80 meters in open space, Operating Temperature: -20°C to 50°C • Humidity: upto 95% RH non-condensing • Dimension: 43x31x12mm, water resistant.
Wireless Manual Call Pint (fixed)	• Power Supply: 12V, 27A, Battery Life: > 1 Year, Range: 80 meters in open space, Operating Temperature: -20°C to 50°C, Humidity: upto 95% RH non-condensing.
Wireless Signal Repeater	• Working Voltage: 12 V DC Adapter Static Current: 10 mA • Working current: 180 mA • Operating Temperature: -10°C to 50°C • Ambient Humidity : Less than 95% RH Maximum Receiving distance: 80 m Maximum transmit distance: 500m

Audio-Video output	• Wireless Outdoor Siren with Flash • Waterproof, Weather-proof • Sound Volume: 220dB • Fixed 1 tone or circled 6 tone alarm indication • Inbuilt battery backup, Sound and light indication at the alarm time • Tamper alarm function • Alarm sound time 3 minutes or 6 minutes, Power failure alarm
Misc.	• 24*7 Active Monitoring & Software

1.4 Access Control / Attack Proof System

1.4.1 Finger Print Scanner

Touchscreen based Fingerprint, Card and PIN based Attendance Device with onboard Camera

Sl. No.	Parameter	Specification
1.	Microcontroller	Onboard
2.	Memory	8GB flash and 2GB DDR3 RAM or better
3.	Processor	Quad Core 1.4GHz or better
4.	Fake fingerprint Detection	Live and fake fingerprint detection. Should not read any fake fingerprint made up of chemical composition like rubber, silicon, Gel, Thin film, paper etc.
5.	Sensor and Algorithm	Fingerprint sensor, algorithm, hardware and software should be of same OEM. Relevant documents to be submitted.
6.	Camera	1.3 MP or better
7.	I/O Interface	LAN Interface
8.	OPERATING System	Linux
9.	LCD Display	Min 5 inch LCD Display with backlight
10.	Touch Keypad	0-9 key numeric, four function keys and enter key
11.	Audible Indication	Audible Alarm Indication
12.	Cabinet	ABS Plastic
13.	Fingerprint Scanner Resolution	Greater than 500 DPI
14.	Scanner	Optical scanner, scratch resistance
15.	Sensing Area	16.4mm X 19.4mm
16.	System Verification Speed	<1 sec
17.	FRR (False Rejection Rate)	0.1 %
18.	FAR (False Acceptance Rate)	0.0001%
19.	Enrolment	Less than 5 Sec
20.	Smart card supported	EM / Mifare/ HID I class/ Prox cards
21.	User Capacity	2,00,000 Template (1: N)/ (1:1)
22.	Transaction Capacity	10,00,000
23.	Verification Mode	1: N, 1:1
24.	Communication	TCP/IP, RS485 OSDP, RS 232
25.	Calendar	Built In RTC
26.	USB	Micro USB for Log Download

27.	Power requirement	UL Listed 12V DC, 3.5 Amp.
28.	Approval	CE, FCC, RoHS, BIS
29.	Operation	Standalone or networked
30.	Operating Temperature	-20°C to +60°C
31.	Operating Humidity	0 to 95% RH

1.4.2 Optical Fingerprint Sensor

Touchscreen based Face Recognition, Card and PIN based Attendance Device

Sl. No.	Parameter	Specification
1.	Microcontroller	Onboard
2.	Memory	2GB RAM + 16GB Flash or better
3.	Processor	Cortex-A9 Quad Core 1.4 GHz or better
4.	Camera	2 MP with IR Cut- off or better
5.	I/O Interface	LAN Interface
6.	LCD Display	Min 5 inch LCD Display with backlight
7.	Operating System	Android
8.	LED Indication	LED indication for Accept & Rejection Indication
9.	Touch Keypad	0-9 key numeric, four function keys and enter key
10.	Audible Indication	Audible Alarm Indication
11.	Cabinet	ABS Plastic
12.	System Verification Speed	<1 sec
13.	FRR (False Rejection Rate)	0.1 %
14.	FAR (False Acceptance Rate)	0.0001%
15.	Enrolment	Less than 5 Sec
16.	Smart card supported	EM / Mifare/ HID I class/ Prox cards
17.	User Capacity	20,000 face Template (1:N)/(1:1)
18.	Transaction Capacity	10,000,000
19.	Verification Mode	1:N, 1:1
20.	Face Recognition distance	0.5 to 3 Meter
21.	Mask/ No Mask Features	Yes
22.	Thermal Module Compatibility	Yes
23.	Light Condition	0-25,000 Lux
24.	Communication	TCP/IP, RS485, RS 232
25.	Calendar	Built In RTC
26.	USB	Micro USB

27.	Power requirement	UL Listed 15V DC, 4 Amp
28.	Approval	CE, FCC, RoHS, BIS
29.	Operation	Standalone or networked
30.	IP Rating	IP65
31.	Operating Temperature	-20°C to +60°C
32.	Operating Humidity	0 to 95% RH

1.4.3 Bio Metric Access System

1. Integrated Attendance Device

i) Android Tablet with 7 inch screen

Specification -

- Processor-1.0 GHz or above
- RAM 512 MB or above
- Internal Storage-4GB or above
- Expandable storage through micro SD, minimum 8 GB
- USB Port Minimum one Micro USB port and an optional additional USB Port
- USB port should provide power supply to biometric device and support USB OTG
- Front facing Camera with VGA resolution.
- Internal Speakers
- 7 inch Capacitive touch screen and minimum 800x480 pixel resolution or above, 16 M Colors
- GSM SIM card slot
- Min Battery backup up to 120 minutes
- SAR values within acceptable range
- Separate charging non-usb port with AC adapter 200-240 volt range
- Micro USB host cable
- Connectivity Requirements
- Mandatory Edge / 3G mobile data support
- WI-FI IEEE 802.11b/g/n OR LAN (Ethernet) interface OR Both
- Software Requirements
- Android 4.0 Operating System or Above
- Safety and other standards compliance - CE certification/RoHS certification
- Full featured Web Browser
- Application to be deployed on android tablet will require rooted Android OS
- Vendor has to provide all necessary technical support for integration of their device drivers with the attendance software and associated UIDAI attendance applications.

ii) Single Fingerprint Scanner Device for use with Android Tablet

Specifications -

- STQC certified Single Finger-print biometric device for Aadhaar Authentication with driver, in-built template extractor software/SDK (mandatorily with license, If required) (STQC Certificate for the device must be submitted)
- Scanner Device for use with Android Tablet
- Device should be plug and play with any android (4.0 and above) tablet without need of any additional license to be deployed
- The device should have integrated micro USB or standard USB type connector
- Device must come with connector cables to allow connection of the device to Micro USB and Standard USB ports
- Vendor has to provide all necessary technical support for Integration of their device drivers with the attendance software and associated UIDAI applications

iii) Rugged Casing

Specifications -

- The casing should be made of Inflexible, solid material and can be of polycarbonate / thick plastic / acrylic / other tough material.
- The casing should not suffer any damage or disfiguration on being dropped from a height of up to 2 meters
- Tablet should be vertically oriented in the casing. This is Important because the attendance application to be deployed is designed to run in vertical mode only.
- The casing should be designed to cover/hide the android task bar of the tablet. This is required to prevent misuse of any other functionality of the tablet.
- The casing should have provision to access the power/reset button of the tablet.
- The fingerprint scanner should be ergonomically placed to support ease of usage for biometric attendance in standing posture of the users.

Assembly:

Android Tablet and Single Fingerprint Scanner should be integrated in a rugged casing.

2. Integrated Attendance Device (Type 2)

i) System Requirement

An Integrated device for recording biometric attendance with STQC certified fingerprint sensor meeting following configurations / requirements

- Display At least 4 inch display with a minimum of 800x480 pixel resolution, 16 M Colors.
- Processor 1.0 GHz or above
- RAM-512 MB or above
- Hard Key / Soft Key Numeric key pad

- Internal Storage-4GB or above
- Expandable storage through micro SD, minimum 8 GB
- USB Port- Minimum one available USB host port to support application landing/ configurations / full functional keyboard
- Device must come with connector cables to allow connection of the device to Micro USB and Standard USB ports
- Internal Speakers
- GSM SIM card slot
- Inbuilt replaceable battery with min. battery backup of up to 120 minutes
- Charging / operation on AC 100-240 volt range with inbuilt surge protection

ii) Biometric sensor/extractor

- STQC certified fingerprint sensor/extractor for Aadhaar authentication (STQC Certificate for the integrated bio-metric device must be submitted)
- SDK for fingerprint device
- The fingerprint scanner should be ergonomically placed to support ease of usage for biometric attendance in standing posture of the users

iii) Connectivity Requirements.

- Mandatory Edge/3G mobile data support
- Wi-Fi IEEE 802.11b/g/n OR LAN (Ethernet) interface OR Both
- Strength, safety and operating environment
- Should be able to withstand 1 m drop test
- Operating temp: 0ºC to 50ºC
- Storage not including battery: 0ºC to 55ºC
- CE certification/RoHS certification
- SAR values within acceptable range

iv) Operating system / software requirements

- Android 4.0 Operating System or above
- Sample application to test fingerprint sensor/extractor
- Vendor has to provide all necessary technical support for integration of their device drivers with the attendance software and associated UIDAI applications.

3. Fingerprint Scanner Device for use with Desktop

- STQC certified single finger-print biometric device for Aadhaar Authentication and extractor software/SDK (STQC Certificate must be submitted)
- API/SDK for Windows (7.0 and above) platform.
- Device should be plug and play with any Windows (7.0 and above) without need of any additional license to be deployed.
- The device should have Integrated USB 2.0 type connector.

- Device must come with connector cables to allow connection of the device to Micro USB and Standard USB ports
- Vendor has to provide all necessary technical support for Integration of their device drivers with the attendance software and associated UIDAI applications.

4. Iris Authentication Device for use with Desktop

- TQC certified Iris authentication device for Aadhaar Authentication and extractor software/SDK (STQC Certificate must be submitted)
- API/SDK for Windows (7.0 and above) platform and Android (4.0 or above) Operating System
- Device should be plug and play with any Windows (7.0 and above) and Android (4.0 and above) without need of any additional license to be deployed
- The device should have integrated USB 2.0 type connector.
- Device must come with connector cables to allow connection of the device to Micro USB and Standard USB ports.
- Sample application for Windows and Android platform to test Iris sensor/extractor
- Vendor has to provide all necessary technical support for integration of their device drivers with the attendance software and associated UIDAI applications.

1.4.4 Tyre Killer with Boom Barrier (3,4,5 Meter)

Provides resistance to forced entry and exit of any vehicle in the premises, disables the wheels of the vehicle hindering its movement and also allowing time for the guards to retaliate.

Sl. No.	Description
1.	**Tyre Killer with boom barrier in single drive unit Blocking element with welded on steel spikes.**
2.	Spike of steel material
3.	Road BLOCKING Width: **3,4,5 meters**
4.	Underground housing: Lx Wx H: (blocking width + 600mm) x 400mm x 110 mm
5.	Blocking Height: 150 mm spikes or more.
6.	WHEEL LOAD: 100 kN according to SLW 60 – DIN 1072
7.	Operating Time: Raising: approx. 4 sec. - lowering: approx. 4 sec.
8.	Drive Cabinet: Single drive cabinet only for electric boom barrier & tyre killer for fast & reliable operation. It requires no further integration for synchronized operation of boom barrier along with tyre killer.
9.	There shouldn't be any external wiring for integration of tyre killer with boom barrier, so that very less maintenance issues during life time of equipment's.

10.	**Working Technology** o Type of Motor Electro Mechanical Torque Drive Motor o Working Voltage 230V ± 10%, 50 Hz Single Phase o Working Temperature 0°C to +50°C o Type of Working • Auto or Manual (Make it sure that in case of supply failure manual can be operated o Boom Barrier with Tyre Killer should be operated rapidly at the time of any attack for the purpose of defence. o Single drive motor for electric boom barrier & tyre killer for fast & reliable operation. o Control Unit • Raise – Stop – Lower (Should be established in Control room). o Control unit in same drive cabinet of boom barrier & tyre killer.
11.	Power: 230V ± 10%, 50 Hz
12.	CONTROL Control unit. Raise – Lower Control unit in same drive cabinet of boom barrier & tyre killer. Control Unit should come with all factories setting for integrated use of boom barrier with tyre killer.
13.	Operation: Access Control Reader or push Button.
14.	Spikes: Color RAL 3000, R Underground housing: RAL 7030 stone grey Cover plate: RAL 1007 daffodil yellow
15.	PROTECTION AGAINST CORROSION • Should be long term protection against corrosion by zinc based multi-layer plastic coating. • Firm will submit a certificate from Original Equipment Manufacturer (OEM) as per relevant standards.

1.4.5 Manual Attack Proof Automatic Gates Solution for High Security

Corridors of Jails

Sl. No.	Description
1.	High Security Corridor • Burglar resistant RC4 according EN1627/30 or better • Gate profile should be 80mm or better
2.	Gate should be resistant to: • Manual and cordless electrical tools including a 1.25 kg 300mm mass, • 250mm chisel, • 550mm wood scissor, two 260mm metal shears, • 800g 350mm ax, a 460mm bolt cutter, • Cordless drill with two 14.4 V 2.4 AH batteries and a set of drills up to 13mm.
3.	Electrical fail secure lock • Fail-secure electrical motorized lock type with 2 locking points, concealed into door frame • The lock should assure a resistance higher than 3 tons. Included, a mechanical override with a high security cylinder integrated into the lock to lock/unlock manually in case of electrical failure or power shut-down. • Designed for more than 1000 operations per day • Lock should keep its optimal characteristics even in case of severe use: in example a pressure of 100 kg on the door due to a person in panic does not reduce the manual unlocking possibility.
4.	Lock should very easy: to open, one command only (through a local push button or a signal from a central command unit). Lock should close either immediate or with a time delay (on choice).
5.	Gate frame should be light weight of anodized aluminum, black mat finish. The lock and its molded strike should fit perfectly into the frameworks.
6.	Manual Lock • Lock cylinder should be 81 mm high security type class 6 according to EN1303 • It should have minimum 5 solid pin tumblers and 1 floating ball for anti-copy and anti-bumping. • It should have boring protection also. • Profile cylinder should be burglar reinforced resistance protection of RC4 with: ✓ One chromium plated reinforcing plate mounted on attack side to prevent the attack of the barrel against drilling. ✓ One chromium plated reinforcing plate mounted on the secure side of the cylinder to prevent ejection during a break with a hammer and chisel.
7.	Cables should be concealed between leaf and door frame

8.	Gate should have reinforcement dog-bolts to maintain moving leaf in position even if hinges were cut.
9.	Minimum Gate Size should be WXH: 1100 MM X2100 MM
10.	Gate should have magnet switch incorporated into the frame, gives a dry contact “door open” or “door closed”, notifies action for the electrical lock and may be linked to an alarm. ✓ Gate should have control card/PLC with: ✓ Interface card with 8 Inputs and 8 Outputs. ✓ This remote card gathers all the customer connection ✓ Connector for 24V DC 5Amp power supply ✓ Inputs: for the command of the outside reader, the inside reader, and for their tear protection. ✓ Outputs: informs for an outside push button call, an inside push button call, state of the lock (locked/unlocked), state of the door (open/closed), lock failure or lock override, tear protection for external or internal reader. ✓ The outputs are free of potential NO+NF contacts. ✓ IO card has to be connected to the door card by a serial bus and by a cable which will bring the 24 V to the door. ✓ Cables and connectors
11.	Cabling & Conduit: It will be as per site location requirement
12.	Control Room Infrastructure: As per site requirement.

1.4.6 Integrated Facial Recognition Device

Sl. No	Minimum Specifications		
	Parameters	Features	Description
1.	T&A	Time & Attendance	In-built with application
2.	RFID	ACS Protocols	125kHz EM & 13.56MHz MIFARE, MIFARE Plus, DESFire EV1/EV2, FeliCa; FBI PIV and FBI ID FAP20;
3.		Mobile Card	NFC, BLE
4.	Protection	Ingress Protection	Minimum IP65
5.	Finger	Live Fingerprint Detection / Fake Finger	500 DPI; Yes
		Minimum Capacity	(1:1) finger enrolment / matching - 100000 (1: N) face enrolment / matching - 100000
		Template	ISO19794-2, ANSI-378
		Extractor / Matcher	MINEX certified and compliant
6.	Face	Live Face Detection / Anti-Spoofing	Yes
		Users (1:1)	100,000
		Users (1: N)	50,000
7.	Capacity	Max. Face Enrolment per User	2
		Max. Finger Enrolment per User	10
		Text Logs	5,000,000
		Image Logs	50,000
		CPU	1.8 GHz Dual Core & 1.4 GHz Quad Core or better
		Memory	16GB Flash + 2GB RAM
8.	Construction	Type	7 inch IPS color LCD
		Resolution	1024000 pixels
		Sound	16bit
		Operating Environment	-20°C to 50°C; 80% RH
		Tamper Detection	In-built
		Ethernet	10/100 Mbps
9.	Seamless Integration	Direct communication with host without the requirement of any Controller for seamless Integrations for all ACS; Visitor Management and T&A Applications	

10.	On-board Interface	RS-485	1Ch
		Wiegand	1ch I/O
		TTL Input	2ch Inputs
		Relay	1 Relay
		USB	USB 2.0
		Power Supply	Voltage: DC 12V ~ DC 24V; 2.5 Amp

1.4.7 Smart Card Reader Cum Controller

Sl. No	Parameters	Specification
1.	Capability	Capable of reading contactless smart card (ISO 1443 1/2/3/4A and B). 64 KB storage on smart card
2.	Reading Range	Upto 10cm (Maximum)
3.	Memory Sufficient for application software to store at least one day data	Hotlist and Blacklist data • Min 10000 and expandable up to 25000 • Entry/exit data • Min 25,000 and expandable upto 50,000 Chip Serial No. (CSN) shall be used for hot listing & black list. Entry/Exit data to indicate data & time of entry/exit (time the stamp) card corresponding to holder accessing the gate. Communication between reader & server shall be through SSL.
4.	RTC	Built in most accurate RTC (Real Time Clock) backup.
5.	PC Communication	Ethernet (TCP/IP) decided by the user with Lithium Cell

1.5. Metal Detectors

1.5.1 Hand Held Metal Detector (HHMD)

Sl. No.	Parameters	Specification
1.	Length Total (overall) (mm)	415
2.	Probe Width/Dia (mm)	80
3.	Body Width/Dia (mm)	65
4.	Maximum Weight (grams)	350
5.	Detection	Ferrous, Non-Ferrous & Alloys
6.	Detects pin from a minimum distance of (mm)	25
7.	Detects Pistol-0.22 from a minimum distance of (mm):	150
8.	Detects Cartridge -0.22 from a minimum distance of (mm):	50
9.	Detects Razor Blade from a minimum distance of (mm):	25
10.	Turning to ensure equal results on wide range of metals and alloys	Automatic
11.	Scan Rate (mm per second) (mm/s)	175
12.	Battery type (inclusive in the scope of supply)	Re-chargeable, 9 Volts
13.	Battery Chemistry	Ni-MH
14.	Details of battery, AH capacity (mAh)	300
15.	Minimum Battery Back-up in continuous operation on single charge (hours)	40
16.	Battery Protection against reverse polarity	Yes
17.	Battery charger (inclusive in the scope of supply)	External charger
18.	Construction	Non-breakable, scratch proof, impact resistant ABS module casing
19.	Operation	Push button or switch to put 'ON' for continuous use
20.	Calibration	Auto
21.	Ingress Protection	IP 55 or better
22.	Alarm	Selectable Audio & Visual and Vibration & Visual Separately

23	LED indication	"ON indication", "Metal detection indication", "Low battery indication".
24	Interference	Harmless to wearers of pacemakers, defibrillators or other vital support systems, pregnant women and magnetic storage media (floppy disks, audio cassettes, video cassettes and similar)
25	Technical manual giving full description of the item & User's hand book and literature on preservation / maintenance	Inclusive in the scope of supply
26	Cleaning Kit	Yes.
27	Availability of Spares for a period of 7 years after the warranty period	Yes.
28	Operating Temperature Range	-30ºC to 55ºC or better 90% RH
29	Certification	Test Reports for Central Govt./NABL/ILAC accredited Lab.

1.5.2 Door Frame Metal Detector (DFMD)

Sl. No.	Parameters	Specifications
1.	**General**	
i.	Type of usage	Outdoor
ii.	Detection Zones	Multiple Zone
iii.	Function	Detects ferrous, Non-Ferrous and alloy metals concealed in the body of a person when passed through it's arch
iv.	Number of Horizontal Detection Zones converting full Height	8
v.	Capacity / throughput rate (person/min)	30 or more
vi.	False Alarm rate (%)	1
	Weight & Bulk	
i.	Passage Height	2000 Millimeter (Min.)
ii.	Passage Breadth	720 millimeter (Min.)
iii.	Passage Width	570 millimeter (Min.)
iv.	Weight of the equipment	Approx. 100 Kg.
	Door Frame Construction	
i.	Construction of Door Frame (Walk-through Arch)	Light weight, rigid, laminated side panels and cross piece with ABS plastic boots for panel protection

ii	Material of Walk-through Arch	Polycarbonate
iii	Mobility	Base wheels to be provided
iv	Sstability & rigidity to the structure	Floor and side panels
iv	Ramp over the floor panel-Covered with synthetic carpet for long life	Yes
v	Water proof	Yes
vi	Weather proof	Yes
2.	**Detection**	
i.	Metals detectable	Ferrous, Non-Ferrous, Ferrite & Alloys
ii.	Uniform detection from top to bottom	Yes
iii.	Capable of Metal Detection in all orientations	Yes
iv.	Detect multiple objects of various size, weight and shape in all the zones simultaneously form head to toe	Yes
v.	Capable of Metal Detection in Walking speed of interception	Yes
vi.	Performance independent of the speed of person passing through	Yes
3.	**Alarm/Indication/Display**	
i.	Audio-visual indication on detection at size panels and control panel	Yes
ii.	Audible Alarm on detection with adjustable volume	Yes
iii.	Bar display to indicate detail location height on person	Yes
iv.	Audio-Visual Low Battery indication	Yes
v.	Back-lit Display	LCD/LED
4.	**Sensitivity**	
i.	Operational Frequencies	Auto
ii.	Number of User Selectable frequencies	10
iii.	Adjustable Sensitivity	Yes
iv.	Number of Sensitivity Levels / Steps	15
v.	Uniform Sensitivity in all zones	Yes
vi.	Calibration	Both manual and Auto Calibration
5.	**Security**	
i.	Revision to secure access to the control unit by a pass word protected alpha numeric keypad	Yes
ii.	Re-setting after alarm condition	Auto Re-set (auto) within 3 seconds

iii.	Walk/Stop indicator for traffic control	Yes
iv.	Control panel	Easy accessible control panel, with modular design and standard plugs and connectors. Adjustable controls should only be activated on insertion of a removable key and / or by password.
v.	User friendly self-testing diagnostics to identify faulty condition	Yes
6.	**Interference Suppression/Rejection**	
i.	Automatic synchronization for DFMDs Do not interfere with adjacent installed DFMDs located close to each other a distance upto	2 ft
ii.	Static Metal Compensation Not affected by heavily reinforced floors / roof tops / walls	Yes
iii.	High discrimination between small masses and personal metallic objects	Yes
iv.	Not affected by external RF transmission and EMI (Electro Magnetic Interference)	Yes
v.	Not affected by interference, which is mains borne or radiated by external source	Yes
vi.	Not affected by the operation of radio, mobile phones, walkie-talkie sets, X-ray monitors etc within a distance of one meter	Yes
vii.	Not affected by moving metallic items such as trolleys, opening / closing of metallic gate etc, one meter away from the archway	Yes
7.	**Health & safety**	
i.	Harmless to wearers of pacemakers, defibrillators or other vital support systems, pregnant women and magnetic storage media	Yes
ii.	Not affected by infrared, ultraviolet, electromagnetic or RF radiation	Yes
iii.	Conform to international security standards of Safety / Radiation	Yes
iv.	Harmless to magnetic media, electronic devices, film safe and Data safe	Yes
8.	**Operating Temperature Range**	-20°C to 55°C
9.	**Power Supply / Battery**	
i.	Source of Power	AC mains supply / by rechargeable battery
ii	Power Supply	220V ± 10% VAC

iii.	Battery	Re-chargeable, maintenance free, internal battery with charger
iv.	Battery Back-up in full function (hours)	16 ours
10	**Accessories**	
i.	One Standard Test Pieces for each machine for testing during commissioning/ maintenance	
ii.	Training tools-charts, slides, training brochure, training work model, blowup diagram, video films on demonstration and use etc	
iii.	Technical manual giving full description of the item, user's handbook and literature	
iv.	Availability of Spares for a period of 7 years after the warranty period	
v.	Ingress Protection	IP65 or better
vi.	Availability of Test Report	NABL/ ILAC accredited or Central Government Lab to prove conformity of products to the specification

1.5.3 Deep Search Metal Detector

Sl. No.	Parameters	Specification
1.	**Physical Characteristic-**	The detector and its accessories should be light weight and made of non-corrosive (exceptionally corrosion protected) material aluminium, carbon fibre etc. Material should have proven reliability and durability.
2.	**Weight and Dimensions**	(a) Search Head- The search head may be in any shape, i.e. circular, oval, rectangular. However, the total area of search head should be between 210 sq cm to 710 sq cm. (b) Length of Telescopic rod :- Search head should be connected with a telescopic rod which should allow prolonged usage by the operator in kneeling standing and lying position without causing undue fatigue for both minimum and maximum possible extension. The length of telescopic rod should be (i) Collapsed 700mm (± 10%) (ii) Extended 1600mm (± 10%) (c) Weight (i) Telescopic pole and search head - 2 kgs (max.) (ii) Electronic control unit - 2 kgs (max.) (iii) The maximum operating weight of the equipment including telescopic pole, search head and electronic control unit 4 kgs (max.) - (iv) Bag weight including accessories of detector 4.5 kgs (v) Total weight of the equipment including carrying case -11 kgs (max.)

3.	**Electronic Circuit**	It should be hermetically sealed and separate from batteries so that in case of battery leakage the electronic circuit is not damaged. The manufacturer will provide a certificate from a recognized laboratory for the same.
4.	**Detector Design**	Its design should allow its use both with and without earphone. The equipment must have volume control facility. Detector must give detection sound when operated without earphone. If earphone is used the detection sound should not be heard in open but only in earphone.
5.	**Control and Sensitivity**	It should must have a power control and sensitivity control to detect all type of ferrous/nonferrous metals.
6.	**Detection and Proximity**	It should must have a visual display to indicate detection and proximity of target metal. The LEDs should be bright enough to be visible in day light (Preferably on the hand grip or on search head).
7.	**Weapons, Bullet Proof Equipment & Bomb Disposal Equipment**	It should must have self-compensating capability to detect the metals in different type of terrain/soil/ water (including salt water). Certification to this effect will be provided by the manufacturer from a recognized laboratory,
8.	**Detection Capabilities**	(a) It should detect all ferrous and non-ferrous metals. (b) Must be capable of detecting buried mine/metals in (i) All type of soils including laterite (Ferrous and aluminium oxide) (Certification required from approved testing Labs.) (ii) Under water one ft. (iii) In all weather condition from arid to pouring rain. The equipment should meet in grass protection standard IP-67. (iv) Over the temperature range of -20°C to +55°C (Certification required from approved testing Labs). (v) Metal near metal: The equipment should be able to differentially detect two detonators No. 27/33 placed at a distance of one ft apart.
9.	**Detection Setting Procedure**	The detector should be operational and capable of being set for operation in air/metal free soil within 30 seconds of switching on of setting switch. Trigger level/threshold control to be provided.
10.	**Detection Sensitivity:**	The size and shape of the object with which the tests will be conducted are as under: (i) 0.15 gm metal - 1 inch x 1 inch tin foil. (ii) 50 mm nail - Thickness 03 mm and dia of head 06 mm. (iii) Salty Water-3 gm iodized common salt in 1 ltr. of water.

		The sensitivity of the detector must meet the following specifications: In Free Air: (a) 0.15 gm metal - 15 cm (b) 50mm nail vertical - 29 cm (c) 50 mm nail horizontal - 23 cm Under Ground: (a) 0.15 gm metal - 11 cm (b) 50 mm nail vertical - 27 cm (c) 50 mm nail horizontal - 17 cm In Clear water: (a) 0.15 gm metal - 11 cm (b) 50mm nail vertical - 28 cm (c) 50 mm nail horizontal - 19cm In Salty water: (a) 0.15 gm metal - 11 cm (b) 50mm nail vertical - 28 cm (c) 50 mm nail horizontal - 19 cm Detector must be capable of pinpointing detected metal to a 5 cm range. The distance will be taken from the centre of the search head to the centre of the object. Detection tone should be distinct from the working tone. The instrument should be free from radio and static interference.
11.	**Electrical Parameter**	The detector must be powered by standard size commercially available dry cells for 20 hours and rechargeable cell for 12 hours. Must have a facility to indicate low battery.
12.	**Transport, Storage and Transit**	The detector together with its accessories must come in a lightweight, durable compact back pack carry bag that is capable of surviving in all adverse environmental conditions. The back pack carry bag weight inclusive of detector accessories must not exceed 4.5 kgs. Weight of the complete detector in its bag and transport box must not exceed 11 kgs. Transport box should be rugged enough to with stand shock and drop from a 3 mtr. height, without suffering any damage to the transport box body or equipment (detector) kept inside it. Period of warranty of supplied equipment minimum 2 years. Manufacturer should agree to provide spares for 10 years from the date of supply

1.5.4 Non Linear Junction Detector (NLJD)

General

The Non-Linear Junction Detector is intended for searching devices and electronic components including Sim card in active or passive mode. The equipment should have the capability for simultaneous reception of the second and third harmonics of the probe signal and provision for audio & video indication for the operator to identify the nonlinear junctions

Sl. No.	Parameters	Specifications
1.	Weight & Bulk (inch)	23 inch X 3.75 inch X 3 inch (max.) 6Kg. including battery.
2.	Telescopic Pole	Should be collapsible type with a minimum extended length of 80cms or higher and should have firm clamps fasteners and the cable should be from the telescopic pole to the control unit be inside and no cable connector should be visible outside or better,
3.	Operational Environment	
a.	Operating Temperature	0ºC to 50ºC
b.	Storage Temperature	-20ºC to 60ºC
c.	Humidity	95% RH non-condensing humid condition without performance degradation.
4.	Technology	State of art technology using Digital Signal Processing (DSP).
5.	Transmitter Power	Should be less than 5 watts ERP (Effective Radiated Power)
6.	Frequency of Operation	Should work on spectrally pure RF fundamental frequency that many be fixed or variable 840-915 MHz
		Modulation:- AM/FM/ Pulse or continuous
7.	Mode of operation	Should have operational modes on 2nd and 3rd harmonics.
8.	Receiver Sensitivity	Should be – 130 dBm or better.
9.	Should have control function for	A. Volume B. Power selection-manual and automatic power selection should be provided
10.	Audio output	With and without headphone
11.	Display	Visual led display distinguishing both 2nd and 3rd harmonics.
12.	Test Target	Printed Circuit Board (PCB) with electronic components and electronic components including Sim card in active or passive mode, materials with Non Linear Junctions.

13.	Detection range	- Detect mobile phones in open space 0.50 meter or better. - Detect mobile phone in dug underground 0.10 meter or better. - Also detect mobile phones even when turned off. - Also should detect Sim Cards (1cm-2cm).
14.	Test False Alarm Rate	Should be less than 5%
15.	Battery	Rechargeable battery should provide minimum 4 hrs operation time on single full charge and a spare battery should be provided.
16.	Battery charger specifications	110 to 240 V. Battery Charger designed for fast recharging should be provided with battery charging indication.
17.	Activation	The system should not activate any radio controlled device in close proximity to search head with operating frequency within HF/VHF range.
18.	Miscellaneous	The firm should provide the following, as applicable along with the equipment:- - Special maintenance tools Kit - Operational training in Delhi - Use hand book and literature on preservation/ maintenance
19.	Warranty	Minimum 2 years with additional warranty of 2 years.

1.6. Detectors

1.6.1 Explosive Trace Detector (ETD) : Desktop (DT) Version

Sl. No.	Parameters	Specification
1.	Role	It should be capable to detect traces of Explosives and Narcotics.
2.	Detection Capacity	The equipment should be able to detect explosives such as RDX, PETN, NG, TNT, HMX, TATP and other explosives and should have the capability of detection of narcotics like Cocaine, Heroin, Amphetamine, Methamphetamine, MDA, THC and others.
3.	Detection Technology	Based on lon Trap Mobility Spectrometry/ lon Mobility Spectrometry/ Mass Spectrometry/ Energetic Materials Detection Technology or better.
4.	Sensitivity	Nanogram level
5.	Selectivity	2% typical false alarm rate and should not respond to non explosive/Non Narcotic substances.
6.	Carrier Gas	Detector system should not require the use of carrier gas.
7.	EMI/EMC	Operation should not be affected by Electromagnetic interference of other electrical/electronic devices.
8.	Indication	Both visual (through TFT-LCD display) and audio alarm signal
9.	Analysis Time	<20 sec per sample.
10.	Re-Calibration	Not more than 2 minutes
11.	Calibration	Automatic calibration
12.	Sample Collection	Surface wipe (Optional Sample collection unit as per user requirement)
13.	Power (AC Input)	220-240 V AC, 50Hz
14.	Battery Back Up	Optional. If required to be specified by the user
15.	Detection mode	Explosives only, Narcotics only, Explosives/Narcotics Simultaneously
16.	Weight	Less than 30Kg
17.	Operating Temperature	0°C to 40°C
18.	Relative humidity	0 to 95% RH non-condensing
19.	Safety Factor and Regulation	Should meet National Safety Regulations
20.	Data Transfer Capability	Should allow data transfer through USB and Ethernet port
21.	In Built On Board Printer	The Explosive Trace Detector should have in built on board printer

1.6.2 Explosives/Narcotics Detection System

Sl. No.	Parameters	Specification
1.	Detector Type	Ion Trap Mobility Spectrometer (ITMS)
2.	Analysis Time	Default 8 seconds
3.	Sample Acquisition	Surface wipe (particulate)
4.	Operating Temp	-30°C to 55°C
5.	Protection Rating	IP20 or better
6.	Power	External AC to DC Power Supply Input 100-240 VAC, -1.8 A, 47-63 Hz Output 15 VDC, 10 A, 150W
7.	Battery Backup	Up to 60 minutes
8.	Solid State Drive	256 GB or better
9.	Operating System	Linux
10.	Display	10.4 in (26.4 cm) LCD monitor with resistive touch screen
11.	Signal Processing	Recognition on multiple peaks and explosives - Output to 4 different display types, including bar graph or time-of-flight plasma gram
12.	Detection Capabilities	Explosives only, Narcotics only. Explosives/Narcotics Simultaneous. Aviation certified configurations will be explosive only
13.	Data Transfer	Two USB 2.0 ports; Ethernet port
	Hysical Specifications Dimensions Net Weight (Approx)	L 500 mm (19.8 in) open 460 mm (18 in) closed W 480 mm (18.9 in) H 380 mm (14.9 in) open 180 mm (7.1 in) closed 12.99 Kg (28.65 lbs)

1.6.3 Handheld Trace Detector

Sl. No	Parameters	Specifications
1.	Technology	lon Mobility Spectrometry (IMS) technology
2.	Detection	
	• Drugs	Cocaine, Heroin, THC, Methamphetamine and others
	• Explosives	RDX, PETN, TNT, Semtex, NG, Ammonium Nitrate and others
	• Chemical Weapons	Nerve and blister agents such as Tabun, Sarin, Soman, Cyclosarin, Agent VX and Vx, Nitrogen Mustard 3 and others
	• TIC	Hydrogen Cyanide (HCN), Phosgene, SO_2, NH3. Etox, HNO3, HCI, Cl_2, and HF
3.	Display	3.5 inch TFT color display
4.	Ready Time	10 minutes from cold start (Max.)
5.	Analysis Time	15 seconds (Max.)
6.	Weight (with battery)	3.5 kg (Max.)
7.	Size	40 x x15 x 15 (Max.) in Cm

1.7 Perimeter Fencing

1.7.1 Concertina Fencing (Short Blade Razor Wire)

Sl. No.	Specification
1.	Diameter of Punched Tape Concertina Coils: 600 mm
2.	Number of spiral Turns per Coil: 50
3.	No. of G.l. clips per spiral pair 5.
4.	No. of clips per coil: 127
5.	Thickness of G.I. Spring Steel High tensile core wire: 2.59 mm (As per IS 4454)
6.	Thickness of G.I. Strip: 0.50 mm-Cold Drawn Low Carbon strip (As per IS 277)
7.	Zinc coating of Spring steel core wire: 230 GSM (As per IS 4454)
8.	Tensile strength of spring steel care wire: 150 to 165 kg/sq mm (As per I5 4454)
9.	Width of G.I. Strip/barb: 19 mm before wrapping on central core wire
10.	Recommended stretch length per coil: 6 Meters
11.	Uniform Pitch between the Sharp barbs: 24 mm (Centre to Centre)-Barb spacing
12.	Length of each barb: 10.50 MM- Standard Short barb (BT0-10)
13.	Thickness of 55clip: 1.50 MM (SS Grade 304)
14.	Packing of Concertina Coils to be done with Jute Cloth or Plastic wrapping.
15.	Gross Weight Per Coil: 8.25 Kg (Approx.)
16.	Running Length of wire per coil: 95meter (Approx.).
17.	NABL Accredited Lab Certificate should be provided by the bidder for complying the concertina coil
	Support wire
18.	Reinforced Barbed Tape (BRT) This is required to hold the concertina coil to angles. Should made out of high tensile material
19.	Thickness of G.I. Spring Steel High tensile core wire: 2.59 mm (As per IS 4454)
20.	Thickness of G.I. Strip: 0.50 mm- Cold Drawn Low Carbon strip (As per IS 277)
21.	Zinc coating of Spring steel core wire: 230 GSM (As per IS 4454)
22.	Tensile strength of spring steel core wire: 150 to 165 kg/sq mm(As per IS 4454)
23.	Width of G.L. Strip/ barb: 19 mm before wrapping on central core wire
24.	Uniform Pitch between the Sharp barbs:24 mm (Centre to Centre)- Barb spacing
25.	Length of each barb: 10.50 mm-Standard Short barb (BTO-10)
26.	Gross Weight Per Coil: 8.00 Kg (Approx.)
27.	NABL Accredited Lab Certificate should be provided by the bidder for complying the Support wire specification

	Supporting Angle Structure
28.	Y structure to support Concertina Coil and Support wire
29.	Should be made up of Gl angle of size not less than 40x5mm
30.	Zink coating on MS angle should not be less than 86microns 610 GSM
31.	Bottom Leg size of Y structure not less than300mm and side legs should be 400-450 mm
32.	NABL Accredited Lab Certificate should be provided by the bidder for complying Support angle structure specification
	Installation
33.	Distance between two Y Structure should be approximate 2.4 meter-3 mater
34.	Support Wire should fix the Concertina coil through 4-5 point for Its firm support
35.	Concertina Coil should hold at least 4-5 point on the GI Angle (Y Structure)
36.	4-5 support wire should use support Concertina Coil through upper of the of the Y Structure and 3-4 support wire should use parallel to each other through the bottom leg of the Y structure. Distance between the parallel wire should not be more than 100 mm.
37.	G Clipping hook must have diameter of 1.5 mm that can punch through punching tool
38.	Clipping should be done on each and every running coil with running support wire.
39.	Y type Gl structure should fasten on wall with at least 4 no. of 12 mm 100mm Fasteners
40.	Prepared height should not less than 2.75-3 feet above the wall.
41.	Warranty should be of minimum 3 year

1.7.2 Perimeter Pulse Fence for Prison

Supply, installation and commissioning of a pulsed perimeter detection & deterrent security system in accordance with appropriate local and international standards and the technical and performance criteria set out in this document. Specification of the energizer will be in accordance with the International Standard IEC 60335-2-76.

Alarm Monitored Pulse Fence on top of wall:	
Length of Fence	To be defined by user
Length of each zone	100-150m
Configuration	Live Earth
Number of Zones	To be defined
Number of Fence controllers	To be defined
Configuration of fence	1.5 mtr 16 lines - Internal Unscalable

Sl. No.	Specifications
1	**Central Monitoring Station**
1.1	**General**
I.	The Central Management System (CMS) Software shall use the Latest Microsoft Windows OS and SQL Databases.
II.	The system shall automatically log and time / date-stamp all events within the system including intruder alarm set/unset events, operator actions and activity.
III.	The central control software shall be easy to use, make extensive use of menus and windows and require a minimum of operator training to operate the system proficiently.
IV.	The central control must be capable of receiving simultaneous alarm signals from a number of remote locations without loss or excessive delay in their presentation to the operator. Any authorized operator should be allowed to acknowledge, view and/or process an alarm from any screen.
V.	The central control shall be fitted with a real-time clock, the accuracy of which shall be preserved over the period of main power supply failure. Synchronization between the central control and Ethernet connected Intelligent Field Controller Controller's shall be automatic and not require operator intervention.
VI.	Operator selection of processing tasks shall be via menu selections. Authorized Operators shall be able to process alarms, produce reports and modify database records without degrading system performance.
VII.	The following is the minimum operational and monitoring facilities required. The ability to: • Monitor the status of all Field Fence Controllers • Monitor the status of all Fence Zones • Arm/Disarm of all the Fence Zones • Acknowledge / Process Alarms
VIII.	Log all system and operator activity as they occur.
IX.	Program alarm response instructions into the system so that these are presented to the Operator when processing an alarm event.
X.	Enable an Operator to enter messages against alarm events. This shall be configurable to be compulsory based on the operator who is logged on.
XI.	Configure user-definable hot keys to allow the operator to enter commonly used comments when entering messages related to alarms. For example, F1 = False Alarm, F2 = User Error, etc.
XII.	The central control shall display a one-line plain language event message for every activity event (alarm or otherwise) occurring in the system. All activity logged shall be time and date stamped to the nearest second (hh:mm:ss). On having the appropriate operator authorization, it shall be possible to drill down into the properties of each component that makes up that event for future details. The event message shall advise:

	• Time of event created at the Intelligent Field Controller. • Time of the event received at the central control system. • Event/Alarm Description • Event/Alarm Source • Event/Alarm Type
XIII.	All operator activity including log on, logoff, alarm response messages and any alteration of system data files.
XIV.	All alarm monitoring activations.
XV.	All communications link failures.
XVI.	The system shall provide a detailed operator help file. This help file shall provide operators with text, audio and video help instructions and tutorials.
1.2	**Alarms Management**
I.	The Security Management System (The System) shall provide entry and exit delays for the setting (arming) and unsetting (disarming) of alarms.
II.	The entry delay shall be configurable from 0 to 999 seconds in increments of one second.
III.	An optional audible warning must sound during the entry delay (from the time the alarm occurs to the time that the Zone state is changed). It must be possible to designate specific Alarm Management Keypads to sound entry delay warning beeps.
IV.	The exit delay shall be configurable from 0 to 999 seconds in increments of one second.
V.	An optional audible warning must sound during the exit delay (from the time that the alarm occurs to the time that the zone state is changed). It must be possible to designate specific Keypad to sound exit delay-warning beeps.
VI.	The system shall include Alarm Escalation as an event. The new event shall correspond to the original alarm, but may have a different (usually higher) priority, and may require a different set of alarm relays to operate.
VII.	Escalated alarms shall be able to be displayed in a window specifically provided for this purpose.
VIII.	Alarms shall be able to be escalated under the following conditions: • Escalate if alarm not acknowledged for a period of time. This must be configurable from 0 to 999 seconds in increments of one second. • Escalate if the alarm remains in an active state for a period of time. This must be configurable from 0 to 999 seconds in increments of one second. • Escalate if zone contains a user-defined number of alarms. This must be configurable from 0 to 99. • Escalate if there are two events from same point within a user-defined period. This must be configurable from 0 to 99. • Escalate if there are two events from different points in same zone within a user-definable period of time. This must be configurable from 0 to 999 seconds in increments of one second.
IX.	It shall be possible to have automatic schedule based Arming and Disarming

X.	It shall be possible to configure the system such that events (such as a operation of a key switch connected to an input) can change the state of a zone.
XI.	Authorized cardholders/users shall be allowed to arm and disarm alarm zones by loggng into the Keypad using their PIN/User Code.
XII.	It shall be possible to arm and disarm multiple alarm zones from an Alarm Monitoring Keypad.
XIII.	All alarm occurrences shall be presented at The System within 5 seconds of their occurrence at the remote field device.
XIV.	All Alarm events shall be viewable from an Alarm Stack.
XV.	It shall be possible to view all alarm events by clicking on interactive Site Plan icons that, because of their changing audible and visual states, indicate the presence of alarms.
XVI.	All alarm events arriving at the central control shall be time-stamped with the time they occurred and the time they were logged at The System.
XVII.	All alarm events shall have a user-definable alarm priority assigned. A minimum of 8 alarm priority levels plus non-alarm event and ignored shall be provided.
XVIII.	It shall be possible to assign a different audio warning sound to each alarm priority.
XIX.	Incoming Alarms shall be presented in the Alarm stack according to their assigned priority with the highest level at the top. Alarms with the same priority shall be presented in time order.
XX.	The priority of Alarms in the alarm stack shall be identifiable by a user definable colour.
XXI.	Identical consecutive alarms that occur within a predefined time span shall be report as a single alarm with the number of occurrences reporting as a flood alarm quantity.
XXII.	The System must be able to control the actual priority assigned to any alarm activation throughout the day. This means any alarm activation may be programmed as 'Low Priority' during office hours and 'High priority' at all other times.
XXIII.	Operators shall be required to complete two-stage alarm processing as: Acknowledge Alarm. An Acknowledged alarm shall remain in the alarm stack and be easily identified as having been acknowledged but not yet processed.
XXIV.	The central control shall record in the hard disk activity log that the operator has acknowledged the alarm. An alarm is 'acknowledged' by the operator selecting the 'Acknowledge' button in the alarm-viewing window.
XXV.	A second alarm from the same source as the acknowledged alarm shall be indicated as a new alarm. • Process Alarm. • A Processed alarm shall clear from the Alarm Stack.
XXVI.	The central control shall record in the hard disk activity log that the operator has processed the alarm. An alarm is processed by the operator selecting the 'Process' button which is displayed in the alarm viewing window.

XXVII.	The system shall allow an operator to multi-select contiguous or non-contiguous alarms in the list in order to add a note, acknowledge or process all selected alarms in one action.
XXVIII.	The alarm list shall support mandatory fields of alarm time, alarm priority and alarm state.
XXIX.	The System shall allow a suitably privileged operator to configure any of the following additional fields to be visible in the alarm list and to configure their order: • Full alarm message • Related cardholder/operator name • Acknowledging operator name • Alarm Zone • Alarm source • Count (occurrences of alarm) • Event type • Event group • Division of the alarm source
XXX.	It must be possible for an operator to sort the alarm list by any of the available fields.
XXXI.	The system shall display a summary of alarms, by priority, which is visible to the monitoring operator at all times and updated dynamically as new alarms occur or existing alarms are on action.
XXXII.	The alarm summary shall indicate if there are any unacknowledged alarms for a given priority.
XXXIII.	The system shall allow configuration of filtered alarm lists. Alarm lists shall be filterable based on any combination of selected divisions, escalation status or alarm priority
XXXIV.	The system shall allow different information to be configured and displayed to a monitoring operator based on the type of alarm.
XXXV.	An active alarm shall not be able to be finally processed and cleared from the Alarm Window until the cause of the alarm has been removed and the alarm condition has returned to the normal state.
XXXVI.	Should have CCTV integration; on any event CCTV should focus on the particular event zone and video pop-up should come to PIDS software and can have the live stream from PIDS software only.
1.3	**Audit Trail**
I.	The Server hard disk shall be used to record all system activity for archiving purposes. It shall not be possible to alter archived data.
II.	Every system activity event along with all details, including but not limited to the following list, shall be time stamped with the time of occurrence at the Intelligent Field Controller and also the time the event was received by The Server, to the nearest second, and shall be recorded in the system activity log for archiving.

	• All access attempts (allowed and disallowed) • Alarm events • System events
III.	The central control shall provide an on-line facility to archive system data and event records to an archive file to free hard disk space for further activity logging.
IV.	It shall be possible to archive the data to a network device by specifying the UNC path.
V.	The archive process shall be initiated by either manual operation or automatically by time.
VI.	It shall be possible to nominate the number of days of data that shall remain on the server subsequent to an archive process.
VII.	It shall be possible for an operator to view filtered event trails, e.g. for filtered for selected site items.
2	**Alarm Monitored Pulse Fence Controller (Electric Fence Controller):**
I.	The Alarm Monitored Pulse Fence (AMPF) Controller shall deliver an electric pulse through the fence wires to maximize the intruder deterrent and detection capabilities whilst meeting global safety standards. IEC 60335-2-76 & IS302-2-76
II.	The AMPF Controller shall operate in a networked environment and be controlled and monitored by the Security Management System software (The System).
III.	The AMPF Controller shall generate pulses at intervals of not less than 1.1 seconds.
IV.	The AMPF Controller shall be available as a Single Fence Circuit (Single Zone) or Dual Fence Circuit (dual zone) option.
V.	Maximum energy delivered to a load of 500Ω must be less than 5 Joule
VI.	The electric fence pulses shall be synchronized so that the pulses on adjacent fence sections occur within time intervals as permitted, i.e., all zones pulsing at the same time, as a single pulse throughout the system
VII.	The AMPF Controller shall operate within an ambient temperature range of -20˚C to +50˚C
VIII.	The AMPF Controller shall have temperature sensors to monitor the internal temperature of its enclosure and adjust performance as follows: • above 60˚C: Warning with Relay output to control external cooling Fan • above 75˚C: Indication and reduce the pulse rate to maintain the internal temperature • above 85˚C: AMPF must stop the pulse a turn off
IX.	The AMPF Controller shall have indicator LEDs on the front panel to indicate the following: • Over Temperature alarm • Service Alarm • Tamper • Mains Power Failure • Battery test failed or battery missing • High Voltage Mode

X.	• Low voltage mode. • Fence circuit pulsing with return voltage measurement in the form of a Bar-LED indicator. • Synchronization status: i. Off ii. Synchronization conflict iii. Correct synchronization
XI.	The AMPF Controller shall have Service Mode to allow a service technician to isolate and locally control fence circuits.
XII.	An event shall be send to the system when the AMPF Controller is in Service Mode.
XIII.	The Service Mode shall be capable of being enabled from the System and using Magnetic Key for Alarms Management (Clearing historic alarms) and Local control whilst diagnosing and maintain fence (Service Mode).
XIV.	The AMPF Controller shall provide Internal battery management as follows: a) Trickle Charge Slow charge rate when battery is below 10 VDC. b) Bulk charge Maximum charge rate for fast battery recovery. c) Float Charge Slow charge rate to accommodate temperature variations. d) Battery Save Reduce electric pulse rate to save battery power
XV.	e) The AMPF Controller shall support external power supplies such as additional backup batteries.
XVI.	The AMPF Controller shall support self-discovery on The System.
XVII.	AMPF Controller shall contain a unique serial number.
XVIII.	Data communication rate between Intelligent Field Controllers and the AMPF Controller shall be on RS485
XIX.	Data communication between Intelligent Field Controllers and AMPF Controllers shall use a minimum of 128 bit AES encryption.
XX.	No of Zones per Fence Controller: 2
2.1	Zone Configuration: HV-Earth
I.	Energy per Zone: Min 2.3Joules independent of other Zones
II.	Fence Voltage: HV Range: 6KV~8KV Low Feel: 0.4KV~1KV
III.	Communication: RS485 Encrypted (2Wire)
IV.	Output: Min 2 Nos, Voltage Free Contacts
V.	Inputs: Min 2 Nos
VI.	Pulse Rate: 1 pulse every 1Sec~2.5Sec (Mandatory; No pulse to repeat within 1 Sec)
VII.	Sync Option: Mandatory
VIII.	Operating Voltage: 230V AC 50Hz
IX.	Internal Battery Capacity with charger: 12V 7 Ah
X.	Operating Temperature: -20˚C to 50˚C

XI.	Power Consumption: 40W~60W
XII.	Compliance: CE, FCC, RoHS, EN60335.2.76, IEC60335-2-76
XIII.	HV plus mode: When an attack is detected on a fence, the Fence Controller will automatically transition to HV plus mode. HV plus mode increases the deterrent to 10 kV for a period of 20 minutes. Only fences armed in High Voltage mode can transition to HV plus mode. Fence controller configurable settings: The following settings should be able to be configured within each fence controller through security management software: • All inputs shall be programmable • All outputs shall be programmable • Output power level • Output pulse rate • Lower alarm voltage thresholds per fence zone • Upper alarm voltage thresholds per fence zone • Lower maintenance alarm voltage thresholds per fence zone • Upper maintenance alarm voltage thresholds per fence zone • Upper Earth alarm threshold • Alarm pulse count per fence zone • Low Battery alarm voltage • Slow pulse rate battery voltage • Stop battery alarm voltage • Pulse rate • Slow pulse rate • Fence voltage logging by voltage change per fence zone • Fence voltage logging by time interval per fence zone • Battery voltage logging by voltage change • Battery voltage change by time interval • Automatic temperature management • Automatic S/W upgrades
3	**Intelligent Field Controller**
I.	The Intelligent Field Controller shall be the main controller in the system for all the AMPF. The Security Management System (The System software) shall communicate directly with all Intelligent Field Controller's.
II.	The Intelligent Field Controller shall store on-board all the security and Perimeter fence / access parameters to operate completely independently. Systems that rely on the central control server for Perimeter fence decisions will not be considered.
III.	The Intelligent Field Controller shall buffer activity data and immediately transmit it to the central control server upon reestablishment of communications.

IV.	Should communications fail with The System, each Intelligent Field Controller shall be capable of buffering up to 80,000 events.
V.	All events shall be time-stamped at the Intelligent Field Controller at the time of occurrence.
VI.	Systems that only time stamp the event upon receipt at the central control PC shall not be acceptable.
VII.	The Intelligent Field Controller shall operate from a separate battery backed 13.6V DC supply.
VIII.	The Intelligent Field Controller shall continue to operate for at least 24 hours in the event of a mains supply failure.
IX.	Intelligent Field Controller's shall automatically restart and resume processing following a power failure.
X.	The Intelligent Field Controller shall contain its own real time clock. The clock shall be synchronized with the central control server clock at least once per hour. The accuracy shall be such that the time difference between Intelligent Field Controller's shall not vary more than 0.5 second at any time.
XI.	The Intelligent Field Controller shall have an on-board Ethernet (TCP/IP) connection and driver supporting 10BaseT and 100BaseT operation. Third party plug-in RS485/Ethernet modules will not be accepted.
XII.	The System and Intelligent Field Controllers shall have IPv6 address support along with IPv4
XIII.	All data communication between The System and Intelligent Field Controller's shall be encrypted using an industry standard symmetric encryption algorithm equivalent to 128-bit AES or stronger.
XIV.	Communication Port: 10/100 BaseT Ethernet Port
XV.	Field Accessories Communication: RS485 x 2 Ports
XVI.	Data Storage: 80,000 Buffer Events
XVII.	Input Power: 12V DC
XVIII.	Power Supply: SMPS with Battery Charger: 12V 7AH
XIX.	Compliance: CE, UL, FCC
XX.	IP66 RATED Console box for Intelligent Field Controller, AMPF and accessories should be provided.
4	Fence Accessories:
I.	Fence Wires: • HT Wire 2.59mm wire with electrical resistance 30 Ohms per KM • Rust free • High conductivity

II.	Double Insulated Cables • Double insulated HT cables must be used to connect the Fence Controller / energizer output connectors to the fence conductor wires of the perimeter fence • 2.5MM GI Wire Double Insulated with HDPE outer Insulator Black and PP Inner Insulator • PP insulation 1.4MM and HDPE 1MM Thickness • Electrical resistance as 35 Ohms per KM Zinc coating of 230gm per Sq Mtr
III.	Insulators • Breakaway Insulator made of HDPE with UV Protection color black and designed to break when 25Kg Load is applied vertically (Anti Climb) • Pull Through Elevator Insulator made of UV Stabilized glass filled nylon with maximum wire tension at 60kgs (long term load) and 200kgs (peak load) • Operating temperature: -10˚C to +60˚C • Dielectrical (Arcing Voltage) 15KV • Post (End / Corner / Support) • 50NB MS Hot Dip Galvanized pipe for wall top fence. The Post should have inclined internal unscalable design. • For wall top fence 1.5mtr the grouting should be minimum 300mm. • End post should have minimum of one support post of equal length to post, fixed diagonally in direction of the fence wire • Corner post should have minimum of two support post of equal length to post, fixed diagonally in direction of the fence wire in both direction • Suitable mounting Flats welded to the post to fasten the Metal Profile (Kiwitah) • All accessories suitable to close the end, Clamps to Mount the support, Fasteners to mount the Metal Profile, etc. • 32NB minimum MS Hot Dip Galvanized for Support post with round profile (Pipe) • Holdfast should be used in case of grouting • All structural climb points must be fitted with extra alarm monitored and anti-climb protection against intrusion.
IV.	Intermediate Post (Kiwitah) Security pulse monitored fence Kiwitah Post with internal Unscalable design • 1mm Profile rolled from Cold Rolled MS and hot dip galvanized to a min thickness of 60Microns • Holes equally spaced on profile not less than 91mm to hold Insulators / Hooks • Profile should be Pointed Top to prevent climbing • Holdfast should be used in case of grouting • For wall top fence: 1.50Mtr intermediate security perimeter fence post above the wall / passive barrier level + 200MM grouting minimum.

V.	Warning sign • Warning sign board made of PP with UV protection of Size 245mmx145mmx3mm in yellow color with Black Lettering The warning messages shall be in Local Language, Hindi and English.
VI.	Earthling • Earth kits must be used at the beginning or end of each zone, at a maximum distance of 50m apart • Three (3) earth pegs, 1.8m apart in a triangle layout or 3.0m apart in straight line, must be provided at each Fence Controller / Energiser • Minimum of 4KG Bentonite Mixture poured in earth hole of 75MM dia with center earth rod made of 10MM Stainless Steel • Connected with Double insulated cable & terminated with Hot Dip Galvanized Clamps with M8 Stainless Steel fasteners
VII.	Fence Live Indicator • Show fence is live: Flashing light should confirm the fence is working effectively • No Battery: Should use power from the fence • High Visibility: LED light should flash to indicate fence is working effectively. Should be easily visible during day and night (up to 1km at night) • Should be Quick and Easy Installation: Simply clip onto fence wire and clamp the earth stake onto an earth wire or part of the earthed fence structure** • Low Voltage Cut Off: Should not flash if the fence voltage is too low (approximately below 2kv) • Long Life: Water and UV resistant
VIII.	Specifications of Audio Hooter Hooter shall be installed at every zone. Hooter output shall be not less than 85dB with horizontal mounting. One hooter shall be installed in/near CMS area and one Hooter is required at each Fence Controller Location.
5.	All hardware with requirement namely Viz computers with peripherals , CCTV, Cables Energizing systems, face meter, Battery , switch , Monitor are to be decided by indenter.

****Note-** User needs to defined whether its requirement is IP based wired. This exercise need to be done after careful consideration of security scenario in an around division.

1.8. Bullet Resistant Items

1.8.1 Bullet Proof Morcha (Medium)

Sl. No.	Description
1.	Features: • It has six firing slots on three sides and firing can be done in knee bent position as well as standing position. • Position of firing port can be defined by user. • Easy to erect and dismantle even by a small team of soldiers. • It can also be made as fixed or can be used as Mobile Morcha with the help of adjustable wheels. • Each plate of Mobile Morcha has easy locking arrangement for assembling and dismantling. • Angle of the side plates provides coverage from three directions i.e. front, left and right. • There is provision of two handles on each of three separate plates in order to carry them from one place to another. • The thickness of the BP Plates and design are highly customizable and can be improvised as per end user requirements. • All the welding joints of Bullet proof morcha have strength of at least 120000 PSI in order maintain the strength of the structure. • The roof of the morcha is designed in such a manner that neither water nor any other object shall hold on it. • Since the bullet proof morcha is to be used open environment, each plate is treated with Zinc based multilayer plastic coating as per ISO EN 7253/ ISO 9227 in order to provide protection from corrosion. The material have passed salt testing period of minimum 2000 hrs.
2.	**Color:** Color of the BP Morcha as per user choice.
3.	**Coverage :** Angle of the side plates to provide coverage from three directions i.e. front, left & right.

<table>
<tr><td>4.</td><td>Dimension of Plate
<table>
<tr><th></th><th>Centre</th><th>Right</th><th>Left</th></tr>
<tr><td rowspan="2">Height (mm)</td><td>1900 ± 10 mm</td><td>1900 ± 10 mm</td><td>1900 ± 10 mm</td></tr>
<tr><td>(without roof)</td><td>(without roof)</td><td>(without roof)</td></tr>
<tr><td>Width (mm)</td><td>750 ± 10 mm</td><td>750 ± 10 mm</td><td>750 ± 10 mm</td></tr>
<tr><td>Thickness (mm)</td><td>14 ± 0.5 mm</td><td>14 ± 0.5 mm</td><td>14 ± 0.5 mm</td></tr>
<tr><td>Firing Slot</td><td>(175 ± 5) x (125 ± 5) mm</td><td>(175 ± 5) x (125 ± 5) mm</td><td>(175 ± 5) x (125 ± 5)mm</td></tr>
<tr><td>View Port</td><td>(150 ± 5) x (150 ± 5) mm</td><td>(150 ± 5) x (150 ± 5) mm</td><td>(150 ± 5) x (150 ± 5)mm</td></tr>
</table></td></tr>
<tr><td>5.</td><td>Roof Cover:
275mm±5mm BP Steel Roof of 6.5mm thickness for protection against all weather conditions.</td></tr>
<tr><td>6.</td><td>Protection Level: NIJ Level IV
• Each Plate is able to provide following protection level:
• 7.62 x 54mmR (Dragunov) – Single fire from a distance of 10 mtrs
• 7.62 x 51mm (SLR) – Burst fire of 6 shots from the distance of 10mtrs
• 7.62 x 39mm (AK-47) (HSC) – Burst fire of 6 shots from the distance of 10mtrs
• Roof is able to provide following protection level:
• 7.62 x 51mm (SLR) – Burst fire of 6 shots from the distance of 10mtrs
• 7.62 x 39mm (AK-47) (HSC) – Burst fire of 6 shots from the distance of 10mtrs</td></tr>
<tr><td>7.</td><td>Material (B.P. Steel)
• Armored Steel being used to manufacture the morchas is approved / tested by TBRL / GFSU/ CFSL or equivalent National/ International laboratory.</td></tr>
</table>

Note: User may also refer BIS standard IS 17525:2021 for more details and further clarifications

1.8.2 Bullet Proof Security Post

<table>
<tr><th>Sl. No</th><th>Description</th></tr>
<tr><td>1.</td><td>

It is conveniently assembled and dismantled.
Each plate of the Security post is independent of Welding joints, it is a Single plate at time of manufacturing for better strength.
All welding joint used in hinges have min. strength of 1.28 Lac+ psi.
Dimension:-

<table>
<tr><th>Height</th><th>Width</th><th>Thickness</th></tr>
<tr><td>7’</td><td>3’</td><td>6.5 mm</td></tr>
</table>

Protection level:-Each plate provides following protection level at 90 degree angle.
i) 6 shots from SLR (7.62 mm x 51mm) at 90 degree from a distance 10 meters.
ii) 6 shots from AK-47 (7.62mm x 39) at 90 degree from a distance of 10 meters.
iii) 6 Shots from INSAS (5.56mm x 45mm) at 90 degree from a distance of 10 meters.
The roof top is designed in manner that neither water nor any other objects holds on it.
The shape & size of Observation Tower as well as windows can be modified as per customer requirement.
All the steel & other metallic ports are treated by rust & corrosion as per IS 4759.
Colour: Colour of the Bullet Proof Security Post as per user choice.
Material (B.P. Steel): Manufacturer of Armour Steel is approved / Registered with TBRL / CFSL or equivalent International laboratory.

</td></tr>
</table>

1.9. Jammers

1.9.1 Static RCIED Jammer

Sl. No.	Parameters	Specifications
1.	Frequency Range	From 20 MHz to 2.4 GHz or more
2.	Jamming Range	Not less than 75 Meters radius
3.	Power Output	To cater for 75 M radius Jamming range in each Band.
4.	Communication Windows	Preferably provision for programmable window.
5.	Power Source	Both AC and DC operated i) AC : Voltage: 220 V ±10% Frequency: 50 Hz ± 2% ii) DC : 12/24 V rechargeable, maintenance free Batteries.
6.	Mode of deployment	Vehicle Mounted
7.	Antenna	Omni Directional
8.	Cooling	Air cooled
9.	System activation time	Maximum 10 Minutes from time of switching ON
10.	Shelter	Should be able to protect equipment from adverse climatic conditions and it should also be as per the requirement equipment.
11.	Operational Temperature	-10°C to +55°C
12.	Protection of Humans	Facility for protection of health of personnel working for prolonged periods, with in the radiation zone of the Jammer
13.	Misc.	Repair backup in the country, supply of spares and training be provided.

1.9.2 Vehicle Mounted RCIED Jammer

Sl. No.	Parameters	Specification
1.	Frequency Range	From 20 MHz to 2.4 GHz or more
2.	Jamming Range	Not less than 75 Meters radius
3.	Power Output	To cater for 75 M radius Jamming range in each Band.
4.	Communication Windows	Preferably provision for programmable window.

5.	Power Source	Both AC and DC operated i) AC : Voltage: 220 V ±10% Frequency: 50 Hz ± 2% ii) DC : 12/24 V rechargeable, maintenance free Batteries.
6.	Mode of deployment	Vehicle Mounted
7.	Antenna	Omni Directional
8.	Weight	Should be such that it does not affect the mobility of the vehicle adversely.
9.	Size	Should be easily accommodated in a light vehicle of SUV category along with two operators and drivers.
10.	cooling	Air cooled
11.	System activation time	Maximum 10 Minutes from time of switching ON
12.	Vehicle platform	Any Indian SUV of TATA/ Mahindra & Mahindra make with hard top.
13.	Operational Temperature	-10ºC to +55 ºC
14.	Protection of Humans	Facility for protection of health of personnel working for prolonged periods, with in the radiation zone of the Jammer
15.	Misc.	Repair backup in the country, supply of spares and training be provided.

1.9.3 Cell Phone Jammer

Sl. No.	Parameters	Specifications
1.	To jam	CDMA/GSM900/GSM1800/3G (up gradation to 4G)
2.	Form	Indoors, wall mounted, compact
3.	Coverage:	For indoors
4.	Technology:	Swept Frequency Technology
5.	Jamming Frequency Bands	
(i)	CDMA	869-894 MHz
(ii)	GSM900	925-960 MHz,
(iii)	GSM1800	1805-1880 MHz
(iv)	3G	2110-2170 MHz
6.	Power Output	20W (5W per BAND)
7.	Antenna	5dB & 90 HPBW
8.	Power Source	220V AC, 50 HZ

9.	Indication	Single LED for ON/OFF & status of all bands
10.	Operating Temp	-10 °C to 55°C
11.	Humidity	5% to 90% RH
12.	Dimensions:	300x300x100mm (unit size)
13.	Weight:	3 kg
14.	Features:	24x7 Operation & Monolithic thermal

1.9.4 Cellular Phone Locator

The Cellular Firewall and Locator provides a real-time cellular active detection and locating identified mobiles. The system will be equipped with appropriate directional/Omni directional/ sectorial antennas for providing surveillance coverage. The denomination of system deployment would be based on specific area anaphoric conditions

Features

1. The Cellular Firewall & Locator modular tactical 2G, 3G, 4G & 5G (NSA) cellular system that provides its user with the following advanced capabilities:

- **Cellular Identity**
  - IMSI / IMEI and more
  - Presence Detection
- **Active Positioning**
  - Native active positioning capabilities in 2G, 3G & 4G
  - First Mile – TA/RTT
  - Last Mile – Direction Finder
- **Scalable, Modular and Upgradable system**

Optional Features include:

- **Cellular Service Managed Access (White-List / Black-List)**

  Manage cellular access and services for authorized/unauthorized lists

- **GSM, UMTS and LTE Smart Blocking**

  Provides a smart cellular phone blocking for 2G, 3G, 4G & 5G (NSA) networks

2. Locator to extract initial location of the target or all in the area of coverage should implement methods like TDOA (Time Difference of Arrival), AEL (Advance Estimated Location) & angle of arrival (DOA- Direction of arrival).

3. The Locator should offer a management system that allows tracking of all the deployed DF devices/agents and to view their location.

4. The system is on the move; the system's trail should be displayed on underlying map.

Technical Specifications (Cellular Locator)

Cellular Firewall & Locator	System should be full SDR support and have capability of acquiring IMSI/IMEI of various phones (2G/3G/4G) in the coverage area natively. Pinpoint the exact position of a target's mobile phone over GSM, UMTS and LTE when running in conjunction with a dedicated Handheld DF homing device support TDOA feature Last Mile Active Positioning with Direction Finder in Native LTE (4G)
User Interface	It should be simplified for operation by automating the technical. Configuration of the system according to the type of operation.
Scheduler	Allows setting operations in advance by scheduling pre-defined transmission configurations to future times.
Firewall (selective blocking)	Block or deactivate devices using GSM, UMTS and LTE networks. Should have capability of creating a white list of phones that should be allowed to operate while rest others should be black listed/blocked or vice versa.
Frequency Bands	**GSM (2G)** GSM-850 (824.0-849.0 / 869.0-894.0), P-GSM-900 (890.2-914.8 / 935.2-959.8), DCS-1800 (1710.2-1784.8 / 1805.2-1879.8), PCS-1900 (1850.0-1910.0 / 1930.0-1990.0) **UMTS (3G)** UMTS I 2100 (1920-1980 / 2110-2170), UMTS II 1900 (1850-1910 / 1930-1990) UMTS IV 1700 (1710-1755 / 2110-2155) UMTS V 850 (824-849 / 869-894) UMTS VII 900 (880-915 / 925-960) **LTE (4G)** E-UTRA I 2100, E-UTRA II 1900, E-UTRA III 1800, E-UTRA IV 1700, E-UTRA V 850, E-UTRA VII 2600, E-UTRA VIII 900, E-UTRA XX 800 **5G -** NSA Supported Band Should support TDD band 2300,2500 without shifting to FDD
Accurate Localization	It should pinpoint the exact position of a target's mobile phone over GSM, UMTS and LTE when running in conjunction with a dedicated Handheld Direction Finder Location device

Handheld Direction Finder – Homing Device	It should be a small size device for remote location extraction Receiver Sensitivity ->> GSM < 112dBm, UMTS < 130dBm LTE < 130dBm Dimension max 15 x 8.5 x 3 cm (L x W x H) Antenna gain: Internal antenna: 0dBi, External antenna: 2dBi Automatic sensing and selection of internal/external antenna Operating Temp: 0 to 40 Celsius Operating Humidity: 5 % to 85% RH Weight Should not be more than 500 gm Heat map support,
Direction finder units' location live in main unit	The DF's can be shown over the main unit map, which give the live location of the DF's and the trail they did. In addition to that, the DF provide a heat map over that location, which help the operator to understand where the target is without risk his own troops.
Number of GSM/ UMTSLTE/ base stations	6X GSM/UMTS/LTE 5G ready (non-standalone) i.e., it should be upgradable to 5G NSA without any change in hardware.
Internal power transmission	Embedded PA GSM: up to 20W UMTS: up to 20W LTE: up to20W

Technical Specifications – Locator

1	Supported Networks	GSM, GPRS, EDGE, UMTS, HSPA, HSPA+
2	Supported Bands	30-3000 MHz
3	Dimensions	15 x 8.5 x 3 cm (L x W x H)
4	Weight	0.5 Kg
5	DC Power	~12 V
6	Measurement accuracy	±1dB
7	Dynamic range	>70dB
8	Map layer	Maps UI for measurement reading recording (requires internet connection)

1.9. Jammers

1.10 Search Light Item

1.10.1 Hand Held Search Light

Sl. No.	Parameter	Specifications
1.	Type of lamp	LED
2.	Battery capacity (AH)	4.0 or higher
3.	Dia of search light (mm)	76 to 100
4.	Wattage of lamp (Watt)	15
5.	Color temperature (Degree K)	5500 to 6500 K for other lamps
6.	Beam angle selection	Wide
7.	Range of Narrow beam angle (Degree) and Range of wide beam angle (Degree)	up to 4 deg
8.	Type of front glass	Toughened Scratch resistant
9.	One hand operated switch	Should be provided
10.	Battery Charger	Must Available
11.	Type of Battery	SMF
12.	Battery Voltage (Volts)	4 or better.
13.	Provision of Lanyard/ strap	Yes
14.	Rugged, Impact and water resistant material of housing	Yes
15.	Type of housing material	ABS
16.	Accessories such as Battery charger with cable for External type Charging cable for inbuilt type	Yes
17.	Gross weight of Hand Held Search with battery (grams)	3.8 kg (max.) with SMF Lead Acid battery
18.	Warranty for HHSL (in years)	12 Months (SMF Lead acid battery)
19.	HHSL system with battery shall pass the drop test from, 1 mtr., height	Yes
20.	Light output of search Light (LUX at 100 meters)	1000
21.	Effective distance of search light (Meter)	≥ 8 meters
22.	Lamp dimming	Step type

23.	Continuous search light operation time at maximum lumen output (Hours)	For LED 5 Hrs
24.	Battery charging time (Hours)	8 to 10 Hrs
25.	Operating Temperature range (Degree C)	-20°C to + 55°C
26.	Operating relative humidity range (%)	RH 95% at 40°C
27.	Lamp life (Hours)	100000 Hrs
28.	Availability of Type Test report	From Central Government/NABL/ILAC accredited laboratory to prove conformity to the specification

1.10.2 Rotating Search Light

Sl. No.	Parameter	Requirement
1.	Rear Diameter, Maximum	20 centimeter ± 10%
2.	Housing and Body Features	Corrosion resistant
3.	Length, Maximum	40 centimeter
4.	Material of Construction	Casing and Body of search light should be tubular heavy duty water resistant and one piece
5.	Front Diameter, Maximum	25 centimeter ± 10%
6.	Weight (Including Battery & Base)	Not more than 15 kg
7.	Construction	Modular Construction consisting of replaceable modules for ease of servicing and repairs. The lamp shall be replaceable by unscrewing the front cover, The battery and blown fuses can be replaced without disturbing electronic circuit by unscrewing the back cover
8.	Operating Temperature	-20°C to 55°C and 95% RH at 40°C
9.	Circuit	Glass Epoxy PCB, Electronic Component nomenclature should not erase. Wire should be heavy duty, Tantalum Capacitor should be used, PCB should modular easily removable for repair, Module should not be used at any stage,
10.	Distance Visibility, Minimum	In Pitch darkness it should make objects Visible at a minimum distance of 500 meter
11.	Operation	It should be operated by remote controller with minimum 10 meter rage

12.	Additional Parameter	• Range: 2000-5000 Meters • Input Voltage: AC120-220V, • Frequency: 50 Hz, • Lamp Specification o Type :XHA Xenon, o Power:1000W-2000W. o Angle of Hunting :Between 30° to 120°

1.10.3 Rechargeable LED Search Light

Parameters	Specification
Type of Lamp	LED/XENON
Capacity (AH)	5 and above
Front Glass Quality	Toughened, Scratch Resistant
Hand Operated Switch	Yes
Battery Charger	In built
Battery type	Lithium-Ion
Lanyard/Strap	Yes
Housing Quality	Impact and water resistant
Housing Material	ABS
Accessories such as Battery charger with cable for External type charging cable for inbuilt type	Yes
Gross weight of Hand Held Search with battery (Kg)	02
Warranty	Minimum 12 Months (Li-ion battery)
Drop Test	The system with battery shall pass the drop test for 1 Mtr height
Functional	
Light output	800 Lux at 100 Meters
Effective distance (Meters)	400 Meters (Minimum)
Lamp Dimming	Step type
Continuous search light operation time at maximum lumen output (Hours)	5 (minimum)
Battery Charging Time (Hours)	10
Lamp life (Hours)	50000 (min.)

1.11 Imaging System

1.11.1 Day & Night Weapon Sight

Sl. No	Specifications
1.	**SALIENT FEATURES**
I.	The equipment shall be compact, sturdy and ruggedized as per JSS 55555 / MIL-810G or later standard, with high precision firing capability.
II.	The equipment shall have MIL STD 1913 compliant piccatiny rail adaptor suitable for mounting on various assault rifles such as AK-47, AK-103, INSAS rifle, LMG, carbines etc.
III.	The sight shall provide vision both during daytime and at night under the moonlight, starlight condition and overcast low light conditions.
IV.	The sight shall have parallel day and night channels. The sight shall have provision to switch off night channel when day channel is switched on automatically.
V.	Weight of the equipment shall be ≤ 1190 grams including batteries, OG cover & eye guard and excluding piccatiny rail adaptor.
2.	**IMAGE INTENSIFIER TUBE CHARACTERISTICS**
I.	II Tube shall be Generation 3 (Gallium Arsenide photocathode).
II.	II Tube shall have minimum limiting resolution of 68 lp/mm or better.
III.	II Tube shall have Photocathode sensitivity of ≥ 1900 µA/lm or better.
IV.	SNR of the II tube shall be minimum 25:1 or better.
V.	FOM of II Tube shall be 1700 or better.
VI.	II tube shall have in-built Bright Source Protection (BSP).
VII.	II tube shall have in-built Automatic Gain Control (AGC).
VIII.	MTTF of the II tube shall be 10,000 hrs. Or better.
3.	**FFECTIVE RANGEABILITY**
I.	Human (1.8m x 0.5m) Detection range under starlight conditions and daytime conditions shall be minimum 300 meters or better.
II.	Human (1.8m x 0.5m) Recognition range under starlight conditions and daytime conditions shall be minimum 200 meters or better.
4.	**EQUIPMENT CHARACTERISTICS**
I.	Optical magnification of the equipment shall be minimum 3X or better.
II.	FOV of the equipment shall be minimum 12° or better.
III.	Diopter adjustment range shall be -4D to +4D or better.
IV.	The equipment shall have inbuilt firing reticle and shall be customizable.
V.	The equipment shall have inbuilt human range estimation reticule.
VI.	The equipment shall have provision for precision windage and elevation adjustment.

VII.	The equipment shall have low battery level indication feature in any form.
VIII.	The equipment shall have reticule brightness adjustment feature.
IX.	The equipment shall have IR illuminator with variable beam brightness adjustment feature.
5.	**POWER SUPPLY**
I.	Equipment shall be capable of power-on using commercially available, removable and rechargeable AA batteries.
II.	Equipment shall have battery endurance of minimum 30 hours or better with IR OFF mode and minimum 10 hours on IR ON mode, on single charge of battery.
6.	**ENVIRONMENTAL FEATURES**
I.	Operating temperature of the equipment shall be -30ºC to +55ºC or better.
II.	Storage temperature of the equipment shall be -40ºC to +70ºC or better.
III.	Product shall be JSS-55555 certified by Indian Govt Lab/NABL accredited Lab. Test reports for High temperature, Low temperature, Vibration, Bump, Corrosion(salt), Dust, Drop and Ingress protection to be attached certified by Indian Govt. Lab/NABL accredited Lab. Certificates to be enclosed.
7.	**MISCELLANEOUS**
I.	OEM shall have its own NABL accredited lab facility in India for testing and calibration of Opto-Electronic equipment.
II.	OEM shall have DPIIT (DIPP) license for manufacturing of Opto-Electronics devices.

1.11.2 Night Vision Binocular

Sl. No	Specifications
SALIENT FEATURES	
1	The equipment shall be rugged, small in size and light in weight which can be used for reconnaissance/ surveillance operations at night. The equipment shall provide vision at night under the moonlight, starlight and overcast cloudy conditions.
2	The equipment shall be single tube bi-ocular system.
3	Permissible Weight (Gram) = 900 with battery, Cover and Eye guards.
IMAGE INTENSIFIER TUBE CHARACTERISTICS	
1	II Tube shall be Generation 2+
2	II Tube shall have minimum limiting resolution of 64 lp/mm or better.
3	II Tube shall have Photocathode sensitivity of ≥ 600 µA/lm or better.
4	SNR of the II tube shall be minimum 24:1 or better.
5	FOM of II Tube shall be 1536 or better.
6	II tube shall have in-built Bright Source Protection (BSP).
7	II tube shall have in-built Automatic Gain Control (AGC).

8	MTBF of the II tube shall be 10,000 hrs. or better.
EFFECTIVE RANGEABILITY	
1	Human (1.8m x 0.5m) Detection range under Night conditions shall be 400 meters
2	Human (1.8m x 0.5m) Recognition range under Night conditions shall be 300 meters
3	Vehicle (light commercial vehicles/trucks/stallions/armored vehicles) Detection range under Night conditions shall be 500 meters
4	Vehicle (light commercial vehicles/trucks/stallions/armored vehicles) Recognition range under Night conditions shall be 400 meters
EQUIPMENT CHARACTERISTICS	
1	Magnification of the equipment shall be minimum 5X.
2	Field of view of the equipment shall be 7.5° or better.
3	Diopter adjustment range shall be -5D to +5D or better.
4	Minimum focus distance for the equipment shall be 15 meters to infinity.
5	The equipment shall have inbuilt IR Laser with IR range up to 125 meters or better (optional).
6	The equipment shall have capability of providing live video through a cable of RCA pin for remote transmission as well as on-site operations.
7	The equipment shall have IPD (Inter Pupillary Distance).
8	The equipment shall have stadia metric reticule for estimating subject distance.
9	The equipment shall have low battery indicator.
POWER SUPPLY	
1	Equipment shall be capable of power-on using commercially available, removable and rechargeable AA or equivalent batteries.
2	Equipment shall have battery endurance of minimum 10 hours on IR ON mode, minimum 30 hours on IR OFF mode.
ENVIRONMENTAL FEATURES	
1	Operating temperature of the equipment shall be -30ºC to +55ºC or better.
2	Storage temperature of the equipment shall be -40ºC to +70ºC or better.
3	The device shall be IP67 compliant.
4	Product shall be JSS-55555 certified by Indian Govt Lab/NABL accredited Lab. Test reports for High temperature, Low temperature, Vibration, Bump, Corrosion(salt), Dust, Drop and Ingress protection to be attached certified by Indian Govt. Lab/NABL accredited Lab. Certificates to be enclosed.
MISCELLANEOUS	
1	The products to be Certified by valid NABL lab.
2	The bidder shall have Quality management system certificate as per ISO 9001:2015 or equivalent

1.11.3 Thermal Imager

Sl. No	Parameters	Specifications
1.	**GENERAL**	
I.	Sensor	Dual, Thermal sensor and visible light sensor
II.	Device shall work 24X7 with an auxiliary power source	
III.	External display	Supported via analog output
2.	**THERMAL DETECTOR CHARACTERISTICS**	
I.	Detector	Uncooled FPA Micro bolometer
II.	Array Size	Min. 160 X 120 or better
III.	Pitch	< 25 µm
IV.	Spectral Range:	8-14 µm
V.	Sensitivity	≤ 0.06 Degree Celsius @ 30 Degree Celsius
VI.	Detector frequency	≥ 50 Hz
3.	**VISUAL CAMERA**	
I.	Sensor:	CMOS
II.	Resolution:	Min. 1.3MP
III.	Frame Rate:	50Hz
IV.	Video Output:	PAL / NTSC
4.	**IR LENS DATA**	
I.	FOV	25° X 19°
II.	Focus	Manual
5.	**RANGE ABILITY**	
I.	Human detection (Thermal)	up to 150 meters or better
II.	vehicle detection (Thermal) (light commercial vehicles)	up to 300 meters or better
III.	Device should be capable of human detection (Visual)	up to 200 meters or better
IV.	Device should be capable of vehicle detection (Visual) (light commercial vehicles)	up to 350 meters or better
6.	**IMAGE DISPLAY FEATURES**	
I.	Display	Min. 3.5 inch LCD
II.	Display resolution	min. 640 X 480
III.	Display	colored
IV.	Polarity:	Min. 11 thermal-colored pallets to suit user perception

V.	Image Display:	1. Switchable infrared & visual image 2. Image overlay of infrared and visual image
VI.	Image Adjustment:	1. Auto / Manual adjustment of contrast and brightness 2. Auto Enhancement mode
7.	**STORAGE FEATURES**	
I.	The device shall have micro-SD card slot.	
II.	Memory	8GB extendable up to 32GB
III.	Device shall store the following:	• Manual / Automatic Storage • Single frame infrared image • Infrared and visible image (associated) • Infrared and visible overlay image • Infrared video • Infrared & visible overlay video
IV.	Thermal and visual image format:	H.264/JPG/MPEG/MPEG4
V.	Device shall have	• Voice annotation recording feature while capturing image • Text comment feature while capturing image
SYSTEM FEATURES		
8.	**SYSTEM FEATURES**	
I.	Battery	Shall operate on Li-ion rechargeable
II.	Battery Back Up	Minimum 04 hours
• Device shall have auto sleep and auto shutdown feature • Device shall be provided with 01 micro-SD card reader • Device shall have 12V DC power input interface • Device shall have video output feature • Device shall have in-built microphone • Device shall have in-built buzzer • The device shall have provision for mounting on tripod • Device shall be provided with lens cap and hand strap.		
9.	**ENVIRONMENTAL FEATURES**	
I.	Operating temperature:	-30°C to 55°C or better
II.	Storage temperature:	Min. -40°C to +60°C or better
III.	Encapsulation	Min. IP 54
IV.	Relative Humidity	5% to 95% (non-condensing)
V.	Shock resistance:	Min. 25G
VI.	Vibration resistance:	Min. 2G

VII.	Drop	2m
10.	**PHYSICAL CHARACTERISTICS**	
I.	Weight	≤ 1000 grams without battery
11.	**MISCELLANEOUS**	
I.	OEM should have Quality management system certificate as per ISO standard	

1.11.4 Body Worn Camera

Parameters	Overview
General	• It can be used as a law-enforcement video recorder. • This device support one key to start high-definition real-time recording, and all the information such as GPS and video can be uploaded to VMS by wireless network: 3G/4G/WIFI. • It should also support audio communication between devices in one group. Network band are below: CDMA EVDO:BCO GSM: B2/B3/B5/B8 WCDMA: B1/B2/B5/B8 TD-SCDMA: B34/B39 LTE-FDD:B1/B3/B5 LTE-TDD: B38/B39/B40/B41.
Functions	• One key recording and remote live monitor Press one button to trigger to start audio or video recording, and with wireless network, the video can be sent to VMS, and on VMS client, it can do remote live monitor. • Group talking Administrator can build groups and add different users into one group, users can talk and send message to other members in this group. • 3G/4G/WIFI Embedded with 3G/4G/WIFI module, the device can register into a public network to connect with VMS, and can send all the information (video/audio/alarm/gps) through wireless network. • GPS Embedded GPS module can receive location information and upload to VMS, and the user can be tracked on the electric map of VMS. • Alarm push When in emergency, users can press the alarm button to trigger an alarm and send to VMS.

Specifications

Name of Item	Parameters	Specifications
Camera	Camera Image Sensing capacity (Picture Mode) (Mega Pixels)	10 MP (min)
	Recording resolution	1920 x 1080 Pixel
	Field of view of Lens (Wide Angle)	140 to 160 Degrees
	Camera Sensor / Imager	CMOS
	Recording Speed (Minimum)	30 fps
	Display Screen	With
	Screen size / type	2 inch / LCD Color Display
	GPS coordinates Stamping onto Videos/ photographs	Yes
	Pre-event Recording time (Prior to press of recording	30 Seconds
	In-built Wifi	Yes
	Connectivity interface	USB
	Supported Picture or Image format	JPEG, TIFF, PNG, BMP
	Video output format	AVI, MOV, MP4, H.264
	Supported Video Compression format	MPEG-4/H.264, H.265
	Supported Audio Compression format	MP3, WMA, AAC
	Video compression frame rate	Upto 30 fps
Storage	Storage type	Micro SD memory card
	Storage capacity	64GB
	Memory card expandable upto	128GB
	Data Transfer	USB 2.0
Battery	Chemistry of rechargeable Battery	Li-ion
	Battery capacity	3500 mAh
	Active Battery Back-up in continuous video mode	8.0
	Battery recharge time from empty to full capacity	4.0
Environmental	Protection against Dust, Water	IP 67
	Operating Temperature Range	-20°C to +60°C
	Operating Humidity-Noncondensing (RH)(%)	95
Certification	Availability of Certificate Report	NABL/ILAC accredited or Central Govt. Lab to prove conformity of products to the specification

1.11.5 Automatic Number Plate Recognition Camera

Sl. No	Parameters	Specification
1.	Image sensor	1/1.8" Progressive Scan CMOS Sensor
	ANPR Platform	Built-in ANPR engine, equipped with deep learning algorithm
2.	Signal System	PAL/NTSC
3.	Effective Pixels	1920 (H) x 1080 (V)
4.	Minimum Illumination	Color: 0.0002 Lux @ (F1.2, AGC ON), 0.0001 Lux@ (F1.4, AGC ON), 0 Lux with IR
5.	Electronic Shutter Speed	1/50 s to 1/100,000 s, Slow Shutter Supported
6.	Gain Control	Auto
7.	White Balance	Auto
8.	Signal to Noise	<48 dB
9.	Auto Iris	DC Drive
10.	Lens Type	8mm to 32mm motorized zoom Lens
11.	Focus	Auto Focus
12.	Zoom	Motorized Optical Zoom Adjustment
13.	Day & Night	True Day & Night with ICR
14.	IR Cut	High performance Mechanical IR Cut Filter with auto switch
15.	IR Source	Inbuilt Smart Array IR with intensity control
16.	IR Range	60 Mtr.
17.	Video compression	H.265 or better
18.	Video Bit Rate	32 Kbps to 16 Mbps
19.	Max. Resolution	1920 x 1080
20.	Frame rate	50HZ: 1920*1080@50fps 60HZ: 1920*1080@60fps
21.	Wide Dynamic Range (WDP)	120dB
22.	Backlight compensation	Supported
23.	Image settings	Rotate mode, Saturation, brightness, contrast, sharpness adjustable by client software or web browser
24.	Security	Password protection, HTTPS encryption, One key reset, heartbeat, watermark
25.	Onboard Storage	Built-in Micro SD/SDHC/SDXC card slot, up to 256 GB, NAS (NFS, SMB/CIFS). ANR
26.	Alarm trigger	Road traffic, motion detection, video tampering alarm, network disconnected, IP address conflict, illegal login, HDD full, HDD error

27.	Protocols	TCP/IP, ICMP, HTTP, HTTPS, FTP, DHCP. DNS, DDNS, RTP, RTSP, RTCP, PPPoE, NTP, UPnP, SMTP, SNMP, IGMP, 802.1X, QoS,IPv4, IPv6
28.	System compatibility	ONVIF
29.	CMS	Full function CMS (Central monitoring software)
30.	Mobile Client Application	Supports android and iOS APP for Smart phone and tablets
31.	Bandwidth control	Supported
32.	Network Storage	NAS (NFS,SMB/CIFS), ANR
33.	Accuracy	Capture Rate> 98%, Recognition Rate > 97%
34.	Optical Character Recognition (OCR)	Onboard ANPR engine
35.	Vehicle Speed	Support vehicle speed 5km/h to 120 km/h
36.	Lane number	Support 1 lane detection
37.	Recognition	License plate recognition
38.	Whitelist & Blacklist	Supports white list, black list, grey list
39.	Ethernet	1 RJ45 10/100/1000 Ethernet port
40.	Power input	Standard DC Jack

1.11.6 FRS & VA-AI SYSTEM SERVER & ANPR / VA-AI SYSTEM SERVER

Sl. No	Brief Description
1.	OS - 64 bit of Windows IoT 2019/ Ubuntu Linux 19.10 / Mac OS 2019 loaded on SSD drive.
2.	Database - Microsoft SQL /Sybase /Oracle RDMS
3.	Minimum Processor Intel Xeon Silver 4316
4.	Minimum Memory 20/30/40 core 96 GB DDR4 or better
5.	A2000 Graphics=1no
6.	2 X500 GB or 1 TB
7.	Network 2 x Gigabit Ethernet ports
8.	In-built USB 2 x USB3.0; 2 x RJ45; 1 x VGA
9.	Input Voltage 100~240 VAC 50/60 Hz
10.	Dual Hot-plug Redundant Power Supply
11.	1U / 2U RACK MOUNT
12.	Operating Environment - 10°C (50°F) ~ 35°C (95°F); 80% RH
13.	Regulatory Certification - CE: FCC: UL; BIS

1.12 X-Ray Based Scanner

1.12.1 X-Ray Based Full Human Body Scanner

Sl. No.	Requirements
1.	The Body Scanner should have Capability of reliable, accurate and stable detection for the metallic, non-metallic weapons, firearms, explosives, plastic explosive, liquid explosive, narcotics and other contrabands objects like mobile phones, blade, knives, lighter etc inside body cavity, swallowed inside the body, concealed in artificial limb or on body surface.
2.	Maximum height of inspected person should be 2050 mm ±5%
3.	Detection and recognition within 7 seconds for TSA prohibited Items example weapons
4.	Warning time should be of around 120 seconds
5.	Through-put should be at least 120 persons per hour.
6.	Penetration (steel)-22 mm
7.	Wire Detectability, (0.12mm general use mode to 0.4mm – low dosage mode)
8.	Technology used shall be Low Dose lionizing Radiation (X-rays)
9.	Dosage radiation in general use mode should not be more than 0.25 uSv and 0.15 uSv in low dosage mode for full body scanning. Certificate on the same from competent authority viz. BARC or AERB should be produced along with tender.
10.	Dose to operators, bystanders and other employees outside of the Inspection should not be more than 10 Sv per hour
11.	Drug detection within plastic containers
12.	Precious Metals, stones, ceramic, plastics, powders, explosives, narcotics etc.
13.	Chemical and biological materials detection with in containers
14.	Image storing ability shall be up to 10,000
15.	Humidity -10% to 90% RH non-condensing
16.	Should give accurate results negating the need for physical searches including persons with cast devices
17.	Should give image of person's shoes up to the sole at the same time that allows to see the hidden objects Inside shoes
18.	The Images should provide absolute privacy Consideration. It should blur face area, chest portion and lower abdomen area. It should allow further inspection in above mentioned areas in case of suspect found.
19.	Dual channel system for detecting of radioactive materials hidden inside of clothes or on the body and inside of the body
20.	Remote control keyboard with key power on and emergency off button
21.	Remote control unit based on computer with Windows OS and 21 inch TFT screen

22.	It should have Integrated special software for storing and enhancing images
23.	Laser color printer
24.	Maximum overall dimensions shall be (between 2000-3000 mm) x (between 1500-2000 mm) x (between 2000-3000 mm)
25.	Maximum weight allowance shall be between 600-900 kg
26.	Power supply specifications: 220 V ± 10% AC, single phase, 50/60 Hz, not more than 2 kVA...
27.	Duration of continuous operation shall be of 24 hours
28.	Demonstration of the quoted model is mandatory and same should be done at Gujarat jail/or any other customer location in India.
29.	On site OEM Warranty : As per user requirement
	Software Features
30.	Control of all Scanner
31.	Components Detector data reception
32.	Image forming
33.	Image archive
34.	Personal Data/image/Dosage database image printout
	Image display:
35.	Zoom/Pan
36.	Automatic contrast enhancement
37.	Gamma correction
38.	Edge enhancement
39.	Brightness and contrast control, including various presets
40.	Black/White Inversion
41.	Export into various image formats like BMP,JPG etc

1.12.2 Millimetre Wave (MMW) based Body Scanner

1. System Overview

- BODY SCANNER SYSTEM will consist of body scanner and required accessories.
- BODY SCANNER SYSTEM shall not use Millimetre Wave (MMW) technology to scan passenger/person shall actively illuminate the subject between the panels (area of scanning)
- BODY Scanner System shall provide automatic detection of items over the skin WITH IMAGE FREE solution using a generic mannequin. Threats shall graphically presented on the generic mannequin so that security staff can tell the location of these objects for targeted search.
- BODY SCANNER SYSTEM shall detect metallic and non-metallic weapons/objects, standard/home-made explosive, improvised explosives devices and liquids /gels or

any other item hidden under clothes over the skin.

- BODY SCANNER SYSTEM shall have TSA or ECAC approval/certification.
- Software/Technology up gradation, shall be provided by the manufacturer regularly.

2. Functional Requirements

- BODY SCANNER SYSTEM should ensure the system function as per defined detection capability and if required there shall be a provision of auto-calibaration and/or periodic calibration by the OEM.
- The scan should be completed in a single sweep, not warranting change of the posture.
- RF signal strength used for scanning shall be safe for human body including those with pacemaker, medical implants and pregnant ladies. Model specific valid certificate from national/international accreditation laboratories , to this effect to be provide by the OEM.

3. Operator Control Requirements

- BODY SCANNER SYSTEM shall have a provision for control monitoring panel/work-station to activate scan, control / modify system parameters by the user.
- Scanned results Pass or Fail, shall be displayed on an operator panel/workstation located away from scanner, as necessary pat-downs/searches may be carried out. Results shall be based on a generic mannequin figure, highlighting single or multiple areas of concern/reason for fail.

4. Safety Aspects

- There shall be harmful radiation emitted by the Body Scanner System. Each system shall be provided with a Dosimeter by the Original Equipment manufacturer (OEM) to check any harmful radiation emitted by the system at any given time.
- There shall also be no harmful radiation emitted by the system in or around the Body Scanner System. Each system shall be provided with a Dosimeter by the Original Equipment Manufacturer (OEM) to check any secondary and harmful radiation around the system at any given time.
- Pregnant women should be subjected to the same screening procedures as applied to other passengers/ persons. However, if a pregnant women expresses concerns , she may request a physical search in lieu of a search using detection systems such as HHMD, WTMD or body scanners. In such a case, private screening should be arranged.

5. Quality Aspects

- Minimum three performance certificates from the end users mentioning the satisfactory performance of the system to be provided by OEM.
- Compliance to Vibration test, Emission conformity and Electrical safety shall conform to international standards. Model specific valid certificate from national/international accreditation laboratories, to this effect to be provided by the OEM.

Technical Specification

Sl. No	Parameters	Specification	
I.	Technology	Millimetre Wave, Non-ionising	
II.	Operating Frequency Range	Up to 100 GHz	
III.	RF Power Density (Peak) at 1 meter distance, in front of the panel	Up to 3000nW/square cm	
IV.	Through put	Minimum 300 passengers / hour	
V.	Body Height Range	Minimum 2.25 Meters (Excluding platform)	
VI.	Scan and processed result time	Up to 8 seconds	
VII.	Detection capability	Should be able to detect all the prohibited itmes listed by the regulator.	
VIII.	Dimensions	Height	2.25 to 2.75 Meters
		Width	1.3 to 1.6 Meters
		Depth	2.2 to 2.6 Meters
IX.	Electrical power Requirement	220 ± 10 V, 50 Hz. 5 Kw	
X.	Average Power Consumption	Up to 4 KVA (Supported with UPS)	
XI.	Minimum operating Temp Range	-5 degree centigrade to +35 degree C	
XII.	Humidity	Up to 90% RH non-condensing	
XIII.	Certification/ Approvals	TSA or ECAC	
XIV.	Image display	Touch screen /workstation	
XV.	Image storage	Minimum for 7 days.	

1.12.3 X-Ray Baggage Scanner (Single View)

Parameters		Specification
1. Size/ capacity/ Radiation level	System Size	Small Size
	Tunnel Width (W)	60 cm for Small Size
	Tunnel Height (H)	40 cm for Small Size
	Conveyor Capacity	>= 160 kg for Small Size
	Throughput Rate (Bags per hour)	200
	Radiation level at a distance of 5 cm from external housing of the system (m r/HR)	0.1
	Resolution	Able to display single uninsulated tinned copper wire of 42-SWG or 38-AWG in center of belt.
	Penetration (Thickness of steel block)	Penetration of 35 mm in center of belt.
	Both Resolution and penetration should be seen without penetration of a button at any point of tunnel, in center of the belt. Capable of providing at least 6 mixed level colouring for material separation	
	Display language for user interface	English/ Hindi /local language
	Operating System	Windows based only- Windows 10 Professional or better
	Threat Image Projection(TIP)	TIP should be available and programmable and ability to automatically lock user if configurable “Miss” attempts exceeded.
2. Certification/ Test Reports	Availability of Certificate	Atomic Energy Regulatory Board (AERB) to certify that the System complies the requirements of Health & Safety regulations with regard to mechanical, electrical and radiation hazards. AERB NOC for mono block source should be uploaded.
	Image Processing	Image processing should be possible from monitor via mouse and also from keyboard

1.12.4 X-ray Baggage Inspection System (XBIS)(Dual View Baggage Scanner)

Sl. No.	Specifications
1.	No. of X -ray Image Generators : Two , Independent , Dual view image
2.	Power Supply : 230 VAC, 50 Hz +/-5%. Voltage fluctuations: 170 V to 260V
3.	Tunnel size :100 cm X 100 cm
4.	X ray Penetration: More than 30 mm thickness of steel in center of belt
5.	Resolution: Image of single un-Insulated 42 SWG copper wire in center of belt.
6.	Type of image: Colour, Full HD (1280x1024 pixel)
7.	Zoom facility: 16x or more, key board controllable image
8.	Baggage Exposure safety to X ray: Film /food safe
9.	Imaging Features • Multi energy Imaging facility to display different materials in different colours to distinguish between organic and in-organic material. • To be able to distinguish high density organic materials viz. explosives, narcotics, etc. along with corresponding atomic number. • Information on stripping capability of multi energy system for organics, inorganic in isolation as well as in mixed condition to be available. • Capable of providing at least 6 mixed level colouring for material separation. • All suspicious Items (Explosives, High density material, narcotics) should be displayed in one mode and that should be online. • Both Resolution and penetration should be seen without penetration of a button at any point of tunnel, preferred in center point.
10.	Radiation level:0.1 mR/hr at a distance of 5 cm from external housing
11.	• Lead Impregnated safety screen at either ends of the tunnel. • Idle rollers to be provided at either end of the tunnel to facilitate placing of baggage/ cargo
12.	X-ray beam divergence : Sufficient for complete image of maximum size without corner cuts
13.	Contrast: Capability to vary contrast as per requirement.
14.	Alarm: Failure to penetrate a particular item (visual and/or audio)
15.	The threat Image projection (TIP) TIP should be available and programmable and ability to automatically lock user if configurable “Miss” attempts exceeded.
16.	Control desk : At desired location with Security Housing, Locking arrangement , Multi operator facility for security through Pass word
17.	Image enhancement feature to be provided.
18.	Conveyor Belt speed : 0.18 and 0.3 mtr /second for baggage.
19.	All software features of machine should be activated and password protected

20.	In case of defective diode array (s), scanning should be displayed and error message should be displayed on the screen.
21.	Software : Machine software to be user friendly and controllable/ operable by keyboard, mouse, touch screen etc., for its all features..
22.	Memory : sufficient to store for at least 15 days . The machine should have online recording facility and Images can be recorded in USB/ Electronic storage devices. The recording should be retained for minimum 14 days.
23.	Recording: Image may also be recorded in external storage devices
24.	Self Diagnosis report : To be able to generate with following Information . a) XBIS Make/Model/Sr. No. b) Software/Firmware/Algorithm Version Number c) Status/Values of major Power Supply Voltages d) Generator Voltage(X-Ray ON/X-Ray OFF) e) Generator Anode Current (X-Ray ON/X-Ray OFF) f) Generator Heater Current (X-Ray ON/X-Ray OFF) g) Diode Array (Raw / Calibrated) Response (X-Ray ON/X-Ray OFF) h) Grand Total number of bags scanned i) XBIS fault Log j) XBIS photoelectric Light Barrier (Tunnel Entry/Exit)Status k) Emergency Switches Status
25.	Environmental Temp. a) Operating : 0°C to 40°C b) Storage: -20° to 50°C
26.	Cover : Anti-rodent and dust proof
27.	OEM to be ISO certified for manufacturing and servicing. AERB NOC for mono block source should be uploaded.
28.	Upgradation: Machine software should be upgradable to accommodate new technique in image processing and pattern recognition
29.	Through put (min.) : 200 bags per hour for cargo machines
30.	Artificial Intelligence: For Automated detection of various contra band items e.g. s knives, guns, fire crackers, battery, bottled liquid, ammunition, ivory, Mobile phone, Charger and Electronics items etc.
31.	Safety: For protection against mechanical, electrical and radiation hazards Supplier to furnish NOC from Atomic Energy Regulatory Board of India regarding radiation safety after every five years.
32.	Display language – As per user requirement
33.	Windows based only- Windows 10 Professional or better
34.	Operator manual : Hard and Soft mode

35.	Test Piece: Manufacturer to provide one set of Certified Combined Test Piece (CTP) per machine for checking service ability
36.	Operational Training for 30 days at site
37.	Products to comply Govt. of India guidelines issued from time to time on Atmanirbhar Bharat
38.	Image processing System should be designed such that image processing can be done independently on top view and side view i.e. top view may be color and side view may be black and white or vice versa.

1.13 Personal Protection Gadgets

1.13.1 Helmet

Parameters	Specification
1. General	• Colour-As required by the user.
	• Glass Reinforced plastic material/ or any other Accredited Test Laboratory proven superior material, Design based on Personal Armour System Ground Troops (PASGT)/totally
	• protective and comfortable to wear.
	• Selectable, adjustable and comfortable.
	• Snap fit and quick release chin strap.
	• Scratch proof, Shatterproof, transparent polycarbonate Visor fitted with retched (openable) system.
	• Provides excellent protection against projectiles, blunt hit encountered during riot situation.
	• Inner fabric should be detachable & washable.
	• Designed developed and ballistically tested by any National Accredited Laboratory For calibration and testing.
	• Wt.:- Less than 2.5 kg including all detachable Items.
2. PC Visor	a. 2.6 mm to 4.5 mm thickness, scratch proof /scratch resistant.
	b. Movable, Adjustable, Detachable and Comfortable.
	c. Anti-fog visor: 20°-50° incline
	d. Light Transmission rate of visor not less than 85%
	e. Attached Metal Net (Detachable): Wt. less than 600 gm
	f. Its life should be upto 50% visibility and not less than 02 years.
3. Shell	a. Material of Shell should be high impact virgin ABS with IZOD impact strength at (6.4mm notching) of 43 kg cm/cm at 23°C and 29 kg cm/cm at -30°C Or material of parallel impact strength at other notching.
	b. It should have appropriate air/sound vent. Confirming to audibility test of 10db over a frequency of 250 to 2000 Hz.
	c. Provision for proper ventilation.
	d. Rubber beading material shall be 100 % EPDM (Ethylene Propylene Diane Monomer) with a tensile strength of 60 KgF/M^2, hardness 70-72 shore A and the ask content should be 15% max.
	e. Comfort padding should be soft comfortable, seat absorbing anti bacterial & flame retardant with following foam specification:
	f. Density 32Kg/$meter^3$ ±2

	g. Cell Size - ≥ 70 PPI
	h. Tensile strength ≥ 0.85 Kgf/ cm²
	i. % of elongation ≤150
	j. Hardness value @ 50% compression = 26kg/323 cm² square ± 5%
	k. It should be made of following material specification: weight of PVC cotton coated fabric should be 570 GSM and breaking load warp 18kg /5 cm and weft 11kg /5 cm
	l. EVA padding thickness should be 10mm (+ 0.8/-0.5)
	m. Hardness – 29 ± 3 (shore A)
	n. Density – 100 ± 8% kg/m^3
	a. Material: ABS (Anti Buta-di-ene poly-Styrene)/Fibre Reinforced Plastic (FRP) or any other NABL proven superior material.
	b. Round shape shell with comfortable interior Cushion padding about 2 cm ± 10% with
	c. Breathe-holes for air circulation.
	d. Adjustable and Comfortable harness should be detachable & washable.
	e. Top Thickness: 5mm ±10% Side Thickness: 04mm ± 10%
	f. Weight: 1:60Kg ± 10%
4. Ear Guard	PC/ABS/ Fibre reinforced plastic or any other NABL proven superior material with air circulation. Side thickness: 3.5 mm ± 10%
5. Chin Strap	• Snug/Snap/Strip fit and quick release chin strap
	• Soft and comfortable on skin.
6. Miscellaneous	• Anti-bacterial Cloth (Treated) or any other NABL proven superior be used for inner lining. A certificate to this effect will be provided from accredited laboratory.
	• PE(Poly Ethylene) inner layer against cutting and stabbing
	• Quick release buckle
	• Design based on personal Armour System Ground Troops. (PASGT)/totally protective and comfortable to wear
	• Side holes to make hearing easier and back holes for better ventilation
	• Provides excellent protection against projectiles encountered during RIOT situation with comfortable sweat absorbing, Mesh Fabric head padding or any other NA proven superior material.

7. Additional & Essential features	Protection of neck-A semi-circular fire and water resistant pad to provide cover protection to sides of the neck and back protection o cervical from stones and projectile attacks.
	• **Neck curtain** should be fire resistant fabric/artificial leather or EPF **(Expanded Polythene Padding Foam)/** Polyfoam that can avoid smell and fungal infection or any other NABL proven superior material. . Capable of protecting personnel against brick batting, stone pelting, Molotov cocktails, acid bottles, and cane attack etc.
	• Ventilation should be proper.
	• Designed to connect with ear/ head phone and gas mask.
	• Tested by leading NABL certified Laboratory for its parameters and material used in construction/fabrication.
	• Shatterproof, transparent PC Visor, Scratch resistant fitted with ratchet (open able) system.
	• Rust proof metal pivot for opening and closing of visor.

1.13.2 Polycarbonate Lathi

Parameters	Specifications
General	• Material: PC (polycarbonate)
	• Ultra Strong
	• **Scratch proof, Non-Corrosive, fire proof**
	• Light wt.
	• Transparent
	• High Impact Resistance
	• Lang Shelf life
Straight/firm/collapsible features may be preferred in light of new technology with ideal flexibility.	• **Technical Features :**
	• Length: 1 Mt 10 mm
	• Diameter: 2.5cm ± 2mm
	• Wall Thickness: 4mm +.0.5mm
	• Weight -350gm ± 25gm
Additional and essential features	• Handgrip
	• About 5 inch
	• Round shaped
	• Unbreakable (As required)
	• Soft, shock absorbent, but firm grip for proper handling with soft cushioning.

Wrist Band	• In the form of flexi 6 inch cotton/nylon/suitable fabric loop on the top handgrip to enable proper security of the lathi/cane.
Protective shoe/stud	• Bottom 2 of Lathi plugged with ring shaped, firm, fire and water resistant fibre/rubber cap firmly/ permanently fixed.
	• Manufacturer's/ Supplier's written Submission regarding non-corrosion, scratch proofing, fire and water resistance be provided.

1.13.3 Polycarbonate Shield

Parameters	Specifications
1. General	• Raw material: Engineering grade Polycarbonate or any other technically proven superior material.
	• Provides excellent protection against brick batting, stone pelting, Molotov cocktails, chains, acids, iron, rod/cane attack.
	• Light wt, scratch proof, durable and transparent.
	• Improved consistency in thickness and enhanced strength.
	• Thick ribs all along the edges for higher structural strength.
	• Vision area of shield so shaped as to avoid scratches during handling.
	• Cushioned/ comfortable arm rest for comfort and longevity.
	• High impact resistance.
2. Technical Data	• Shape: Rectangular or any other proven better shape.
	• Length: 910 mm to 1000 mm
	• Weight: Less than 3.4 kg
	• Breadth (Flat): 580mm ±20mm or any other proven better shape
	• Breadth Concave: 620mm 10mm
	• Material: Transparent/scratch proof.
	• PC(polycarbonate) virgin grade, and not recycled.
	• Edges well secured and covered durable
	• Engineering Polycarbonate / elbows.
	• Provide complete protection against brick stone pelting, iron rod/cane Attack, cocktails, acids.
	• Thick ribs all along the edges for higher structural strength
	• Cushioned arm rest provide comfort in long use i.e to in have solid strap, handle for grip. High Impact

1.13.4 Full Body Protector

Parameters	Specification
General Specifications	• Material cloth Jackets of fire retardant drill cloth in required colour and required camouflage pattern • Colour as required-plain/ disruptive/ camouflage pattern. • Weight-5.950kg ±10% • Size:-Small/ Large/ Extra Large (The description is given here for large size) • Physical protection against brick batting cane knife/acid attacks, Molotov cocktails projectiles encountered in Riot situation and other policing functions. • Special fire retardant, high impact resistance rubber inserts. • Protective sheets for front and back pouches with trauma pads. • Sweat absorbing mesh fabric (detachable & washable) In-lined elbow and an guards ergonomically formed to protect limbs during riot/mob situation • Impact attenuation (reduction) above 80%. • Ergonomic design for maximum wearing comfort. • Thoroughly tested by leading NABL laboratories engaged in research in physiology and bio-engineering with certificate to that effect. • Design ensures restraint free movement long shelf life, light wt. with Excellent Protection capability.
Chest Protector- (40 cm ±10%)	• Upto 4.5 mm ±10% thick poly foam. • Inner lining made of mesh fabric(Detachable & washable) with sweat absorbing lining 2mm+10% thick foam with specified (16-22) shore A hardness and engineered plastic certified from a NABL lab. • Weight-Less than 3.00 kg • Material - High quality unbreakable engineered plastic for front and back pouches with trauma pads. • High Impact resistant rubber inserts to absorb trauma. • All sandwiches paddings of soft plastic with EVA (Ethylene and vinyl Acetylene based Polymer) foam or any other technically better test proven material, should have number of small holes for free movement of air, • Inter stich able so as to remain in place and not slip.

Elbow Pad	• (Length-37cm ±10%) a. Made of soft engineered plastic • Velcro closure. • EVA (Ethylene and vinyl Acetylene based Polymer) Poly foam of minimum specified • hardness. • Engineered plastic with matt surface of 2.6mme 10% thickness, • Mesh fabric poly foam of upto 4mme 10% specified hardness, • Should be able to withstand impact from one metra on hard surface. • Inter switchable so as to remain in place and not slip. • All sandwiches paddings of soft plastic with EVA (Ethylene and vinyl Acetylene based Polymer) foam or any other technically better tout proven material, should have number of small holes for free movement of air. • The fabric should be detachable & washable.
Shin Guard- (Length-55 cm±10%)	• Made of soft engineered plastic or any other NABL proven superior material. • Elastic stripes for easy wearing. • Velcro closure • Sweat absorbing mesh fabric Poly foam 10mm+10% hardness and Inter stichable so as to remain in place and not slip. • All sandwiches paddings of soft plastic with EVA (Ethylene and vinyl Acetylene based • Polymer) foam or any other technically better test proven material, should have number of small holes for free movement of air. • The fabric should be detachable & washable,
Upper Arm Protector	• High protection engineered, soft plastic or any other NABL proven superior material with sweat absorbing mesh fabric (Detachable & washable) inner protection with a unique flexible design for optimum movement, fit and comfort suitable to human body parts shape. • Velcro fixed. • Inter stichable so as to remain in place and not slip. • All sandwiches paddings of soft plastic with EVA (Ethylene and vinyl Acetylene based Polymer) foam or any other technically better test proven material, should have number of small holes for free movement of air

Shoulder Pad (15cm ± 10%)	• Velcro fixed. • High protection engineered soft plastic or any other NABL proven superior • Material with a unique flexible design for optimum movement, fit and comfort. • Poly foam (preferably 3mm thickness) with specified (35-40) Shore A hardness and black mesh fabric that covers the chest and back. • High protection engineered soft plastic with shock absorbing EVA Polyfoam • Cushioning the shoulder. • Inner lining made of mesh sweat absorbing fabric (detachable & washable). • Inter stachable so as to remain in place and not slip. • All sandwiches paddings of soft plastic with EVA (Ethylene and vinyl Acetylene based Polymer) foam or any other technically better test proven material, should have number of small holes for free movement of air.
Groin Guard	• Section has an outer shock absorbing sweat absorbing mesh fabric (detachable & washable) padding (plastic/ EVA/ poly foam) along with hard shell cap or any other NABL proven superior material. • The protection attachment should cover the grain a from all ricocheted projectiles and allow a comfortable sitting. Inter stich able so as to remain in place and not slip. • All sandwiches paddings of soft plastic with EVA (Ethylene and vinyl Acetylene based Polymer) foam or any other technically better test proven material, should have number of small holes for free movement of air
Forearm & Elbow Guard (37 cm ± 10%)	• High protection engineered soft plastic outer shell or any other NABL proven superior material should provide flexibility required for forearm and elbow. • Shock absorbing poly foam with minimum specified (Maximum 5mm) thickness and black mesh(detachable & washable fabric) lining which offers comfort and breathability • Adjustable straps fastening with durable elastic and Velcro • High protection engineered soft plastic of minimum specified standard thickness (Preferably 2.5-3.5mm) so that it does not lose its flexibility with higher padding or any other NABL proven superior material. • Inter stich able so as to remain in place and not slip. • All sandwiches paddings of soft plastic with EVA (Ethylene and vinyl Acetylene based Polymer) foam or any other technically better test proven material, should have number of small holes for free movement of air.

Thigh Guard (44cm ±10%)	• Thigh guard must be supported by kamarbandh to avoid slippage while running and during movement • High protection engineered unbreakable plastic of 2.5 to 04 mm thickness on thigh section. • EVA (Ethylene and vinyl Acetylene based Polymer) foam or any other technically better test proven material with minimum 4.5 mm thickness and mesh lining (detachable & washable fabric)for comfort and breathability. • Adjustable straps fastening with durable elastic and Velcro. • Inter switchable so as to remain in place and not slip. A fire retardant drill cloth • (detachable & washable fabric) jacket with fire retardant and polycarbonate inserts in front and back pouches. Two shin guards having high resistant unbreakable plastic inserts. • All sandwiches paddings of soft plastic with EVA (Ethylene and vinyl Acetylene based Polymer) foam or any other technically better test proven material, should have number of small holes for free movement of air.

2.
SURVEILLANCE

2.1 IP CCTV SYSTEM

Sl. No.	Features	Specifications
1.	Image Sensor	1/2.8 inch Progressive Scan CMOS or better
2.	Effective Pixel	5 MP (2592x1944) or better
3.	Min. Illumination	Color: 0.005 lux @F1.6 BW: 0. lux @F1.6 (IR on)
4.	Other Features	WDR, BLC, HLC; 120dB WDR; White Balance - Auto/Tungsten/ Daylight/Manual; Gain Control 0~100%; 2D/3D DNR; EIS; DEFOG; Minimum 5 Areas of Privacy Masking; Smart IR Light Controller; Auto Tracking; (Auto/Manual)/OFF ; TDN - Auto (ICR) / Color / BW
5.	Shutter Time	Auto, Manual (1/1 to 1/30,000 sec)
6.	Day & Night	Auto (ICR) / Color / BW
7.	S/N	≥50dB
8.	Zoom	Digital 16X & P-IRIS Optical 30X
9.	LENS	
	• Focal Length	4.7-6.0~141-180mm @ F1.6~F4.3 or better, PIRIS Lens
	• Field of View	As per focal length
10.	Camera	
	• Pan Range/Pan Speed	0°-360° endless/Pan Manual Speed: 0.1°~180°/s,
	• Tilt Range/Tilt Speed	"-10° ~ +90°(Auto Flip)" /Tilt Manual Speed: 0.1° ~ 90°/s, Tilt Preset Speed: 90°/s
	• Preset Quantity	256
	• Preset Freezing	Support
	• Patorl	12 Patrols, up to 48 presets each patrol
	• Pattern	6 Recording Patrol Patterns
	• IR Distance	150 m with inbuilt IR Light Controller for Auto / Manual / OFF including a minimum of 10 nos of IR Lights
11.	Video	
	• Primary Stream	(2592 x 1944/2592 x 1520/1920 x 1080/ 1280 x 720) @30 fps
	• Secondary Stream	(704 x 576 / 704 x 480 / 640 x 480 / 352 x 288 /352 x 240) @ 30 fps
	• Tertiary Stream	(1920 x 1080 / 640 x 480/352 x 288 / 352 x 240 / 320 x 240) @ 30fps

	• Video compression	H.265 HEVC/H.264/MJPEG
	• Network	
	• Ethernet	1*RJ45 10M/100M Ethernet Port
	• Network Storage	NAS (Support NFS, SMB/CISF) or SFTP or FTPS or MFT
	• Protocol	IPv4, IPv6, TCP / IP, HTTP, HTTPS, RTSP / RTP / RTCP, IGMP, SMTP, DHCP, NTP, DNS, QoS, SNMP, 802.1X, UDP, ICMP, ARP, TLS
	• Audio & Alarm	2-Way, Full duplex Audio Streams
	• Audio Compression	G.711A/G.711U/AAC
	• Audio I/O	1 IN/1 out
	• Alarm I/O	2 IN/2 out
	• Storage	Minimum 256 GB on-board Class 10 speed SD Card having Linux Unified card encryption key
	• Privacy Masking	Up to 4 areas
	• Region of Interest	Minimum 8 Regions or Zones of Rectangles with Off/On option
	• PTZ Auto Tracking	Support
12.	Events	
	• Event Trigger	Motlon Detection, Network Disconnection, External Input, Audio Alarm, IP Address conflict, illegal Access, Storage anomaly; Tampering
	• Event Action	FTP Upload, SD Card Record, External Output, PTZ Motion, HTTP Notification, etc.
	• Video Analysis	People counting, Video motion detection, Alarm input, Recording notification, Tampering, Loitering, Tripwire, Smart Motion Detection
	• System Compatibility	ONVIF Profile S & G & T Compliant. Quoted Model should be listed on ONVIF site on or nefore the date of bid submission.
13.	General	
	• Working Condition	Temperature: -20°C to 60°C / Humidity: 0-90% RH
	• Power Supply	AC24V ; PoE+ (IEEE 802.3at) (Class 4)
	• Power Consumption	25W
	• Surge Protection	Die-cast Aluminium housing; IP67 Compliant, IK10 Certified, In-built Heater Fan and EN 50130-4 / BIS: IS 13252 (Part 1):2010
	MTBF Compliance	As per Telcordia SR-332 or RCM or MIL-HDBK-217 or RCR-9102 standard

	• Certificate	UL/cUL/ BIS-IS13252, CE/equivalent BIS, FCC / equivalent BIS; EN 55032 / equivalent BIS; EN 50130-4/equivalent BIS; EN 63000 / equivalent BIS; BIS/IS/IEC 62368: Part1: 2018 or IEC 62368-1:2018; RoHS, ONVIF - G, S, T
	• Security	Secured Password protection, IP address filtering, HTTPS encryption, IEEE 802.1Xa network access control, Digest authentication; PCIDSS or UL -CAP compliance; User access log, TLS1.2 stream encryption; SSL/SSH; 3rd Party PKI Digital certificate-based encryption; Digitally Signed Firmware; AES 256; Authenticated MAC; NDAA compliant on-board processor
14.	CCTV Camera should have SSL Encryption,	
15.	Multi Cast & Un-Cast Support; Minimum 10 concurrent users	
16.	Statutory GFR 2020 Compliance - OEM Camera Firmware; Source Code; Chipset; SOC/ processor; coded firmware and PCBs should not be from countries sharing land border with India including the designated restricted countries.	
17.	MAC address/ Serial Number of the devices including their firmware duly signed with OEM PGP Key & PKI Certificates must be on the name of respective OEMs. OEMs must comply with MACID – Authentication what shall be done through 3rd party tool. OUI must be declared.	
18.	IP CCTV System & Components OEM should have direct presence as registered company(ies) in India for last TEN (10) years from the date of publishing of bid (Registered offices by way of Joint Ventures, Franchise, Agency, multiple & different stakeholders; distribution partners, partnership firms; venture capitals; multiple ownership & different stakeholders or through any other 3rd party association during the stated period will not be considered). In case of the company having a foreign parent / holding company, the company must be a wholly owned subsidiary.	
19.	ISO certifications: ISO 9001; ISO 14000; OHSAS 18001,2007 & ISO 45001	
	CCTV OEM firmware development shall be in line with MEITY (Ministry of Electronics and Information Technology) recommended CMMI Level 5 secure development.	
20.	The Offered VMS Software should be ONVIF S, GT & Q Profile Compliant. The Declaration of ONVIF S, GT & Q Profile shall be available on ONVIF Official Website www.onvif.org in the Conformant Devices.	
21.	CCTV SYSTEM APPLICATION SOFTWARE OEM(s) must be having prescribed Global/India Standards Cyber Security Certificate or equivalent, as on the date of bidding - NIST - FIPS; UL- CAP or UL – 2900; NCSC-UK – Secure by Default; ISO/IEC 27032; Indian Cyber Security Certificate - STQC-ERTL.	

2.1.1 3 Megapixel (or better) IR High Speed PTZ Dome Camera

Parameter	Specification
Image Sensor	1/2.8 inch 3MP CMOS Sensor with 2065(H) X 1536(V) Pixels
Processor	Qualcomm QCS605 / Ambarella S3L33M /ARTPEC 8
Lens	4.6 ~ 165.6mm (F1.6 ~ F4.7), 36x Zoom
FOV	58.1°(W) ~ 1.9°(T)
Wide Dynamic Range	Min 120dB (True WDR)
IRIS	Auto Iris
IR Illumination Distance	350 m
Day/Night Functionality	TDN (True Day Night)
Sensitivity	Colour: 0.35Lux BW: 0Lux with IR
Video Compression	H.265, H.264 High profile & M-JPEG
Recording Resolution	2048x1536p
Multi stream	Up to 30 FPS at all resolution with H.264, H.265 + MJPEG
Audio Compression	G.711
Audio Input	1[1.0Vms, 3k ohm]
Audio Output	1
Pan range and Speed	360° endless, Max. 380°/sec. (preset)
Tilt range & Speed	-10~190°, Max. 380°/sec. (preset)
Preset	256
Tour & pattern	8
Alarm In/Out	4/1
Motion Detection	Up to 4 areas
Privacy Mask	Up to 16 masks
Local Recording	Micro SD, Micro SDHC, Micro SDXC
Remote upgrade	Required
Advance Smart Compression	Smart LBR, ROI over and above H.265
ONVIF Membership & Profile	Full or Contributing Member with min. S profile support
Applicable Protocols	TCP/IP, UDP, HTTP, HTTPS, QoS, FTP, UPnP, RTP, RTSP, RTCP, DHCP, ARP, Zeroconf, Bonjour.ONVIF
Event Trigger	Motion Alarm, Network disconnection, Temperature critical
Power Supply	PoE (UPoE, Class 4), DC 12V
Power Consumption	PoE: 28W, 500mA DC 12V: 28W, 2.3A
Operating Temperature	-20°C to +55°C
Operating Humidity	10%-90% RH (non-condensing)

Housing Environmental rating	IP66
Impact resistance	IK10
Certifications	CE, FCC, EN & BIS

2.1.2 2MP (or better) IP IR PTZ Speed Camera

Sl. No.	Brief Specification	
1	Image sensor	1/2.8 inch Progressive Scan CMOS Sensor
2	Signal System	PAL/NTSC
3	Effective Pixels	2MP (1920 x 1080) @ 25/30 fps and @50/60 fps; 16:9 aspect ratio
4	Minimum illumination	Color: 0.010 lux @F1.6 1/30sec BW: 0 lux @F1.6 (IR on)
5	Electronic Shutter Speed	1/3-1/100,000s
6	Signal to Noise	≥50 dB
7	Gain Control	Auto/Manual; 0 ~ 100 %
8	White Balance	Auto / Fixed Current / Manual
9	Auto iris	Auto / Manual - DC IRIS / P-IRIS
10	Lens type	4.3 -6.0 ~ 129-180mm @ F1.6~F4.8+ or better, 36X Optical & 16X Digital Zoom or better
11	Zoom Speed	Approx. 1 s (optical lens, wide-tele)
12	Angle or View	H: 65° ~ 1.9° V:38.0° ~ 1.00°
13	Focus Optical Zoom	36X Optical Zoom
14	Digital Zoom	16X Digital Zoom
15	Aperture Range	F1.6 to F4.8+
16	Video Compression	H.265 HEVC; H.264; MJPEG
17	H.265 codec profile	H.265 HEVC; Main Profile
18	Video Bit Rate	18 K ~ 80 Mbps
19	Audio compression	G.711 / G.726
20	Max. Resolution	2MP (1920 x 1080) @ 25/30 fps and @50/60 fps; 16:9 aspect ratio
21	Video Streaming	Minimum Individually Configured 03 Streams; 03 streams on 2MP (1920 x 1080) @ 25/30 fps and @50/60 fps
22	Main Stream / Resolution	1920 x 1080 / 1280 x 720 / 640 X 360 / 640 x 360 - @25/30 fps; 50/60 fps)
23	Second Stream	1920 x 1080 / 1600 x 904 / 1360 x 768 / 1280 x 720 / 640 x 360 - @25/30 fps; 50/60 fps)
24	Day & Night	Auto (ICR)/Color/BW

25	IR Source	Inbuilt IR Light Controller for Auto / Manual / OFF including a minimum of 10 nos of IR Lights
26	IR Range	200 Meters
27	Pan Angle	0°-360° endless pan rotation
28	Tilt Angle	"-110° to 110°"
29	Pan Speed	Configurable, from 0.1° to 400°/s. Preset Speed: 240°/s
30	Tilt Speed	Configurable, from 0.1°to 300°/s. Preset Speed: 240°/s
31	Presets	256
32	Preset Accuracy Patrol,	upto 32 presets for each patrol
33	Tour Pattern	8 patrols,
34	Power-off Memory	Yes
35	PTZ position display	Yes
36	OSD Menu	In-builtt XYZ OSD Display (Default - Off)
37	Camera ID	Yes
38	Privacy Masking	24 - Off / On
39	Alarm Linkage	Event notification using digital output, HTTP, Email and MicroSD card
40	Motion Detection	Video Motion Detection
41	ROI	5
42	HLC and BLC	Yes
43	Smart Auto Tracking	Yes
44	Defog	Yes
45	WDR	120 dB
46	Protocols	PELCO-P, PELCO-D, Multi-protocol support
47	Baud Rate	2400/4800/9600bps
48	EIS - Electronic Image Stabilization	Support
49	DNR	2DNR / 3DNR
50	SD Card Image settings	Minimum 256 GB on-board Class 10 speed SD Card having Linux Unified card encryption key; NAS (Support SMB/CISF)
51	Image settings	Rotate mode, Saturation, brightness. contrast, sharpness adjustable Image settings through client software or web browser
52	User/Host	10 Concurrent Users
53		3 levels: Administrator, Operator and User

54	Security	Secured Password protection, IP address filtering, HTTPS encryption, IEEE 802.1Xa network access control, Digest authentication; PCIDSS or UL -CAP compliance; User access log, TLS1.2 stream encryption; SSL/SSH; 3rd Party PKI Digital certificate-based encryption; Digitally Signed Firmware; AES 256; Authenticated MAC; NDAA compliant on-board processor
55	Crypto Compliance	TPM2.0 / FIPS 140-2 /Intel PTT
56	Protocols	IPv4, IPv6, HTTP, HTTPS, 802.1X. QoS. FTP, SMTP, UPnP, SNMP. DNS, DDNS, NTP, RTSP, RTP, TCP/IP, UDP, IGMP, ICMP, DHCP, PPoE,SNMP, TLS1.2, CoS
57	System compatibility	ONVIF Profile G; St & T
58	CMS	Full VMS (Video Management System &/or NVR) level integrations on RTSP; ONVIF -G/S/T & Native
59	Mobile Client Application	Supports seamless VMS / NVR android and iOS APP for Smart phone and tablets
60	Ethernet	1 RJ45 10/100/1000 Ethernet port; micro USB for Wifi; crypto processor
61	Audio In/Out	
62	Alarm In/Out	2 input/1 output
63	Power Requirement	24VAC and Hi-PoE/ UPoE; 42 -54 W
64		
65	MTBF Compliance	Minimum 3,00,000 Hours of MTBF as per Telcordia SR-332 or MIL-HDBK-217 or RCR-9102 Reliability Prediction Testing Standards & Procedures
66	Cyber Security Certificate	Global/India Standards Cyber Security Certificate or equivalent, as on the date of bidding: - NIST - FIPS; UL- CAP or UL – 2900; NCSC-UK – Secure by Default; ISO/IEC 27032; Indian Cyber Security Certificate - STQC-ERTL.
67	Surge Protection	IEC: 61000-4-2 - Electrostatic discharges (ESD); IEC: 61000-4-3 - Continuous radiated disturbances (RS); IEC: 61000-4-4 -Electrical fast transients (EFT); IEC: 61000-4-5 - Surges; IEC: 61000-4-6 - Continuous conducted disturbances (CS); IEC: 61000-4-11 -Voltage dips & interruptions; EN - 50130-4 Clause 7 - Mains Supply Voltage Variations
68	Enclosure	Aluminium all weather installation tpe IP66/67; NEMA-4X; IK -10; Microporous membrane protective vents enclosure.
69	Operating Temperature	-20°C to 60°C
70	Operating Humidity	90% RH

71	Certifications	UL/cUL/ BIS-IS13252, CE/equivalent BIS, FCC / equivalent BIS; EN 55032 / equivalent BIS; EN 50130-4/equivalent BIS; EN 63000 / equivalent BIS; BIS/IS/IEC 62368: Part1: 2018 or IEC 62368-1:2018; RoHS, ONVIF - G, S, T
72	Multi Cast & Un-Cast Support; Minimum 10 concurrent users	
73	MAC address/ Serial Number of the devices including their firmware duly signed with OEM PGP Key & PKI Certificates must be on the name of respective OEMs. OEMs must comply with MACID – Authentication what shall be done through 3rd party tool. OUI must be declared.	
74	IP CCTV System & Components OEM should have direct presence as registered company(ies) in India for last TEN (10) years from the date of publishing of bid (Registered offices by way of Joint Ventures, Franchise, Agency, multiple & different stakeholders; distribution partners, partnership firms; venture capitals; multiple ownership & different stakeholders or through any other 3rd party association during the stated period will not be considered). In case of the company having a foreign parent / holding company, the company must be a wholly owned subsidiary.	
75	ISO certifications: ISO 9001; ISO 14000; OHSAS 18001,2007 & ISO 45001	
76	CCTV OEM firmware development shall be in line with MEITY (Ministry of Electronics and Information Technology) recommended CMMI Level 5 secure development.	
77	Statutory GFR 2020 Compliance - OEM Camera Firmware; Source Code; Chipset; SOC/ processor; coded firmware and PCBs should not be from countries sharing land border with India including the designated restricted countries.	

2.1.3 Joystick Keyboard for PTZ Camera

Sl. No.	Parameters	Specifications
1.	Control Mode	IP based
2.	Localized Decoding / Technology	4 cameras @ 1080p
3.	Decoding Compression supported	H.265 or better
4.	Operating system	LINUX / Windows
5.	LCD screen & resolution / Design	a. The full-size, soft-coated keys backlit with adjustable colour LEDs for quick commands. b. Touch wheel or jog shuttle with options to control NVR/Recorder Server and camera selections. c. LED screen having pleasant backlight providing STN, positive image, minimum 120 x 30 Dots. d. Specific keyboard keys for various camera functions including dedicated PTZ functions; IRIS; etc.; standard keys (alpha + numeric); Recording Server/NVR keys for Rec/Stop, Play Fwd., Play Rev, Review, Step FWD, REV; etc.
6.	Joystick	Multi Axis /3-Axis or above / 3-D axis proportional control - Intuitively and precisely navigate digital models or camera positions in 3D space
7.	Network Port	1×Ethernet (10Base-T, 100Base-TX) RJ45 with PoE
8.	Audio in/Out / Power Connector	1× Locking 12 VDC power connector
9.	Serial interface	1×RS232/422
10.	USB Port	1×USB Type A, version 1
11.	Power supply	12 V DC
12.	Power consumption	≤ 12 W
13.	Working temperature	-10°C to +55°C
14.	Working humidity	≤ 80% RH
15.	Certifications	UL/cUL/ BIS-IS13252; CE; FCC: CFR 47 Part 15 Class B; BIS; EN 61000 / EN 60065:2006 or equivalent BIS

2.1.4 5MP(or better) IP Based Fixed Day & Night IR Dome Camera

Sl. No.	Parameter	Minimum Required Specifications
1	Image Sensor	1/2.8 inch Progressive Scan CMOS or better
2	Mega Pixel	5MP (2592 X 1944) at 25/30 fps
3	Day/ Night operation	Automatic with IR Cut Filter
4	Minimum Illumination	0.05 Lux/F1.6 (Color,30 IRE), 0 Lux/ F1.6 (IR ON)
5	Lens	Automatic Varifocal lens 2.8-12mm(, F1.6 ~ F3.0+) motorized focus & zoom
6	Image Resolution	Minimum 03 individually configurable streams. 5MP (2592 X1944) @ 25/30fps or better & 2 MP (1920x1080) simultaneously 02 streams in 2 MP (1920x1080) @ 25/ 30fps simultaneously or better simultaneously.
7	Video Compression Type	H.265 -HEVC, H.264 or higher, Motion JPEG
8	Motion Detection	Yes
9	Electronic Shutter	1/30 sec to 1/30,000 sec or better
10	Electronic Exposure & Control	Automatic/ Manual
11	Wide Dynamic Range	120 dB or better
12	WDR, BLC, HLC; AWB; 3DR; Defog; AGC (0-100% range); ROIs minimum 08 rectangular; Privacy masking	In-built & required
13	Privacy Masks	Minimum 4
14	Camera on-board Video Analytics -Events	People counting, Video motion detection, Alarm input, Recording notification, Tampering, Loitering, Tripwire, Smart Motion Detection
15	Event Actions	File upload via FTP/SFTP/HTTP/HTTPS; digital output and Notification via email, Memory SD Card.
16	Event Actions	Pre- and post-alarm video buffering, External output activation, Video recording to edge storage, card replenishment, Day/night mode, Overlay text
17	S/N Ratio	Minimum – Min. 50dB

18	Edge Storage	Built in SD card slot with support up to 256 GB with Class 10 speed SD Card Slot. The camera should have the facility to store the data on local SD card having card encryption with Linux Unified Key Setup for local video storage when event triggered inside the camera in case of network connection loss and the stored data on SD card should be automatically sent to the storage when network reconnects.
19	Protocols	IPv4, IPv6, TCP / IP, HTTPS, UPnP, RTSP, IGMP / Multicast, SMTP, DHCP, NTP, DNS, DDNS, QoS, SNMP, 802.1X, UDP, ICMP, ARP, TLS1.2
20	Security	Secured Password protection, IP address filtering, HTTPS encryption, IEEE 802.1Xa network access control, Digest authentication; PCIDSS or UL -CAP compliance; User access log, TLS1.2 stream encryption; SSL/SSH; 3rd Party PKI Digital certificate-based encryption; Digitally Signed Firmware; AES 256; Authenticated MAC; NDAA compliant on-board processor
21	Firmware Authenticity; Security & Upgrade	The firmware must be OEM original; encrypted &/or Digitally Signed with secured keys for all secure boot and upgrades with code signing. All the upgrades shall be done though TLS1.2 -HTTPS secured web interface.
22	Interface	RJ 45, 100 Base TX; Audio: Line In/Out; Alarm - 1/1
23	Enclosure	Aluminum, IP66/67; IK-10; protective Outdoor enclosure
24	Mount	Wall / Pole Mount
25	Power Supply & Consumption	12 VDC / 24 VAC (50 / 60Hz), PoE/PoE+((802.3at PoE Class 4), Auto Sensing; Max. Power less than 8 Watt
26	IR Range	Intensity adjustable Smart Illuminator with minimum 40 Mtr Auto / Manual IR light Control; or external IR equivalent IP66; IK-10 rated IR
27	Operating Environment	-20 ºC to 60 ºC; 90% RH
28	Certification	UL/cUL/ BIS-IS13252, CE/equivalent BIS, FCC / equivalent BIS; EN 55032 / equivalent BIS; EN 50130-4/equivalent BIS; EN 63000 / equivalent BIS; BIS/IS/IEC 62368: Part1: 2018 or IEC 62368-1:2018; RoHS, ONVIF - G, S, T
29	MTBF Compliance	As per Telcordia SR-332 or RCM or MIL-HDBK-217 or RCR-9102 standard

30	Security Certificate	Certifications - NIST-FIPS Certification or NCSC - UK - Secure by Default Certification or UL - CAP or STQC - ERTL - CERT-IN Certification or IS 27032

2.1.5 5 MP (or better) Indoor /Outdoor Panoramic or Fish Eye Camera

Sl. No	Parameter	Specification
1.	Image Sensor	5 MP CMOS Sensor
2.	Min. Illumination	0.1 lux at 50 IRE F/2.0
3.	Processor	Qualcomm QCS605/ Ambarella S5L66/ ARTPEC 7 (OEM to declare on letter head)
4.	Day/Night	Automatic and Manual with IR cut filter
5.	Alarm	1x contact input, 1x contact output
6.	IR	15 meters
7.	Audio Input	Yes
8.	Audio Output Level	Yes
9.	Lens	360°/180°, 1.5 - 1.6mm, F 2.0 / 2.5
10.	Corridor View	It should be possible to split views in corridor mode
11.	3-Way split corridor view	T view should be possible
12.	Virtual Cam	Up to 4 different VCam
13.	Advanced Event Management	Configurable Triggers: Motion regions, Network message, Link down Configurable Actions: SMTP (snapshot), Local recording
14.	Security	Password protection, Brute force protection, IP address filtering, HTTPS encryption
15.	Frame rate	Minimum 30 fps@ 9MP
16.	Video Compression	H.264, H.265, MJPEG and VP8 (WEB RTC)
17.	Smart Compression	Color based compression
18.	Streams	30 fps @ 2992 x 2992 (9.0 MP, max resolution)
19.	Image Enhancement	High WDR @ 100dB @ 25fps @ 9MP resolution(simultaneously)
20.	Functionality	10x zoom with 3D client-side de-warping software
21.	ONVIF Membership & Profile	Full or Contributing Member with min. S profile support
22.	Unicast & Multicast	Unicast: Up to 20 simultaneous users depending on the resolution setting Multicast: Yes, supported

23.	On board storage	Support 512GB SD card
24.	Power Input	Power over Ethernet (PoE), 8-28 VDC
25.	Operating Temperature	-40°C to 50°C
26.	Ingress Protection & Impact Rating	IP67 and IK 10
27.	Mount Type	Surface and Pendant, Pole Wall Mount
28.	Accessories (Pole/Celling mount)	Same make as camera
29.	ISO Certificate for camera OEM Company	ISO 9001:2015 and ISO 14001:2015
30.	Certifications	UL, FCC, EN & BIS

2.1.6 4x5.0 Multi Sensor 360 Degree 20 Megapixel IR Motorized Dome Camera

Sl. No	Parameter	Specification
1.	Image Sensor	4 x SONY STARVIS EXMOR 1/2.8" 5M CMOS
2.	Processor	Qualcomm QCS610 / Ambarella S3L63 /ARTPEC 7
3.	Lens	2.7 - 13.5 mm, F1.4
4.	FOV	Horizontal: Approx. 85° (Wide) to 31° (Tele)
5.	Wide Dynamic Range	120dB (True WDR)
6.	IRIS	Auto
7.	Day/Night Functionality	TDN (True Day Night)
8.	Sensitivity	Color: 0.13 Lux / B/W : 0.005 Lux
9.	Video Compression	H.265, H.264 High profile & M-JPEG
10.	Recording Resolution	2592x1944p
11.	Multi Stream	2592x1944/30 + 480p30 with H.264,H265 + MJPEG
12.	Audio Compression	G.711
13.	Audio Input & Output	1[1.0Vms, 3k ohm]/ 1(for 1st camera)
14.	Local Recording	Micro SD, Micro SDHC, Micro SDXC
15.	I/O Terminals	1 x Alarm In / 1 x Alarm Out (For the 1st Camera)
16.	Remote upgrade	Required
17.	Advance Smart compression	Smart LBR, ROI over and above H.265
18.	ONVIF Membership & Profile	Full or Contributing Member with min. S profile support
19.	Applicable Protocols	TCP/IP, UDP, AutoIP, RTP(UDP/TCP), RTSP, NTP, HTTP, HTTPS, SSL, DNS, DDNS, DHCP, FTP, SMTP, ICMP, SNMPv1/v2/v3(MIB-2), ONVIF

20.	Analytics at Camera Edge Level	Camera should support i) Detection Zones & Rules ii) Camera Shake Cancellation filter iii) Direction filter iv) Pose tracker filter v) Intrusion and Loitering filter vi) Object Counting filter vii) Camera tampering filter viii) Face detection viii) Speed detection ix) 3D Calibration x) Face recognition if required. xi) Pose filter xii) Colour filter
21.	Event Trigger	Motion Alarm, Network disconnection, Temperature critical
22.	Power Supply	PoE IEEE 802.3af Class 3 & 12VDC, Max. 31W
23.	Operating Temperature	-30°C to +50°C
24.	Operating Humidity	10% to 90% RH (non-condensing)
25.	Housing Environmental rating	IP67
26.	Impact resistance	IK 10
27.	ISO Certificate for camera OEM Company	ISO 9001:2015, ISO 14001:2015,ISO 45001:2018
28.	Certifications	FCC, EN & BIS /UL

2.1.7 6Megapixel(or better) 4K IR Motorized Varifocal Lens Bullet Camera

Sl. No	Parameter	Specification
1.	Image Sensor	1/1.8 inch 8.5MP CMOS Sony Starvis Sensor with 3952(H) X 2320(V) Pixels
2.	Processor	Qualcomm QCS610 / Ambarella S5L66 /ARTPEC 8
3.	Lens	Motorized Zoom, 3.6 ~ 10mm (F1.5)
4.	FOV	D:52.3° ~ 112.9°, H:45.7° ~ 98.4°, V:25.9° ~ 54.6°
5.	Wide Dynamic Range	120dB (True WDR)
6.	IRIS	P-Iris
7.	IR Illumination Distance	120ft
8.	Day/Night Functionality	TDN (True Day Night)
9.	Sensitivity	Colour: 0.09Lux
10.		BW: 0Lux with IR
11.	Video Compression	H.265, H.264 High profile & M-JPEG
12.	Recording Resolution	3840x2160
13.	Multi stream	3840x2160p30 + 480p30 with H.264, H265 + MJPEG
14.	Audio Compression	G.711
15.	Audio Input & Output	1[1.0Vms, 3k ohm]/1
16.	Local Recording	Micro SD, Micro SDHC, Micro SDXC

17.	Remote upgrade	Required
18.	Advance Smart compression	Smart LBR, ROI over and above H.265
19.		
20.	Programming I/F	CGI API, ONVIF
21.	Applicable Protocols	TCP/IP, UDP, AutoIP, RTP(UDP/TCP), RTSP, NTP, HTTP, HTTPS, SSL, DNS, DDNS, DHCP, FTP, SMTP, ICMP, SNMPv1/v2/v3(MIB-2), ONVIF
22.	Event Trigger	Motion Alarm, Network disconnection, Temperature critical
23.	Power Supply	PoE IEEE 802.3af Class 3 & 12VDC,
24.	Analytics at Camera Edge Level	Camera should support i) Detection Zones & Rules ii) Camera Shake Cancellation filter iii) Direction filter iv) Pose tracker filter v) Intrusion and Loitering filter vi) Object Counting filter vii) Camera tampering filter viii) Face detection viii) Speed detection ix) 3D Calibration x) Face recognition if required. xi) Pose filter xii) Colour filter
25.	Operating Temperature	-40°C to +50°C
26.	Operating Humidity	10% to 90% RH (non-condensing)
27.	Housing Environmental rating	IP67
28.	Impact resistance	IK10
29.	Certifications	UL, FCC, CE, ROHS, BIS

2.1.8 5MP(or better) IR IP Dome Network Camera

Sl. No.	Description (Brief Specification)
1.	1/2.8 inch Progressive Scan CMOS or better 5MP (2592 X 1944) at 25/30 fps
2.	5MP (2592 X 1944) at 25/30 fps
3.	2.8 to 12 mm
4.	Automatic focusing and motorized zoom Lens
5.	Frame Rate: upto 30fps; 1/8 ~ 1/32,000 shutter speed
6.	H.265 -HEVC, H.264 or higher, Motion JPEG
7.	TDN - Auto (ICR) / Color / BW
8.	2D / 3D DNR
9.	True 120dB WDR
10.	Iris Control: Auto Iris
11.	0.005 Lux / F1.6 (Color, 30 IRE), 0 Lux / F1.6 (IR ON)

12.	50 m with inbuilt IR Light Controller for Auto / Manual / OFF including a minimum of 04 nos of IR Lights
13.	DC12V, PoE (IEEE 802.3af)
14.	Video Output: 1 RJ45 10M/100M self-adaptive Ethernet port
15.	Motion Detection, Network Disconnection, External Input, Audio Alarm, IP Address conflict, Illegal Access, Storage anomaly; Tampering; People counting, Video motion detection, Alarm input, Recording notification, Tampering, Loitering, Tripwire, Smart Motion Detection
16.	IPv4, IPv6, TCP / IP, HTTP, HTTPS, RTSP / RTP / RTCP, IGMP, SMTP, DHCP, NTP, DNS, QoS, SNMP, 802.1X, UDP, ICMP, ARP, TLS; SFTP
17.	Die-cast aluminium housing; IP67 Compliant, IK10 Certified, In-built Heater Fan and EN 50130-4 / BIS: IS 13252 (Part 1):2010
18.	ONVIF - S; G; T
19.	WDR, BLC, HLC; 120dB WDR; White Balance - Auto/Tungsten/Daylight/Manual; Gain Control 0~100%; 2D/3D DNR; EIS; DEFOG; Minimum 5 Areas of Privacy Masking; Smart IR Light Controller (Auto/Manual)/OFF ; TDN - Auto (ICR) / Color / BW
20.	Minimum 256 GB on-board Class 10 speed SD Card having Linux Unified card encryption key
21.	Secured Password protection, IP address filtering, HTTPS encryption, IEEE 802.1Xa network access control, Digest authentication; PCIDSS or UL -CAP compliance; User access log, TLS1.2 stream encryption; SSL/SSH; 3rd Party PKI Digital certificate-based encryption; Digitally Signed Firmware; AES 256; Authenticated MAC; NDAA compliant on-board processor
22.	Field of View : Minimum Horizontal: 96°-26°, Vertical :69°-20°
23.	Resolution: 2592 x 1944; 2592 x 1520; 1920 x 1080; 1280 x 720; : 704 x 576; 640 x 480; 352 x 240; 320 x 240
24.	Temperature: -20°C to 60°C / Humidity: 0-90% RH
25.	Certifications: UL/cUL/ BIS-IS13252, CE/equivalent BIS, FCC / equivalent BIS; EN 55032 / equivalent BIS; EN 50130-4/equivalent BIS; EN 63000 / equivalent BIS; BIS/IS/IEC 62368: Part1: 2018 or IEC 62368-1:2018; RoHS, ONVIF - G, S, T
26.	MTBF Compliance - As per Telcordia SR-332 or RCM or MIL-HDBK-217 or RCR-9102 standard
27.	Multi Cast & Un-Cast Support; Minimum 10 concurrent users
28.	Statutory GFR 2020 Compliance - OEM Camera Firmware; Source Code; Chipset; SOC/ processor; coded firmware and PCBs should not be from countries sharing land border with India including the designated restricted countries.

29.	MAC address/ Serial Number of the devices including their firmware duly signed with OEM PGP Key & PKI Certificates must be on the name of respective OEMs. OEMs must comply with MACID – Authentication what shall be done through 3rd party tool. OUI must be declared.
30.	IP CCTV System & Components OEM should have direct presence as registered company(ies) in India for last TEN (10) years from the date of publishing of bid (Registered offices by way of Joint Ventures, Franchise, Agency, multiple & different stakeholders; distribution partners, partnership firms; venture capitals; multiple ownership & different stakeholders or through any other 3rd party association during the stated period will not be considered). In case of the company having a foreign parent / holding company, the company must be a wholly owned subsidiary.
31.	ISO certifications: ISO 9001; ISO 14000; OHSAS 18001,2007 & ISO 45001
32.	CCTV OEM firmware development shall be in line with MEITY (Ministry of Electronics and Information Technology) recommended CMMI Level 5 secure development.
33.	The Offered VMS Software should be ONVIF S, GT & Q Profile Compliant. The Declaration of ONVIF S, GT & Q Profile shall be available on ONVIF Official Website www.onvif.org in the Conformant Devices.
34.	Global/India Standards Cyber Security Certificate or equivalent, as on the date of bidding: - NIST - FIPS; UL- CAP or UL – 2900; NCSC-UK – Secure by Default; ISO/IEC 27032; Indian Cyber Security Certificate - STQC-ERTL.
35.	CCTV SYSTEM APPLICATION SOFTWARE OEM(s) must be having prescribed Global/India Standards Cyber Security Certificate or equivalent, as on the date of bidding - NIST - FIPS; UL- CAP or UL – 2900; NCSC-UK – Secure by Default; ISO/IEC 27032; Indian Cyber Security Certificate - STQC-ERTL.

2.1.9 5MP(or better) IR Motorized Varifocal Lens Bullet long distance Camera

Sl. No.	Parameter	Specification
1.	Image Sensor	1/2.8 inch 5.14 MP CMOS Sony Starvis Sensor with 2592(H) X 1944(V) Pixels
2.	Processor	Qualcomm QCS610 / Ambarella S3L63 /ARTPEC 8
3.	Lens (Perimeter Locations)	Motorized Zoom, 6 ~ 50 mm (F1.4)
4.	FOV	D:39° ~ 109°, H:31° ~ 85°, V:24° ~ 62°
5.	Wide Dynamic Range	120dB (True WDR)
6.	IRIS	P-Iris
7.	IR Illumination Distance	120ft
8.	Day/Night Functionality	TDN (True Day Night)
9.	Sensitivity	Colour: 0.08Lux
10.		BW: 0Lux with IR
11.	Video Compression	H.265, H.264 High profile & M-JPEG

12.	Recording Resolution	2592x1944
13.	Multi stream	4:3 Mode: 2592x1944/20 +480p30 with H.264, H.265+MJPEG
14.		16:9Mode: 1440p30 + 480p30 with H.264, H.265+MJPEG
15.	Audio Compression	G.711
16.	Audio Input & Output	1[1.0Vms, 3k ohm]/ 1
17.	Local Recording	Micro SD, Micro SDHC, Micro SDXC
18.	Remote upgrade	Required
19.	Smart Feature	Smart LBR, ROI
20.	Advance Smart compression	Smart LBR, ROI, over and above H.265
21.	ONVIF Membership & Profile	Full or Contributing Member with min. S profile support
22.	Applicable Protocols	TCP/IP, UDP, AutoIP, RTP(UDP/TCP), RTSP, NTP, HTTP, HTTPS, SSL, DNS, DDNS, DHCP, FTP, SMTP, ICMP, SNMPv1/ v2/v3(MIB-2), ONVIF
23.	Event Trigger	Motion Alarm, Network disconnection, Temperature critical
24.	Analytics at Camera Edge Level	Camera should support i) Detection Zones & Rules ii) Camera Shake Cancellation filter iii) Direction filter iv) Pose tracker filter v) Intrusion and Loitering filter vi) Object Counting filter vii) Camera tampering filter viii) Face detection viii) Speed detection ix) 3D Calibration x) Face recognition if required. xi) Pose filter xii) Colour filter
25.	Power Supply	PoE IEEE 802.3af Class 3 & 12VDC,
26.	Operating Temperature	-40°C to +50°C
27.	Operating Humidity	10%-90% RH (non-condensing)
28.	Housing Environmental rating	IP67
29.	Impact resistance	IK10
30.	ISO Certificate for camera OEM Company	ISO 9001:2015, ISO 14001:2015 & ISO45001:2018
31.	Certifications	UL, FCC, EN & BIS

2.1.10 APPLICATION SOFTWARE

Video Management Or Network Video Recording &/Or Management Software

Sl. No.	Parameter	Specification
1	Video Management Software	• Video Management Software must aggregate the feeds from different locations to a centralized server and from there, through a secure transmission channel, the feeds must be accessible to all the authorized users based on users' locations of interest. • A unified software platform must be available for Mobile, Desktop and Video Wall/ Tv's for streaming and showing various Events of Interest (EOI) to authorized users. • Software must be secure at Data transmission and storage Level via SSH keys, SSL/TLS encryption, Server Firewalls, encrypted storage etc. The accessibility of the Software must be provided to only those users who have been given access through a central administration panel managed by the designated authorized administrator. • Please amend as – OS &/or LDAP password & as well as a digital signing or digital certificate-based login must be present in Mobile and Desktop apps to allow only authorized users to access Mobile and Desktop apps.
2	Live Streaming in Mobile App Desktop and in video wall at command center	• Mobile and Desktop apps must support live streaming from different locations in near real time. The user can select the area and the cameras they want to access through Mobile and Desktop apps from any geographical location.

Sl. No.	Parameter	Specification
3	Software Administrative System	A web-based Software Administrative System must support following functionality: • Feeds Management to add/view feeds from different locations. • Alert and Statistics as per actual recorded in System • Event of interest (EOI) Management to enable different events on different feeds based. EOI management must support multiple regions of interest and multiple time intervals for each feed. • Recordings to display past recordings of each Camera. System must support at least 30 days of recordings. • User Management for adding/managing different users and their user-level permissions. • Empirical data analysis to provide an overview of different types of alerts generated by the System. • Feed statistics for providing an overview of running/stopped feeds and network usage of each feed.
4	User Activity Management	All the activities performed by the above-mentioned users must be managed through separate service on the web panel which record different information as follows: • Record login time • Record Event analysis monitoring • Record the response on alert
5	Live streaming through mobile app	• The VMS shall offer the VA - Alarms Management Mobile app-based streaming through which any authorized user from any of the location can send the live feed to the command center or security control room.
6	Response Management	• Software should provide the software mechanism through which a particular alert detected should be assigned to right stakeholder for disposal
7	Audit report	• Software should provide the mechanism to download the report for different dates and time for the alerts generated
8	Offline video search	• The VMS shall provide a mechanism through its VA Application platform allowing users to upload offline videos for forensic analysis.
9	User role management	• Software should provide the mechanism to assign the different role and responsibilities to different users.

Sl. No.	Parameter	Specification
10	Activity of interest	• The software should provide a user interface for the selection of region of interest (ROI) to activate different Analytics for different areas.
11	Analytics Integration	• VMS shall support integration with the ANPR, FRS and other VA applications mentioned in the RFP through ONVIF & Restful API/SOAP/WEB API for integrations.
12	System Security	• The Recording Server System application shall support advanced security features with encryption support for communication between desktop clients to recording server and secure HTTPS login for the Web Client and Mobile App along with AES18/256 encryption. • Supports three modes of encryption between client and server through default encryption, windows authentication encryption and certificate-based encryption under the application security settings for secure communication. • Shall support certificate-based encryption across workgroup and domain including remote locations; web clients and mobile apps/clients such as VeriSign Class 3 Code Signing 2010 CA certificate or Digi-cert latest CA Certificate for certificate-based encryption. • Body pixilation and face blurring in live view to protect privacy from abuse of surveillance data. • Annoymization of Faces having had identifying particulars or details removed & Selective unmasking for clip export of selected cameras and date/time with only the face of a person of interest unmasked. • The System supports & compliant to encrypting of SQL Server communications (Over SSL); encrypted video stream with TLS 1.2, create/edit IP filter lists; Digest Authentication; IPsec secured communication using AES/3DES for Encryption and SHA1/MD5 for Integrity, enable IPsec policy through OS Firewall; using HTTPS as the default communication protocol; SSH/SSL certification; 4-Eye dual user authentication; PKI; digest authentication; digital signing. • Encrypted video stream with TLS 1.2, in-built Security from CSRF; Insufficient Transport Layer Protection; Cross-Site Scripting XSS Create/edit IP filter lists; TPM 2.0 / FIPS 140 -2 / Intel PTT crypto compliance (hardware-based encryption); • Digital signing • GDPR
13	Redundancy	Supports multiple options including 1:1; N:1; N: M. The System must be supplied with in-built with 1: N/1:1 redundancy

Sl. No.	Parameter	Specification
14	ONVIF & PSIA	ONVIF – S; G &T; PSIA.
15	Client Features	• Supports mobile apps for both IOS and Android for a minimum 10 recording servers' logins to be configured including local & remote; biometric fingerprint authentication login through a minimum 5 users' fingerprints to be configured per device; digital zooming for video streaming in 1X1 Layout; zoom in and zoom out support; HLS Streaming support for IOS; HTTPS support for IOS & Android Apps and secured default communication. • Supports 4k resolution @25/30 fps; 3D Positioning by allowing to view a specific object in a live video in 3-dimensional view for click based camera positioning; rectangle selection 3D positioning & restoring to last PTZ position. • Supports both analog and digital PTZs through the GUI or the keyboard; single-click option or mouse drag 3D PTZ control experience by doing away the requirement of continuous clicking. • Supports multi-zoom views on HD video and support for Profile cameras to create virtual cameras by digitally zooming into the field of view. • Supports Metadata conversion utility what allows automatically /manually the user to update the unique ID number for the cameras in primary/redundant box and thus allows a user to effectively playback the recorded clip without loss of video. Supports Offline Mode by allowing the user to synchronize the Unique ID number in offline mode for specific cameras in redundant recorders. • Supports viewing capability to be launched multiple times on the same workstation, a minimum of four times to display four viewers on four separate monitors per workstation. • Supports the Video Surround to track subjects of interest as they move between areas covered by adjacent cameras by clicking for double-clicks on the panel where the subject is currently visible under specific Camera. • Supports H.265 Codec for GPU based Rendering client management feature for a minimum of 23 no of H.265 cameras with 1080P Resolution at 30 FPS/30 GOP.

Sl. No.	Parameter	Specification
		• Supports the Video Analytic Events by enabling to analyse the video automatically for detection and determining the events what taking place in real time for the Video Analytic events triggered from the cameras by configuring the events in the camera web page to view in the Alarms window. The recording application supports camera built-in/ edge Video Analytics Events include Face Detection; Tamper Detection; Audio Detection; - Device SD Card Full memory & Device SD Card Failure. • Supports Metadata conversion utility what allows automatically /manually the user to update the unique ID number for the cameras in primary/redundant box and thus allows a user to effectively playback the recorded clip without loss of video. Supports Offline Mode by allowing the user to synchronize the Unique ID number in offline mode for specific cameras in redundant recorders.
16	Remote Monitor Access	• The proposed VMS must have remote monitor facility through LDAP &/or Digital Signing or Digital Certificate based log-ins shall allow operators to control a remote monitor connected to another workstation and perform review capabilities so that both the local operator and the remote viewer can simultaneously watch the same video.
17	Integrated GUI	• Integrated GUI - The Integrated Unified User Console is a suite consists a map-based user interface designed to improve situational awareness; Incident Workflow, designed to help standardize response and information recording for incidents and critical activities; Health Dashboard for displaying health status of devices at various level; Device management for upgrading connected device firmware and changing passwords; safety compliance dashboard to display the healthy safety metrics of a building such as number of social distancing violations, mask compliance violations. • The System should support displaying the active and acknowledged alarms reported on the devices accessible to the logged in user and allow search and sorting based on the alarm fields.

Sl. No.	Parameter	Specification
		• The GUI of VMS shall have a customized Video analytics tab for visualizing all the scanned and recognized objects by various analytics algorithms across different cameras. This tab empowers the operators to visualize the people and vehicles appearances in a chronological order along with the properties for e.g. blacklisted, whitelisted. Analytics tab increases situational awareness by showing history trail of appearances of a vehicle or a person, validation through an instant recording playback thru simple drag and drop of these events. • GUI shall be able to define the video display for each panel namely, Pre-Alarm, Post Alarm, Live, and On Alarm.
18	Localization & Support - The proposed Video Management System must be able to provide	• The proposed Video Management System must be able to provide Application Software application localization requirements for varied & defined SOPs through customized text, integrated customized alarm window; layout, graphics and multimedia, keyboard shortcuts, fonts, character sets and locale data, as per secure development; firmware upgrades; digitally signed firmware and customized API support in India meeting and mitigating trouble shooting and localized India specific API support & development. Supports ONVIF Profile G for 3rd party cameras. • Macro capability to allow for custom scripts and to provide both customization and third-party integration. • Support to provide varied & defined SOPs through customized text, integrated unified single alarm window; layout, graphics and multimedia, keyboard shortcuts, fonts, character sets and locale data, as per secure development; firmware upgrades and customized API support in India meeting and mitigating trouble shooting and localized specific API support & development in India as per MEITY secure development standards.
19	Edge Analytics Support	• Supports camera specific or edge video analytics like intrusion detection; loitering detection; trigger line detection; abandoned object detection; object missing detection under single UI of Alarm Window. • Supports mask compliance detection feature for the people who are with and without Masks in a given scene. Supports social distancing violation detection feature by detecting distance between two people and raises an alarm if the social distance norm is violated.

Sl. No.	Parameter	Specification
		• Supports analytics annotations for camera built in or edge video analytics enabling to trace and locate the moving subjects in live/recorded video and generates an alarm if intrusion or loitering is detected thus subjects in video when found in Region Of Interest, is bounded by rectangle box and on alarm conditions, it will be signified with a change in color of bounding box in live and playback video. Supports alarms for events of motion detection; tampering; blurred image; too dark Image; too bright image; people detection within scene or FOV. • Supports to configure or mask identifiable objects based on the scene environment to choose and configure the required camera based on the mounting position and also enable user need to select the required environment from the stream preferences like the case of a variable scene containing both stationary and moving people or objects, the objects in high motion in the scene and still scenes to anonymize the objects.
20	Reporting & Compliance	• Supports for event history and operator log reporting with export to PDF, Crystal Reports, Excel or Word. • The VMS shall support customizable Standard Operating Procedures (SOP); incidents with SOP Steps and audit trail for compliance. • The VMS shall support to view the compliance and incidents data securely on from a single view; a unified user experience for monitoring; to have a reporting tool for dashboard view.
21	MAP Support	• The VMS shall provide a GUI having a high-resolution map with a deep zoom capability allowing easy navigation of the facility to find issues or to review areas of interest. Large-scale individual maps are linked with simple navigation to seamlessly access maps at national, local and site levels with building details and individual internal floor plans. Navigation on the maps is simple and intuitive, using pinch-to-zoom and drag-to-pan as commonly adopted on touch interfaces, and can also be operable with a mouse control if appropriate. • The VMS shall support HTML5 video live view pop-up on maps - without plug in need.

Sl. No.	Parameter	Specification
		• The VMS should support configuring image-based maps (.jpg, .png, .bmp); configuring online GIS maps and should leverage Open-Street maps; importing the maps directly from CAD files; aid navigations between maps and support the user in identifying issues, at each level there are links to lower-level maps. As an example, when viewing a map of a building there would be links to each floor within the building &/or campus. • The VMS shall support Camera specific or user defined Objects to be represented on the maps showing the live video stream, options to playback and to PTZ operations. • The VMS shall provide an uncluttered interface with immediate visibility of key equipment and information, the map will be configured to show a small selection of key smart objects when zoomed out, but for additional object to be progressively disclosed as the user zooms into specific areas of the map enabling the status of the cameras or doors to be monitored continuously while the user can zoom into areas when additional information is required. • The VMS shall enable operators for selecting specific or defined privileged rights-based alarms; upon selecting one of the active alarms, system should display the device location on map and display history of alarms and the related live or recorded video all in one screen.
22	VMS Workflows	• The VMS shall have standard operating procedures (SOPs) that are presented to the operator as a set of steps when a workflow is initiated either initiated automatically as a result of alarms or initiated manually by the operator (for example for crowd trouble) and also a list of available SOPs through a display of user-friendly icons which makes selection quick and simple.

Sl. No.	Parameter	Specification
		• The VMS shall allow an operator to take ownership of the workflow by enabling the workflow buttons and allowing the operator to check off each step when completed. The VMS shall have the facility of when the operator marks a step as completed, the operator's name (system log-in) and the time and date of the step being completed would be recorded and shall allow only the responding operator is able to check-off SOP steps at any one time; shall allow to release control of the SOP by navigating away from the display and approving/ allowing another operator to take control. The VMS shall allow any logged-on operator to add comments to the SOP header or to individual steps facilitating team working and collaboration on the workflow while maintaining control and responsibility. All comments and other actions are time-stamped and naming for full traceability. Comments shall able be added to the workflow or to individual steps and the name of the operator and the time and date of the comment's entry is recorded. • The VMS shall allow evidence attachments as per requirement allowing the users to attach evidence such as document and pictures to created incidents; other users having access to the incidents to review the attached evidence; support generating a detailed report for incidents including the details of the incident attachments as well and securely to store the attachments and at periodic intervals, should purge the evidence attachment to free up the disk space
23	VMS Dashboard	• The VMS shall have an integrated dashboard for visualizing system device health; viewing status of system components such as recorders and their vital health metrics including CPU usage, memory usage, available disk storage and allowing to access status of individual cameras and search & filter by name and various parameters.

Sl. No.	Parameter	Specification
		• The VMS Dashboard shall allow the users to carry out maintenance activities efficiently by allowing system administrator to maintain a firmware inventory, view current firmware version vs installed version and initiate firmware upgrade simultaneously for all or selected cameras. In addition to firmware upgrades, system shall allow administrators to easily comply with password management policies for peripheral devices by allowing to change camera password simultaneously for all or selected cameras. All firmware's & their upgrades shall be digitally signed & secured. Any Video export shall be digitally signed & encrypted at AES256. • The VMS Dashboard shall have tools related to the compliance violation issues and adherence levels of a facility with respect to safety compliance protocols set by customer's organization. The VMS dashboard contemplates the overall safety levels of a building by graphically displaying occupancy levels with a drill down option to view details of each metric for e.g. number of compliance issues detected such as social distancing violations or non-observance of mask guidelines.
24	Video Clip / Evidence Footage	• The VMS shall be capable of exporting user selected images or video clips and encrypting a digital signature to every exported clip. The Clip Creation facility of VMS shall allow multi-camera clip generation through story clips by selecting multiple cameras at different times to create a single clip to play the cameras back in order and also supporting saving salvo information in a story clip. • The Clip Creation facility of VMS salvo clips shall provide an instant clip export button to create an instant clip while maintaining the salvo information; supporting a pre-determined pre- and post-times that are user-configurable in the preferences. • The VMS shall provide Video Clips / Evidence Footage preview window/windows for play back of the individual cameras prior to commencing clip creation. • The VMS shall allow manual setting of the clip duration in the clip creation window for each camera. The VMS shall allow playing back the exported video clips and each video channel that is being recorded by the recording system shall be overlaid with text and a time stamp that is customizable by the user

Sl. No.	Parameter	Specification
25	Mobile Apps	• The VMS shall support mobile app for Android and IOS platforms. • The VMS Mobile apps should support viewing live, recorded videos, controlling PTZ and responding to alarms. • The Communication between the server and the mobile app should be encrypted for both video and non-video data. • The VMS shall enable viewing live video, zooming in for full screen viewing, playback or searching for video by date and time, perform PTZ control through presets, monitor & manage alarms and taking a snapshot of a video frame, one each configuration for both local and remote server connection. • The VMS shall allow to configure and logon using Touch ID for fingerprint authentication login; digital zoom in and zoom out for full screen view in landscape or portrait; take a snapshot of a live or recorded video frame and use as an image; monitor & manage alarms HIS streaming support to view live video even in the case of a valid/trusted certificate not installed and HTTPS support.
26	Back-ground Data Service	• Supports background data service settings under which all system data gets synchronized enabling to find and clean up the orphan clips from file system or DB. Supports drive scan feature by allowing if Video recorder 1 is down due to some technical issues, then the hard disk of Video Recorder 1 can be used in Video Recorder 2. Video Recorder 2 initiates the scan, detects the drives and displays the recordings of video recorder
27	Cyber Security Certificate	• NIST-FIPS Certification or NCSC – UK – Secure by Default Certification or UL – CAP or STQC - ERTL Certification or IS 27032

Note- For more info, user may also refer BIS standard -Video Surveillance System IS 16910-2018

SAMPLE BOQ OF VARIOUS ITEMS AT DIFFERENT LOCATIONS UNDER A PRISON

Sl. No	Item Description	Area of Operations
1	FIXED IP IR CAMERA - 3MP or 5MP or 8MP for recognizing & recording the Automatic Number Plates of vehicles	Vehicle Number Plate Recognition
2	IP IR BULLET CAMERA - 5MP or 8MP for Face / Facial Recognition of Drivers / CO Passengers / Pilon Riders	FRS / Face Recognition Camera
3	IP IR Long Range Bullet 5MP Bullet Camera	Periphery Surveillance
4	IP IR 5MP or 3MP or 2MP PTZ Camera	PTZ Camera for Gate / Periphery/ General 360-degree fast view surveillance
5	IP IR 2MP Flame Proof PTZ Camera	Custom fitted explosion-proof housings can operate safely in areas where traditional camera device designs may be unsuitable or pose a risk to safety due to the presence of explosive or flammable gases and material. Intrinsically safe design: Sealed camera body prevents unintentional ignition in hazardous environments
6	Joystick keyboard for PTZ Camera	PTZ Keyboard to be used for controlling PTZ Cameras through NVMS Client
7	5MP or 12MP Indoor / Outdoor Panoramic or Fish Eye Camera	When ceiling mounted, fisheye cameras have a 360º field of view, making them ideal for single camera installations. Ideal for Prison Cells / Dormitory / Cafeteria / Dining Rooms 360º coverage: Cover wide areas with no blind spots Flexible viewing: Multiple live viewing options with camera-side dewarping for easy monitoring Low profile design: Low profile design allows the camera to blend into its surroundings Help with operational insight for people counting, heatmapping and queue management analytics

8	2 or 4 Nos of each 5MP Sensor based 360 Degree IR Motorized Varifocal lens Multi-sensor Camera	Eliminate the need for multi-camera installations Only require a single network cable for installation Record all sensors using a single camera recording license for VMS solutions View up to 360° Custom monitoring with replaceable lens modules Center Mode to remove blind spots below the camera Up to 20MP (5MP x 4) Up to 220° field of view Multiple viewing options – Single panorama – Original camera views – Cropped images
9	5MP or 8MP IP IR Indoor / Outdoor Dome Camera	for Small Rooms/Meeting rooms
10	Network Based Server Storage System for recording video staorge of minimum 30/60/90 days as required	Video Storage Server / NAS
11	Network Video Management System (NVMS)	Central Management System
12	AI Based Face Recognition System Licenses	Server based AI driven Face Recogntion Application what would be running on AI Server kept at Control room
13	AI Based Video Analytics System Licenses	Server based AI driven VIDEO ANALYTICS Application what would be running on AI Server kept at Control room
14	AI Based Automatic Number Plate Recognition System Software	Server based AI driven ANPR Application Shall be running on AI Server being kept at Control Room
15	NVMS or Central Management Server	Central Management System Server shall be kept at Control room
16	AI Based FRS / ANPR / Video Analytics Server	Video Analytics Server for FRS /ANPR / Other Critical Analytics which shall be kept at Control Room
17	Fixed Workstation with minimum 22inch LED TFT for VMS / FRS / ANPR / Video Analytics Application Clients	Workstation for running Single User Graphics User Interface Client for all viewing/monitoring /management of Live/Recording/Alarms/Play back viewing from any of the place through installed client app
21	Network Cabling - OFC & Copper along with accessories etc required complete termination and transmission.	OFC Single Mode Cabling would be considered for all nodes/ outdoor IP Cameras or Cameras which are more than 60-70-meter average distance being spliced and connected through Single Mode LIU with Field Level Industrial Switches being housed under Outdoor JB, properly earthed and adequate Ethernet surge arrestors considered at field/distribution and core level

22	Network Switches for Edge /Access / Aggregation / Distribution/TOR/Core Levels	Active Network Switching for connecting field devices with distribution or aggregation switches with options to dedicate; filter bandwidth through Software Driven Network being driven from Core Layer Switches in full redundancy physically stacked and ring topology for complete redundancy and high availability.
23	LED Panel 55-60 inch	Viewing Panels for Control rooms; High Official / Chief of the Prison
24	JB & Pole	Outdoor Junction Boxes and 5/6 Mtr Poles
25	Power Cabling with accessories; electrical DB /MCBs / RCBs /RCBOs etc fittings along with eathing	Power wiring as required with DB/MCB/earthing accessories
26	Network Rack 9U /12U /15U	Indoor Network Distribution Racks where field level Access Switches shall be kept at 9U indoor level and distribution switches along with other accessories like patch panel / LIU in the 12/15 U racks
27	Network cum Server Rack 42U	Central Racks for Control Room
28	Online UPS Power provisioning as per site requirement areas for a minimum 60 minute back-up on full load	UPS Power sizing in terms of VA Power for all field devices; for all active equipment's kept at JB / Racks; Servers; Client Workstations shall be provisioned to meet downtime requirements

2.2 Security Poles

Security Poles consists of following Cameras

2.2.1 Mini Dome Network IR-15 Camera

Sl. No.	Specifications	
i.	• 5MP -2560x1920 high sensitivity with CMOS sensor or better,	
	• H.264; H.265-HEVC - 5MP -560x1920@ 25/30 fps with 16:9 aspect ratio, • ONVIF - G; S; T	
	• WDR 120db or better.	
	• Colour 0.18 lux (30 IRE or better)	
	• Lens size 2.8 -12 mm, MFZ P-IRIS Lens; Triple Streaming. Horizontal • View 100 degree or Above	
	• · Bit rate Compression Mode CBR/ VBR (Selectable option in camera). POE, Analytics like SD Card error; Camera Tampering & Motion Detection; Alarm Input; Camera Tampering Detection; Unattended object, Missing object; Loitering, Line Crossing, Intrusion, Camera tampering detection, SD Card notification; Face Detection; System Boot; Alarm input etc.	
	· SD card slot - 256 GB;	
ii.	Operating Temperature	IP66/67; NEMA-4X; IK -10; Microporous membrane protective vents enclosure; -10ºC to +50ºC, 90% RH
iii.	Certification	UL/cUL/ BIS-IS13252, CE/equivalent BIS, FCC / equivalent BIS; EN 55032 / equivalent BIS; EN 50130-4/equivalent BIS; EN 63000 / equivalent BIS; BIS/IS/IEC 62368: Part1: 2018 or IEC 62368-1:2018; RoHS, ONVIF - G, S, T
iv	Connectors	1 RJ45 10/100/1000 Ethernet port; micro USB for Wifi; crypto processor; 2/1 Alaram I/O; 1/1 - Audio I/Os
v	Security	Secured Password protection, IP address filtering, HTTPS encryption, IEEE 802.1Xa network access control, Digest authentication; PCIDSS or UL -CAP compliance; User access log, TLS1.2 stream encryption; SSL/ SSH; 3rd Party PKI Digital certificate-based encryption; Digitally Signed Firmware; AES 256; Authenticated MAC; NDAA compliant on-board processor

vi	Cyber Security Certificate	Global/India Standards Cyber Security Certificate or equivalent, as on the date of bidding: - NIST - FIPS; UL- CAP or UL – 2900; NCSC-UK – Secure by Default; ISO/IEC 27032; Indian Cyber Security Certificate - STQC-ERTL.
vii	MTBF Compliance	Minimum 3,00,000 Hours of MTBF as per Telcordia SR-332 or MIL-HDBK-217 or RCR-9102 Reliability Prediction Testing Standards & Procedures

2.2.2 SD PTZ Dome Network Camera

Sl. No.	Parameter	Specification
1.	Image Sensor	1/2.8 inch Progressive Scan CMOS Sensor; 2MP (1920 x 1080) @ 25/30 fps and @50/60 fps; 16:9 aspect ratio
2.	Compression	· H.264; H.265-HEVC ; MJPEG
3.	Illumination	Color: 0.010 lux @F1.6 1/30sec BW: 0 lux @F1.6 (IR on)
4.	Zoom	Optical 40X; Digital - 16X
5.	Dynamic Range	120 db or better, 256 present positions or better, VMD, full duplex bi-directional
		full duplex bi-directional
6.i	Pan Angle	360 degree or Better
7.	Tilt Angle	220 degree or more
8.	Operating Temperature	IP66/67; NEMA-4X; IK -10; Microporous membrane protective vents enclosure; “-10 deg to + 50deg C,90%RHNC
9.	Certification	UL/cUL/ BIS-IS13252, CE/equivalent BIS, FCC / equivalent BIS; EN 55032 / equivalent BIS; EN 50130-4/equivalent BIS;EN 63000 / equivalent BIS;BIS/IS/IEC 62368: Part1: 2018 or IEC 62368-1:2018; RoHS, ONVIF - G, S, T
10.	Connectors	1 RJ45 10/100/1000 Ethernet port; micro USB for Wifi; crypto processor; 2/1 Alarm I/O; 1/1 - Audio I/Os
11.	Security	Secured Password protection, IP address filtering, HTTPS encryption, IEEE 802.1Xa network access control, Digest authentication; PCIDSS or UL -CAP compliance; User access log, TLS1.2 stream encryption; SSL/SSH; 3rd Party PKI Digital certificate-based encryption; Digitally Signed Firmware; AES 256; Authenticated MAC; NDAA compliant on-board processor
12.	Cyber Security Certificate	Global/India Standards Cyber Security Certificate or equivalent, as on the date of bidding: - NIST - FIPS; UL- CAP or UL – 2900; NCSC-UK – Secure by Default; ISO/IEC 27032; Indian Cyber Security Certificate - STQC-ERTL.

13.	MTBF Compliance	Minimum 3,00,000 Hours of MTBF as per Telcordia SR-332 or MIL-HDBK-217 or RCR-9102 Reliability Prediction Testing Standards & Procedures

2.2.3 High Resolution IR Bullet Camera

Sl. No.	Parameters	Specification
1.	Sensor type	1/2.8 - inch CMOS
2.	Active pixels	2.8 -12 mm 5MP (2592 X 1944) at 25/30 fps with 60 Meter of inbuilt/External IR illuminator
3.	Sensitivity	3200K, reflectivity 89%, F1.6, 30IRE
4.	Color	0.005 Lux/F1.6 (Color,30 IRE), 0 Lux/ F1.6 (IR ON)
5.	Video compression	H.265 HEVC; H.264; MJPEG
6.	Base frame rate	25/30 fps
7.	Video resolution	5MP (2592 X 1944) at 25/30 fp
8.	Night vision Distance	60 m (196 ft)
9.	Lens type	Automatic Varifocal 2.8 to 12 mm, DC Iris F1.6
10.	Horizontal field of view	30° - 86°
11.	Analog video output / Event Linkage	Event notification using digital output, Email and MicroSD card
12.	Alarm Input / Output	I/O - 1/1
13.	Network connector	RJ45
14.	Dimensions (H x W x D)	OEM Specific
15.	Video Recorder	Built in Hard disc of each 16 TB as per 30 days recoding for 128 cameras with RAID 5/6; having support for minimum up to 192 TB raw storage
16.	Intel Xeon Quad Core	Processor - Intel Xeon Processor 4210 or Intel Xeon Silver 4210R or AMD EPYC 7252 RAM - 32GB 2x 240 GB SSD, RAID 1 for OS Drive
17.	Trays	12 x HDD Storage bays, supporting Hot plug, for installing upto 8 HDDs upto 16TB/18 TB each
18.	SATA Cache	As per OEM
19.	AMD FirePro	OEM Compatible NVDIA / Intel or AMD Graphics Card of minimum 2/4 GB being required to complete the system
20.	Intel	2x 240 GB SSD, RAID 1 for OS Drive
21.	Certificate	CE; FCC; BIS; UL; RoHS; TPM2.0 or FIPS -140-2

2.2.4 Display/Monitor

Sl. No.	Parameters	Specification
1.	Bezel-to-Bezel Distance	32 inch to 55 inch, Ultra-Narrow Bezel 3.5mm
2.	Brightness	500 cd/m2
3.	Contrast Ratio	1400:1;
4.	Viewing angle	178°/178°
5.	Pixels	1920x 1080 (HxV)
6.	IPS Panel Connection	HDMI, DVD-D In, DVD-D Out
7.	Component	RGB In Video In, PC In, Audio In, Audio Out, Seriel In, Seriel Out
8.	LAN	IR In/Out, USB, Ext SP (80hm 20W)
9.	Power	220-240V 50/60Hz, (aprox) 320W
10.	Dimension	1213(w)x680(h)x95(d)mm; Bezel width:(2.25mm (left/top), 1.25mm(right/bottom).

2.2.5 5MP(or better) Network IR Bullet Camera

Sl. No.	Parameter	Specifications
1.	Image Sensor	1/3 inch CCD/CMOS
2.	Lens	2.8 -12 mm 5MP (2592 X 1944) at 25/30 fps with 60 Meter of inbuilt/External IR illuminator
3.	External IR illuminator	IP 66 & IK 10 rated
4.	Resolution	5MP (2592 X 1944) at 25/30 fps
5.	Min Illumination	0.005 Lux/F1.6 (Color,30 IRE), 0 Lux/ F1.6 (IR ON)
6.	Day/Night	Auto (ICR) / Color / BW
7.	WDR	120 dB
8.	S/N Ratio	≥ 50 dB
9.	Video Compression	H.265 HEVC; H.264; MJPEG
10.	Motion Detection	Yes
11.	Alarm Trigger	Motion Detection, Network Disconnection, External Input, Audio Alarm, IP Address conflict, illegal Access, Storage anomaly; Tampering; People counting, Video motion detection, Alarm input, Recording notification, Tampering, Loitering, Tripwire, Smart Motion Detection
12.	Iris Control	DCIRIS
13.	Frame Rate	1fps - 25/30fps

14.	Network Protocol	ONVIF Profile - S,G,T ; Individually configured minimum 03 video streams
15.	2 Way Audio	Yes
16.	Motion Detection	Yes
17.	SD Card	Minimum 256 GB on-board Class 10 speed SD Card having Linux Unified card encryption key
18.	Video In/Out / Other Features	WDR, BLC, HLC; 120dB WDR; White Balance - Auto / Tungsten / Daylight / Manual; Gain Control 0~100%; 2D/3D DNR; EIS; DEFOG; Minimum 5 Areas of Privacy Masking; Smart IR Light Controller (Auto/Manual)/OFF ; TDN - Auto (ICR) / Color / BW
19.	Audio In/Out	1in/1out
20.	Alarm In/Out	1 in/1out
21.	Ethernet	RJ-45 10/100 Base T
22.	Security	Secured Password protection, IP address filtering, HTTPS encryption, IEEE 802.1Xa network access control, Digest authentication; PCIDSS or UL -CAP compliance; User access log, TLS1.2 stream encryption; SSL/SSH; 3rd Party PKI Digital certificate-based encryption; Digitally Signed Firmware; AES 256; Authenticated MAC; NDAA compliant on-board processor
23.	Protocol	IPv4, IPv6, TCP / IP, HTTP, HTTPS, RTSP / RTP / RTCP, IGMP, SMTP, DHCP, NTP, DNS, QoS, SNMP, 802.1X, UDP, ICMP, ARP, TLS; SFTP
24.	Operating Temperature	Temperature: -20ºC to 60ºC / Humidity: 0-90% RH
25.	Power	PoE
26.	Standard Approvals	UL (Certificate copy to provided, should be verifiable at online UL database)
27.	CE	FCC
28.	Ingress Protection	Weather Proof IP66; IK10
29.	IR Range	60 m with inbuilt IR Light Controller for Auto / Manual / OFF including a minimum of 04 nos of IR Lights
30.	Certifications	UL/cUL/ BIS-IS13252, CE/equivalent BIS, FCC / equivalent BIS; EN 55032 / equivalent BIS; EN 50130-4/equivalent BIS; EN 63000 / equivalent BIS; BIS/IS/IEC 62368: Part1: 2018 or IEC 62368-1:2018; RoHS, ONVIF - G, S, T
31.	Multi Cast & Un-Cast Support; Minimum 10 concurrent users	

32.	MAC address/ Serial Number of the devices including their firmware duly signed with OEM PGP Key & PKI Certificates must be on the name of respective OEMs. OEMs must comply with MACID – Authentication what shall be done through 3rd party tool. OUI must be declared.
33.	IP CCTV System & Components OEM should have direct presence as registered company(ies) in India for last TEN (10) years from the date of publishing of bid (Registered offices by way of Joint Ventures, Franchise, Agency, multiple & different stakeholders; distribution partners, partnership firms; venture capitals; multiple ownership & different stakeholders or through any other 3rd party association during the stated period will not be considered). In case of the company having a foreign parent / holding company, the company must be a wholly owned subsidiary.
34.	ISO certifications: ISO 9001; ISO 14000; OHSAS 18001,2007 & ISO 45001
35.	CCTV OEM firmware development shall be in line with MEITY (Ministry of Electronics and Information Technology) recommended CMMI Level 5 secure development.
36.	Statutory GFR 2020 Compliance - OEM Camera Firmware; Source Code; Chipset; SOC/ processor; coded firmware and PCBs should not be from countries sharing land border with India including the designated restricted countries.
37.	Global/India Standards Cyber Security Certificate or equivalent, as on the date of bidding: - NIST - FIPS; UL- CAP or UL – 2900; NCSC-UK – Secure by Default; ISO/IEC 27032; Indian Cyber Security Certificate - STQC-ERTL.
38.	The Offered VMS Software should be ONVIF S, GT & Q Profile Compliant. The Declaration of ONVIF S, GT & Q Profile shall be available on ONVIF Official Website www.onvif.org in the Conformant Devices.
39.	MTBF Compliance - As per Telcordia SR-332 or RCM or MIL-HDBK-217 or RCR-9102 standard

2.3 Unmanned Aerial System

2.3.1 Micro Unmanned Aerial Vehicle (UAV) System

Sl. No	Parameter	Specifications
1 Micro UAV system should consist of the following sub-systems:		
	UAV Bird with battery pack	
	Ground Control station with data link equipment	
	Daylight Camera Payload	
	Night Camera Payload	
	Universal Battery Charger with Power Supply System	
1. Essential requirements :		
I.	Role	Surveillance, reconnaissance and detection during day and night.
II.	Launch and Recovery Mode	i) Vertical Take Off and Landing (VTOL) from within an area of 25m x 25m clearing or less ii) Payload should not damage during recovery of UAV
III.	Aural Signature	≤ 40dbs at 300 meters Above Ground Level
IV.	Payloads carrying capability	Should have capability to carry Electro Optic (EO) for day and Thermal Imager (TI) for night one at a time. or Integrated Day & Night payload. (As per user requirement)
V.	Flight Modes	a) Fully Autonomous Vertical Take Off b) Fully Autonomous Vertical Landing c) Hover at defined waypoint d) Autonomous waypoint navigation (pre-defined during flight) as well as dynamically adjustable waypoints e) Remote Piloted mode for video based user navigation. f) Vision based Autonomous Target Tracking of fixed and moving targets. g) Should be controllable in real time from the GCS up to recovery. h) Fully autonomous and stabilized.
VI.	Endurance	60 minutes or more with all payloads at Mean Sea Level.

VII.	Operating Altitude	400m AGL (Above Ground Level) or more. Payload characteristics: Payloads required a) Electro Optic (EO) for day (colour) b) Thermal Imager (TI) for night or c) Integrated day & night payload (As per user requirement) Payload and Video a) All payloads should be gimbals stabilized on Stabilization board. b) Video output should be digitally stabilized at all zoom levels. c) Quality of video should not be affected by UAV vibrations of Electro optic (EO) d) Colour Camera with 360° pan and 90° tilt Daylight Payload control during flight. e) Resolution: 1280 X 720 pixel or better
VIII.	Launch Altitude	2000m AMSL (Above Mean Sea Level) or more
IX.	Range of Operation	Minimum 5 km line of sight
X.	Cruise Speed	25 km/hr or more
XI.	Operating Wind Conditions	a) Take off: 20 km/h or more b) Landing: 20 km/h or more c) Operate: 20 km/h or more
XII.	Failsafe features	a) Automatic Return to Home on communication failure b) Automatic Return to Home/Land on low battery c) Multiple GPS on-board for GPS failure redundancy
XIII.	Propulsion system	Electrical with rechargeable batteries
2. Payload characteristics:		
I.	Payloads required	a) Electro Optic (EO) for day (colour) b) Thermal Imager (TI) for night c) Integrated day & night payload. (As per user requirement)
II.	Payload and Video Stabilization	a) All payloads should be gimbals stabilized on board. b) Video output should be digitally stabilized at all zoom levels. c) Quality of video should not be affected by UAV vibrations.

III.	Electro Optic (EO) control Daylight Payload	a) Colour Camera with 360° pan and 90° tilt during flight. b) Resolution: 1280 X 720 pixel or better c) Optical Zoom: 10X zoom with minimum FOVS5, maximum-FOV 2 45° (wide field). Digital zoom: 4X d) Should be able to detect human size target at 750 meter slant or more
IV.	Thermal Imager Night Payload	a) Thermal Camera with 360 pan and 90° tilt control during flight. b) Resolution: 640 X 480 pixels or better c) White/Black Hot modes d) Digital Zoom: 4X or more e) Should be able to detect human size target at 400 meter slant or more
V.	Night Recovery Beacon	Switchable (from GCS) LED light when operating with Night Payload
3. Ground Control Station characteristics:		
I.	Option-1: GCS should have MIL-STD-810G or better and IP51 or better, semi rugged laptop. Option-2: GCS should have MIL-STD-810G or better and IP65 or better, rugged laptop. (As per user requirement)	
II.	Computing Hardware :	
	CPU	Intel Core i5 v Pro Processor, 2.3 GHz or better
	Storage	Minimum 500 GB
	Memory	2GB or more
	Display	Minimum 10 inch - 1024 x 768 XGA sunlight readable screen, anti-glare.
	Keyboard & input	Touch screen
III.	Battery Operation	Battery Operation Minimum 02 hours at peak utilisation.
IV.	Battery Charging time of GCS	Should be less than 3.5 hours
V.	Data portability	Ports for data transfer to external secondary storage devices
VI.	Interface	VGA/HDMI, USB, 10/100/1000 Ethernet.
VII.	Capability	a) Transmit control commands to UAV. b) Receive UAV Flight and propulsion parameters. c) Receive, display and record real time day and night video from UAV. d) Capability to control UAV while on the move.

VIII.	GCS Application Software	a) Geographic Map along with UAV location, UAV trajectory, camera view polygon, Software. waypoints and flight plan.
		b) Real-time video from the UAV with on screen display of important parameters like:
		i. Coordinate of target ii. Ground altitude of target iii. UAV Position iv. Height of UAV above ground level V. Distance of UAV from GCS vi. Bearing (Azimuth) of UAV from GCS vii. Ground speed of UAV viii. UAV Heading/ True North indication ix. Mission time
		c) Geographic map and real-time video should be displayed at all times during the flight.
		d) Geographic map and real-time video views should be resizable and/or switchable to allow user to switch between big map/small video and small map/big video views through a single click/button input.
		e) Artificial Horizon indicating UAV altitude.
		f) Switchable between 2D/3D views, capability to Tilt/rotate 3D map as per user input.
IX.	Map Formats	a) Should have the capability to integrate geo-referenced raster maps provided in at least one of the commonly used digital map formats (OIF, TIFF, DTED and SRTM etc.)
		b) Should be able to work with Google Maps, application should have the capability to download maps automatically after specifying location GPS co-ordinates.
X.	Payload Controls	a) Selection and switch on/off of payload
		b) Pan/Tilt/Zoom Controls
		c) Point payload to ground co-ordinate function
		d) Recording on/off
		e) Switch on/off Night Recovery Beacon
XI.	Joysticks controls	i. Full Camera Control Pan/Tilt Zoom In/Out Black/White Hot ii. RPV Mode iii. Altitude Control

XII.	Video	a) Video should be recorded in any commonly portable video formats (AVI/MPEG/ MP4 etc) b) Video of the full flight should be recorded c) Should have capability to take image snapshots at any time during flight d) Software should be provided that will facilitate extraction of imagery from the recorded video post flight
XIII.	Pre-flight checks	Self-test of UAV system, Output: go/no go
4. Communication Link:		
I.	Communication link equipment capability	i) Transmit control commands from GCS to UAV ii) Transmit parameter of UAV and payload to GCS iii) Transmit day and night video from UAV to GCS
II.	Type of link	Secured digital uplink & downlink with AES encryption.
III.	Frequency Band	System should operate on S & C frequency Band uplink and down link, preferably on license free band i.e 2.4Ghz or 5.8 Ghz.
5.General System requirements: Weight		
I.	Weight	The weight of complete Micro UAV bird including battery pack & one payload should ≤ 6kg.
II.	Assembly/ Disassembly time Life of Micro	Less than 10 minutes each.
III.	life of micro UAV	The total technical should not be less than 500 landings.
IV.	Environmental conditions for Operation and Storage	The UAV an associated systems should be certified for operation and storage for following environment conditions. i) Damp Heat: 40°C at RH not less than 95% ii) Operating temperature & Storage temp: -10°C to +55°C iii) Ability to withstand dust, drizzle and humid conditions
V.	Portability and Operation	The Micro UAV should be battery operated portable, light in weight, compact, for day and night surveillance, capable of being carried and Portability Operation operated by two men.
VI.	Battery of AV	The intelligent standard lithium based battery pack should have the backup of minimum 60 minutes
VII.	Battery Charger of AV battery	Suitable universal battery charger to charge the batteries within two to three hours:

VIII.	Accessories	a) Water proof Back Packs IP66: 1 set b) Field Repair kit: 1 No's c) Lithium based Battery packs: 3No's d) Spare propeller Sets: 2 No's e) Spare Landing Gear sets: 2 No's f Associated Cables & Mountings: 1set g) Hard transportation boxes: 1set h) User, Technical & Maintenance Manual:11 set i) Log Book : 1 Set

2.3.2 Drone with Camera

Type of Drone	Rotary Wing
Compliance & Test	
Warranty	3 Year
Tested performances	Aural Signature Test, High temperature test, Damp heat test
Classification of UAV as per DGCA regulation for Civil Aviation requirement in India	Micro
A. Performance	
Wind resistance (maximum)(Km/hr)	36-40
Operational endurance	≥20 minutes
Advanced flight modes	Autonomous, manual, mission, auto take-off, Position Hold Survey, Remotely Piloted mode, Auto landing, Way point navigation
Nominal Cruise speed (meter/second)	6-8
Operational Altitude (above ground level)	≥200m
Max. Overall Length (with propellers)	80 centimeter
Max Weight(net weight including battery & Payload)	2 kilogram
Overall Width (with propellers)	80 centimeter
Product compliant ready DGCA & permission No-takeoff guideline	Yes
Importer or seller or manufacturer RPAs has Equipment Type Approval (ETA) from WPC Wing, Department of Telecommunication that drone is working in de-licensed frequency band(s)	Yes
UAV & manufacture is in compliance with DGCA for CAR UAV's published 27Aug 2018 *Latest	Yes
Ingress protection Class for Drone	IP 53
Ingress protection Class for Bagpack	IP 66
Equipment Type	To be provided
Certificate number by Certifying Agency (for compliance to standard civil aviation requirement by DGCA)	To be attached

OEM/Reseller authorization letter to be furbished on buyer demand	Yes
All declared test report, license & Certificates to be submitted on confirmation of order	Yes
B. Performance	
Payload freedom (in fight) across vertical axis	360 degree
Advanced flight modes:	Autonomous, manual, mission, auto off, Position Hold & Survey, Remotely mode, Auto landing, Way point navigation
Minimum Operating temperature	0°C
Target detection slant range(Human Size Target) (Thermal)	≥250m
Payload freedom (in flight) across horizontal axis	90 degree
Minimum Radius Range covered from line of sight(for live transmission)	2 kilometer
Video transmission during flight operation	Real-time
Maximum Operating temperature	40°C
Minimum Technical life of UAV (number of landings)	500
Target detection slant range(Human Size Target) (Day light)	≥400m
Maximum Vertical aviation speed (meter/second)	2
Launch Altitude (above mean sea level)	≥300m
GUI Display Parameters	
Real-time video on-screen display parameters	UAV co-ordinates, target(payload) co-ordinates & range from UAV, true north indication, distance from Indicator home, Target tracking, Moving target Indicator
Surveillance parameters displayed	Geographic map, UAV location, UAV trajectory, camera view polygon, way points, flight plans
Image system provided	Day Light, Night(thermal)
Imaging System	
Imaging System resolution (Day light)	1280*720 pixel HD
Optical Zoom-in capacity	5X
Thermal Imager slot compatible	Yes
Imaging System resolution (Night)	320*240 pixel HD
Live transmission quality definition	HD
C. User Control	

User controlled attribute	Set altitude of UAV, Way point navigation, Dynamic flight plan adjustment, point payload to ground coordinate function, Turn off recording
video recorded format on the gcs	Mp4
User controlled flight functionality	Take off, Land, Hover, Tilt, Zoom In/Out
On-flight captured modes.	Video, Image snapshot, Thermal Imaging
D. General	
Spare propellers provided	One set
Rated Voltage	29.6 Volt
Video Stabilization mechanism	Mechanical Image stabilization, Electronic Image stabilization
Control System	Fully Autonomous
Ground Controlled software system for control	Yes
Port for data transfer from GCS hardware	USB
Data recording	Hard Disk
Packing & Storage for housing all systems	Water proof bagpack
Propulsion of UAV powered through	Battery Powered
Data recording setup card	Inbuilt in User Control device
Type of Battery embedded	Li-ion
Maximum required operating crew	2
Failsafe features	Return to home on communication failure, return to home/land on low battery multiple GPS on board for GPS failure redundancy, high wind indication, anti-collision light, Global satellite system, Autonomous flight termination system, fire resistant Identification plates, return to home on high wind
Rated ampere,	3000 mAh
Compatible Hardware provided with installed GCS	Laptop.
Map compatibility	Google, Raster, open source, Tiff, Giff, BIT, DTED
Laptop/Tablet type	Semi-rugged
Training Provided	Yes
Number of Spare Battery	2

3.
INFORMATION TECHNOLOGY

3.1 UPS System

3.1.1 Uninterrupted Power Supply

Sl. No.	Parameters	Specifications
1.	Rating (KVA)	0.6 KVA, 1.5 KVA, 2KVA
2.	Technology	MOSFET- PWM
3.	Type of battery	SMF-VILA coming to 60-470 PLIA
4.	Rated Output (Volt)	Single Phase Quasi wave 250 V AC, 50
5.	Degree of protection	IP-21
6.	Inverter Efficiency (N)	≥ 60%
7.	Warranty	1 Year
8.	Warranty for Line Interactive UPS	1 Year
9.	Casing material	ABS
10.	Inverter output socket AC output for printer (not through Inverter)	2 /3 pin
11.	Total harmonic distortion (N)	≤ 40%
12.	Voltage Input (Volt)	Single phase sine wave (160-280)
13.	Switching over time (mili sec)	Maximum 10 milliseconds
14.	Overload Time (Minutes)	≥ 10 minutes
15.	Load power factor	≥ 0.6
16.	Variation in AVR output in AC mode (%)	230 Volts ± 9 %, 50Hz ±3 Hz
17.	Overload (%	≥10%
18.	Variation in output voltage in battery mode (%) (UPS output voltage in battery mode)	230 Volts ±10%
19.	Variation on output frequency in battery mode (Hz)	≤ 0.5
20.	Protection against (over discharge) discharge per 12v battery (Volt)	10.5
21.	Protection for outside input voltage range if Input voltage goes outside the range 160 to 280 Volts, the system shall switch over to battery mods	Yes
22.	Protection against short circuit of UPS	Yes
23.	Protection for over voltage and ever load	Yes

24.	As per Melty (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes
25.	Battery Back up	As per requirement of the user

3.1.2 10 KVA Online UPS with 1Hrs Battery Backup

Sl. No.	Parameters	Specification
1.	Capacity (in KVA/KW)	10 KVA / 10 KW 1-Phase Input/1-Phase Output
2.	Online Double Conversion	True Online configuration with double conversion UPS & Zero transfer time.
3.	DSP Based System.	DSP based control with advanced technology
4.	Input Voltage Range:	100-280 V AC
5.	Auto Restart & Battery Independent	Auto restart capability with the Independent battery bank operation of the UPS.
6.	UPS Operational Configuration	Parallel Configuration with Separate Battery Bank in each UPS
7.	Generator & Cold start compatibility	Generator compatibility with cold start and AC start features.
8.	N+X Upto 4 Systems	Possibility of enhancing UPS capacity/redundancy by operating *UPS in N+X Parallel. Redundant Configuration up to 4 units.
9.	PFC & Inverter Based Technology	UPS should have topology for both PFC (power factor correction) &inverter based technology.
10.	Input facility -Phases/Wires	Single-Phase /2-Wire & Gnd (1Phase & Neutral + Ground)
11.	Nominal Voltage Range:	200/208 (de-rating to 90%): 100VAC 280 VAC 220/230/240:100Vac 280 VAC
12.	Nominal Input Frequency	50/60Hz ± 10Hz (Auto Selectable)
13.	Input Frequency Range	40 to 70 Hz
14.	Input Power Factor	>0.99(full load)
15.	Generator Compatibility	Compatibility to Genset Supply
16.	Input Protection	Should be provided at the input of the UPS suitable for the full rated capacity of the UPS.
17.	Nominal Output voltage	200/208/220/230/240 VAC
18.	Output Voltage Regulation	±1% for linear load
19.	Nominal Output Frequency	50GHz ± 0.05Hz
20.	Out frequency regulation	± 0.1 Hz

21.	Output frequency slow rate	<1Hz/sec
22.	Output Wave form	Pure sine wave
23.	Output voltage Distortion (THDu)	<3% for linear load.
24.	Crest factor	3:1 on Full load (Minimum)
25.	Output short circuit protection	Electronic Protection
26.	Transfer Time (Mode of operation)	Zero ms from Mains mode to Battery Mode Zero ms from battery Mode to Mains mode
27.	Transfer Time (inverter to Bypass/ Bypass to Inverter)	2 to 4 ms
28.	Automatic Bypass switch UPS	UPS should be capable of automatic change.
29.	Overall Efficiency (AC to AC)- Online (Double Conversion)	Upto 95% (on 100% load)
30.	ECO Mode Efficiency	98%
31.	Inverter Overload capacity	<105% for Continuous, <105 to 125 for 2Min <125-150 for 305ec
32.	Measurements (On LCD)	Input: Voltage & Frequency, Bypass: Voltage & Frequency, Output: Voltage, frequency, Kilowatt & RVA, Battery: Remaining time & Battery Level Indicator, Load Percentage & Load Level Indicator, Ambient temperature.
33.	Fault Indication (On LCD)	Abnormal /P.I/P Fuse blown, Rectifier Abnormal, BUS start abnormal, Battery start abnormal, SUS start abnormal in battery i mode, +BUS voltage too high & low,-BUS voltage too high & low, Inverter O/P voltage abnormal, Overload shutdown, Charge voltage too high, Damaged Batteries, Battery missing. Battery to low & Over temperature Protection.
34.	Settable data through (LCD)	Inverter Voltage, Inverter Frequency, Frequency converter, ECO Mode, Overload alarm, Buzzer, Charging current, Battery Capacity, Battery String & Parallel ID
35.	Audible Alarms	Replace Battery, Overload warning & shutdown, High Temple Battery High Temp warning & shutdown
36.	Battery Bank Voltage	Minimum 228 VDC Stable from (192VDC-264 VDC)
37.	Batteries Type	Sealed Maintenance Free (SMF)- 12V Cells, VRLA, GEL
38.	Battery Back UP	60 Minutes on full load with Each UPS
39.	Battery VAH	Minimum 17000 with each UPS

40.	Minimum Charger Rating (including Internal/external)	The charger should be able to deliver charging current equivalent to 10% of Battery Ah rating offered. (In case of external chargers, suitable monitoring of the chargers should be provided in the UPS. Also all external chargers taking AC Input must have PFC-Power factor correction)
41.	Charger type/Charging Method & Charging Voltages	Float Cum Boost Voltage Solid state SMPS charger
42.	Charger Current	Inbuilt 6 AMP
43.	Battery recharge time (After complete discharge) to 90% capacity	3hour to 90%
44.	Battery Housing (Vendor to provide the GA drawings of the offered Battery Rack)	Should be compact and space saving MS steel open racks complete with Interconnectors
45.	Battery End Cell Voltage	1.75 V/cell
46.	Serial Communication A5232 Port	RS232 Port should be provided as standard in the UPS.
47.	USB port available	However there should be provision for USB port also in the UPS.
48.	REPO port available	However there should be provision for REPO part also in the UPS.
49.	SNMP Card	Monitors and controls the status of the UPS via a network system
50.	Interface to Mini TVSS card	Mini TVSS card is available
51.	Cold Start	UPS should start up, On AC Supply (Mains) without DC Supply (Batteries).On DC Supply (Batteries) without AC Supply (Mains)
52.	Automatic Restart	UPS should start up automatically on mains resumption after battery low shutdown
53.	Self Diagnosis	UPS should be capable to carry out self test of Rectifier / Charger /Battery & Inverter module during start-up
54.	Normal Operating Temperature	0°C to 40°C
55.	Storage Temperature	-15°C to 50°C
56.	Operating Humidity	5% to 95% RH (No Condensing)
57.	Operating Altitude	0-1000m
58.	Type of Cooling	Forced Air
59.	Noise Level should reduce with Load	<50 dbA at 1 meter distance
60.	Form Factor	Tower mountable
61.	Reliability	MTBF greater than 100000 hours

62.	Grounding	UPS should have grounding arrangement.
63.	Product Safety Certifications (Mandatory)	IEC 62040-1:2008, ESD:IEC61000-4-2: level 4, RS: IEC61000-4-3:level 3, EFT: IEC61000-4-4:level4, SURGE: IEC61000-4-5:level4 CS: IEC61000-4-6: level3, IEC61000-4-8.IEC 61000-2-2, EN 62040 2:2006, EN 61000-3-2:2009, EN 61000-3-3-2013
64.	Manufacturer	QMS: As per ISO 9001: 2008, EMS: As per ISO 14001:2004 OSHAS: As per ISO 18001: 2007, TL: 9000, NABL Accredited lab in India
65.	ROHS compliance	UPS should be ROHS compliance

3.2 Digital Display Item

3.2.1 Video Wall

Sl. No.	Parameters	Specifications
1.	Display wall	Panels of 55 inch Diagonal in a (2) X (2) Configuration, complete with standard wall mount with OEM Installation
2.	Display technology	Liquid Crystal Display
3.	Display size and resolution	The diagonal size of each display unit/ module shall be 55 inch with a native resolution of at least 1920x1080 pixels
4.	Combined bezel gap	Should be 3.5 mm
5.	Light source	LED
6.	Brightness	500 Cd/m2 10% or better
7.	Colour	Shall offer in excess of 16 million colours
8.	Response time	8ms
9.	Viewing angle	H:178 V:178
10.	Contrast ratio	should be minimum 1400:1
11.	Architecture	The control box and power supply should be in the same housing to ensure quick swapping of module for repair with minimum downtime
12.	Signal Interface	2 x HDMI in/ 1x Display port 1.2 1x RS232C Dsub-9/RJ 45 1x Digital DVI/HDMI out / Display port out 1x USB
13.	Input compatibility	480i, 480P, 720P, 1080i, 1080P, 2160P
14.	Scan rate	Fh:30 75KHz Fv:50 85Hz
15.	Timing compatibility	720x400 @ 70Hz, 85HZ VGA @60Hz, 72Hz, 75Hz, 85Hz SVGA @60Hz, 70H, 75Hz, 85Hz XGA@60Hz, 70Hz, 75Hz, 85Hz SXGA+ @60 Hz, 75 Hz UXGA @60 Hz HDTV 50 H2,60 Hz, UHD @ 30 Hz, 60 Hz

16.	Power control: Electrical	1 AC power ON/OFF switch
	Wire control:	RS232C/RS422 Input
	IR remote	IR remote
	OSD style	list type OSD format
	On Screen display	Input selection, picture, Image and tiling should be adjusted using OSD
	Colour adjustment	User should able to adjust the primary & secondary colours for colour alignment and fine tuning
	OSD Languages	English
17.	**Electrical**	
	AC power input range	90-240VAC, 50/60Hz, 5A max.
	Power consumption	Normal operating should be < 200 W
18.	**System Reliability**	
	Operating temperature	0~40°C
	Operating relative humidity	20-80%
	MTBF	50,000 hours

3.2.2 55 Inch Full HD LED Display Unit

Sl. No.	Specifications
1.	Type: LED Color
2.	Screen Size: 55 Inch
3.	Resolution: Full HD (1080P)
4.	Aspect Ratio: 16:9
5.	Connectivity: HDMI, USB
6.	Accessories: Wall Mount Kit, Remote Control with battery to be provided
7.	24x7 working feature. Attach data Sheet or OEM declaration confirming this feature
8.	Certification: FCC (Enclose Certificate)

3.2.3 TV Display

1.	**TV 32 inch**	Type LED Backlit LCD Screen Size 32 Inch or higher Resolution 1080p Category Smart Wattage of speakers – 10w x2 Type LED Backlit LCD Services Connector Wi-Fi Operating System in case of Smart TV – Linux Static Contrast Ratio 1100:01:00 or higher Typical Brightness - 300-399 Power Consumption (Watts) 45 Inbuilt speaker - Yes Number of HDMI Ports – 2 Number of USB Ports - 1 Number of VGA Ports- 0 Number of Ethernet Ports - 1 Refresh 50 Hz Mounting Wall Mount & Table Mount Details of Accessories : Remote control, connecting Cable, Batteries
2.	**TV 43 inch**	Screen Size 43 inches Supported Internet Netflix, Amazon Prime, Disney Hotstar, YouTube Services Connector Wi-fi Type Smart Resolution 1080p Display LED Technology Operating System in case of Smart TV – Linux Static Contrast Ratio 1100:01:00 or higher Typical Brightness - 300-399 Wattage of speakers – 10w x2 Power Consumption (Watts) 45

		Inbuilt speaker - Yes Number of HDMI Ports – 2 Number of USB Ports - 1 Number of VGA Ports- 0 Number of Ethernet Ports - 1 Refresh 50 Hz Rate: Model Year 2020 Mounting Wall Mount & Table Mount Details of Accessories : Remote control, connecting Cable, Batteries

3.3 Server

3.3.1 NVR/Server with Preloaded Video Management System and Supporting

Video Analytics

Sl. No	Parameters	Specification
1.	Operating System	Embedded Linux Operating System
2.	Multiplex Operations	Simultaneous multi-channel real-time recording. playback, network operation, USB backup:
3.	User interface	Support 16-bit true color graphical menu interface and mouse operation
4.	Incoming Bandwidth	480 Mbps
5.	Outgoing Bandwidth	360 Mbps
6.	IP Video Input	32 channel supported
7.	HDMI Video Output	2-ch, Resolution: 4K x 2K/ 1920 x 1080/1280 x 1024, 1920 x 1080 / 1280 x 1024
8.	VGA Video Output	2-ch, Resolution: 1920 x 1080/1280 x 1024
9.	Two way Audio Input	RCA x 1
10.	Audio Output	RCA x 2
11.	Alarm Input/output	16/4
12.	Network	2 x Gigabit (10/100/1000) self-adaptive Ethernet port (RJ45)
13.	e-SATA	e-SATA interface
14.	Serial port	1 RS-485 (full-duplex), 1 RS-232, 1 keyboard
15.	USB	2 x USB 2.0 Interfaces, 1 x USB 3.0 Interface
16.	Recording Resolution	Upto 32 MegaPixel supported
17.	Frame Rate	Main stream: 25fps (p)/30 fps (N) Sub stream: 25fps (p)/30 fps (N)
18.	Video Compression	H.265, H.264
19.	Playback Resolution	Upto 32 MegaPixel supported

20.	Max playback capability	Max 16 ch playback, 1-ch@32 MP (30 fps)/2 ch@12 MP (20fps)/4-ch@8 MP (25fps)/8-ch@4 MP (30fps)/16-ch@1080p (30fps)
21.	Dual stream recording	Supported
22.	DDNS	Supported; Dynamic and Static IP support
23.	CMS	Full function CMS (Central Monitoring Software)
24.	Mobile Client Application	Support android and IOS APP for Smart phone and tablets
25.	System compatibility	ONVIF Supported
26.	Protocols	HTTP, TCP/IP, IPv4, UPNP, RTSP, SMTP, NTP. DHCP, DNS, DDNS, FTP, P2P
27.	Security	Password protection user management
28.	Playback Function	lay, Pause, Stop, Rewind, Fast Play, Slow Play. Digital Zoom
29.	Search Mode	ALL, Channel, Manual, Time, Date, Motion Detection
30.	Smart Search	Highlighted color to display the camera record in a certain
		Period of time, different colors refers to different record events
31.	Special Function support	Supports special function cameras, including people counting camera, ANPR (automatic number plate recognition) camera, fisheye camera
32.	Video Analytics Support	Supports Video Analytics like Line crossing, Unattended Object, Missing object, Tampering, Video Loss Etc.
33.	Alarm Trigger	Recording, Email, FTP, Snapshot, Buzzer and screen tips, alarm output
34.	Recording Mode	Manual/Motion Detection/Continuous
35.	Storage Bays	8x HDD Storage bays, supporting Hot plug, for installing upto 8 HDDs upto 10TB each
36.	Storage Capacity	48TB RAW Capacity pre installed in the NVR server
37.	RAID support	RAID 0,1,5, 6, 10 supported. N+1 hot spare supported
38.	Backup Mode	USB Device/Network
39.	Overwrite Mode	Should Support
40.	Power Supply	100 to 240 V, 50 to 60 Hz
41.	Fan	Inbuilt fan with speed self adjustable
42.	Power Consumption	<15W (without HDD)
43.	Chassis	3U Chassis
44.	Operating temperature	-30°C to + 65°C
45.	Working Humidity	95% or less (non-condensing) RH
46.	Certifications	CE, FCC

3.3.2 Central Management Server

Sl. No	Parameters	Specification
1.	Form factor	10 or 2U rack server
2.	Processor	Intel Xeon® processor E3-1220 v5 3.0GHz, 8M Cache, 4C/4T,turbo(80W), 4C/4T, turbo (80W) or latest as required
3.	Operating System	Microsoft Windows Server 2016 64 bit OS or better
4.	Memory	RAM: 16GB DDR4 or better
5.	Storage	As required by Applications
6.	Communications	2 x 1GbE Lan Ports.
7.	Power	250W cabled PSU

3.4 Network Hardware Items

3.4.1 RACK

Specifications

- Adjustable 19 inch equipment mounting verticals provide the better mounting flexibility maximizing the usable mounting space
- Depth adjustable mounting slots
- Precision engineering capabilities and best efficient software configuration product technology provides the best
- product quality and fastest delivery in the industry Top and bottom Panel with ventilation and cable entry facility
- Provision to mount the cooling fans on the top panel
- Powder coated finish with pre-treatment process meeting all Industry standards
- Grounding and Bonding Options
- 100% assured compatibility with all equipment conforming to DIN 41494. General industrial standard for equipment
- 42U Closed Rack/Width 8000/Depth 1000
- Construction: Welded OR CKD (Knock Down)
- Front Door: Lockable Toughened Glass Door
- Rear Door: Steel Door
- Basic Frame: Steel
- Equipment Mounting: DIN Standard 10mm Sq. Slots/Direct M6 Tap
- Mounting Angle: 19 inch Mounting angles made of formed steel
- Standard Finish: Powder
- Top and Bottom Cover: Welded to Frame, Vented and Field Cable entry exit cut outs
- Mounting Option: Castor wheels (Front 2 wheels with Break and rear without break) Or Levellers Or Base plinth
- Standard Colour: Black or Grey
- Accessories: Doors & Side Panels, Power Distribution Units, Cable Manager, 4* Fans and Fan Modules, Jacking Feet, 5 Mounting Hardware, Vertical Power strip with 12 nos of 5/15A sockets (high end).

3.4.2 36U Indoor Rack for Control Room

Sl. No.	Description (Brief Specification)
1.	36 U Rack 600mmW X 1200 mm D with Built in 4 fans 12 port PDU, floor type with castor wheels, 2 X cable manger. Front Glass Door Rear / Side partitions with perforations for heat dissipation. Lockable front door

3.4.3 42U Rack for Indoor Use

Sl. No.	Parameter	Specifications
1.	Basic Frame	Multi hollow extrusion Aluminium profile frame
2.	Construction	Modular Construction of the rack made of 4 vertical, 4 horizontal & 4 depth extruded aluminium alloy multi hollow profiles bolted and joined together with Links and Corner Block. 2/3 pairs of support channel to equate the load evenly
3.	Size	**Floor stand with single side panels** 42U, 800W x 1000D
4.	Top & Bottom Cover	Bolted to Frame with Cable entry cut outs
5.	Front Door	Lockable 4mm thick Toughened Glass Door
6.	Rear Door	Lockable Steel Door with square ventilation
7.	Lock for doors	Cam Lock / 3-point lock
8.	19 inch Mounting Angle	4 No Adjustable. 19 inch verticals with Punched 9.5mm Squarer Hole and Universal 12.7 mm-15.875 mm-15.875 mm alternating hole pattern offers greater mounting flexibility, maximizes usable mounting space.
9.	Standard Finish	Epoxy polyester Powder coated 60-80-micron thickness
10.	Standard Colour	Combination of RAL 7035 & 7037 **OR** RAL 9005
11.	Standard Mounting	Caster wheels (2 with Brake & 2 without Brake) and Levellers **OR** Plinth
12.	Static Load	Up to 1200 KG.
13.	Accessories	Power distribution unit, Metal Cable manager, Hardware packet, Monitor Shelf, Cantilever Shelf, Blank Panels, Support angles, Keyboard tray, Metal cable channel
14.	Equipment cooling	4 Fan Mount provision on top cover
15.	Corrosion Resistance	Salt spray test according to ISO 9227 (NSS test) and IEC EN 60068-2-11 (Ka test) for 168 hours: degree of Rusting Ri1 according to ISO 4628-3, propagation ≤1 mm according to ISO 4628-8.

16.	Rack Standards	IS 9606-1980, UL 2416, IEC EN 60529, IEC EN 62262, ISO 9001:2008, ISO14001: 2015
17.	Degree of Protection	IP 20 according to IEC 60529:2013, IK08 according to IEC EN 62262:2002
18.	Warranty	One year

3.4.4 6U Outdoor Rack

Sl. No.	Description (Brief Specification)
1.	Outdoor waterproof 6 U Rack 600mmW X 550 mm D with in Built 2 fans with cross ventilation. PDU with surge protection Wall Mountable, Cable manager, Lockable front door

3.4.5 Rack Mount LIU

Specifications

- Rack mount 12/24 port U Loaded Single mode
- 12/24 port Loaded LIU accommodate SC Single mode adapters.
- Cold steel base material with powder coating. Aluminium top and front cover for light mounting
- can manage both splices and terminations
- should have fibre magic sticker provision inside for 900um tight buffered fibre storing
- Accessory kit consists of cable ties, mounting ear screw earthling.
- Front-Mounted Cable Saddles for jumper management
- Removable Top & Front cover for better access to interior of LIU
- Rubber grommet allow for pre-terminated fibre trunk installation, protects cable and minimizes
- dust build-up
- Adapter panel - Cold steel
- Adapters should have compact design & high precision which perform well under various circumstances & maintain good plug retention strength.

3.4.6 Network Field Switch

Sl. No	Parameters	Brief Specification
1.	Port Density & Redundancy	8 x Gigabit Port 4 x SFP Port SFP of same OEM from day one.
2.	POE Standard	IEEE 802.3af, IEEE 802.3at and 802.3 bt
3.	Stacking Option	Minimum 2 units in a stack/Virtual stack or better
4.	RAM	1GB
5.	Switching Capacity	should support non-blocking switching ©24 Gbps
6.	Quality of Service	Support for Egress rate limiting, Eight egress queues per port, Voice VLAN, DSCP for IP-based QoS, Differentiated services architecture, IEEE 802.1p Class of Service with strict and weighted round Robin scheduling
7.	Protocol Support	IGMP Snooping V1, V2, V3,, ITU-T G.8032, IEEE 802.15, IEEE 802.3ad/802.1AX Link Aggregation Control Protocol (LACP), IPV4/ IPV6, DHCP Option 82, BPDU, STP Root Guard
8.	Management	SNMP V1,V2,V3, Web GUI, CLI, USB or equivalent memory card, IPv6 management feature on open standards, IEEE802.1ag, TDM or equivalent standards
9.	Security	Should support Access Control Lists (ACLS), DHCP snooping, IEEE802.1x
10.	Resiliency	IEEE802.1q, IEEE802.1d, IEEE802.15, IEEE802 1w, ring resilience/ ring
11.	Power Supply	Fan less-Redundant Hot Swappable Power Supply - AC/DC
12.	Enclosure Rating	IP 30 or equivalent Industrial Grade Rating
13.	Operating temperature	-40ºC to 75ºC
14.	Safety Certification	UL 508, UL 61010 EN 50021, EN 55032 ISA 12.12.01, CSA22.2/213 IEC 60255-21-2, IEC 60255-21-14 ROHS standards NEMA-TS2
15.		Surge protection of 6KV on all copper ports

3.4.7 Network Core Switch

1.	General	The switch must be 19" rack mountable. The switch must have minimum stackable 24 x 1G SFP ports and 4 SFP/ SFP+ Ports. The switch must support at least 200 Gbps switching capacity & 150 mpps packet forwarding rate. At least 4000 VLANS with support for 802.10. Support for 48K MAC and 64K IPv4 Routes Support Stacking of upto 8 switches from day one with 80 Gbps Stacking bandwidth The switch must support 802.1D STP, 802.3 bz, 802.1w RST, Rapid Spanning Tree (802.1w), 802.1s MST and 802.3ad LACP. The switch must support standard based IEEE 802.3af, IEEE 802.3at and IEEE802.3bt on all copper (RJ45) ports. Switch should support 802.1AE, 802.1aq and DPI for application filtering and policy enforcement The Switch Support Security like RADIUS, TACACS+, Guest VLAN, SSHV2 for Telnet management, MAC based Network Access Control. Must Support ITU-T G.8032/Y.1344 (ERPV2) The Switch Must Support Single IP address stack management and Across stack link aggregation, VLAN and Port Mirroring. Switch must support ether channel configuration across two different core switches. The switch must support L3 functionalities like Inter VLAN routing. The switch must support IPv6 management.
	DHCP option	Switch should support SDN protocols like Open Flow 1.3.1 and1.0 agent for control of native Open Flow Support for RADIUS authentication & accounting. Management support using SNMPv3, HTTP, Telnet, SSHv2. SFP Should be from the same OEM Switch shall support either of UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment Switch shall conform to EN 55022 Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements.

		Switch/Switch's Operating System should be tested and certified for EAL 2/NDPP or above under Common Criteria Certification FIPS 140-2 Vendor to be present in Gartner Magic Quadrant 5 Years from OEM with Toll free number for support in India OEM should have R&D centre in India

3.4.8 24 Port PoE Switch with 4 SFP Combo Ports

Sl. No.	Specification
1.	Port Standards • IEEE 802.3 10BASE-T Ethernet (twisted-pair copper) • EEE 802.3u 100BASE-TX Fast Ethernet (twisted-pair copper) • IEEE 802.3u 100BASE-FX 100 Mbps over fiber optic • IEEE 802.3ab 1000BASE-T Gigabit Ethernet (twisted-pair copper) • IEEE 802.3z 1000BASE-X 1 Gbps over fiber optic • IEEE 802.3az Energy Efficient Ethernet (EEE) • IEEE 802.3x Flow Control • JEEE 802.3af/at compliance (for PoE ports)
2.	Interface: 24 x 10/100/1000BASE-T PoE Ports and 4100/1000 Mbps GbE/ SFP combo ports
3.	Duplex Mode: • Full/Half-duplex for 10/100 Mbps • Full-duplex for 1000 Mbps
4.	Media Interface Exchange: Auto MDI/MDIX adjustment for all twisted-pair ports
5.	Switching Capacity: 56 Gbps
6.	MAC Address Table: 8K entries
7.	Static MAC Addresses: 256 entries
8.	Memory: CPU Memory: DDR3 128 MB
9.	Power Budget: 193W or higher
10.	LED indications: Power (per device). Link/Active/Speed (per port). PWR Max. Fan Error
11.	Power Input: 100 to 240 V AC 50/60 Hz, internal universal Power supply
12.	Fans: 2 fans

13.	Operating Temperature -5°C to 50°C
14.	Certifications: EMI: CE Class A, VCCI Class A, FCC Class A, BSMI, CCC

3.4.9 24 Port SFP Managed L3 Switch

Sl. No.	Specification
1.	Console Port: RJ45
2.	Interface: 16 SFP Ports and 8 Combo 10/100/1000Base-T/SFP Ports
3.	Stacking Ports: Supported
4.	SD card Slot: Supported
5.	Stackablity: • Physical Stacking: up to 40G Stacking Bandwidth. Up to 6 units per Stack • Virtual Stacking: Single IP Management (SIM). Up to 32 units per Virtual Stack
6.	Security: • IP-MAC-Port Binding • ARP Packet Inspection • IP Packet Inspection • DHCP Snooping • IPv6 ND Snooping • Support up to 510 Address Binding Entries per Device • -SSH v2 • -SSL v1/v2/v3 • Pont Security • Up to 64 MAC addresses per port/ VI.AN • Broadcast/Multicast/Unicast Storm Control • Traffic Segmentation • NetBIOS/NetBEUI Filtering • DHCP Server Screening • ARP Spoofing Prevention • DOS Attack Prevention • BPDU Attack Protection
7.	Switching Capacity: 88 Gbps
8.	MAC Address Table: 16K entries
9.	Ethernet Ring Protection Switching (ERPS) Supported
10.	L3 Features • Max. 16 IP Interfaces • ARP Proxy • IPv6 Neighbour Discovery (ND)

	• VRRP • IPv6 Tunneling • L3 Routing: Static Route, 512 static routing entries for IPv4/IPv6, RIP, OSPF, IP Directed Broadcast
11.	Memory: Packet Buffer Memory: 2 MB Flash Memory: 32 MB
12.	Power Input: 100 to 240 V AC 50/60 Hz
13.	Ventilation: Smart Fan (High Speed at > 40°C; Low Speed at < 35°C)
14.	Operating Temperature: 0°C to 50°C
15.	Emissions EMI: FCC Class A. CE Class A, VCCI Class A. IC. C-Tick Safety: CB, cUL, LVD

3.4.10 Media Converter

Sl. No	Parameter	Specification
1.	Fiber Mode	Single Mode
2.	Wavelength	1310nm
3.	Fiber cable	9/125 Micron
4.	Fiber Cable Distance	20 Kms
5.	Fiber Connector	SC type
6.	Copper UTP Port	Fast Ethernet/100Mbps RJ -45
7.	Interoperable with most of Hubs and Switches	Supported
8.	TP Port Supports Auto Negotiation and Auto-MDI-X	Supported
9.	LED Indicators	100M, Link/Act, TP:100, FDX PWR
10.	Power adapter External	5 VDC, 1A
11.	Operating Temperature:	0°C to 50°C
12.	Operating Humidity	5% to 90% RH Non- condensing
13.	Certifications	CE, FCC

3.4.11 Computer Kiosk

Sl. No	Parameters	Specifications
1.	Type Of Enclosure	Mild Steel
2.	Processor Make:	Intel
3.	Processor Configuration:	Dual Core or higher
4.	Processor Speed (GHz):	3.1
5.	Operating System (Pre-loaded):	Window 10 or later
6.	Memory (GB):	4
7.	Storage/HDD (GB):	999
8.	Display Size (inches):	22
9.	Display Type Colour:	LED touch Screen
10.	Touch Type :	Capacitive
11.	Screen Resolution (pixels):	1920 x 1080
12.	On Site OEM Warranty (Year):	1

3.4.12 Client Workstation

Sl. No	Parameters	Specification
1.	Form factor	Mini Tower/Tower
2.	Processor	Intel Core i7 processor
3.	Operating System	Microsoft Windows 10 Pro OS
4.	Memory	RAM: 16GB
5.	Storage	As required by Applications
6.	Communications	2x1GbE Lan Ports
7.	Graphics Card	4GB Dedicated Graphics card - Nvidia or AMD

4.
COMMUNICATION

4.1 Telephone Exchange

4.1.1 Telephone Instrument Single Push Button

Sl. No.	Features	
1.General		
I.	• Connecting Cord Length with each instrument (mtrs)	2 meter
II.	• Colour	Black/Grey or defined by user
III.	• Hands free two way speaker phone	Yes
IV.	• Mounting position	Both desk and wall mounting
V.	• Connecting Jack	RJ 11
VI.	• Material	ABS
VII.	• Keyboard	Alpha Numeric
VIII.	• Weight (gms)	500 gram-Approx.
IX.	• Alarm facility	Yes
2. Dialing/ Ringing Features		
I.	• Mute	Yes
II.	• No of Ring volume settings	4
III.	• Redial facility	Yes
IV.	• Caller ID	Yes
V.	• No of selectable ring melody tone	4 or more
VI.	• Flash Dialing	Yes
VII.	• Ringing LED indication	Yes
VIII.	• Pause/Hold	Yes
IX.	• Tone/pulse switchable	Yes
3. Memory		
I.	• No. of Fast Dialing Keys	10
II.	• No of Incoming call Memory	80
III.	• No of outgoing call memory	24
IV.	• No .of Memory for redialing	1
4. **Display Details**		
I.	Display	LCD
II.	No .of digits in display	16
5. Certificate		
I.	Availability of the Test Report from TEC	Yes
II.	TEC approval	Yes

4.1.2 Electronic Private Automatic Branch Exchange (EPABX)

Sl. No.	Specifications
1.	The equipment shall be electronic type. It shall be based on microprocessor / micro controller
2.	It shall be on PCM/TDM digital switching technology with 100% non-blocking and should have valid TEC approval.
3.	It shall have distributed processing architecture, SLIC and SMT Design.
4.	System should work on 48 volt DC and provision for hot standby power supply card.
5.	It should have automatic on line self-diagnostic and reporting system, complete with visual indication facilities, fault isolation and recovery features.
6.	It should be suitable for DTMF as well as FSK type of telephone: instruments.
7.	Its capacity shall be suitable expansion of 300 ports in single cabinet
8.	System shall have modular design, flexible and having universal slots so that any module can install anywhere on the slots.
9.	System shall have inbuilt auto attendant facility and shall be able to answer minimum 5 calls simultaneously and should support dial by name.
10.	It shall have minimum 15 participant's conference
11.	System shall have ISDN Digital platform and shall be compatible with ISDN PRI line of MTNL
12.	System shall have multiple port interfaces such as analog extension lines, Digital key phone, C.O. Line, GSM, E & M Line, PRI/E1 and VoIP. The all interface shall be in the form of expansion card and can be plugged in to the universal slots of the system as and when require in the future
13.	System can be programmed through Analog telephone, Digital key phone, and Ethernet without any external devices
14.	System can be programmed remotely if it is connected to Internet
15.	Call ringing sequence would be programmable and have options such as simultaneous, hunting off, round robin and delayed simultaneous
16.	System shall have in built remote maintenance facility
17.	It shall have minimum one number of public address port and external music port
18.	System shall have unrestricted simultaneous dialing facility. Preferably system shall have dedicated DTMF circuit on each port
19.	Caller line identification (CLI) on Analog and digital/PRI trunks shall be in built for both DTMF and FSK telephone instrument
20.	System shall integrate in-skin voice mail card with adequate storage capacity
21.	Detail reports of all system parameters should be generated through SMDR port of EPABX
22.	System shall have QSIG Protocol support suitable to work with other EPABX
23.	System should support CLI based DISA feature

24.	Each port of system shall be programmable. It shall have programmable features
25.	System shall support flexible numbering for extensions such as it may have extension with 1 digit, 2 digits and up to 6 digits numbers as well as in combination of all
26.	System shall have web based software programming tool for system administration. The license copy of software and all hardware attachments shall be provided for onsite programming
27.	Access codes, system timers and access to features shall be programmable
28.	Storage of outgoing, incoming and internal call reports shall be generated on SMDR port of the system
29.	Voice guided auto attendant shall be preferably built-in
30.	DISA, DOSA and remote programming features along with their hardware cost shall be provided. Preference would be given to those who offer these built-in
31.	There shall be minimum 900 numbers possible and shall be able to dial by as an abbreviated numbers
32.	Features given to an extension shall be accessed from any other extension by dialing the secret codes
33.	System features shall have class of service, night service, conference, auto diagnostic etc. Class of service shall be unrestricted. STD restricted and semi restricted
34.	System must have following features: • Call Budget on Trunk • CLI based DISA (Mobile Extension) • Mobile Trunk Connectivity • Multi-Stage Dialing • Returned Call to Original Caller (RCOC) • Automatic Call to Missed (Predefined) Calls on GSM SIMS • Parallel Ringing • Routing of calls to only permissible legal networks (Logical Partitioning) • SMDR though Ethernet Port
35.	Extension features shall have extension to extension call, extension to central office, extension to operator, automatic call back, call transfer, call forward, follow me, executive/secretary, do not disturb, barge-in, raid, Boss ring, Priority, emergency reporting etc
36.	Operator features shall have assistance to extension, attendant call transfer, call intercept, indication of call waiting, night service control etc
37.	Over voltage protection on junction and extension lines shall be provided by the supplier
38.	System shall have features as CLI based routing, call duration control, least cost routing i.e. time, number or combination of both
39.	System shall have conversational recording in the mail box. Conversation recording should be possible on both Digital key phone and Analog phone lines both

40.	System shall have security dialer. It is preferable to connect any sensor such as Glass brake sensor, fire sensor etc. shall connect directly to system. When sensors get activated system will dial out the preprogrammed number and deliver prerecorded emergency message as well as request for confirmation
41.	System shall have call buffer storage more than ten thousand calls
42.	Systems should have provision for hot standby of power supply and control cards

4.1.3 IP PABX System (Server Based Ip- Ippabx system)

Sl. No.	SIP Enabled IP PABX System supporting the following functionalities:
1.	The IP PABX system should be LINUX server based.
2.	The IP functionality (extensions, Trunk etc.) should be built-in and should not require any additional IP card/ module. IP PABX server should be of same OEM including Line and trunk cards etc.
3.	The IP PABX to be installed at remote locations should have inbuilt server from same OEM.
4.	The IP PABX system should be a true ISDN switch to connect BRI/PRI lines. It should operate on BRI and PRI interface for transmission of Voice, Data and Image including Video Conferencing through the same equipment code.
5.	The system should support H.264 video code.
6.	The system should support IP Telephony with an Integrated card (10/100/1000 BaseT). It should support 64kbps comprehensive open encrypted 16kbps voice codecs, silence suppression with comfort noise insertion, up to 64 MS G.168 echo cancellation and support end-to-end DTMF
7.	The system should support a minimum of 800 users (Analog/Digital/IP) in a single/ networked mode.
8.	The system should support minimum 2 ISDN PRI interface within a single PRI card.
9.	Trunk Supported: • SIP • Analog • ISDN PRI • BRI
10.	The IP IP PABX should have a capability to connect a minimum of 20 sites in a networked scenario functioning as a logically single system.
11.	The IP IP PABX should be certified by Microsoft for Direct SIP integration with MS Lync 2013 towards Unified Communication integration. Vendor should provide a documentary evidence to support this clause.
12.	The system should provide direct media routing (end-to-end IP) between IP extensions.

13.	The system should have minimum 6 party audio conference in 4 simultaneous groups in any combination (internal and external) and support 4 party video conference in unlimited simultaneous groups from day one. Only license is to be required for activation of Video calls with required video phone/soft video client.
14.	The IP PABX should be Q-Signaling compliant so as to get connected for inter IP PABXs working of same or different technologies equipment between two different locations through leased line.
15.	The system should support the following QSIG standards: (a) Basic Call Control: ETS 300 172/ISO 11572, ISO 11574; (b) GFP (within the scope of the supported supplementary service listed below): ETS 300 239/ISO 11582 (c) Supplementary services: (I) CLIP, COLP, CLIP: ETS 300 173/ISO 14136 (II) CNIP, CONP, CNIR: ETS 300 238/ ISO 13864, 13868 (III) AOC: ECMA 211/212
16.	The system should support the following network topologies: Ring, Point-to-point, Star and Meshed.
17.	The system should support integrated TDM/SIP DECT Cordless with Base stations TDM/SIP DECT. Cordless Extensions. The system should support indoor and outdoor base stations with a radio relay, in case twisted pair cable is not available. The base station should support 4/8 simultaneous calls
18.	It should support to provide Mobile Extensions with the IP PABX i.e. It should be possible to integrate a Mobile Phone (GSM/CDMA/WILL) with the IP PABX converting the mobile phone as an office extension.
19.	It should support dual mode mobile phone connected over WIFI and GSM with client application for all type of smart phone to provide true mobility features.
20.	It should be possible to connect the IP PABX on LAN through the web based system management. It should be possible to administer the system through any PC on LAN or through remote access.
21.	It should have a in-skin advanced voice messaging system for automated attendant, conversation recording, external access and other voice - prompting and messaging applications, as well as integrated music-on- hold.
22.	It should support PC based operator Console. The IP PABX should support a suite of easy-to use business operators and receptionist by providing receptionist high capacity call handling tools, powerful directory management and messaging and information facilities. A busy lamp field for status indication and a web-interface to access the directory are provided as well.
23.	The IP PABX system should be compact & rack mountable.
24.	The IP PABX should have provision of automatically identifying and isolating faulty Trunks.

25.	The IP PABX system should be equipped with remote maintenance interface via IP/ISDN/ Analog lines.
26.	The IP PABX should have inbuilt SMDR Facility for call billing.
27.	The IP PABX System should have in built Automatic call Distribution.
28.	It should support abbreviated dialing by name or number.
29.	This system supports one number feature for up to 10 terminals.
30.	It supports Personal Call Routing and Presence facility; and call centre functionality for minimum 10 agents with suitable CTI Call Centre application.
31.	The IP PABX System terminals programming can be done via the web Based management interface.
32.	The IP PABX System has Embedded Unified Communications, Collaborative & Multimedia Services. UCC solution, including CTI, video conference, chat and desktop sharing only activation license shall be required.
33.	The IP PABX System supports SIP, XML, LDAP, TAPI and KNX protocols. Integration with building management via should KNX protocol.
34.	The IP PABX System has in built DHCP server functionality.
35.	The IP PABX should have colored display to check alarms and self-diagnostic system on the chassis.
36.	The analog extension cards should be in Multiple of 8/16/32 Ports.
37.	The IP IP PABX should have Blade Server.
38.	The Main unit should have provision for dual Power Supply. The second Power Supply should work as an Auxiliary Power Supply.
39.	The IP PABX should support the below mentioned Applications:- ➢ Audio, Web & Video Conferencing ➢ Contact Center Embedded Full Featured & standalone ➢ Softphone with Video, Presence & Chat ➢ CTI Client with presence & UC ➢ Directory Integration ➢ Click to Call ➢ Fax Services ➢ Building Automation Specification of IP/ Digital Phone ➢ Wall mounting ➢ Headset socket: DHSG ➢ Display: 7*34 characters ➢ Backlighting ➢ Indicator LED: 2 ➢ Fixed function keys: 10minimum

	➢ Configurable keys (Soft Keys): 3minimum ➢ Alpha keyboard ➢ 4-way navigation key ➢ Bluetooth supported ➢ **Features:** ➢ Name dialing ➢ Call preparation ➢ Open Listening ➢ Full-duplex speakerphone ➢ Transfer ➢ Conference ➢ Call forwarding ➢ Voice mail ➢ Send/receive text messages ➢ Access to central phone book ➢ Expansion key modules supported ➢ Viewing angle 25 º/40 º
40. Features and functionality	
	A. Incoming call routing functions • Partial re-routing • Block incoming calls per user • Busy on busy (used with several phones) • Calls to users with several terminals (One number concept) • Calls to user groups • Direct internal dialing (max. 10 DDI plans) • Display caller name (CNIP/CONP) • Display caller name (CLIP/COLP) • Group-dependent call routing (switching groups) • Limit simultaneous incoming calls • Private call routing • Route calls on busy or no answer to alternatives destinations • Time-dependent call routing (vector groups, switching positions) • User group with linear, cyclic and global call distribution
	B. Outgoing call routing functions • Group and time-dependent emergency destinations. • Internal/external line access authorization per subscriber • Outgoing dial with dialer / line key • Prioritised trunk allocation • Simultaneous outgoing call limitation • Speed – dial numbers

	C. Cost control functions • Additional price calculator for charge billing • Allocate cost charges to cost centres • Avoid manual LCR • Call logging (CL) • Charge data acquisition for private calls. • Individual charge payment • Individual charge payment reports • LCR fallback to alternative network provider • Least Cost Routing (LCR) • Number lock (limit outgoing numbers)
	D. System functions • Announcement before answering (group and time-dependent) • Auto attendant(IVR) • DECT solution (integrated) • Global/individual VM greeting messages • Music on hold • Secure fax transmission over IP • SIP- DECT solution • SMTP client (sending e-mails) • Time and date – controlled functions • Two – company configuration • Voicemail (VM) • VM audio guide • VM MWI notification via e-mail with attachment • VM box for group • VoIP voice and signal encryption SRTP/TLS
	E. Networking • Private networking via ISND (QSIG protocol) • Private networking over IP (SIP protocol) • Private transparent networking over IP (intelligent Network) • Private virtual networking via the public ISDN
	F. Application interfaces • 1st- party CTI via LAN • CSTA III XML interface • Hotel Management System interface (Micros FIAS certified) • KNX • LDAP (server/client) • Microsoft Outlook 2007/ 2010 • Microsoft Exchange 2007/2010 integration (calendar and phone book connection) • TAPI (1st party/server)

	G. Features available to the user • Absence information • Access to system phone book (Names/numbers) • Activate/deactivate remote maintenance key function • Activate red • Announcement before answering, record announcement text • Answer central alarm • Appointment call • Assign to cost Centre/re-book • Automated configuration • Automatic software update • Brokering • Busy lamp field • Calls answered from connection • Call charge display and call-back • Call charge transmission • Call connection with delay (line and team keys) • Call Deflection – CD • Call door terminal • Call forwarding (CF); Call forwarding on busy (CFB) • Call list(s) • Call recording (automatic/manual) • Calls to busy subscribes (CCBS) and free subscribes (CCNR) • Call transfer with or without notice • Call waiting • Calling on an external terminal with your own settings • Choose internal/external ring tones • Conference call • Configurable key • Control features remotely • Control private call routing • Control relay (open, close) • Deactivating call number display • Deflection of voice mail messages • Dial exchange access (company, private, with cost centre, targeted route dial, LCR fallback) • Dial by name/ quick dial • Discreet call • Do not disturb (call protection) • DTMF dialing • Duplex mode • Emergency call number

	• Emergency / priority line seizure • Enquiry • Fast take • Free seating • Follow me • HOLD • Home alone • Indicating new messages • Individual call charge payment • Intrusion with/without alert tone • Leave a message • Message LED • Open door • Parking a call (locality, centrally) • Phone lock • Pick up call • Presence profiles and management (presence) • Private call with PIN • Record voicemail greeting messages, listen to voice messages, indicate new messages • Register malicious calls (MCID) • Return to a connection on hold • Ring alone • Reject call • Secret code (remove room-room lock) • Send text messages • Set system time/date • Speed-dial numbers • Team keys • Toggle switching groups • Transfer of a call connection without preparation • User groups (on/off)
	H. System management services and tool • Management Suite • Data import/export • DHCP server for telephony functions and applications • Manual/automatic database backup • Park Management • Remote management accesses via IP/ISDN/analogue lines • Self-configuration of same OEM IP and SIP phones • System management tasks with can be handled by customers • System management web client for installers and customers

4.2. Conferencing Unit

4.2.1 Multi Conference Unit (MCU)

Sl. No.	Feature	Specifications
1.	Platform	It should be running on application based platform with suitable hardware. Each server should have one redundant power supply.
	Ports	• The MCU must have 75SD ports @720p 30 fps with H.264 AVC and Continuous presence from day 1 or 24 Ports @ Full HD
		• 75 ports must be able to connect different sites at different bandwidths and protocols. H.264 AVC standard must be supported at the minimum to connect all the 75 sites.
		• To be able to host at least 2 simultaneous conferences each having different capacities restricted by the maximum port capacity of the MCU. In addition, the MCU should have 25 concurrent personal meeting licenses for scheduling their own conferences.
		• To be capable of supporting participants using various means i.e., via video cabled phones, room-based video endpoints, soft clients on mobile/tablet or via the browser using WebRTC compatible browsers in a single conference. The meeting quality must be consistent and of high quality. In case additional components are required for this functionality, all additional components required to have this functionality has to be included in the solution. The WebRTC participants should be able to chat amongst themselves.
		• To be capable of hosting meetings with internal and external participants in a secure way so that it should co-exist with the enterprise security policies
		• To support H323 or SIP protocols.
		• To support geographical redundancy in case future expansion is needed.
		• To support the concept of virtual meeting rooms to users who host meeting frequently. Such meeting rooms should support dialing in from standard based video end points, internal and external users, and browser-based clients. The system should allow one Virtual meeting room per employee; however, it should not consume resources when not in use.
		• To be able to maintain the dynamic resource allocation capacity for 1080p, 720p and SD participants simultaneously without having to reboot or change any configuration.
		• The MCU should display a security icon on the endpoint if the conference is secure.

		• The administrator should be able to specify maximum resolution for main video and content.
		• Video conferencing endpoints deployed at other organization must be able to take part in video conferencing.
		• Interoperability with all organization must be possible using standards based dialing methodology using the Internet.
		• It should be able to 'integrate with existing Cisco Video Endpoints deployed at various Jails across the state, directly without any need of third-party integration tool (hardware/software).
2.	Video Standards	• To support H.263/H.263+/H.263++, H.264 AVC video algorithms
3.	Video Resolution	• Support video resolution from SD to Full HD to join into a conference • To be able to combine HD and SD in the same conference without degrading the HD resolution from and to the HD endpoints. The MCU shall interoperate with multiple vendors' endpoints. The supported mediums should be IPv4 and IPv6.
4.	Audio Standards	• Along with the support for basic algorithms like G.711 and G.722.1 the MCU should also support wideband Audio protocols like MPEG 4 AAC - LC and MPEG 4 AAC – L
5.	Transcoding & Rate Matching	• The MCU should support transcoding of different Audio/video Protocols. • MCU should be able to combine HD and SD in the same conference without degrading the HD resolution from and to the HD endpoints.
6.	Dual Video	• The MCU should have H.239/BFCP protocol for sending and receiving dual video streams (Presenter + Presentation).
7.	Video Layouts	• At least 20 or more sites to be seen simultaneously on the screen in traditional Continuous Presence mode.
		• The MCU must also support advanced continuous presence such that the site that is "on-air" to be seen on a larger window and the other sits are seen in smaller quadrants.
8.	Security	• The MCU must be a score Non-PC Hardware with a strong operating system. The Hardware and software must be from the same OEM.
		• The MCU should support 128 Bit strong AEs encryption for calls and H.235 for authentication • The MCU must support encryption for calls on SIP.
9.	Power/ Network/USB Interface	• At least 1 LAN /Ethernet--10/100/1000 Mbps full duplex and dedicated serial/USB connection for maintenance/upgrade.
10.	Conference Layout	• MCU Solution should support minimum of 10 layouts

11.	Firewall Traversal	• The department needs to connect users on Internet for Video conferencing. Hence, it is required that either the proposed MCU should integrate with the existing firewall traversal solution or through a new solution for connecting secure video calls over Internet.
12.	Integration with existing could web conferencing platform	• The MCU should get integrated over H.323/SIP with the existing Cisco WebEx cloud-based web conferencing platform for enhanced capabilities along with live streaming
13.	Scheduling of conference	• The MCU should provide a web - role based GUI based platform for remote scheduling of conferences on the MCU. The administrator should be able to do the following functions from the GUI based tool for remote conference management: • Conference lock • Audio / Video mute of video participants • On screen text messaging • On screen • Move participants between conferences • Change conference layouts • Make participants important banners • The existing Cisco Video endpoints and MCU should be managed, monitored through the same application for software updates, upgrades, remote monitoring, remote provisioning and configuration

4.2.2 Multiparty Full HD Video Conferencing End Point

Sl. No.	Specification	Value
1.	Type of End Point	1+3 Multiparty Full HD
2.	Video Conferencing System Resolution	1080; 60fps
3.	Minimum Bandwidth Required for Specified video Quality at End point/far-site end (kbps)	1024
4.	Type of Camera	PTZ
5.	Camera Positioning System	Preset
6.	Type of sensor	CMOS
7.	Camera Control (focusing, brightness, and white balance)	Automatic
8.	Multiple Camera System in Case of Automatic Voice activated Camera Tracking	NA
9.	Optical Zoom	12x
10.	Digital zoom	10x

11.	Field of View at zoom (degree)	72.5
12.	Pan range minimum to Maximum (+/-Degree)	-130 to 130
13.	Tilt Range (Degree)	-25.90
14.	Cord and connector to be supplied	Yes
15.	System delivers Full HD video and voice & Full HD content for an overall full HD experience at specified bandwidth	Yes
16.	Video coding support Protocol	H.263. H.264AVC, H,264 High Profile
17.	System has G-722/G-711/G-729 or equivalent wideband audio coding support	Yes
18.	System supports sharing of video and graphics content during the video call	1080p, 30fps
19.	It is to be possible to see both the near and far site on one Screen thus making most efficient use of a single display area	Yes
20.	System is equipped with one or more Omni directional High Definition Microphones as required to convert large conference room	Yes
21.	Number of microphone supported	4
22.	Number of microphone supplied	1
23.	Number of camera support from the same OEM	2
24.	Number of Ethernet connection points for System supports for RJ-45, 10/100/1000 Mbps Base-T Ethemet Connection	1`
25.	System to support AES encryption video calls. System to have Encryption on and off capability	Yes
26.	To come with easy to use infra-red hand held remote control/Touch Panel with operating distance	Yes
27.	All equipment to be compliant with the requirements of ITU-T (SIP Protocol & H Dot 323) Standard related to video Conferencing	Yes
28.	System to be IP ready	Yes
29.	System uses standards based protocols & the offered system is inter operable with any existing H-323 AVC/SVC based VC equipment in a P to P call on VC end point: All H/W and S/W required to make it interoperable is included in the scope of supply	Yes
30.	Number of input DVI Ports	0
31.	Number of input HDMI or equivalent ports	3
32.	Number of input USB Ports	1

33.	Number of Output DVI Port	0
34.	Number of Output HDMI or equivalent Port	2
35.	Number of output USB port	1
36.	Recording @1080p on the end point	Yes
37.	System to have following components from the same OEM (a) Codec (b) Camera (c) At least one Microphones with suitable connectivity (d) Remote control/Touch Panel	Yes
38.	Type of Microphone	Omni Directional
39.	System to be tropicalized and report available from ILAC/NABL/Govt Lab with all add on including Environmental Sequence	Yes
40.	Dry heat-a) For 16 hrs at 55 ºC as per IS: 9000/pt-3/sec-5/1977 (b) Cold – for 4 hrs at deg C as per IS:9000/pt-2/sec 4/1977 (c) Damp Heat-For 2 Cycles of 24 hrs each at 40 ºC & 95% RH as peer IS:9000/pt-5/sec-1/1991 (All Reaffirmed 2007)	Yes
41.	After each environmental test and a recovery period of two hours, the video conferencing system to be been checked for complete functional parameters	Yes
42.	BIS Registration under CRS of Melty	Yes
43.	UL/CCE certification	Yes
44.	Operating Temperature (ºC) Range	-40**ºC to 40º C**
45.	Operating Humidity (%RH) Range	10 to 90
46.	Installation and commissioning	Yes
47.	On Site OEM Warranty (Year)	5

4.2.3 Video Conferencing System

- Camera : Polycom
- Camera 1/2.33” CMOS.
- H/v Resolution. 1920 x 1080.
- Output. SMPTE 296M 1280 x 720p60,
- SMPTE 274M 1920 x 1080p, 60/50.
- Lens focal length (mm). f= 3.76 to 37.6; f ± 1.2.
- Zoom.4x optical (black), 10x/12x (silver) optical/digital.
- Focus. Auto.
- Horizontal field view. 65º , 85with wide angle adaptor.

4.3. Wireless/ Walki Talki Gadget

4.3.1 Digital Trans Receiver (Handheld)/Walki Talki

1.	**Performance Features**	
	• Frequency Range (MHz)	• 136-174
	• Types of Bandwidth	• VHF Full Band
	• Display	• Yes
	• Channel Capacity	• 1000
	• Channel Spacing	• 12.5 KHz
	• Frequency Stability (±)	• 0.5 parts per million
	• Technology	• Digital TDMA (2-slot)
	• Air Interface Standard	• Open Standard DMR Tier-II
	• Antenna Impedance	• 50 Ohm
2.	**Transmitter**	
	• RF Power output	Programmable
	• RF Power output Range	1 to 5 Watts (VHF)
	• FM Emission	11K0F3E,7K60FXE,7K60FXD
	• Digital Modulation	4FSK
	• Transmitter FM Hum/Noise (dB)	-40
	• Transmitter Modulation Limiting	± 2.5 KHz @12.5KHz
	• Transmitter Adjacent Channel Power (dB)	-60
	• Audio Response	+1,-3dB
	• Audio Distortion	3%
	• Digital Vocoder	AMBE+2
3.	**Receivers**	
	• Analog Receivers Sensitivity for 12JB SINAD	0.16 micro Volt
	• Digital Receiver Sensitivity at 5% BER	0.14 micro Volt
	• Receiver Adjacent Channel Selectivity (dB)	60
	• Inter Modulation (dB)	70
	• Receiver Audio Output	500 milli Watt
	• Receiver Rated Audio Distortion	3 %

4.	**Accessories**	
	Antenna	Rugged flexible Helical
	Programming kit	Yes
	User Manual	1 set with each equipment
	Technical repairing & maintenance manual with complete block diagram, circuit layout etc. in soft as well as hard copy	do
5.	**Battery Charger**	**Yes**
	• Input voltage	230 V ± 10%, 50Hz
	• Output voltage	14V
	• Charging time for standard mode	6 to 14hrs
	• Charging time for rapid mode	1 to 3hrs
	• Number of charging pockets	1
	• Number of spare batteries with each Radio Set	1
	• Indicator	For all modes of charging status
6.	**Power Source/Battery**	
	• Chemistry of Battery	Various Battery Options for Single Radio like Ni-MH, Ultra High Capacity Ni-MH, and High Capacity Li-Ion Battery Etc, Single Charger can charge Li-Ion, Ni-Mh & Alkaline Battery for capacity 1450MAH to 2300mAH & Tri-Color LED indicator to indicate different status of Battery during Charging
	• Voltage rating of the Battery	7.4 Volt
	• Capacity of Battery (mAh)	2000
	• Average Battery duty cycle 5/5/90 for digital transmission	20 hour
	• Average Battery duty cycle 5/5/90 for digital transmission	15 hour
	• CERTIFICATION-B	
	• BIS registration under CRS of Meity for the battery	Yes
	• EMI/EMC	Compatible
	• Safety	Reverse polarity protection & Short circuit protection
	• Service Warranty	3year

7.	**Other features**	
	• Simple Press to talk	Yes
	• Low Battery Alert	Yes
	• CTOSS or DCS	Yes
	• Operation (analog & digital)	Yes
	• Signaling	2Tone,DTMF,Digital
	• Busy Channel Lockout	Yes
	• Selective Call Decode	Yes
	• Capable of VOX for hands-free operation	No
	• PTT ID Encode	Yes
	• Channel Scanning with call quieting facility	Yes
	• Emergency SOS/SIREN	Yes
	• Talk-around	Yes
	• Automatic number Identification (ANI)	Yes
	• Text message and predefined message	Yes
	• Keypad	Yes
	• Availability of Inbuilt GPS system	Yes
	• If yes, Horizontal accuracy	5 meter
	• Time to first fix (TTFF) cold start	1 minute
	• Time to First Fix (TTFF) Hot start	10 second
	• Communication security	Inbuilt encryption, 3rd party encryption
	• Protocols supported in case of third party encryption	Yes
	• Weight with Battery	325 gram (Maximum)
8.	**Environmental Conditions**	
	• Operating	-30 ºC to 55 ºC
	• Storage	-40ºC to 70’ ºC
	• Operating Humidity @40 degree C	95% RH

9.	**Test Report Details**	
	• Ingress Protection	IP-67
	• Vibration Shock, Salt, Rain	MIL-STD-810 G Compliant
	• Availability of Test Reports from Central Govt/NABL/ILAC accredited lab to prove conformity of the Specifications	Yes

4.3.2 Tetra Radio

Sl. No.	Parameters	Specifications
1.	Frequency Range	400MHz Band /800 MHz Band
2.	Duplex Spacing	10 MHz for 400 MHz Band 45 MHz for 800 MHz Band
3.	TDMA	4-Slot TETRA Standard
4.	Operation Modes	TETRA Standard
5.	Emission	21KODIW
6.	Number of Channel	1000 or better
7.	Channel Spacing	25 kHz
8.	Number of contacts (individual / group call numbers)	1000 or better
9.	Operating Voltage	11-25 V DC
10.	Frequency Stability	± 1.5 PPM or better
11.	Display	Alphanumeric
12.	VSWR	Better than 1.5
13.	Protection	Reverse Polarity and High VSWR
14.	Interoperability with minimum two vendors	IOP Certification from Technical Working Group TETRA Association
15.	Transmitter	
	• RF Power Output	Minimum 25 W for all bands
	• Digital Modulation	TU/4QDPSK
	• Modulation Deviation	+2.5 kHz at 25 kHz
	• FM Hum & Noise	-40 dB or better at 25 KHz
	• Adjacent Channel Power	-60 dB or better at 25 KHz
	• Audio Response	+1,-3dB
	• Digital Recorder	ACELP

16.	Receiver	
	• Sensitivity (Analog)	0.30µV (12dB SINAD or better)
	• Sensitivity (Digital)	0.30µV at 5% BER or better
	• Adjacent Chanel Selectivity	60dB or better at 12.5 KHz
	• Inter- Modulation	70dB
	• Audio Output	Minimum 3 W
	• Audio Distortion	Less than 3%
17.	GPS	
	• Time for fix cold Start	< 2 Minutes
	• Time first fix hot Start	< 20 Second
	• Horizontal accuracy	< 10 Meter
18.	Environmental Specs.	
	• Operating Temperature	-30°C to +55°C
	• Storage Temperature	-40°C to +70°C
	• Humidity	95% RH Max. +20°C Non-condensing
	• Vibration	MIL-STD-810 F/G
	• Shock & Drop	MIL-STD-810 F/G
	• Ingress protection	IP-54
	• Salt	MIL-STD-810 F/G
	• Rain	MIL-STD-810 F/G
	• Low Pressure	MIL-STD-810 F/G

4.3.3 Digital Hand Held VHF Transceiver Set

Sl. No.	Parameter	Specification
1.	**General**	
	• Frequency Range	136 to 174 MHz (Full Band)
	• No. of channels	255 or More
	• Channel Spacing	12.5 KHz or better
	• Frequency Stability	± 1.5 PPM or better
	• Protocol & Technology	Digital TDMA or FDMA Technology or better. User organization to define protocol and technology
	• Type of Emission (Modulation)	Analog; 11KOF3E Equivalent technique or Equivalent technique complying to standard/non Protocol as defined by an international standards body like ETSI FCC etc.
	• Type of Operation	Simplex, Press to talk
	• Type of Antenna	Rugged flexible Helical Antenna
	• Weight with Battery	500 gram (Max.)
	• Power Source	Ni-MH or Lithium-ion or Li-polymer battery pack of 2000 mAH or more with belt clip
	• Protection	Reverse polarity protection Protection against high VSWR
2.	**Transmitter**	
	• R.F Power output	1/5 Watt (Programmable)
	• FM Hum/ Noise	-40 dB or better
	• Modulation Limiting	± 2.5 KHz @ 12.5 KHz
	• Adjacent Channel Power	-60 dB or better
	• Audio Distortion	Less than 3%
3.	**Receiver**	
	• Sensitivity	i) Analog:- 0.30µV for 12 dB SINAD or better ii) Digital - 0.30µV at 5% BER or better
	• Selectivity (Adjacent channel)	60 dB or better
	• Inter Modulation	60 dB or better
	• Audio Output	500 MW
	• Audio Response	+1, -3 dB
	• Rated Audio Distortion	Less than 3%

4.	**Environmental Specifications**	
	• Operating Temperature	-30°C to +60 °C
	• Storage Temperature	-40°C to +70 °C
	• Humidity	Max. 95% @ +40°C non condensing
	• Other Tests	Low & High Low Shock Solar Radiation, Rain, Salt Fog, Vibration, Dust & Shock
	• Ingress Protection	IP 57 or better
5.	**Accessories**	
	• Battery Charger	Single unit, Smart charger (capable to charge Lithium Ion, Ni-MH, Lithium-Polymer batteries).
	• Hands free Kit (VOX unit with PTT) (optional)	The vendor should provide minimum of two variants for trials
	• Programming kit	All necessary software and hardware required for programming of the set
	• Literature	User manual with each radio sets n soft as well as hard copy.
	• Battery	Two extra Lithium-ion or Ni-Mh or li-polymer batteries with each Radio Set
	• Leather case (Optional)	One good quality leather case with belt clip & shoulder strip.
6.	**Configuration**	
	• Caller ID display	Yes
	• Facility for locking the channel. or key pad locking	Yes
	• Scan with priority	Yes
	• Transmitter Time Out Timer (TOT)	The time should be programmed to best suit the application
	• LCD Display	Yes
	• Mode of calls	Selective Call, Group Call, Inter and Intra Group call facility
	• Remote Radio Kill / Stun/ Revive facility	Yes
	• Mode of operation	Radio should operate in analog mode and digital mode. (Compatible with .existing all type of VHF analogue radio sets viz: Motorola, Icom, Kenwood, Vertex etc)
	• Emergency Button	Allows a user to obtain help in critical situations.

	• SMS Texting	Should be capable of sending pre-defined messages & short messages from keypad as Optional.
	• Programming	Front panel programming with password protection or PC programming.
	• DTMF front panel key pad with back kit	Yes
	• Battery strength bar	Yes
	• Support GPS	Inbuilt GPS system with accuracy of less than 10 meters.(Optional- As defined by user)
	• GIS	Radio should have Application protocol interface along with software applications to messaging on PC/ Console. (Optional-As defined by the user)
	• Networking	Should be IP based for automatic roaming etc. (Optional- As defined by user)
7.	**Field Trial**	The actual performance of the radio set will be assessed in the field trials

4.3.4 Digital VHF Repeater Set

Sl. No.	Parameter	Specifications
1.	**General**	
	• Frequency Range	174 to 320 MHz (Full Band)
	• No. of channel	16 or more
	• Channel Spacing	12.5 KHz or better
	• Frequency Stability	±1.5 PPM or better
	• Protocol & Technology	Digital TDMA or FDMA B Technology or better (User / organization may decide protocol & Technology as per their requirement/ choice)
	• Type of Emission (Modulation)	Analog; 11K0F3E Digital;4FSK complying or equivalent technique complying to open standard / nonproprietary Digital Protocol as defined by an international standards body like ETSI / FCC etc.
	• Weight	Less than 15 Kg
	• Power Source	• DC-13.8 Volt ± 15% • AC-230Volt ±15%, 50Hz ±1 • These should be switched automatically on DC supply during mains failure & when mains supply restored it should be shifted on mains from DC supply

	• Protection	• Reverse polarity protection • Protection against high VSWR
2.	**Transmitter**	
	• R.F Power output	45 Watt or more (Programmable/ Selectable)
	• FM Hum/ Noise	-40 dB or better
	• Modulation Limiting	±2.5 KHz@ 12.5 KHz
	• Adjacent Chanel Power	-60 dB or better
	• Audio Distortion	Less than 3%
3.	**Receiver**	
	• Sensitivity	i) Analog:- 0.30 µV for 12 dB SINAD or better ii) Digital - 0.30µV at 5% BER or better 60 dB or better
	• Selectivity (Adjacent channel)	-60 dB or better
	• Inter Modulation	70 dB or better
	• Audio Response	6 (+1 to -3)dB
	• Rated Audio Distortion	Less than 3%
4.	**Environmental Specification**	
	• Operating Temperature	-30°C to +60 °C
	• Storage: Temperature	-40°C to + 71 °C
	• Humidity	75 % RH
5.	**Networking**	Should be supplied with Repeater
6.	**Interfaces**	Ethernet port RJ-45 to provide - a) Wide area IP connectivity for Voice and Data. b) Remote monitoring and status check.
7.	**Accessories**	
	• Battery cable & Mounting fixtures	Should be supplied with Repeater
	• Antenna	3dB/6dB gain, Omni Directional antenna with 45 meter RF Cable RG-217 for base station will be provided as per user's requirements.
	• Programming Kit	All necessary programming software and hardware required for the set will be provided as per user's requirements.
	• Literature	i) Users manual with each radio sets to be provided in soft as well as hard copy. ii) Technical repairing manual with complete block diagram, circuit layout etc to be provided in soft as well as hard copy.

8.	**Field Trial**	The actual performance of the radio set will be assessed.

4.3.5 Digital UHF Hand Held Trans Receiver Set

Sl. No.	Parameters	Specification
1.	Frequency Range	403-470 MHz
	No. of Channel	256 or more
	Channel Spacing	12.5 KHz or better
	Frequency Stability	± 1.0 PPM or better
	Protocol	Digital TDM /FDM Technology
	Type of Emission	Analog: 11K0F3E Digital: 4FSK or equivalent Modulation technique complying to Open Standard propriety Digital Protocol defined by an non as international standards body like ETSI / FCC etc.
	Type of Operation	Simplex press to talk
	Type of Antenna	Helical Antenna
	Weight with battery	500 grams (max)
	Power Source	Ni-Mh or Li-on rechargeable battery with belt clips to meet the Operating time of 8 hours with 5:5:90 duty cycle at peak conditions.
2.	RF Power out put	Programmable/ switchable up to 4 watt or more
	FM hum / Noise	12.5KHz: 40dB or better
	Frequency Deviation	± 2.5 KHz in 12.5 KHz spacing
	Modulation Sensitivity	2 to 10 mV
	Modulation Distortion	Less than 3% @ 1 KHz
	Modulation Fidelity	+1,-3 dB of 6dB
	Audio Distortion	Less than 3% @ 1 KHz
3.	Sensitivity	(i) Analog: 0.3 5 µV for 12 dB SINAD or better (ii) Digital: 0.30 µV at 5% BER or better
	Selectivity (adjacent channel)	60 dB @12.5 KHz or better
	Inter Modulation	60 dB or better as per ETSI standard or better
	Audio out put	500 mW or higher
	Audio Response	6dB with variation of (+ 1 to -3) dB

4.	Operating Temperature	-30 °C to +60°C
	Storage Temperature	-40°C to +70°C
	Humidity	90% RH at 50°C (as per MIL810E) or later
	Environmental Standard	MIL 810F or later
	Ingress Protection	IP 54, IP 55 or better
5.	Support GPS	Should be supplied with GPS with accuracy less than 15m to enable being tracked from Remote Control Station.
	Support GIS	Radio should have application protocol interface along with software application to provide location and messaging on PC/ Console.
	Text Messaging	Should be capable of sending short messages from keypad and defined messages
	Front Panel LCD Display	Digital hand held radio with key pad
	Transmitter Time out Timer (TOT)	The time can be programmed to best suit the application
	Emergency Button	Allows a user to obtain help in critical Should be available
	Scan with priority facility	Should be available
	Mode of calls	Selective call, Group call, inter and intra Group call facility
	Contact list	Contact list of more than 100 user for SMS and selective calling
	Remote Radio killing /stun /Revive facility	Should be available
	Caller ID Display	Should be available
	Networking	IP based for features like automatic roaming
	Secrecy	Should provide internet protection against casual eavesdropping
6.	Battery charger	Single unit rapid charger (100% of number of sets) Four way or more charger (25% of number of sets)
	Hands Free Kit (VOX unit with PPT)	The vendor should be provide minimum of two variants for trials
7.	Programming Kit	All necessary programming software and hardware required for the set
	Literature	User manual with each radio set. Technical repairing manual with complete block diagram. Circuit layout etc at a scale of 10% On site training as per user .

4.4 Studio

Sl. No.	Parameters / Specifications	
Broadcast Studio Camera	4K 3-CMOS 1/3 inch Sensor Broadcast Cameras, captures 4K at up to 60p, relying on three 1/3 inch Exmor R sensors that provide improved low-light capability when compared to standard sensors. The camera integrating a 25x optical zoom lens and an electronic variable ND filter. The camera should supports a variety of codecs.	
	Image Sensor	1/3 type back-illuminated Exmor R3CMOS sensor
	Sensor Resolution	3840 * 2160
	Optical System	F1.6 prism system
	Built - in Optical Filters	ND filters OFF: CLEAR 1: 1/4ND 2: 1/16ND 3: 1/64ND Linear variable ND (Approx. 1/4ND to 1/128ND)
	Shutter Speed	1/24 sec to 1/8,000 sec
	White Balance	• Present (3200K), • Memory A, • Memory B/ATW
	Recording Format (Video)	• <XAVC Long> • XAVC- L QFHD mode: VBR, maximum bit rate 150Mbps, MPEG-4 H.264/AVC • XAVC-L HD 50 mode:VBR, maximum bit rate 50Mbps, MPEG-4 H.264/AVC • XAVC-L HD 35 mode: VBR, maximum bit rate 35 Mbps, MPEG-4 H.264/AVC • XAVC-L HD 25 mode: VBR, maximum bit rate 25Mbps, MPEG-4 H.264/AVC • <DVCAM> • DVCAM mode: CBR, 25Mbps, DVCAM
	Recording Format (Audio)	• <XAVC Long> • XAVC-L mode: LPCM 24-bit, 48kHz, 4 channels <DVCAM> • DVCAM mode: LPCM 16-bit, 48kHz, 4 channels

	Recording Frame Rate	• <XAVC Long> • XAVC-L QFHD 150mode: • 3840x2160 / 59.94P, 50P, 29.97P, 23.98P, 25P • XAVC-L HD 50mode: • 1920x1080/ 59.94P, 50P, 59.94i, 50i, 29.97P, 23.98P, 25P1280x720/59.94, 50P • XAVC-L HD 35mode: • 1920x1080/59.94P, 50P, 59.94i, 50i, 29.97P, 23.98P, 25P • XAVC-L HD 25mode: • 1920x1080/59.94i, 50i • <DVCAM> • DVCAM mode: • 720x480/59.94i, 29.97PsF, 720x576/50i, 25PsF
	Lens Mount	Fixed type
	Zoom Ratio:	25X
	Iris	• Auto/manual switchable • F1.6 to F11 and C(close)
	Audio Input	• XLR-type 3-pin (female) (x2), • line/mic/mic +48V selectable. • LINE : +4, 0, -3dBu/10kΩ • MIC : -80dBu to -30dBu/ 3kΩ • (0 dBu= 0.775 Vrms)
	Audio Ouput	Integrated into Multi/Micro USB jack(x1)
	SDI Output	BNC (x1), 3G/HD/SD selectable
	Timecode Input	BNC (x1) (switchable to TC out) 0.5V-1.8Vp-p, 3.3kΩ
	Timecode Output	BNC (x1) (switchable to TC in) 1.0Vp-p, 75Ω
		USB: USB device, Multi/Micro USB jack (x1) Host: USB 3.0/2.0 type A(x1), USB 2.0 type A(x1)
	Headphone Output	Stereo mini jack (x1) -16dBu 16Ω
	Speaker Output	Monaural Output: 500mW
	DC Input	DC jack
	Remote	Stereo mini-minijack (2.5 mm)
	HDMI Output	HDMI connector (Type A)
	Wired LAN	RJ-45 (x1), 1000BASE-T, 100BASE-T, 10BASE-T
	Viewfinder	• 1.0cm (0.39 type) • Approx. 2.36M dots

	LCD	• 8.8cm • (3.5 type) Approx. 1.56M dots
	Supported Format	• IEEE 802.11 a/b/g/n/ac • **Frequency Band** 2.4 GHz bandwidth 5.2/5.3/5.6 GHz bandwidth • **Security** • WEP/WPA-PSK/WPA2-PSK • **NFC** • NFC Forum Type 3 Tag compliant
VISION MIXER	12 HD/SD-SDI inputs, 8 HD/SD-SDI outputs and 1 HDMI output come as standard. Mixed HD/SD input supporting the standard configuration. The 9 outputs can all be freely assigned a fully mixed SD/HD environment with the switcher alone. Mixers must come as standard with 2 keyers, 2 DSKs and 4 powerful 2.5D DVE engines.	
	Video Formats	1080/59.94L, 1080/50, 1080/29.97P, 1080/25P, 1080/24P, 1080/23.89P, 1080/24PsF, 1080/23.98PsF, 1080/25PsF, 1080/29.97PsF, 720/59.94p, 720/50p, 1080/59.94p, and 1080/50p level A 525/60(NTSC), 625/50(PAL)
	Video Inputs With Processing Amplifier	HD/SDI: 1.5 Gbps or SD-SDI: 270 Mbps, 750, BNC x12 (FSs on 8inputs, resize on 4 inputs).
	Number Of Video Inputs	HD HDI-1.5 Gbps, Or SD SDI 270 Mbps X 12 (Auto Select)
	Number Of Video Outputs	HD/SDI: 1.5Gbps or SD-SDI: 270 Mbps, 75Ω. BNC x8, HDMI 1
	Effect	Wipe:100 patterns, border and softness/2.50 dve:56 patterns or more dve wipes
	Micro Function	30 commands (Upto 230 series of operation can be registered for command)
	Still/Clip Store	2 channels (with backup feature), each store can hold upto 227 frames of HD video
	Keyer/ Dsk	4 Channels (keyer X 2) + DSK x2) includes 2D DVE that can be freely assigned.
	Mutli Viewer	2/4/5/7/9/10/11/14/15/16 - Way split views with title, tally and audio level meter display and 1 frame delay for PGM Output.
	Genlock Input	BB:NTSC:0.429 Vp-p/PAL: 0.45 Vp-p OR TRI-LEVEL SYNC:0.6 Vp-P,75Ω, BNC x 1, loop through (To be terminated with 75Ω terminated if unused)

Tripod Dolly	Aluminum or carbon composite tripod system. The head with 100mm or more ball providing smooth pans and tilts. Built-in bubble for horizontal leg, 3-section legs, Double handle.	
	Folded Height	910mm or less
	Max Operating Height	1750 mm or more
	Min Height	510mm or less
	Tilt Range	-85° to +85° or more
	Pan Range	360°
	Ball Size	100mm
	Pan Rod	2
	Load Capacity	8 kg or more
	Net Weight	8.5 kg or less
	DOLLY	**Folded Length:** 560 mm or less **Net Weight:** 5 kg or less **Load Capacity:** 50 kg or more
Teleprompter System	For use in Studio for live as well as recording production.	
	• Support multiple language • Dual monitor use • Mouse movement speed control • User control of scroll speed using the hand controller (optional) • Prompts in any window's compatible language • Import word file	
Monitor Speakers		
	• 2-way bass-reflex bi-amplified near field studio monitor with 5 inch or more cone woofer and 1 inch or more dome tweeter • Frequency response:- 54Hz-30kHz • 45W LF plus 25W HF bi-amp system for high-performance 70W power amplification • Room Control and high trim response controls • XLR and TRS phone jack inputs to accept balanced or unbalanced signals.	
1 x 1 Panel LED Lights	LED 80W panel should have high output, bi-color temperature, long service life and controlled heat dissipation. Easy carrying and simple assembly, with a standalone cable dimmer to help easier dimming, suitable for lighting in video and outdoor image capture.	
	Input Voltage(V)=	12-24V DC (Decoder) DC Adapter
	Total Power (W)	80W
	LED	DIP
	Power Factor (PF)	100% (DC Decoder)
	LED Lumen	7200LM or better

	Related Color Temperature	(RCT) 5600K ±355K
	LUX Define the Exact Range as	1800 LUX/2.5M
	Color Rendering Index	(CRI)>-95+
	Average Beam Angle	45
	Distribution of light	BI color
	DMX	Optional
	Working humidity	90% RH
	Storage Temperature	25 C
	Lifespan for LED lighting source	50,000 hrs
	Clamp with Safety Chain	optional
	Size	14 inch X 14 inch
Led spot 100w	• Continuous Light which gives studio lighting required to get the professional shots. Video requirement with 5600k one should be able to adjust the knob to change the angle of the light, either go spot or flood. Fixture in manual and pole operation. • Voltage: AC100~240,50/60Hz • Power:135W • Light Source: 100W Led • Beam Angle: 18-58o • Control Mode: DMX-512, Master/Slave • Channel :1 Channel • Pan: 540o/630o • Tilt: 270o • IP Rating: IP 20 • Net Weight: 5kg or less	
Lapel Mic Wireless	• Wireless lapel microphone that offers good sound quality, simple mounting and easy to use. • All-in-one wireless Lapel mic with high flexibility for broadcast quality sound. • Excellent sound and construction quality • Easy to sue and fast setup time • Powerful and reliable wireless transmission • Range: 100 meters/330feet or more • Operation time: 8 hours or more	

Handheld Mic Wireless	A broadcast quality sound solution, providing the highest flexibility for video sound and field recording applications. A robust wireless microphone system that offers excellent sound quality, simple mounting and easy to use. The easy wireless solution for moderators or reporters. The rugged microphone resistant to any bad weather or field condition, with receiver mountable to any camera. • Rugged all in-all-one wireless system with high flexibility for broadcast quality sound • Excellent sound and construction quality • Easy to us and fast setup time • Powerful and reliable wireless transmission • Range: 100 meters/ 330 feet or more • Operation time : 8 hours or more
Earset:	A connector cable, swivel joint and earpiece kit, with a coiled earpiece cable for use with telex assistive listening and IPB products
Intercom System	• Rac-mountable minimum 8 user wired intercom system with 4 belt packs & 4 headsets. (Quantity as per user requirement) • Industry standard 19 inch 1U rack design, for easy integration. • Supports 8 -way intercom • Additional exteranal earphone and microphone interface. • Bi-color tally light indicator. • Selectable channel talk, broadcast to all or mute. • Half- Duplex design for eliminate the environmental noise. • Enables communication between the camera crew • Communication distance up to 200 meters • Supplied complete with Gooseneck Microphone and light.
Audio Mixer	• 16 - Channel Mixing Console • 10 Mic/16 Line inputs 98 mono+ 4 stereo) • Group buses +1 Stereo bus • AUX (incl. Fx) • D- PRE mic preamps with an inverted Darlington circuit • 1 - Knob compressor • High-grade effects: SPX with 24 programs • 24- bit/ 192kHz, 2, in /2 out USB Audio functions • Includes Cubase A1 DAW software download version • PAD switch on mono inputs • +48 phantom power • XLR balanced outputs • Internal universal power supply for world- wide use • Rack Mount Kit Included • Metal chassis

Phone in Unit	• Separate send level and receive level meters for each hypbrid. • Place caller on -hold via front panel button. • Auto-answer with selctable ring count. • Wide-range AGC and Dynamic EQ by Omnia, with adjustable gain stings. • Adjustable caller override to improve proformance and allows to individualize the degree to which the announcer ducks the caller audio. • Digital Dynamic EQ and adjustable smart leveler to keep audio spectrally consistent from call to call. • EQ high and EQ Low display meters for each hybrid. • Audio Interfaces- Analog • Ringing and On-Air status for each hybrid. • Input range: Selectable between MIC and Line levels • Input Level: adjustable from -10 to +4 dBu (nominal) • Impedance : Bridging, > 50K Ohms • Analog clop Point : +121 dBu • Analog to Digital Converter Resolution: 20 bits • Analog Outputs Connector : XLR malr , Pin 3 High • Output Level : Nominal at +4 dBu • Impedance: < 50 ohms • Digital – to – Analog Converter Resolution: 24 bits • Headroom before clipping : 20 dB headroom from 4 dBU nominal levels • Frequency Response: 200 to 3400 Hs, +/- 1 dB • THD+ N/ Input:< 0.5% THD +N using 1 KHz sinewave • Signal to Noise: > 90 dB • General purpose Input / output: Single 9 pin D- Sub connector with 2 status outputs (Ringing and On-Air) and 2 control inputs 9 on and off) • Per hybrid • Trans-hybrid loss:> 55 dB
Video in /Video Out Card-	Digital cinema capture card with full frame DCI 4K input and output via 12G-SDI. Dual link multi rate 12 G-SDI connections that work with SD, HD and Ultra HD even in Ultra HD 60 p, as well as full frame DCI 4K at 4096x 2160 resolutions up to 25p. To capture 10-bit YUB or full color bandwidth 12-bit RGB. Includes AES/ EBU audio, up, down and cross conversion, plus built in #D stereoscopic output at full bandwidth 4:4:4:4 RGB
SDI Video Inputs:	2x12GB/sSD/HD 2K/4K. Supports single / Dual link 4:2:2/4:4:4 2D/3D Switchable. SDI Video outputs: 2x12GB/sSD/HD 2K/4K. Supports single / Dual link 4:2:2/4:4:4 2D/3D Switchable **Analog Video Inputs:** 1x Component YUV on 3 BNCs switchable to s- Video or composite. Component support HD and SD.

<table>
<tr><td rowspan="4">Analog Audio Inputs:</td><td colspan="2">2 Channels of balanced analog audio via XLR connectors.
Analog Audio Outputs:
2 Channels of balanced analog audio via XLR connectors.</td></tr>
<tr><td>AES/EBU Audio Inputs</td><td>2 Channels unbalanced with sample rate converter.
AES/EBU Audio Inputs:
2 Channels unbalanced</td></tr>
<tr><td>SDI Audio Inputs</td><td>16 Channels embedded in SD/HD/2K/4K
SDI Audio Outputs: 16 Channels embedded in SD/HD/2K/4K</td></tr>
<tr><td>HDMI Video Inputs</td><td>HDMI type A connector with support for 2016p 60</td></tr>
<tr><td>Ingest / Playout Server for 2 SD/ HD Ports</td><td>HDMI Video Outputs</td><td>HDMI type A connector with support for 2160p60.</td></tr>
<tr><td colspan="2">Byne Input: Tri-Syne or Black Burst.
Playout solution should provide stability and usability advantages. It should allow for optimum CPU balancing using multi-core systems; the server to control the video output while the client manages the playlist. The media files are to be verified by the client application before being accepted for playout.
• System should have intuitive user interface for easy ingest and play operation with easy controls.
• Operator to define source and destination for ingest.
• Operator also preview & browse the content
• without disrupting the recording process.
• Automated Play-out system with manual rider
• The system to support scaling for up to 6 HD ports in future
• The playback of scheduled clips from the play list without any delay
• Supported HD/SD
• Supported types of video files
• DV in .avi container (four CCd Vsd and DSVD
• LXF, MP4/MOV, MXF, ASF/WMV, MPEG-TS,
• Mpeg2, Mpeg4
• GXF, FLV, AVI, DV, MPEG-PS, MKV, WebM,
• DVCPRO, M-JPEG, MPEG-1, MPEG-2, VC-1
• Windows Media Video with extension .wmv
• Two simultaneous ingests</td></tr>
</table>

CG (Character Generator) System	A broadcast graphics playout. Powerful, multilayer, reliable and easy to use. Live titling. Instant operation.	
	Full NDI Implementation in/out	Broadcast Applications for both input and output support and Tricaster's macro automation. NDI sources that can be wrapped to 3D objects, moved and squeezed in real-time with the power of CG template editors.
	Media Render implementation	Re-designed and optimized Media Handling layer for simple improved features, backwards compatibility, increased support for media formats and capture devices
	Text handing improvements	Vector and bitmap text with additional flexibility to support floating point kerning and spacing.
	Docking extended to all main apps	Docking of all Template Editors with comfortable interface
	Group highlights and Drag & Drop on LB	Groups of contents to be created/assigned by Drag & Drop. Group IDs also to be unlimited and to be assigned automatically. Users should be able to visualize the contents inside a group
	GUI	The Template Preview player, to the Frame Markers editor, to the Media player and NDI previewer, cursor shape change on Drag & Drop, multi-screen user interface consistent GUI across applications
	Clip Player	Software capable to play any media file (including MXF, MOV, MP4) to a vast number of supported video devices. Easy to operate. HQ crop/scale, field-polarity-aware with support for mark-in/out, frame resynch, on-air scrub and more.
	GPIO interface	GPIO feature which goes down to the hardware and gives control to the single bits of serial ports.
	Social Server	To support Facebook, Twitter, Instagram and others API.
Sync Generator:	Stabilized video reference outputs for referencing all the video equipment in studio in either high definition Tri-Sync or standard definition Black burst television standards.	
	Analog Video Outputs	6 x common Black burst or Tri Level reference outputs. SDI Rates: 270Mb, 1.5G. **Multi Rate Support:** Via mini switches Updates and Configuration: Via USB

	Analog Format Support	525129.97 NTSC, 625125 PAL, 720p50, 720p59.94, 720p60, 1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p30, 1080PSF23.98, 1080PaF24, 1080i50, 1080159.94, 1080160
Embedder	• Embed audio into any SDI source in SD and HD formats up to 1080p60. Audio input to be balanced analog or AES/EBU using 4 inch connectors from equipment such as mixers and analog decks. • **SDI Video Inputs:** 1 x SD HD or 3G-SDI. 1 x ALT • SDI Input for automatic switch over if main input fails. • **SDI Video Outputs:** 1 x Embedded SDI Output. • **Analog Audio Inputs:** 4 channels of balanced Analog audio. • **Digital Audio Inputs:** 8 channels of balanced AES/EBU audio. • **SDI Redundant Input:** Automatically switches over if main SDI input is lost. • **Multi Rate Support:** Auto detection of SD, HD or 3G-SDI. • **Updates and Configuration:** Via USB 2.0 high • speed. (480 Mb/s) • Re clocking: yes **SD Video Standards:** 525159.94 NTSC, 625150 PAL HD Video Standards: 720p50, 720p59.94, 720p60, 1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p30, 1080p50, 1080p59.94, 1080p60 1080PsF23.98, 1080PaF24, 1080PsF25, 1080PSF29.97, 1080PsF30, 1080150 1080159.94, 1080160 **2K Video Standards:** 2K DCI 23.98p, 2K DCI 24p, 2K DCI 25p, 2K DCI 23.98PF, 2K DCI 24PsF, 2K DCI 25PeF **SDI Compliance:** SMPTE 259M, SMPTE 292M, SMPTE 296M, SMPTE 372M, SMPTE 424M-B, SMPTE 425M, ITU-R BT.656, ITU-R BT.601, SMPTE ST-2036 **SDI Video Rates:** SDI video connections pa switchable between standard definition and high fi definition. **SDI Video Sampling:** 4:2:2, 4:4:4 **SDI Audio Sampling :** Television standard sample rate of 48 kHz and 24 bit. **SDI Color Precision :** 4:2:2, 4:4:4 Complied **SDI Color Space:** YUV, RGB **SDI Auto Switching:** To automatically selects between SD, HD, and 3G-SDI.	

SDI to HDMI 6G	Mini Converter SDI to HDMI 6G which allows to convert from SDI to HDMI in SD, HD, and Ultra HD formats while de-embedding audio to HDMI, AES/EBU or balanced analog audio. Features such as down conversion for monitoring Ultra HD on HD HDMI monitors as well as built in 3D LUTS plus HDMI instant lock for instant video display when an SDI input is connected. • **SDI Video Inputs;** 1 x SD, HD or 6G-SDI. 1 x ALT • SDI Input for automatic switch over if main input fails. • **SDI Video Outputs:** 1 x SDI Video Loop Output. HDMI Video Outputs: HDMI type A out. • **Analog Audio Outputs** 2 channels of balanced analog audio • **Digital Audio Outputs:** b digital audio • **SDI Redundant Input:** Automatically switches over • **if main SDI input is lost.** • **Multi Rate Support:** Auto detection of SD, HD or 6G-SDI. • **Updates and Configuration :** USB • **Re clocking:** Yes • **D Video Standards:** 625150 PAL, 525159.94 NTSC • **HD Video Standards** 720p50, 720p59.94, 720p60, 1080p23.98, 1080p24, 1080p25. 1080p29.97, 1080p30, 1080p50, 1080p59.94, 1080p60 1080PSF23.98, 1080PF24, 1080PsF25, 1080PSF29.97, 1080PaF30 1080150, 1080159,94, 1080160 2K Video Standard: 2K DCI 23.98p, 2K DCI 24p, 2K DCI 25p, 2K DCI 23.98PsF, 2K DC1 24PSF, 2K DCI 25PSF • **Ultra HD Video Standards:** 2160p23.98, 2160p24, 2160p25, 2160p29.97, 2160p30 • **4K Video Standards:** 4K DCI 23.98p. 4K DCI 24p, 4K DCI 25p • **SDI Compliance:** SMPTE 259M, SMPTE 292M, SMPTE 296M, SMPTE 372M, SMPTE424M, SMPTE 425M, SMPTE ST-2081 • **SDI Video Rates:** SDI video connections to be switchable between standard definition, high definition, Level A or Level B 30-SDI and 60-8DI. • **SDI Video Sampling:** 4:2:2 and 4:4:4 • **SDI Audio Sampling:** Television standard sample rate of 48 kHz and 24 bit SDI Color Precision 4:2:2 and 4:4:4 SDI Color Space: YUV and RGB

	• **SDI Auto Switching:** To automatically detects SD,HD or 60-SDI NTSC,720p50, 720p59.94, 720p60,1080p23.98,1080p24, 1080p25, 1080p29.97, 1080p30, • **HDMI Video Standards:** 625150 PAL, 525159.94 1080p50,1080p59.94, 1080p60, 1080150, 2160p25, 2160p29.97, 2160p30 1080159,94, 1080160, 2160p23.98, 2160p24, • **HDMI Color Space:** YUV and RGB • **HDMI Color Precision:** 4:2:2 and 4:4:4
SDI Distribution	A single SD or HD-SDI connection to up to 8 different SDI outputs at the same time. It should have 30-5DE design with fully re-clocked outputs and automatic switching between all SD and HD formats up to 1080p60. Should support for all ASI, ancillary and embedded audio formats.
	• **SDI Video Inputs** 1 x SDI Video Input. Switchable between SD, HD and 30 BDI Video Outputs: 8 x outputs to automatically match the SDI video input. Multi Rate Support, Auto detection of SD, HD or 3G-SDI. • **Re clocking: Yes** SD Video Standards:525159.94 NTSC, 625150 PAL 720p60, 1080150, 1080159.94,1080i60, 80p23.98, • **HD Video Standards:** 720p50, 720p59.94, 1080P F23.98, 1080p24, 1080Ps24, 1080p25, 1080P F25, 1080p29.97, 1080P F29.97, 1080p30, 1080PsF30, 1080p50, 1080p59.94, 1080p60. • **2K Video Standards:** 2K DCI 23.98p, 2K DCI 24p, 2K DCI 25p 2K DCI 23.98PSP, 2K DCI 24PP, 2K DCI 25PMP • **SDI Compliance:** SMPTE 259M, SMPTE 292M, SMPTE 296M, SMPTE 372M, SMPTE 424M B and SMPTE 425M • **SDI Video Rates:** SDI video connections are switchable between SD, HD, and DCI 2K. • **SDI Video Sampling:** 4:2:2 and 4:4:4 • **SDI Audio Sampling:** Television standard sample rate of 48 Hz and 24 bit.. • **SDI Color Precision:** 4:2:2 and 4:4:4 • **SDI Color Space:** YUV and RGB • **SDI Auto Switching:** Automatically detects SD, HD or 3G-SDI.
IT Workstations	• Playout & Ingest Workstation • latest Processor • 1 X 1TB or more HDD for OS • 2 X 4TB or more HDD • 32GB or more RAM • 1 X 4GB or more GFX CARD • WIN 10 PRO or latest version`

5.
MISCELLANEOUS

5.1 Bullet Resistant Glass

Specification

Thickness for Protection	Type of Weapons
17 mm to 25 mm	For small Arms wiz; pistols, 9mm carbines
30 mm to 40 mm	For 7.62 mm AK 47 rifle
40 mm to 50 mm	For 7.62 mm SLR rifle + 5.5 Insas
100 mm	Rocket Resistance

Technical Details:

Class	Type Of weapons	Caliber	Ammunition	Testing Distance	No. of Shots	Striking Distance
B1	Rifle	.22LR	Lead Core	10 Meters	3	120 + .10
B2	Hand Gun	9MM PARA	Soft Core	5 Meters	3	120 + .10
B3	Hand Gun	.357 MAGNUM	Soft Core	5 Meters	3	120 + .10
B4	Hand Gun	44 MAGNUM	Soft Core	5 Meters	3	120 + .10
B5	Rifle	5.56X45	Soft Core	10 Meters	3	120 + .10
B6	Rifle	7.62X51	Soft Core	10 Meters	3	120 + .10
B7	Rifle	7.62X51	Armour Piercing	10 Meters	3	120 + .10

5.2 High Mast Pole

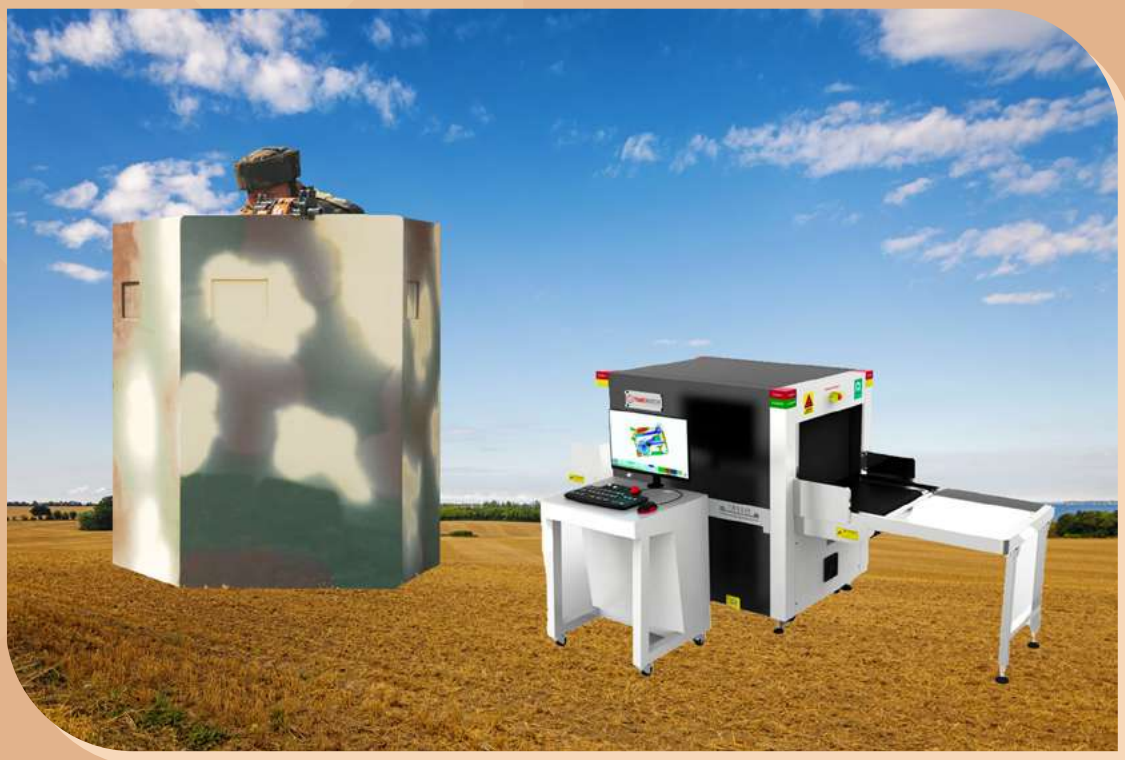
- Height: 15 Mtrs.- 20 Mtrs.
- No. of lamps- 8
- Wattage of lamps :250 Watts each
- Signal Red color: 1 No
- Operated by Electrical Motor:1 No.

5.3 Alcohol Breath Tester (Digital)

Sl. No.		Specification
I.	**General**	• Alcohol Breath Test is a unique and highly sophisticated alcohol Breathalyzer utilizing the variation for electrical property value of a finely tuned oxide-semiconductor. • This Alcohol Breathalyzer will selectively analyze the alcohol concentration in units of ppm in human breath. • It should be very accurate and can be used as an aid to prevent drink driving, an on-site alcohol test for employees, an alcohol test for patients, and on-site incident test or a personal test for impairment. • Reliable, small, lightweight and extremely accurate. • Quick and easy to use • Highly accurate reading using a selective advanced semiconductor oxide sensor to give an accurate measurement of alcohol level in few seconds • At least 700 tests without recalibration • Long detector life • Approximately 9V Alkaline battery & in car cigarette DC adapter included in a nice hard shell case and soft zipped pouch • It should provide Alarm sounds for high readings
II.	**Technical Specification**	• It should be Highly reliable accuracy by a sophisticated sensor as this device adopts a highly- selective semiconductor sensor • It should allow to get stable data for successive testing • It should display by 3 digits (0.xx% BAC/BRAC) • Digital Stability: Long Term • It should be Compact & light weight hand-held device • It should have Short warm-up & response time- Only 15-30 seconds warm-up time i.e., Just a few seconds after sample has been given for reading • The sensor can be purged for another test in only 20-40 seconds • Little waiting between results • Quick Recovery Time (in seconds)

Consultative Committee for Compendium of Security Equipment Used in Prisons

Sl. No.	Name & Designation	Status
1	Shri K K Meena, Assistant Director, BPR&D	Convener & Secretary
2	Dr. Raveesh Kumar, Principal Scientific Officer (Weapon) ,BPR&D	Member
3	Shri Rupak Kumar, Assistant IG, Prisons & Correctional Services, Home Department (Prisons) Bihar, Patna	Member
4	Shri Dilip Saikia, DIG Prisons, Prison Headquarter, Khanapara, Assam	Member
5	Shri Harinder Singh, Superintendent, District Jail, Gurugram, Haryana	Member
6	Shri Jeetendra Kumar, Superintendent, Jharkhand Prison Department	Member
7	Shri K. Suresha, Superintendent, Hq. Bengaluru, Karnataka Prison Department	Member
8	Shri Santosh Kumar Roy, Superintendent, Telangana Prison Department	Member
9	Shri Mirza Saleem Ahmed Beig, Superintendent, J&K	Member
10	Shri Anurag Malik, Superintendent, District Jail, Tehri, Uttarakhand	Member
11	Shri T. R. Rajeev, Joint Superintendent, Technical Cell of Prisons, Kerala Prison Department	Member
12	Shri Vinod Chambyal, Dy. Superintendent, Himachal Pradesh Prison Department, Shimla	Member
13	Shri Arvind Kumar Singh, Dy. Superintendent, Tihar Prison	Member
14	Shri Samir Sahoo, Jailor, Odisha Prison Department	Member
15	Shri K B Joshi, Research Officer, UP Prison Department, Lucknow	Member
16	Shri S.V. Changawala, Wireless, PI, Gujarat Prison Department	Member
17	Shri Y. Benison Pou, Jailor, Manipur Prison Department, Imphal	Member
18	Shri Keishan Lokeshore Singh, Jailor, Manipur Prison Department, Imphal	Member
Representative from CAPFs		
19	Shri Ajay Dhyani, Assistant Commandant, BSF Hqrs., New Delhi	Member
20	Shri Rajat Jain, 2nd in Command, CRPF, Hqrs., New Delhi	Member
21	Shri Viplav Azad, DC/Tech, CISF, Hqrs., New Delhi	Member
Secretarial Assistance		
22	Shri Jitendra Yadav, Assistant Director, BPR&D	
23	Shri J P Mahato, Senior Scientific Assistant (Operational Research), BPR&D	
24	Shri Ashok Kumar, Junior Investigator, BPR&D	



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