

H.P. STATE ELECTRONICS DEVELOPMENT CORPORATION LTD.
(A Unit of H.P. Government Undertaking)



**e-Tender
for
Rate Contract for Procurement of CCTV Surveillance
Systems.**

E-Tender No: **HPSEDC/RC/CCTV/2K26-2108**

H.P. STATE ELECTRONICS DEVELOPMENT CORPORATION LTD.,
1st FLOOR, I.T BHAWAN, MEHLI, SHIMLA-171013, H.P.
Tel. Nos.: 0177-2623259, 2623043, 2623513 (Telefax): 0177-2626320
Email: hpsedc@hpsedc.in, procurement@hpsedc.in

Website: www.hpsedc.in, tender document can also be downloaded from <https://hptenders.gov.in>

23/07/2026

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SECTION-I
INVITATION FOR E-BIDS

E-TENDER NO: HPSEDC/RC/CCTV/2K26-2108

Note:

The Press e-Tender Notice published on 23/07/2026 for inviting e-Tenders for Rate Contract for Procurement of CCTV Surveillance Systems. In case there is any decrease/increase in prices, HPSEDC may asked the bidders to submit revised quotes in sealed envelopes. The rates finalised in this tender will also be considered for General Rate Contract of equipment and will be valid for two years.

The detailed e-Tender document contained in following sections has been prepared to elaborate all techno-commercial conditions of this tender. In case of any discrepancy between the Press Advertisement and detailed provisions of this Tender Document, the latter will prevail. For any further changes (if any, based on feedback/ queries from any quarter and pre-bid meeting) in this tender document, please see its updated version/corrigendum on www.hpsedc.in and <https://hptenders.gov.in>.

A) e-Tenders are invited by the undersigned from eligible bidders, i.e., Original Equipment Manufacturers (O.E.M.)/ Principal National Distributors/ Country Channel Partners in India (in case of imported equipment)/ Large Scale Systems Integrator duly authorised by the manufacturer for these Hardware Equipment/ Software Applications as per technical specifications in Annexure-I and providing after sale support during warranty period.

GIST OF IMPORTANT GENERAL CONDITIONS

- 1) The tender has been floated for finalizing the Rate Contract for Procurement of CCTV Surveillance Systems as per specifications mentioned in Annexure-I. The rate will be finalised for all the components involved in the specified hardware, where the bidder has quoted lowest (L1) rate item wise. **Only L1 rates** will be conveyed and accordingly purchase orders would be placed for only L1 bidder. However, since the equipment is to be procured and supplied so reasonability of the rates would be ascertained by the tender committee w.r.t. other tenders/ rate contracts in the market. Bidders have to ensure that the **rates quoted for this tender/ rate contract are economical** (or at least equal) than the rates in other rate contracts/ government supplies or open market anywhere else in the country.
- 2) The rates, as discovered through this RFP, shall also be considered for Rate Contract, valid for two years. The terms and conditions of the Rate Contract shall be same as per this tender document.
- 3) After finalizing the L1 rate contract, other bidder(s) may be given opportunity to match the prices of L1 bidder for rate contract, if tender committee deems fit to ensure healthy competition and timely supply of hardware. Therefore, bidders are advised to quote their best rates.
- 4) Unless otherwise specified for a part of the order, the supplies should be completed within **6-8 weeks** from the date of placing the supply order except for snowbound/ tribal areas, where delivery can be made within 8-10 weeks. Delivery is to be made FOR destination i.e. anywhere in the State of Himachal Pradesh and Installation has to be completed within **one week** after supply of material. In Remote and snowbound areas delivery may be done at nearest district head quarter, in case the area is cut-off for the time being. The Managing Director, HPSEDC reserves the right to extend the delivery period based on the request of the supplier, wherever required.
- 5) The committee reserves the right to negotiate the rates with L1 bidder to bring them to a reasonable level based on the best prices offered by other bidders and current market rates.
- 6) If the bidder quotes/ reduces, its price to render similar goods, works or services at a price lower than any tender/ rate contract price to anyone in the Country at any time during the currency of this tender, the price shall be automatically reduced with effect from the date of reducing or quoting lower price, for all delivery of the subject matter of procurement under this tender shall be amended, accordingly. The tender holder shall furnish the certificate to the HPSEDC that the provisions of this clause have been complied with in respect of supplies made or billed for upto the date of this certificate. On the conclusion of the tender the

successful bidder shall furnish a certificate that the provision of this clause has been complied with during the period of tender/ rate contract.

- 7) Any prospective bidder can procure the Tender Document from the “H.P. STATE ELECTRONICS DEVELOPMENT CORPORATION LTD., FIRST FLOOR, I.T. BHAWAN, MEHLI, SHIMLA-171013, (H.P)”. Tender can also be downloaded from website <http://www.hpsedc.in> and <https://hptender.gov.in>.

The tender document will be available on all working days upto last date of bids submission on payment of Rs.5000/- (Rupees Five Thousand only) non-refundable, by demand draft in favour of “HP State Electronics Development Corporation Ltd., Shimla” payable at Shimla. If the tender document is downloaded from the website, the tender fee will have to be deposited along with the bid as a separate bank draft. E-tenders will be uploaded on HP Government e-Procurement portal <https://hptenders.gov.in> as well on HPSEDC website www.hpsedc.in. Interested bidder can participate for all or any of the category of equipments/items by procuring a single tender (i.e no separate tender cost has to be paid for each category of items).

3.)SCHEDULE OF THE TENDER PROCESS:

S. No.	Information	Details
1.	RFP No. and Date	No: HPSEDC/RC/CCTV/2K26-2108 Date: 23/07/2026
2.	Last Date for submission of pre-bid queries	Pre-Bid queries will only be accepted upto 29/07/2026 till 5PM through email and no query will be entertained after 29/07/2026 through e-mail (procurement@hpsedc.in)
3.	Pre-Bid Meeting	Pre-Bid meeting will also be held on 01/08/2026 at 11:30AM through video conference. Video Conferencing link is as under: https://meet.google.com/uki-zsby-qkz
4.	Price of Tender Document	Rs. 5000/- online through HP Govt. e-Procurement Portal
5.	Earnest Money Deposit	Rs.2,00,000/- online through HP Govt. e-Procurement Portal
6.	Bid validity period	180 days from the last date (deadline) for submission of e-Tenders.
7.	Bid submission start date	11/08/2026, (11:00 AM)
8.	Bid submission End date	24/08/2026 (02:30 PM)
9.	Opening of e-Tenders Bids	25/08/2026 (2:30 PM)
10.	Tender Download Site	www.hpsedc.in & https://hptenders.gov.in

11.	Venue	H.P. State Electronics Development Corporation Ltd., 1 st Floor, I.T. Bhawan, Mehli, Shimla-171013, H.P.
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Note: If Price of Tender document and EMD, is deposited through RTGS, then kindly select DD & fill RTGS No. in available columns on e-Procurement Portal and upload the copy of RTGS receipt.

(i) Eligibility-cum-Technical Bids shall be opened initially and eligibility documents will be evaluated.

(ii) Thereafter Technical Bids of Eligible Bidders shall be evaluated.

(iii) Commercial Bids of Eligible and Technically qualified bidders will be opened thereafter.

**** Any corrigendum, modifications, changes related to this tender before the day of bid submission shall be notified on website www.hpsedc.in or <https://hptenders.gov.in> only.**

4) Notwithstanding anything else contained to the contrary in this Tender Document, the Managing Director, H.P. State Electronics Development Corporation Ltd., Shimla reserves the right to cancel/withdraw/ modify fully or partially the “Invitation for Bids” or to reject one or more of the bids without assigning any reason and shall bear no liability whatsoever consequent upon such a decision.

5) Pre-Bid queries are to be strictly submitted in the form of **excel sheet** in the following Format. Deviation from the same would lead to non-acceptance of the queries.

S.No	Page No	Section of the RFP	Point of clarification required in the RFP	Clarification required / Suggested changes	Remarks

5. INSTRUCTIONS TO BIDDERS FOR ELECTRONIC TENDERING SYSTEM

5.1 Registration of bidders on e-Procurement Portal: -

All the bidders intending to participate in the tender processed online are required to get registered on the centralized e-Procurement Portal i.e. <https://www.hptenders.gov.in>. Please visit this website for more details. In case of any problem in registration, please contact on toll free No. 1800-3070-2232

5.2 Obtaining a Digital Certificate:

- 5.2.1 The Bids submitted online should be encrypted and signed electronically with a Digital Certificate to establish the identity of the bidder bidding online. These Digital Certificates are issued by an Approved Certifying Authority, by the Controller of Certifying Authorities, Government of India.
- 5.2.2 The bidders may obtain Class-II or III digital signature certificate from any Certifying Authority or Sub-certifying Authority authorized by the Controller of Certifying Authorities or may obtain information and application format and documents required for the issue of digital certificate from:
- 5.2.3 Bid for a particular tender must be submitted online using the digital certificate (Encryption & Signing), which is used to encrypt and sign the data during of bid preparation stage. In case, during the process of a particular tender, the user loses his digital certificate (due to virus attack, hardware problem, operating system or any other problem) he will not be able to submit the bid online. Hence, the users are advised to keep a backup of the certificate and also keep the copies at safe place under proper security (for its use in case of emergencies).
- 5.2.4 In case of online tendering, if the digital certificate issued to the authorized user of a firm is used for signing and submitting a bid, it will be considered equivalent to a no objection certificate/power of attorney /lawful authorization to that User. The firm has to authorize a specific individual through an authorization certificate signed by all partners to use the digital certificate as per Indian Information Technology Act 2000.
Unless the certificates are revoked, it will be assumed to represent adequate authority of the user to bid on behalf of the company/firm in the department tenders as per Information Technology Act 2000. The digital signature of this authorized user will be binding on the firm.
- 5.2.5 In case of any change in the authorization, it shall be the responsibility of management/ partners of the company/firm to inform the certifying authority about the change and to obtain the digital signatures of the new person / user on behalf of the firm / company. The procedure for application of a digital certificate however will remain the same for the new user.
- 5.2.6 The same procedure holds true for the authorized users in a private/public limited company. In this case, the authorization certificate will have to be signed by the directors of the company.
- 5.2.7 Pre-requisites for online bidding:

In order to bid online on the portal <https://www.hptenders.gov.in>, the user machine must be updated with the latest Java & DC setup. The link for downloading latest java applet & DC setup are available on the Home page of the e-tendering Portal.

5.3 Online Viewing of Detailed Notice Inviting Tenders (N.I.T.) :

The bidders can view the detailed N.I.T and the time schedule (Key Dates) for all the tenders floated through the single portal e-Procurement system on the Home Page at <https://www.hptenders.gov.in>

5.4 Download of Tender Documents:

The tender documents can be downloaded free of cost from the e-Procurement portal <https://www.hptenders.gov.in> and www.hpsedc.gov.in.

5.5 Key Dates:

The bidders are strictly advised to follow dates and times as indicated in the online Notice Inviting Tenders. The date and time shall be binding on all bidders. All online activities are time tracked and the system enforces time locks that ensure that no activity or transaction can take place outside the start and end dates and the time of the stage as defined in the online Notice Inviting Tenders.

5.6 Bid Preparation (Qualification & Financial)

- 5.6.1 Payment of Tender Document Fee & EMD of online Bids: The payment for Tender document fee and EMD can be made as mentioned in Section 3, at Sr. No. 1 and 2 of the Table.
- 5.6.2 The bidders shall upload their eligibility and technical offer containing documents, qualifying criteria, technical specifications, schedule of deliveries, and all other terms and conditions except the rates (price bid).
- 5.6.3 The bidders shall quote the prices in price bid format only.
- 5.6.4 If bidder fails to complete the Online Bid Preparation at Submission stage on the stipulated date and time, his/hers bid will be considered as bid not submitted, and hence not appear during tender opening stage.
- 5.6.5 Bidders participating in online tenders shall check the validity of his/her Digital Signature Certificate before participating in the online Tenders at the portal <https://www.hptenders.gov.in>.
- 5.6.6 For help manual please refer to the 'Home Page' of the e-Procurement website at <https://www.hptenders.gov.in>, and click on the available link 'How to .. ?' to download the file.

5.6.7 Post registration, bidder shall proceed for bidding by using both his digital certificates (one each for encryption and signing). Bidder shall proceed to select the tender he is interested in.

NB: Any changes/corrigendum/revised tender related to this Tender Document will be published on our website www.hpsedc.in and <https://hptenders.gov.in>. Therefore, prospective bidders are requested to see the updates on these websites regularly.

SECTION 2
INSTRUCTIONS TO BIDDERS
A- INTRODUCTION

2.1. Eligible Bidders

Sr. No.	Pre- Qualification Criteria	Required details to be accompanying the Bid document
1.	The Bidder should be registered under the Indian Companies Act, 1956 and should be in existence for not less than preceding 5 years in the relevant field. Proprietors/ Partnership Firms should have valid Government licence and GSTN.	Certificate of Incorporation (CoI), Memorandum of Association (MoA), Articles of Association (AoA) of bidder/ Proprietor and detailed profile of the Company/ Firm/ Government License and GSTN for proprietors.
2.	(i) Tender Document Fee in favour of Managing Director, H.P. State Electronics Development Corporation, I.T. Bhawan, Mehli, Shimla-13. (ii) Earnest Money Deposit (EMD) in the shape of Demand Draft/Online payment in favour of Managing Director, H.P. State Electronics Development Corporation, I.T. Bhawan, Mehli, Shimla-13.	(i) Demand Draft (DD) of Rs. 5000/- (Rupees Five Thousand only) (ii) Earnest Money (Rs. 2,00,000/-) EMD may be submitted through DD/ RTGS in HPSEDC A/c: (State bank of India Khalini, Shimla-2 Account no. 55069383586 IFSC Code-SBIN 0051132) Receipt/Copy of the demand draft/ RTGS should be uploaded. NOTE: In case of Demand Draft, the original DDs need to be submitted on or before the last date of bid submission.
3.	The Bidder should have a valid GST Number, PAN Number.	Relevant Registration Certificates (copies to be enclosed)
4.	A Bidder should be Original Equipment Manufacturer (OEM) or Authorised Principal National Distributor/ Importer/ System integrator duly authorised by the OEM (Original Equipment Manufacturer) of the required Hardware/ Software Application respectively. It will, however be, preferred that the Original Equipment Manufacturers (O.E.M.) quotes directly.	Authorization letter from OEM in format given at Proforma-A, in case OEM not bidding directly.
5.	The Bidder quoting for CCTV Surveillance systems or its OEM {themselves or through re-sellers} must have supplied minimum 500 number of CCTV based surveillance Systems during the last three financial years (i.e FY 2023-24, 2024-25 & 2025-26) to any	Copies of supply orders/ satisfactory reports of last three years are to be provided and Proforma-“C”

	Government/Semi Govt./ PSUs/ Autonomous bodies of Central/ State Govt.	
6.	The Bidder quoting for Software Applications (Item No. 151 to Item No. 155) or its OEM {themselves or through re-sellers} must have installed atleast 20 similar software applications during the last three financial years (i.e FY 2023-24, 2024-25 & 2025-26) to any Government/Semi Govt./ PSUs/ Autonomous bodies of Central/ State Govt.	Copies of supply orders/ satisfactory reports of last three years are to be provided
7.	The average annual turnover of the OEM, whose equipment's/ systems/ Items/ Applications/ Software is sought to be supplied should be as below during last 3 years (FY 2022-2023, 2023-2024, 2024-2025): 1. Camera OEM: Rs 200cr 2. UPS OEM: Rs 50cr 3. Software/ Applications OEM: Rs 10 cr 4. Other remaining active components: Rs. 50cr	Certificate from Chartered Accountant (CA) confirming the average annual turnover for the specified period shall be submitted as documentary proof
8.	The average annual turnover of the bidders should be Rs. 10 Crores (Rs. Ten Crores) during last 3 years (FY 2022-2023, 2023-2024, 2024-2025) as per audited balance sheets.	Certificate from Chartered Accountant (CA) confirming the average annual turnover for the specified period shall be submitted as documentary proof
9.	The bidder should either have positive Net worth in last three years or should be a profit-making Company/ firm in any two years during the immediately preceding last 3 financial years as per audited balance sheets.	Supporting financial documents/Balance sheet/ certificate from company's Statutory Auditor/ CA.
10.	The bidder must have ISO 9001 certification.	Certificate of each type from the certifying organizations.
11.	The OEM of CCTV surveillance equipment must have the following certifications: • ISO 9001 • ISO 27001 • ISO 14001 • ISO 45001/ OHSAS 18001 • E-waste (EPR) certificate • BIS (where applicable)	Certificate of each type from the certifying organizations.
12.	The OEM of Software Applications must have the following certifications: • ISO 9001 • ISO 27001 • ISO 14001 • CMMI Level 3	Certificate of each type from the certifying organizations.

13.	OEM Toll Free Help-desk facilities should be already available during working hours (9 to 6 PM and from Monday to Saturday). The bidder and OEM should have its own website having product related information (for OEM) and support related information (for both bidder and OEM).	Contact information and availability hour's details. Provide detail of web linkages.
14.	Escalation Matrix for Service Support: OEM and the bidder must provide Escalation Matrix along with Telephone Numbers for Service Support.	Details to be submitted.
15.	Bidder / OEM of hardware equipment should have at least 05 service centres in the Himachal Pradesh.	Details of service centres to be submitted.
16.	The OEM should have its registered office in India.	Copy of registration certificate to be attached.
17.	The Bidder and its OEM should not have been declared ineligible at the time of bid submission and at the time of placing of supply order due to corrupt and fraudulent practices with any of the departments of the Central, State Governments Deptt. and PSUs of Central/ State Govt.	Certificate from the authorized signatory prescribed in Form-E.
18.	The bidder should have submitted the declaration of acceptance of terms and conditions of this RFP as per Form D	Declaration from Authorized Signatory as per Form D of this RFP
19.	The Bidder should already have reasonable support base in this region. The Purchaser's discretion regarding reasonableness of support base shall be final. It is clarified that this clause pertains to only the existing level of support. The actual support required to implement this arrangement has been described in the relevant section.	Supporting documents/ certificate from company's authorised signatory.

Note: -

Purchase Preference for Local Micro and Small-Scale units/ Startup Enterprises of the state: -

The following purchase preference ratio shall be applicable to the Local Micro and Small-Scale Units of State and Local Micro and Small-Scale categories under H.P. State Startup Scheme: -

1. Local Micro and Small-Scale Units of State of H.P. =15%

2. Local Micro and Small-Scale categories under H.P. State, Startup Scheme=15%

Total Purchase Preference =30%)

Provided that if Startup Enterprises will not be available, then 30% purchase preference shall automatically be given to Local Micro & Small-Scale Unit and vice versa as the case may be.

Exemption, if any in evaluation criteria or any other terms & conditions of this document, will be as per Notification No. 4-Ind/SP/Misc/F/6-10/4/80-Vol-V dated 16.05.2020 issued by Controller of Stores Himachal Pradesh or any other orders issued by Govt. of Himachal Pradesh in case the committee deems it fit.

It is reiterated that Purchaser's decision regarding Bidder's eligibility will be final and binding on all the Bidders.

The Bidder can choose to have a separate Authorised Service Provider (ASP). There is no turnover criterion for the ASP, but it should provide the first level of OEM's support which is fully backed up by the O.E.M. by means of a written understanding regarding maintenance. However, the Purchaser shall have the final discretion in this regard and can even ask for a trilateral agreement with the Bidder and the OEM in such cases to ensure timely delivery and maintenance.

If the bidder happens to be a System Integrator (SI), should have a National presence besides meeting the turnover criteria and having a sustained relationship with the O.E.M. in the past. The Bidder (or his OEM) must be able to establish his capability to execute the order(s) by showing satisfactory/ timely delivery, where similar numbers of equipment(s) and its allied accessories are involved.

Either OEM or its authorised reseller only can participate in the bid/tender and if both participates in the bid/tender, then the bid of both bidders will not be considered, and both the bids would be technically disqualified. If the OEM authorises more than one reseller, all the bids of the participating resellers shall be deemed disqualified.

If the bidder offers or reduces their price to supply similar goods, works, or services at a rate lower than the HPSEDC rate contract price (i.e. Basic price + HPSEDC technical charges) to any party in the state during the validity of this rate contract, their rate contract will be terminated without prior notice.

2.2 Cost of Bidding:

2.2.1 The Bidder shall bear all costs associated with the preparation and submission of its bid and H.P. State Electronics Development Corporation Ltd., Shimla (hereinafter referred to as the 'Purchaser' or "HPSEDC" in short) will in no case be responsible or liable for these costs, whether or not the Bid is finally accepted.

B- TENDER DOCUMENT

2.3 Contents of Tender Document:

2.3.1 This Tender Document comprises of the following Parts/ Sections.

Section-1 : Invitation for e-Bids

Section-2 : Instructions to Bidders

Section-3 : General Conditions of The Tender & Contract

Section-4 : Technical Specifications and Maintenance Conditions

Section-5 : Technical Specifications & Annexures.

2.4 The Bidder is expected to examine the Tender Document carefully. Failure to furnish all information required as per the Tender Document may result in the rejection of the Bid.

2.5 Clarification regarding Tender Document:

2.5.1 The clarifications/ changes in tender document/ corrigendum can be uploaded by giving up to 7 days for bid submission.

2.6 Amendment of Bids:

2.6.1 Bids once submitted cannot be amended. However, in some circumstances (such as major anomaly in the technical specifications having a major impact on pricing), the Purchaser may decide to take fresh bids from all the Bidders before actually opening of the Commercial Bids.

2.6.2 In order to afford prospective Bidders reasonable time to make amendment in their bids, the Purchaser may, at his discretion, extend the deadline for the submission of bids. However, no such request in this regard shall be binding on the Purchaser.

C - PREPARATION OF BIDS

2.7 Language of Bid & Correspondence:

2.7.1 The Bid will be prepared by the Bidder in English language only. All the documents relating to the Bid (including brochures) supplied by the Bidder should also be in English and the correspondence between the Bidder & Purchaser will be in English Language only. The correspondence by Fax / E-mail must be subsequently confirmed by a duly signed copy (unless already signed digitally).

2.8 Documents comprising of Bid:

The Bidder will prepare the bid in two parts.

I. FEE-ELIGIBILITY CLAIM-CUM-TECHNICAL BID:

In support of his eligibility cum technical bid, a Bidder must submit/upload the relevant documents strictly in accordance with Proforma B marked with page numbers on e-portal <https://hptenders.gov.in>.

Packet-I (Fee/other Eligibility Documents/Technical) (to be uploaded in Packet-1 on e-procurement portal)

II. COMMERCIAL BID:

Commercial Bids of only eligible and technically qualified bidders will be opened as per the date notified by the purchaser on its website (www.hpsedc.in and <https://hptender.gov.in>). Those technically qualified bidders which have also deposited the tender cost and Bid Security shall be termed as Substantially Responsive (i.e. eligible and technically qualified and have also deposited Bid Security & tender cost). The Tender Committee's determination of a Bid's responsiveness is to be based on the contents of the Bid itself and not on any extrinsic evidence. However, while determining the responsiveness of various Bidders, the Tender Committee may waive off any minor infirmity, which does not constitute a material deviation. The decision of the Tender Committee in this regard shall be final.

The bidder has to submit their Commercial Bids online as per BOQ in Packet-2 on the e-procurement portal.

(i) Sample BOQ / Price Bid will be as per Schedule I.

2.9 Bid Currencies:

2.9.1 Prices shall be quoted in Indian Rupees.

2.9.2 The contract price shall be paid in Indian Rupees.

2.10 Bid Security:

2.10.1 The Bidder shall furnish Bid security, as part of its bid as mentioned hereunder. Any bid submitted without bid security or with the lesser bid amount, as indicated below may be rejected being non-responsive.

Sr. No.	Equipment types	EMD/ Bid security amount in Rupees.
1.	Rate Contract for Procurement of CCTV Surveillance Systems.	Rs. 2,00,000/- (Rupees Two lakh only)

2.10.2 The Bid Security is required to protect the Purchaser against the risk of Bidder's conduct which may require forfeiture of security pursuant to Para 2.10.8.

2.10.3. The Bid Security shall be submitted online through HP Govt. e-Procurement Portal i.e. <https://hptender.gov.in>.

2.10.4 Any bid not secured in accordance with Para 2.10.1 and 2.10.3 will be rejected by the Purchaser.

- 2.10.5 Unsuccessful Bidders' Bid Security will be refunded as promptly as possible.
- 2.10.6 The successful bidder's Bid Security shall be discharged to the bidder upon finalization of the Rate Contract/ Tender and signing of the agreement.
- 2.10.7 No interest will be payable by the Purchaser on the above-mentioned Bid Security.
- 2.10.8 The Bid Security may be forfeited:
1. If a Bidder withdraws its bid during the period of bid validity specified by the bidder and required by the Purchaser.
 2. During the tendering process, if a Bidder indulges in any such activity as would jeopardise or unnecessarily delay the tender process. The decision of the Purchaser regarding forfeiture of the Bid Security/EMD shall be final & shall not be called upon question under any circumstances.
 3. In the case of a successful Bidder, if the Bidder fails,
 - (i) to sign the contract by raising issues contrary to the provisions of the RFP or the Bid or undertakings given during evaluation of bids, or
 - (ii) to furnish Performance Security or
 - (iii) Violates any of such important conditions of this tender document or indulges in any such activity as would jeopardise the interest of the Purchaser. The decision of the Purchaser regarding forfeiture of the Bid Security shall be final & shall not be called upon question under any circumstances.
- 2.11 Period of validity of Bids:
- 2.11.1 For the purpose of placing the order, the Bids shall remain valid for at least 180 days after the date of bid opening. A bid valid for a shorter period may be rejected by the Purchaser as being non-responsive. During the period of validity of Bids, the rates quoted shall not change. However, in case of general fall in prices of a product in the IT/ Electronics Industry before despatch of goods, such a reduction shall be passed on to the Purchaser after mutual negotiations.
- 2.11.2 In exceptional circumstances, the Purchaser may ask for extension of the period of validity and such a request shall be binding on the Bidder. The Purchaser's request and the response to such a request by various Bidders shall be in writing. A Bidder agreeing to such an extension will not be permitted to increase its rates.

D-SUBMISSION OF BIDS

2.12 Submission of Bids:

- 2.12.1 Bidder(s) shall submit their bids only on online e-procurement portal www.hptenders.gov.in. All the instructions regarding e-bids submission are also available on www.hptenders.gov.in.

2.13. Deadline for Submission of Bids:

- 2.13.1 Bids will be online submitted/uploaded on e-procurement portal <https://hptenders.gov.in> on or before the deadline mentioned on the e-portal.

- 2.13.2 The Purchaser may, at its discretion, extend this deadline as per Para 2.6.2. The Purchaser may also extend this deadline for any other administrative reason.

2.14. Bids not submitted online:

- 2.14.1 Any bid not submitted/uploaded through e-portal will not be received by the Purchaser after the deadline for submission of bids prescribed by the Purchaser, as per clause 2.13.1 or 2.13.2, will be rejected.

2.15 Modification and withdrawal of Bids:

- 2.15.1 E-bids can be modified upto last date & time has not been closed by e-procurement system.
- 2.15.2 E-Bids cannot be withdrawn in the interval after its submission of bids and before the expiry of Bid's validity specified by the Purchaser. Withdrawal of Bid during this interval may result in the forfeiture of Bidder's Bid security pursuant to clause 2.10.8.

E-BID OPENING AND EVALUATION

2.16. Opening of bids by Purchaser:

- 2.16.1 The e-Bids shall be opened on the date and time already described in the tender/e-portal or on any other later day and time fixed as per Para 2.6.2 or other enabling provisions in this behalf, in H.P State Electronics Development Corporation Ltd, First Floor, IT Bhawan, Mehli, Shimla-13 (H.P.) in the presence of representatives of the Bidders who may choose to attend the proceedings. The representatives of Bidders will sign a register in evidence of their presence.
- 2.16.2 In order to assist in the examination, evaluation and comparison of Bids, the Purchaser may at its discretion ask the Bidder for a clarification regarding its Bid. The clarification shall be given in writing, but no change in the price or substance of the Bid shall be sought, offered or permitted.
- 2.16.3 In the first instance, Eligibility bid documents uploaded on the e-portal will be opened and evaluated for eligibility of each Bidder will be ascertained. Technical Bids of only those Bidders shall be evaluated who are found to be eligible as per the criteria laid down in para 2.2.1/ 2.8 (I) and submitted bid security and tender cost as per Para 2.10. In doubtful cases (where further documents or clarification are required to establish eligibility), the Purchaser in its discretion, may decide to open/evaluate Technical Bid. However, such Bids can be rejected subsequently, if it is found that the bidder has claimed eligibility on false grounds.
- 2.16.4 The Technical e-Bids of only the Eligible Bidders will be opened and the contents (particularly Fact Sheets) will be announced/ displayed in the presence of all Bidders or their representatives.
- 2.16.5. Scrutiny of Technical Bid:
The product proposed in the bid document of only eligible bidders will be evaluated as per the requirements specified in the RFP/ Tender Document. The "Fact Sheets" submitted by the Bidders shall be compared against the Product Catalogue and authenticated circulars regarding latest changes in the specifications. It will thus be ascertained whether the product offered by the Bidder matches with the minimum requirement of the Purchaser as given in the Technical Specifications in this Tender Document. In case of a doubt the Purchaser may require the bidder to produce the quoted equipment for physical inspection and demonstration, so that components could be seen to ascertain the veracity of the Bidder's claim about specifications.

The Tender Committee may undertake oral and or written clarifications with the bidders. The primary function of clarifications in the evaluation process is to clarify ambiguities and uncertainties arising out of the evaluation of the bid documents. The financial bids of only eligible and technically qualified bidders will be opened for further processing. It is, however, clarified that subject to other provisions of this document, every bidder will have to fulfil the minimum technical specifications laid down in this document for being qualified technically. In order to assist in the examination, evaluation and comparison of Bids, the Tender Committee may at its discretion ask the Bidder for a clarification regarding its Bid. The clarification shall be given in writing immediately, but no change in the price shall be sought, offered or permitted. The Technical e-Bids of only the Eligible Bidders will be opened and the contents (particularly Fact Sheets) will be announced in the presence of all Bidders or their representatives. An open discussion regarding technical parameters quoted by various Bidders may also take place, if required. The Compliance/ Deviation statement submitted by the Bidders shall be compared against the Product Catalogues and authenticated circulars regarding latest changes in the specifications. It will thus be ascertained whether the product offered by the Bidder matches with the minimum requirement as given in the Technical Specifications in this Tender Document. The Financial Bids of only those eligible and technically qualified bidders will be opened who also fulfil minimum technical requirements mentioned in this document. However, the Tender Committee reserves the right of giving minor relaxation, if a particular Bidder is not able to exactly match the specifications given in the Tender Document, provided that such a minor deficiency does not substantially reduce the performance level and is suitably compensated by some extra feature in the product. The decision of the Tender Committee about giving minor relaxation shall be final and shall not be called upon question under any circumstances.

The commercial Bids of only those bidders will be opened who fulfils the minimum technical requirements of the purchaser and are found substantially responsive as per Para 2.8 (II) read in conjunction with other relevant clauses/Forms. However, the Purchaser reserves the right of giving minor relaxation, if a particular Bidder is not able to exactly match the specifications

given in the document, provided that such a minor deficiency does not substantially reduce the performance level and is suitably compensated by some extra feature in the product. Therefore, all Bidders must indicate in the Fact Sheets, deviations, if any, extra features offered by them. The decision of the Purchaser about giving minor relaxation shall be final and shall not be called upon question under any circumstances.

The evaluation committee, if so desire may ask for the demonstration of the quoted solution/products, for which sufficient time will be given for arranging demonstration.

2.16.6. Opening of Bid Security:

The document containing bid security will be opened and checked at the time of determining eligibility of the bidders at the time of eligibility bid opening.

2.16.7. Opening of Commercial Bids of substantially Responsive Bidders:

The Commercial Bids of only those Bidders will be opened who meets the minimum technical requirement and substantially responsive. The Purchaser's determination of a Bid's responsiveness is to be based on the contents of the Bid itself and not on any extrinsic evidence. However, while determining the responsiveness of various Bidders the Purchaser may waive off any minor infirmity, which does not constitute a material deviation. The decision of the Purchaser in this regard shall be final.

2.16.8 A Bid determined as not substantially responsive will be rejected by the Purchaser. Such a Bid will not be normally allowed to be made responsive subsequently by way of correction/ modification.

2.17. Evaluation and Comparison of Commercial Bids:

2.17.1 The comparison of Commercial Bids shall be done as follows:

2.17.2 Bid Comparison:

The Bidders are required to complete their Commercial Bid/ BOQ in Schedule-I. Initial evaluation/ comparison of items within a Category given in the Tender Document will be done as per clause 2.17.3.

2.17.3. Item Rate:

Item Rate for each item for all will be calculated as under;

Item Rate = FOR Destination Unit Price of the Item under a category including installation charges (if any) with three years' warranty inclusive GST of the Item in a Category.

Note 1:

The Bidder shall not quote prices subject to certain conditions. Bids containing any conditional prices may be rejected or the Purchaser may take a final decision in its discretion about such conditionality.

2.17.4 In the procurements of goods, the following procedure shall be followed:

- (i) Among all qualified bids, the lowest bid will be termed as L1. If L-1 is from a local supplier, the contract for full quantity will be awarded to L1.
- (ii) If L-1 bid is not from a local supplier, 50% of the order quantity shall be awarded to L-1.

Note: Local supplier shall be as per relevant state procurement guidelines.

2.17.5 Thereafter, the lowest bidder among the local suppliers, will be invited to match the L-1 price for the remaining 50% quantity subject to the local supplier's quoted price falling within the margin of @5% and contract for that quantity shall be awarded to such local supplier subject to matching the L-1 price. In case such lowest eligible local supplier fails to match the L-1 price or accepts less than the offered quantity, the next higher local supplier within the margin of @5% shall be invited to match the L-1 price for remaining quantity and so on, and contract shall be awarded accordingly.

2.17.6 In case some quantity is still left uncovered on local suppliers, then such balance quantity may also be ordered on the L1 bidder.

2.18. RANKING OF BIDDERS:

2.18.1 Bidders will be ranked in the inverse order of Item Rate in the Category. The criterion for selection of lowest Bidder (L1) for individual items in all categories.

2.18.2 Reduction in Statutory Duties and Levies:

If any reduction in taxes takes place after opening the commercial bids, but before despatch of goods; the Successful Bidder shall pass on the proportional benefit to the Purchaser. However, if any such reduction takes place after the opening of bids but before the finalisation of tender, revised sealed commercial bids shall be taken.

2.19. NEGOTIATIONS:

- 2.19.1 The Purchaser may finalise the Tender & award the Contract without any negotiations, if it is satisfied with reasonableness & workability of the lowest offers. Therefore, the bidders are advised to quote lowest possible rates in the first instance only. In case of negotiation, that shall be held with Lowest Ranked (L1) bidder only for a particular item in the Category. The purchaser has the discretion to have rate contract for more than one eligible and technically qualified bidders.
- 2.19.2 During the negotiations a revised offer will be taken from the representative of the Bidder by way of sealed bids. This revised offer will replace/supersede the earlier Technical & Commercial Bid, provided that the original offer (i.e. Technical/ Commercial) will not be allowed to be changed to the detriment of the Purchaser, as far as rates of every individual item & terms/ conditions are concerned. Therefore, the Bidders are advised to send sufficiently senior representatives (who can take spot decisions) for negotiations.
- 2.19.4 During the negotiations on prices & other related terms/conditions, prevalent worldwide street-prices of such product, prices finalised in bids of similar size on GEM portal/Other State Government Rate Contract etc. will be kept in mind. The scope of negotiations may also include precise *modus-operandi* of after-sales service, mode of delivery, system integration and price of add-ons & consumables etc.
- 2.19.5 During the negotiations, the Purchaser may even go in for marginally higher or lower configurations as per its absolute discretion.
- 2.19.6 After this final ranking is done based on negotiated prices, award of rate contract will be made to the lowest Bidder, subject to post qualification in Para 2.20 below.

F - AWARD OF CONTRACT

2.20 Post Qualification:

2.20.1 HPSEDC will devise a performance criterion in consultation with successful bidders which will include online after sales feedback from the Government departments. The lowest Bidder can be denied the right of continuing with the contract, if the equipment being supplied by him, fails the standard performance criteria. In such an event, the next lowest bidder (L-2) shall be considered.

2.21 Purchaser's right to vary Quantities:

2.21.1 The Purchaser reserves the right to place the supply received from various Government departments/ Govt. Institutions/ Autonomous bodies on the approved vendors during the currency of the rate contract.

2.22 Purchaser's Right to accept any Bid and to reject any or all Bids:

2.22.1 Notwithstanding anything else contained to contrary in this Tender Document, The Purchaser reserves the right to accept or reject any Bid or to annul the bidding process fully or partially or modifying the same and to reject all Bids at any time prior to the award of Contract, without incurring any liabilities in this regard.

2.23 Notification of Award/Rate Contract:

2.23.1 Prior to the expiry of the period of Bid validity, the Purchaser will notify the successful Bidder in writing by speed post or Fax or email that his Bid has been accepted.

2.23.2 The liability of the supplier(s) to deliver the Goods and perform the services will commence from the "date of Notification of Award/Rate Contract". The Delivery Period shall be counted from the date of 'Placing the Supply Order'. The "date of delivery" shall be the date on which the equipment / material is received at the destinations.

2.23.3 Upon the successful Bidders' furnishing of performance security, the purchaser will promptly notify each unsuccessful Bidder and will refund his Bid Security.

2.24 Signing of Contract:

2.24.1 After the Purchaser notifies the successful Bidder(s) that his 'Bid' has been accepted, the Purchaser will sign an agreement (described as Contract herein after) within 10 days with the successful Bidder on mutually agreed terms for efficacious implementation of the order.

2.24.2 The Purchaser's liability of taking the goods from the selected supplier(s) shall commence only from date of signing the date of the Contract.

SECTION-3

GENERAL CONDITIONS OF THE TENDER & CONTRACT

3.1 Definitions:

3.1.1 In this part, the following interpretation of terms shall be taken:

- (a) "The Contract" means an agreement regarding supply of the goods & provision of services entered into between the HPSEDC and the Supplier, as recorded in the Contract Form signed by the parties, including all appendices thereto and all documents incorporated by reference therein.
- (b) "The Contract Price" means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations.
- (c) "The Goods" means all the equipment and/or other material, which the Supplier is required to supply to the Purchaser under the Contract.
- (d) "Services" mean services ancillary to the supply of the Goods, such as transportation and insurance, and any other incidental services, such as installation, commissioning, training, maintenance and other such obligations of the Supplier covered under the Contract.
- (e) "The Purchaser" means the H.P. State Electronics Dev. Corporation Ltd" or "HPSEDC" in short.
- (f) "The Supplier", means short listed Bidder supplying the goods and services under this Contract.
- (g) "End User" means various Government Departments, Boards, and Corporation etc. in the State of Himachal Pradesh.

Note: The aforesaid definitions will be valid with respect to one or more Suppliers short-listed to execute the Project. Services to be executed by each Supplier have been explained in detail in this Tender Document.

3.2. Application:

- 3.2.1 These General Conditions shall apply to the extent that these are not superseded specific by provisions in other parts of this tender document. A detailed Contract agreement shall be signed and detailed provisions of such a contract-agreement shall have an over-riding effect vis-a-vis this Tender Document.

3.3 Standards:

3.3.1 The goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications and the latest improvements incorporated after the finalisation of contract, but before the dispatch.

3.4 Patent Rights of the Goods:

3.4.1 The Supplier shall indemnify the Purchaser against all third party claims of infringement of patent, trademark or industrial design rights arising from use of the goods or any part thereof in India.

3.5 Performance Security:

3.5.1 Performance Security for delivery/ installation and maintenance during warranty period.

3.5.2 Within 10 days of 'Award of work order/ supply order', the successful bidder/ Supplier shall initially furnish a 3% Performance Bank Guarantee of total order value valid for T+3 months (where T refers to the duration of the work order/ supply order) to safeguard the purchaser against timely delivery/installation and maintenance of ordered equipment during the currency of the contract.

(1) In case supply orders increases the above-mentioned quantity then 3% amount of each supply order will be deducted as PBG from due payment from bidder & same will be released after expiry of the warranty period or bidder has an option to submit additional PBG against the supply order.

(3) EMD of successful bidder(s) will only be released after finalization of the Tender/ Rate Contract following signing of the agreement.

3.5.3 The proceeds of the Performance Bank Guarantee/ additional Performance Bank Guarantee as Security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete his obligations under the Contract. The Purchaser may claim such compensation in addition to initiating any other legal proceedings.

3.5.4 The Performance Bank Guarantee shall be given in one of the following forms:

An irrevocable and unconditional Bank Guarantee in favour of the Purchaser issued by a Nationalised/schedule bank in a format given by the Purchaser. This Bank Guarantee should be of a sufficient duration to cover the risk of the Purchaser.

3.5.5 The Performance Bank Guarantee, regarding delivery & installation will be discharged by the Purchaser and returned to the Supplier not later than 30 days following the date of completion of the Supplier's performance related obligations,

under the Contract (excluding after sales maintenance for which separate performance guarantee has been taken).

3.6 Inspections and Tests:

- 3.6.1 The Purchaser or its representative shall have the right (if it so desires) to test the goods to ascertain their conformity to the specifications. The Purchaser shall notify to the Supplier in writing of the identity of the representative deputed for this purpose & nature of tests that may be conducted (if found necessary) for bench-marking.
- 3.6.2 The inspections and tests may be conducted in the factory premises of the Supplier. All reasonable facilities and assistance including access to drawings and production data shall be furnished to the inspecting officers at no charge to the Purchaser. The Contractor shall inform the Purchaser in advance the time of starting of manufacture and the progress of manufacture of the equipments offered by him so that arrangements can be made for inspection at the premises, if so desired by the purchaser.
- 3.6.3 Should any inspected or tested Goods fail to conform to the Specifications, the Purchaser may reject them, and the Supplier shall either replace the rejected goods or make all alterations necessary to meet specification requirements to the Purchaser.
- 3.6.4 If the Purchaser decides to conduct the inspection at supplier's premises as per clause 3.6.1 to 3.6.3, no material being furnished against this specification shall be dispatched until inspected and approved by the Purchaser/ or his representative. Such inspection and approval will not relieve the Contractor of full responsibility for furnishing equipment conforming to the specifications nor will it prejudice any claim, right or privilege which the Purchaser may have on account of any loss sustained by it due to defective or unsatisfactory equipment supplied by the contractor. Should the inspection be waived off by the Purchaser, such waiver shall not relieve the contractor in any way from his contractual obligations.
- 3.6.5 The sample of the proposed Equipment, if desired by the purchaser, to be supplied for approval/testing.
- 3.6.6 Bidder has to provide the required drivers etc. if essentially required for the quoted equipment/peripherals being supplied.
- 3.6.8 Bidder has to provide necessary support by providing required drivers for connecting the hardware devices being used at the user site. All these drivers should be freely available on the OEM website for which necessary links may be provided.
- 3.6.9 Bidder has to install the patches/upgrades during warranty period at no extra cost.

3.6.10 GUI tools for configuring devices.

3.6.12 Bidder should provide service maintenance of System Software / driver software up-gradations, installing patches etc., at no extra cost during the warranty period.

3.6.13 All drivers' patches required at site are to be arranged by the supplier and should be available on the website of the respective OEM.

3.6.14 The Supplier of software items shall depute its technical person, if end user is facing problem in installation/working of software. On-line support will be made available without any charges to end user.

3.7 Packing Delivery & Documentation:

3.7.1 The supplier shall provide such packing as is required to prevent damage or deterioration of the goods during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitations, rough handling during transit and exposure to extreme temperatures and precipitation during transit and open storage. The Supplier shall be responsible for any defect in packing.

3.7.2 The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as will be specifically provided for in the contract.

3.7.3 Delivery of the goods and associated documentation will be done in such manner as may be prescribed by the Purchaser in the Contract.

3.8 Insurance:

3.8.1 The Goods supplied under the Contract shall be fully insured against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery.

3.8.2 The supplier will indemnify the Purchaser from all responsibility of compensation etc. caused by third party injury including death while he is discharging his duties under the contract.

3.9 Transportation:

3.9.1 The entire cost of carriage/transportation from the point of discharge to the destination shall be borne by the Supplier.

3.9.2 Where the Supplier is required to affect delivery to some other address within Himachal Pradesh, the supplier shall be required to meet all transport and storage expenses until delivery is completed.

3.10 Literature and Instruction:

3.10.1 Each supplied equipment(s) packing box must contain copy of illustrated literature

and instruction books regarding the installation, handling, maintenance and use of the Goods at each station shall be supplied by the supplier as part of the Contract price before dispatch of the first assignment.

3.11 Payment:

3.11.1 **First Instalment:** First Instalment shall be paid after delivery of the Goods at the prescribed destinations. Amount of 1st instalment shall be regulated in such a manner that the total payment after delivery is 85% of the order value. A claim for first instalment shall be staked by the Supplier, when he has supplied adequate number of equipment(s). The first installment of 85% will be paid only after receipt of duly acknowledged delivery challans & invoice, as required by the Purchaser.

3.11.2 **Second Instalment:** Remaining amount of 15% of the order value shall be paid after satisfactory installation of equipments and execution of Performance Guarantee for proper maintenance during warranty period as mentioned at Clause 3.5. If the installation is delayed beyond 45 days on account of site not being ready (or any other reasons entirely attributable to the Purchaser) or any other reason attributable to the Purchaser, $\frac{2}{3}$ of the second instalment (i.e., 10% of the order value) shall be released to the Supplier subject to submission of site not ready (SNR) report from concerned department. In such an unlikely event of the site not being ready, the remaining amount $\frac{1}{3}$ of the second instalment (i.e., 5% of order value) will be released after submission of successful installation reports of the ordered equipment(s) duly signed by the competent authority of the department(s).

Note: *First & second instalments shall be released only on production of bill supported by delivery challan and installation report by the Supplier. Any bill supported by requisite documents will be processed and objections, if any, will be conveyed in one go. If the claim is found in order, the payment will be made accordingly as per the funds released from the End User Department.*

3.12 Prices:

3.12.1 Subject to the provision to Rule 2.11.1, the prices charged by the Supplier for Goods delivered and services performed under the Contract shall not vary from the prices quoted by the Supplier in his Bid. But in case of global or national fall in prices of a product in IT/ Electronics industry due to a change in Government Policy or otherwise, such a reduction shall be passed on to the Purchaser after mutual

negotiations.

3.12.2 There shall be no effect of the exchange rate variation etc., on the rates to be quoted by the Vendor during two-year period. However, if rates will increase/ decrease, HPSEDC will call techno-commercial bids from the empanelled bidders on requests received from them.

3.13 Modification in the Order:

3.13.1 The Purchaser may at any time, by written order given to the Supplier make changes within the general scope of the Contract in anyone or more of the following:

- (a) The specifications of the Goods
- (b) The method of shipment or packing
- (c) The service to be provided by the Supplier
- (d) Quantity of goods
- (e) Any other change that the purchaser may deem fit

3.13.2 If any such change causes an increase or decrease in the cost of, or the time required for the Supplier's performance of any part of the work under the Contract, an equitable adjustment shall be made in the Contract price or delivery Schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this clause must be put forth within 30 days from the date of the Supplier's receipt of the Purchaser's change order.

3.14 Subcontract:

3.14.1 The Supplier shall not assign in whole or in part, its obligations to perform under the Contract, except with the Purchaser's prior written consent.

3.14.2 The Supplier shall notify the Purchaser, in advance in writing, of all sub-Contracts awarded under the Contract if not already specified in his bid. Such notification, in his original bid or later (even if with prior approval of Purchaser) shall not relieve the Supplier of any liability or obligations under the Contract.

3.14.3 Subcontracts must comply with the provisions of the clause 2.3.

3.15 Delays in the Supplier's Performance:

3.15.1 Delivery of the goods and the performance of services shall be made by the Supplier in accordance with the time schedule specified by the Purchaser in the Contract.

3.15.2 Any unjustifiable delay by the Supplier in the performance of his delivery obligation may render the Supplier liable to any or all the following:

- (i) forfeiture of its performance security,
- (ii) imposition of liquidated damages @Rs 50/- per day per CCTV Surveillance

Systems of the unfulfilled order. The maximum penalty will not exceed 10% of the equipment cost.

(iii) termination of the contract and risk purchase at Supplier's risk

(iv) initiation of any other legal proceedings.

3.15.3 The Supplier will strictly adhere to the time-schedule for the performance of Contract. However, the Purchaser can relax this time limit in force majeure conditions.

3.16 Termination for Default:

3.16.1 The Purchaser may without prejudice to any other remedy for breach of contract, (including forfeiture of Performance Security) by written notice of default sent to the supplier, terminate the Contract in whole or in part after sending a notice to the Supplier in this regard.

(a) if the Supplier fails to deliver any or all of the goods within the time period(s) specified in the Contract, or any extension thereof granted by the Purchaser pursuant to clause 2.11.2, or

(b) if the Supplier fails to perform any other obligation under the Contract.

3.16.2 In the event the Purchaser terminates the Contract in whole or in part, he may procure, upon such terms in such manner, as it deems appropriate, goods similar to those undelivered, and the Supplier shall be liable to pay excess cost of such similar goods to the Purchaser. This liability will be in addition to forfeiture of performance guarantee and any other legal proceedings, which the Purchaser may initiate as per Para 3.15.2.

3.17 Force Majeure:

3.17.1 Notwithstanding the provisions of the clauses 3.15 and 3.16, the Supplier shall not be liable for forfeiture of its performance security or termination for default, or payment of any damages, if and to the extent that his delay in performance under the Contract is the result of an event of Force Majeure.

3.17.2 For purpose of this clause, Force Majeure means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of the Purchaser either in its sovereign or contractual capacity, war, revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

3.17.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser

in writing or such conditions and the cause thereof within 7 days of occurrence of such event. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract, as far as reasonably practical, and shall seek all reasonable alternative means for performance, not prevented by the *Force Majeure* event.

3.18 Taxes and Duties:

3.18.1 Supplier shall be entirely responsible for payment of all taxes, duties and levies, imposed up to/until the delivery point specified in the Contract. If there is a reduction in any of the statutory duties and levies before the despatch of goods, the benefit of the same will be passed on to the Purchaser.

3.19 Limitation of Liability:

The liability of the supplier in respect of all claims under this tender including penalty for delay in delivery, services, liquidity damages etc. shall not exceed the aggregate value of the goods and services supplied under this tender. Either party shall not be liable for any claim made for any indirect, consequential or incidental losses and indirect damages, costs or other expenses related thereto.

3.20 Arbitration:

All disputes, differences, claims and demands arising under this tender shall be referred to arbitration of a sole arbitrator to be appointed with mutual consent of both the parties. All arbitration will be held in Shimla. If the parties cannot agree on the appointment of the Arbitrator within a period of one month from the notification by one party to the other of existence of any dispute and need for appointment of an arbitrator. Further action will be taken in accordance with the provisions of the Arbitration and Conciliation Act, 1996 and the award made under this tender shall be final and binding upon the parties hereto, subject to legal remedies available under the law.

SECTION-4

TECHNICAL SPECIFICATIONS AND MAINTENANCE CONDITIONS

4.1. SCOPE OF THE TENDER:

The successful Bidder(s) will provide the following services:

(i) Manufacture /Import (ii) Testing (iii) Supply (iv) Installation (v) After Sales Service during warranty and Annual Maintenance period.

(i) Manufacture/Import.

The OEM/ Bidder can manufacture the Goods in India or import the same (in full or in parts) from any part of the world.

(ii) Testing.

Testing/ Benchmarking as per requirement of the Purchaser and in such manner and for such size of sample as may be prescribed subsequently may be got done as a part of the Contract.

(iii) Supply

The Goods need to be supplied F.O.R. as per the list of destinations to be supplied at the time of signing the Contract.

(iv) Installation and Commissioning of equipment(s): The successful bidder of respective equipments will do installation and ensure that the equipment supplied works/run properly.

(v) After-Sales-Services

The Supplier will open Own/Authorised Service Centre in Himachal Pradesh for the maintenance of equipment(s) supplied under this tender. Similarly, the supplier shall keep equipments as spare (as finalised of RC to be mutually decided), to provide immediate replacement, with the service centre during the warranty period. It will be desirable that minor functional problems of these equipments are taken care of by the service centre only. In case of major & specific problems, respective vendors will have to rectify the defect within the time-limits prescribed in Para 4.2.2 below, otherwise must have to replace with the new one.

4.2 AFTER SALES SERVICES:

4.2.1 Comprehensive Warranty:

The Supplier shall provide Comprehensive OEM warranty (including labour and spares) for 36 calendar months. The warranty shall cover the System Software, Labour and all the hardware parts including updation/ upgradation (free of cost) of the Operating System. An undertaking to this effect shall be given by the Bidder in the Fact Sheets. The supplier of Items shall ensure genuine add-ons items & consumables for the items sold in the state for their own brand.

4.2.2 Service Centre:

The Service Centres in the State shall be manned by qualified Engineers as per Clause 4.1(v) above and one call coordinator. It will be equipped, with sufficient inventory of spares as per ABC Analysis. The supplier will provide prompt after sales support and shall attend any complaint not later than 24 hours. The minor and major defects shall be rectified not later than 36 hours and 60 hours respectively. If defect is not rectified within the time stipulated as above penalty as prescribed by the Purchaser will be imposed. However, the penalty in such instances shall not exceed 10% of the equipments cost against a non-attendance/ non-rectification of defects against a service call. The exact quantum of penalty per day shall be @ Rs. 50 per day. During the warranty period, this penal clause will be enforced by ensuring that the supplier gives a Performance Security by way of Bank Guarantee to the Purchaser.

4.2.3 Inventory of Spares:

An ABC analysis of inventory of spares shall be done by the Purchaser in consultation with the supplier to ensure that all critical spares/ components apart from the 1% inventory of new equipments for replacement purposes (if equipment are beyond repair within 24 hours) are available with the Service Centres in sufficient quantity.

4.2.4 The amount of non-delivery of products as mentioned in Clause No. 3.15: **Delays in the Supplier's Performance** and Clause No. 4.2: **After Sale Services** or any other recoverable amount from bidder(s) may be adjusted/ recovered or set-off against any sum payable to the bidder against any other contract with HPSEDC or with State Government. The amount shown against that shall be withheld to be adjusted against the compensation levied as mentioned above. Recovering or deducting of this amount on failure of delivery/ delay in delivery or not providing services in time bound manner,

shall be automatic deducted without any notice to the concerned bidder.

The Managing Director, HPSEDC, will reserve the right to relax/ decrease the penalties or release recovered amount without giving any interest to the bidder(s), after receiving justified/ reasonable reasons from the bidder(s).

4.3 TECHNICAL SPECIFICATIONS:

4.3.1 The Technical Specifications have been given in Annexure-I in Section-5. These specifications should be carefully studied by the Bidder, so that the product could be technically evaluated as per the Purchaser's requirement.

4.4. FACT SHEETS:

- (i) Fact Sheets as per Annexure-I Section 5 are to be filled in by the bidders as part of the Bid. These Fact Sheets should be complete in all respects and should be free from errors and omissions. All required parameters must be replied to in affirmative/ negative. In case of any difference between fact sheets (in Section – 4) and the specifications given in Annexure - I of Section - 5, the latter shall prevail.
- (ii) The Bidder shall also supply along with the Bid all brochures and authenticated bulletins carrying latest changes covering the technical aspects of each item appearing in schedule of requirement intended to be supplied by the Bidder. For the purpose of establishing latest changes, printouts down loaded from INTERNET (& duly authenticated) may be acceptable.

5. Acceptance Testing After Notification of Award:

- i. The Purchaser may conduct benchmarking & acceptance test, which could involve operation of complete system for at least two consecutive days. The Supplier(s) will provide full assistance in this regard. Partial delivery/ installation/ testing of hardware/ system software will not be permissible for acceptance/ payment. The criteria for benchmarking/ acceptance will be conveyed separately.

PROFORMA- A
(Declaration by the O.E.M.)
[Para 2.8(I)(ii)]

To Date:

The Managing Director,
H.P. State Electronics Development Corporation Ltd.,
1st Floor, IT Bhawan, Mehli, Shimla- 171013.

Subject: Authorisation to a distributor for tender No: **HPSEDC/RC/CCTV/2K26-2108**

Dear Sir,

Please refer to your Notice Inviting Tenders for procurement of CCTV Surveillance Systems

M/s _____(Bidder), who is our reliable distributor for the last _____years, is hereby authorised to quote on our behalf for this prestigious tender. M/s _____(Bidder)is likely to continue as our business partner during years to come. We undertake the following regarding the supply of these equipments/ peripherals etc.

1. The Machines supplied in this tender shall be manufactured by us as per the specifications required by the Purchaser. M/s _____ (Bidder) shall not be allowed to do any hardware integration on our equipment.
2. It will be ensured that in the event of being awarded the contract, the CCTV Surveillance Systems will be delivered by M/s_____(Bidder) & maintained by M/s _____ (ASP) properly as per the conditions of the contract. For this purpose, we shall provide M/S _____ necessary technical support including technical updates, & spares to the ASP. If M/s _____ fails to maintain the equipments for any reason what-so-ever, we shall make alternative arrangements for proper maintenance of these equipment(s) during the warranty period. During the period of 3 years' warranty, we shall provide full support back up to the Bidder/ASP. On the whole, it shall be ensured that the clauses regarding service and maintenance of Machines do not get diluted in implementation due to non-availability of spares and lack of technical inputs from our side even during AMC/extended warranty period.
3. If due to any reason whatsoever, the tie up between our Company & M/s _____ (Bidder) or M/s_____ (ASP) breaks down subsequently, we shall make necessary alternatives arrangements for honouring the terms of the contract.

Yours very truly,

Name : _____
Designation : _____
Company : _____

PROFORMA-B
[Para 2.8 (II)(i)]

I. Financial Parameters

1. Net worth as on 31-03-2023, 31-03-2024 & 31-03-2025
2. (PBT) Profit before taxes for the last three years.
3. (PAT) Profit after taxes for the last three years.
4. Income Tax Return for the last three years.
5. Equity Base
6. Premier contributors to Equity including Promoter's Contribution.
7. Turn-over during the last 3 financial years.

II. Growth Profile

- (i) Percentage increase in
t/o from 2021-22 to 2022-23
- (ii) Percentage increase in
t/o from 2022-23 to 2023-24
- (iii) Percentage increase in
t/o from 2023-24 to 2024-25

III. Installation Base and Regional Spread

III. Customer Support and Service.

- (i) Number of engineers and their qualification

Sr. No.	Qualification	Numbers (\$)	Experience	Break Up	Special Attributes *
1.	B.Tech and above				
2.	Diploma Holders				
3.	Others				

- (ii) Inventory of critical components maintained at _____

- Give special attributes such as Microsoft Certified etc.
- \$ Indicate number of Engineers in Himachal Pradesh / Chandigarh

PROFORMA-C
[Para 2.8(II)(ii)]

(i) DETAILS OF EQUIPMENTS BASE SUPPLIED DURING THE LAST 3 YEARS.

Sr. No.	Organisation (\$)	Number of CCTV Surveillance Systems/ Software Applications supplied and installed	Value	Date of Order	Current Status
1.					
2.					
3.					
4.					
		<Total>	<Total>		

* Give latest position regarding installation and arrangement for after sales support.

\$ Give telephone/ fax No./email-id and address of the contact persons

(ii) Certificate from five prominent Government/Semi Govt./PSUs/Autonomous bodies of Centre/State Govt. institutions, duly signed and stamped by the authorized officers of the end user department clearly indicating name, address and contact number regarding satisfactory supply, installation and after sale support during warranty period.

Sr. No.	Name, Address, Contact Number of the End user deptt.	Number of CCTV Surveillance Systems/ Software Applications supplied installed	Supplied/ Installed (Yes/No)	Date of Supply/ Installation
1.				
2.				
3.				
4.				

FORM-D

DECLARATION REGARDING ACCEPTANCE OF TERMS & CONDITIONS CONTAINED
IN THE TENDER DOCUMENT

To

The Managing Director,
H.P. State Electronics Development Corporation Ltd.,
1st Floor, IT Bhawan, Mehli, Shimla-171013.

Sir,

I have carefully gone through the Terms & Conditions contained in the Tender Document [No.: **HPSEDC/RC/CCTV/2K26-2108**] regarding procurement CCTV Surveillance Systems for Rate Contract by HPSEDC. I declare that all the provisions of this Tender Document contained in Section-1 to Section-5 and subsequent corrigendum(s)/ clarifications issued from time to time are acceptable to my Company/firm. I further certify that I am an authorised signatory of my company and am, therefore, competent to make this declaration.

Yours very truly,

Name: _____

Designation: _____

Company: _____

Address: _____

Contact No:

Email-id:

FORM-E

DECLARATION REGARDING PAST PERFORMANCE

To

The Managing Director,
H.P. State Electronics Development Corporation Ltd.,
1st Floor, IT Bhawan, Mehli, Shimla-13.

Sir,

I have carefully gone through the Terms & Conditions contained in the Tender Document [No. **HPSEDC/RC/CCTV/2K26-2108**] regarding rate contract of CCTV Surveillance Systems by HPSEDC. I hereby declare that my company has not been debarred/black listed by any Government / Semi Government organizations for quality/ service products nor is there any pending dispute regarding short shipment/ installation/service. I further certify that I am an authorized signatory of my company and am, therefore, competent to make this declaration.

Yours truly,

Name: _____

Designation: _____

Company: _____

Address: _____

Contact No:

Email-id:

SCHEDULE - I
SAMPLE OF PRICE SCHEDULE/BOQ
[Para 2.8 (III)(i)]

(to be completed by bidder as per the format available on e-procurement portal
<https://hptenders.gov.in>)

PRICE SCHEDULE (DOMESTIC TENDERS - RATES ARE TO GIVEN IN RUPEES (INR) ONLY) (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)									
Sl. No.	Item Description	Qty	BASIC RATE with installation (if any) and three years warranty In Figures To be entered by the Bidder in Rs. P	GST Amount in percent age (%)	GST amount in Rupees Rs. P	Unit Price with GST Rs. P	TOTAL AMOUNT Without Taxes with three-year warranty Rs. P	Gross Bid Value Inclusive installation and Taxes (for three-year onsite OEM warranty) Rs. P	TOTAL AMOUNT In Words
1.	<i>"The BoQ will all the items shall be available on e-procurement portal https://hptenders.gov.in"</i>								
2.									
Total in Figures							0.00	0.00	INR Zero Only
Quoted Rate in Words		INR Zero Only							

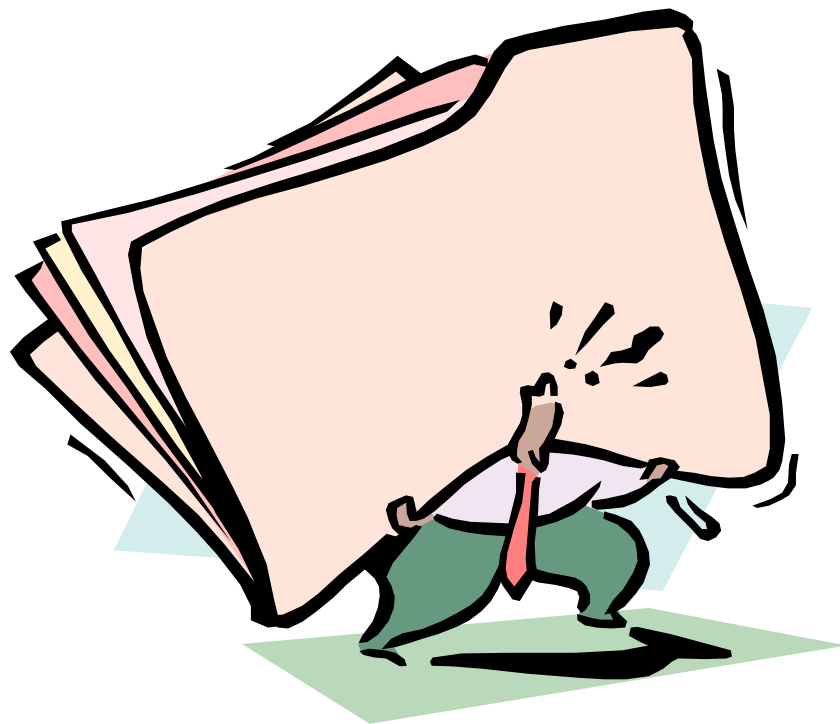
Note: If needed be, for the solution-based items asked through this bid, HPSEDC can ask for the bifurcated cost at any time during the validity of this rate contract.

SECTION- 5
TECHNICAL SPECIFICATIONS

ANNEXURES

Tender Document No:

HPSEDC/RC/CCTV/2K26-2108



NB: Final specifications uploaded after pre-bid meeting. Please visit our web-sites www.hpsedc.in & <https://hptenders.gov.in> for latest amendments or notices in reference to this tender.

ANNEXURE-I

SECTION – 5

TECHNCIAL SPECIFICATIONS ANNEXURES

The specification mentioned hereunder are bare minimum requirement. Bidders are encouraged to offer better specifications in this bid or subsequently during the period of rate contract. Technical compliance to be provided on OEMs letterhead with signatures, name, email, contact number of Authorized signatory. **The onsite warranty of all these equipment(s) should be three years.**

Data Sheet of the product(s) offered in the bid, are to be uploaded along with the bid documents. Product catalogue should be available on OEM web Site. In case of any unexplained mismatch of technical parameters, the bid is liable for rejection.

CCTV SURVEILLANCE SYSTEM

ITEM NO. 1: 8MP VARIFOCAI BULLET CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	8MP Bullet Camera with Motorized Varifocal Lens	
2.	Sensor	The camera should be equipped with a minimum of 1 / 2.7-inch 8MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 3840 (H) × 2160 (V) for high-definition video quality	
4.	Minimum Illumination	0.001 lux@F1.4 or better	
5.	Shutter Speed	Auto/Manual, 1/3s~1/10000s	
6.	Lens	2.8–13 mm (± 5%) with OEM Fitted Varifocal Motorized lens	
7.	Mirror Function	Supports	
8.	S/N Ratio	>57 dB or better	
9.	Warm Light	Warm Light Range of 60 Mtr.	
10.	Gain Control (AGC)	Auto/Manual	
11.	Video Compression	H.265/H.264	
12.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
13.	Wide-Dynamic- Range	The camera should give a WDR range of minimum 120dB Real WDR	
14.	Stream Capability	Quad Stream or better	

16.	Video Streaming	Main stream: 8MP (3840 × 2160)@1–20 fps/ 4MP (2688 × 1520)@1–25/30 fps Sub Stream 1: D1@25fps Sub Stream 2: D1@25fps Sub Stream 3: D1@1fps	
17.	Resolution	8MP,6MP,5MP,4MP,3MP,2MP, 1.3MP,720P can be set at any resolution as per requirement.	
18.	Motion Detection	3 Areas or Better	
19.	Privacy Mask	3 Areas or Better	
20.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
21.	ROI	The Camera should allow at least 3 sections of the camera view to be streamed separately for distinguished viewing and recording.	
22.	Audio Compression	G.711a/G.711Mu	
23.	Audio In/Out	1 Channel in/1 Channel Out	
24.	Alarm In/Out	1 Channel in/1 Channel Out	
25.	Built in Mic	Supported	
26.	Intelligent features	Tripwire, Intrusion	
27.	Protocol	SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE, NFS, UDP, UPnP, ICMP, SSL, DHCP, SMTP, RTSPS, ONVIF (Profile S, Profile G, Profile T), unicast, multicast	
28.	Ethernet	RJ-45 (10/100Base-T)	
29.	Alarm Event	No SD card, SD card full, SD card error, Network disconnection, IP conflict, illegal access, Motion detection, Video tampering, Tripwire, Intrusion, Audio detection, Voltage detection, External alarm, IMD (Intelligent motion detection), Security exception	
30.	Cyber Security	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot	
31.	User	5 or better	
32.	Micro SD	Micro SD card (support max. 128 GB or better); SFTP,NAS	
33.	Operating Temperature	-30 °C to +60 °C (–22 °F to 140 °F)	
34.	Dual Light	8MP Dual Light Bullet Camera (IR Range of 60 Mtrs, Warm Light Range of 60 Mtrs)	
35.	IR Range	Up to 60 Meter or Better	
36.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
37.	Housing	IP67 & IK10(Optional) with OEM fitted metal Body	

38.	Certifications	STQC approved compliance report, BIS, CE, FCC, RoHS.	
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ITEM NO. 2: 8MP VARIFOCAI DOME CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	8MP Dome Camera with Motorized Varifocal Lens	
2.	Sensor	The camera should be equipped with a minimum of 1/2.7-inch 8MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 3840 (H) × 2160 (V) for high-definition video quality	
4.	Minimum Illumination	0.001 lux@F1.4 or better	
5.	Shutter Speed	Auto/Manual, 1/3s~1/10000s	
6.	Lens	2.8–13 mm (± 5%) with OEM Fitted Varifocal Motorized lens	
7.	Mirror Function	Supports	
8.	S/N Ratio	>57 dB or better	
9.	Gain Control (AGC)	Auto/Manual	
10.	Video Compression	H.265/H.264	
11.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
12.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
13.	Stream Capability	Quad Stream or better	
14.	Video Streaming	Main stream: 8MP (3840 × 2160)@1–20 fps/ 4MP (2688 × 1520)@1–25/30 fps Sub Stream 1: D1@25fps Sub Stream 2: D1@25fps Sub Stream 3: D1@1fps	
16.	Resolution	8MP,6MP,5MP,4MP,3MP,2MP, 1.3MP,720P can be set at any resolution as per requirement.	
17.	Motion Detection	3 Areas or Better	
18.	Privacy Mask	3 Areas or Better	
19.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
20.	ROI	The Camera should allow at least 3 sections of the camera view to be streamed separately for distinguished viewing and recording.	
21.	Audio Compression	G.711a/G.711Mu	
22.	Audio In/Out	1 Channel in/1 Channel Out	
23.	Alarm In/Out	1 Channel in/1 Channel Out	

24.	Built in Mic	Supported	
25.	Intelligent features	Tripwire, Intrusion	
26.	Protocol	SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, ONVIF (Profile S, Profile G, Profile T), unicast, multicast	
27.	Ethernet	RJ-45 (10/100Base-T)	
28.	Event Trigger	No SD card, SD card full, SD card error, Network disconnection, IP conflict, illegal access, Motion detection, Video tampering, Tripwire, Intrusion, Audio detection, Voltage detection, Security exception, External alarm	
29.	Cyber Security	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot	
30.	User	5 or better	
31.	Micro SD	Micro SD card (support max. 128 GB or better); SFTP/FTP	
32.	Operating Temperature	-30 °C to +60 °C (-22 °F to 140 °F)	
33.	IR Range	Up to 50 Meter or Better	
34.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
35.	Housing	IP67 & IK10 with Metal body	
36.	Certifications	STQC approved compliance report, BIS, CE, FCC, RoHS.	

ITEM NO. 3: 8MP FIXED DOME CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	8MP Dome Camera with Fixed Lens	
2.	Sensor	The camera should be equipped with a minimum of 1 /2.7-inch 8 MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 3840 (H) × 2160 (V) for high-definition video quality	
4.	Minimum Illumination	0.05 lux@F1.4 or better	
5.	Shutter Speed	Auto/Manual, 1/3~1/100000s	

6.	Lens	The Camera should be provided with an OEM fitted 3.6mm Lens	
7.	S/N Ratio	>57dB or better	
8.	Gain Control (AGC)	Auto/Manual	
9.	Video Compression	H.265/H.264	
10.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
11.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
12.	Stream Capability	Quad Stream or better	
13.	Video Streaming	Main stream: 8MP (3840 × 2160)@1–20 fps/ 4MP (2688 × 1520)@1–25/30 fps Sub stream 1: D1@(1–25/30 fps) Sub stream 2:D1@(1–25/30 fps) Sub stream 3:D1@1fps	
14.	Resolution	8MP,6MP,5MP,4MP,3MP,2MP, 1.3MP,720P can be set at any resolution as per requirement.	
15.	Intelligent features	Tripwire, Intrusion	
16.	Motion Detection	3 Areas or Better	
17.	Privacy Mask	3 Areas or Better	
18.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
19.	ROI	The Camera should allow at least 3 sections of the camera view to be streamed separately for distinguished viewing and recording.	
20.	Audio Compression	G.711a/G.711Mu	
21.	Audio	Built-in Mic	
22.	Audio Input & Output	1 Ch in & 1 Ch Out	
23.	Alarm Input & Output	1 Ch in & 1 Ch Out	
24.	Mirror Function	Supports	
25.	Protocol	SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, ONVIF (Profile S, Profile G, Profile T), unicast, multicast	
26.	Security Features	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot	
27.	Ethernet	RJ-45 (10/100Base-T)	
28.	Alarm Event	No SD card, SD card full, SD card error, Network disconnection, IP conflict, illegal access, Motion	

		detection, Video tampering, Tripwire, Intrusion, Audio detection, Voltage detection, Security exception	
29.	User	5 or better	
30.	Dual Light	8MP Dual Light Vandal Dome Camera (IR Range of 50 Mtrs , Warm Light Range of 30 Mtrs)	
31.	Warm Light	Warm Light Range of 30 Mtr. or better	
32.	IR Range	The camera should have Smart IR and cover distances up to 50 mtr or above.	
33.	Micro SD	SFTP, Mirco SD card (Max. 512GB)	
34.	Operating Temperature	-30 °C to +60 °C (–22 °F to 140 °F)	
35.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
36.	Weatherproof Standard	IP67 and IK10 with OEM Fitted Metal Body	
37.	Certifications	STQC approved compliance report, BIS, CE, FCC, RoHS, ISO 9001, 14001, 27001, 45001, 20000, CMMI Level 3 & Level 5, ISO/IEC 27032, GDPR	

ITEM NO. 4: 8MP FIXED BULLET CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	8MP Bullet Camera with Fixed Lens	
2.	Sensor	The camera should be equipped with a minimum of 1 /2.7-inch 8 MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 3840 (H) × 2160 (V) for high-definition video quality	
4.	Minimum Illumination	0.05 lux@F1.4 or better	
5.	Shutter Speed	Auto/Manual, 1/3~1/100000s	
6.	Lens	The Camera should be provided with an OEM fitted 3.6mm Lens	
7.	S/N Ratio	>57dB or better	
8.	Gain Control (AGC)	Auto/Manual	
9.	Video Compression	H.265/H.264	
10.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
11.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
12.	Stream Capability	Quad Stream or better	

13.	Video Streaming	Main stream: 8MP (3840 × 2160)@1–20 fps/ 4MP (2688 × 1520)@1–25/30 fps Sub stream 1: D1@(1–25/30 fps) Sub stream 2:D1@(1–25/30 fps) Sub stream 3:D1@1fps	
14.	Resolution	8MP,6MP,5MP,4MP,3MP,2MP, 1.3MP,720P can be set at any resolution as per requirement.	
15.	Intelligent features	Tripwire, Intrusion	
16.	Motion Detection	3 Areas or Better	
17.	Privacy Mask	3 Areas or Better	
18.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
19.	ROI	The Camera should allow at least 3 sections of the camera view to be streamed separately for distinguished viewing and recording.	
20.	Audio Compression	G.711a/G.711Mu	
21.	Audio	Built-in Mic	
22.	Audio Input & Output	1 Ch in & 1 Ch Out	
23.	Alarm Input & Output	1 Ch in & 1 Ch Out	
24.	Mirror Function	Supports	
25.	Protocol	SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE, NFS, UDP, UPnP, ICMP, SSL, DHCP, SMTP, RTSPS, ONVIF (Profile S, Profile G, Profile T), unicast, multicast	
26.	Security Features	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot	
27.	Ethernet	RJ-45 (10/100Base-T)	
28.	Alarm Event	No SD card, SD card full, SD card error, Network disconnection, IP conflict, illegal access, Motion detection, Video tampering, Tripwire, Intrusion, Audio detection, Voltage detection, Security exception, External alarm	
29.	User	5 or better	
30.	Dual Light	4MP Dual Light Bullet Camera (IR Range of 50 Mtrs , Warm Light Range of 30 Mtrs)	
31.	Warm Light	Warm Light Range of 30 Mtr. or better	
32.	IR Range	The camera should have Smart IR and cover distances up to 50 mtr or above.	
33.	Micro SD	SFTP, Mirco SD card (Max. 512GB)	

34.	Operating Temperature	-30 °C to +60 °C (–22 °F to 140 °F)	
35.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
36.	Weatherproof Standard	IP67 and IK10(Optional) with OEM Fitted Metal Body	
37.	Certifications	STQC approved compliance report, BIS, CE, FCC, RoHS, ISO 9001, 14001, 27001, 45001, 20000, CMMI Level 3 & Level 5, ISO/IEC 27032, GDPR	

ITEM NO. 5: 6MP FIXED BULLET CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	6MP Bullet Camera with Fixed Lens	
2.	Sensor	The camera should be equipped with a minimum of 1 /2.7-inch 6 MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 3288 (H) × 1850 (V) for high-definition video quality	
4.	Minimum Illumination	0.001 lux@F1.4 or better	
5.	Shutter Speed	Auto/Manual, 1/3~1/100000s	
6.	Lens	The Camera should be provided with an OEM fitted 3.6mm Lens	
7.	S/N Ratio	>52dB or better	
8.	Gain Control (AGC)	Auto/Manual	
9.	Video Compression	H.265/H.264	
10.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
11.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
12.	Stream Capability	Quad Stream or better	
13.	Video Streaming	Main stream: 6MP (3288 × 1850)@20 fps, 5MP (2688 × 1520)@25/30 fps; Sub Stream 1: D1@25fps, Sub Stream 2: D1@25fps, Sub Stream 3:D1@1fps	
14.	Resolution	6MP,5MP,4MP,3MP,2MP,1.3MP,720P Can be set at any resolution as per requirement.	
15.	Intelligent features	Tripwire, Intrusion	
16.	Motion Detection	3 Areas or Better	
17.	Privacy Mask	3 Areas or Better	
18.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	

19.	ROI	The Camera should allow at least 3 sections of the camera view to be streamed separately for distinguished viewing and recording.	
20.	Audio Compression	G.711a/G.711Mu	
21.	Audio	Built-in Mic	
22.	Audio Input & Output	1 Ch in & 1 Ch Out	
23.	Alarm Input & Output	1 Ch in & 1 Ch Out	
24.	Mirror Function	Supports	
25.	Protocol	IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, ONVIF (Profile S, Profile G, Profile T), unicast, multicast	
26.	Security Features	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot	
27.	Ethernet	RJ-45 (10/100Base-T)	
28.	Alarm Event	No SD card, SD card full, SD card error, Network disconnection, IP conflict, illegal access, Motion detection, Video tampering, Tripwire, Intrusion, Audio detection, Voltage detection, Security exception, External alarm	
29.	User	5 or better	
30.	Dual Light	6MP Dual Light Bullet Camera (IR Range of 50 Mtrs , Warm Light Range of 30 Mtrs)	
31.	Warm Light	Warm Light Range of 30 Mtr. or better	
32.	IR Range	The camera should have Smart IR and cover distances up to 50 mtr or above.	
33.	Micro SD	SFTP, Mirco SD card (Max. 128 GB or better)	
34.	Operating Temperature	-40 °C to +60 °C (–40 °F to 140 °F)	
35.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
36.	Weatherproof Standard	IP67 and IK10(Optional) with OEM Fitted Metal Body	
37.	Certifications	STQC approved compliance report, BIS, CE, FCC, RoHS.	

ITEM NO. 6: 6MP FIXED DOME CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	6MP Dome Camera with Fixed Lens	
2.	Sensor	The camera should be equipped with a minimum of 1 /2.7-inch 6 MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 3288 (H) × 1850 (V) for high-definition video quality	
4.	Minimum Illumination	0.001 lux@F1.4 or better	
5.	Shutter Speed	Auto/Manual, 1/3~1/100000s	
6.	Lens	The Camera should be provided with an OEM fitted 3.6mm Lens	
7.	S/N Ratio	>52dB or better	
8.	Gain Control (AGC)	Auto/Manual	
9.	Video Compression	H.265/H.264	
10.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
11.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
12.	Stream Capability	Quad Stream or better	
13.	Video Streaming	Main stream: 6MP (3288 × 1850)@20 fps, 5MP (2688 × 1520)@25/30 fps; Sub Stream 1: D1@25fps, Sub Stream 2: D1@25fps, Sub Stream 3:D1@1fps	
14.	Resolution	6MP,5MP,4MP,3MP,2MP,1.3MP,720P Can be set at any resolution as per requirement.	
15.	Intelligent features	Tripwire, Intrusion	
16.	Motion Detection	3 Areas or Better	
17.	Privacy Mask	3 Areas or Better	
18.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
19.	ROI	The Camera should allow at least 3 sections of the camera view to be streamed separately for distinguished viewing and recording.	
20.	Audio Compression	G.711a/G.711Mu	
21.	Audio	Built-in Mic	
22.	Audio Input & Output	1 Ch in & 1 Ch Out	

23.	Alarm Input & Output	1 Ch in & 1 Ch Out	
24.	Mirror Function	Supports	
25.	Protocol	SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, ONVIF (Profile S, Profile G, Profile T), unicast, multicast	
26.	Security Features	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade,	
27.	Ethernet	RJ-45 (10/100Base-T)	
28.	Alarm Event	No SD card, SD card full, SD card error, Network disconnection, IP conflict, illegal access, Motion detection, Video tampering, Tripwire, Intrusion, Audio detection, Voltage detection, Security exception	
29.	User	5 or better	
30.	Dual Light	6MP Dual Light Vandal Dome Camera (IR Range of 50 Mtrs , Warm Light Range of 30 Mtrs)	
31.	Warm Light	Warm Light Range of 30 Mtr. or better	
32.	IR Range	The camera should have Smart IR and cover distances up to 50 mtr or above.	
33.	Micro SD	SFTP, Mirco SD card (Max. 128 GB or better)	
34.	Operating Temperature	-40 °C to +60 °C (–40 °F to 140 °F)	
35.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
36.	Weatherproof Standard	IP67 and IK10 with OEM Fitted Metal Body	
37.	Certifications	STQC approved compliance report, BIS, CE, FCC, RoHS.	

ITEM NO. 7: 5MP BULLET VARIFOCAI CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	5 MP Bullet Camera	
2.	Sensor	1/1.8" image sensor	
3.	Resolution	2560 x 1920	
4.	Minimum Illumination	0.01 <u>Lux@F1.2</u> 0 Lux with IR	
5.	Shutter Speed	1/1 to 1/100,000 sec adjustable, slow shutter speed required	
6.	Features	Defog, 3D-DNR, HLC, BLC, white balance	
7.	Lens	2.7 – 13.55-50 mm MVF Lens	

8.	Gain Control (AGC)	Auto/ Manual	
9.	Video Compression	H.265, H2.64 Focus Control: Auto and Manual	
10.	Privacy Masking	4 or better	
11.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
12.	Audio Compression	G.711U & G.711A	
13.	Video Streaming	Min 4 streams @ H.265 Main stream: 5MP @ 25/30fps Sub stream: 1080P @ 25/30fps Third stream: VGA @25/20fps Fourth stream: VGA @25/30fps	
14.	Video Bitrate	16 Kbps-8Mbps	
15.	PT manual	Pan: 0-360 degree Tilt: 0-90 degree	
16.	Audio Input & Output	Built in Mic or 1/1(Full Duplex)	
17.	Alarm Input & Output	1/1	
18.	Protocol	TCP/IP, IPv4, IPv6, SSL, TLS, HTTP, HTTPS, HTTP-Base64, HTTP-Digest, DHCP, DNS, RTP, RTSP, RTSPS, RTCP, ICMP, NTP, SMTP, IGMP, SNMP (V1,V2,V3), UDP, Multicast, ONVIF Profile S, G, T &M	
19.	Privacy Masking	4 or better	
20.	Security Features	Authorised user name & Password, HTTPS with password, HTTPS digest authentication, watermark, RTSPS, AES 256 encryption, SHA256 and RSA2048, OTP, signed firmware, firmware anti-rollback, TEE (Trusted Execution Environment), TRNG, User Authentication, and encrypted firmware, Hardware secure boot	
21.	User	20 or better	
22.	IR Range	50 mtr or better	
23.	Micro SD	Min 2 TB or better	
24.	Operating Temperature	-40 to 70 degree	
25.	Power Source	12VDC/PoE (802.3af)	
26.	Weatherproof Standard	IP67, IK10 or better	
27.	Certifications	CE, FCC, BIS-ER, STQC, MTBF:1,00,000 hrs or better	

ITEM NO. 8: 5MP DOME VARIFOCAI CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	5 MP Dome Camera	
2.	Sensor	1/1.8" image sensor	
3.	Resolution	2560 x 1920	
4.	Minimum Illumination	0.02 Lux@F1.2 0 Lux with IR	
5.	Shutter Speed	1/1 to 1/100,000 sec adjustable, slow shutter speed required	
6.	Features	Defog, 3D-DNR, HLC, BLC, white balance	
7.	Lens	2.7 – 13.5/5-50 mm MVF Lens	
8.	Gain Control (AGC)	Auto/ Manual	
9.	Video Compression	H.265, H2.64 Focus Control: Auto and Manual	
10.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
11.	Audio Compression	G.711U & G.711A	
12.	Video Streaming	Min 4 streams @ H.265 Main stream: 5MP @ 25/30fps Sub stream: 1080P @ 25/30fps Third stream: VGA @25/20fps Fourth stream: VGA @25/30fps	
13.	Video Bitrate	16 Kbps-8Mbps	
14.	PT manual	Pan: 0-360 degree Tilt: 0-90 degree	
15.	Audio Input & Output	Built in Mic or 1/1(Full Duplex)	
16.	Alarm Input & Output	1/1	
17.	Protocol	TCP/IP, IPv4, IPv6, SSL, TLS, HTTP, HTTPS, HTTP-Base64, HTTP-Digest, DHCP, DNS, RTP, RTSP, RTSPS, RTCP, ICMP, NTP, SMTP, IGMP, SNMP (V1,V2,V3), UDP, Multicast, ONVIF Profile S, G, T & M	
18.	Security Features	Authorised user name & Password, HTTPS with password, HTTPS digest authentication, watermark, RTSPS, AES 256 encryption, SHA256 and RSA2048, OTP, signed firmware, firmware anti-rollback, TEE (Trusted Execution Environment), TRNG, User Authentication, and encrypted firmware, Hardware secure boot	
19.	User	20 or better	
20.	IR Range	50 mtr or better	

21.	Micro SD	Min 2 TB or better	
22.	Operating Temperature	-40 to 70 degree	
23.	Power Source	12VDC/PoE (802.3af)	
24.	Weatherproof Standard	IP67, IK10 or better	
25.	Certifications	CE, FCC, BIS-ER, STQC, MTBF:1,00,000 hrs or better	

ITEM NO. 9: 5MP BOX CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	5MP Box Camera	
2.	Sensor	The camera should be equipped with minimum of 1/2.7-inch 5MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 2960 (H) × 1668 (V)	
4.	Minimum Illumination	0.01 lux@F1.4 or better	
5.	Shutter Speed	Auto/Manual, 1/3~1/100000s	
6.	S/N Ratio	>60dB	
7.	Gain Control (AGC)	Auto/Manual	
8.	Video Compression	H.265/H.264	
9.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
10.	Defog	The camera should be equipped with Defog which can be used to help in improving the captured image in poor weather conditions such as smog, fog or smoke. The visibility of the cameras can be enhanced in any weather condition.	
11.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB WDR	
12.	Video Streaming	The camera should Support H.265 Quad Stream that are individually configurable	
13.	Frame Rate	Main stream: 5MP (2960 × 1668)@1–25/30 fps Sub stream 1: D1 (704 × 576/704 × 480)@1–25/30 fps Sub stream 2: 720p@1–25/30 fps Sub stream 3: D1 (704 × 576/704 × 480)@1fps	

14.	Resolution	5MP,4MP,2MP,1.3MP,720P, D1 & CIF can be set at any resolution as per requirement.	
15.	Motion Detection	4 Areas or Better	
16.	Privacy Mask	4 Areas or Better	
17.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
18.	ROI	The Camera should allow at least 4 sections of the camera view to be streamed separately for distinguished viewing and recording.	
19.	Mirror Function	Off/On	
20.	OSD (On Screen Display)	The Camera should support Camera title, Date & Time OSD Features	
21.	Audio Compression	G.711a/G.711Mu	
22.	Audio	Built-in Mic	
23.	Audio In/Out Port	1 Channel In/1 Channel Out	
24.	Alarm In/Out Port	2 Channel In/2 Channel Out	
25.	Protocol	IPv4, IPv6, HTTP, HTTPS, RTSPS, SMTP/SFTP, DHCP, DNS, UPnP, NTP, Multicast, PPPoE, SNMP, TLS Version 1.2, ONVIF (Profile S, Profile G, Profile T), Unicast, Multicast	
26.	Security Features	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot	
27.	Ethernet	RJ-45 (10/100Base-T)	
28.	Alarm Event	No SD card, SD card full, SD card error, Network disconnection, IP conflict, motion detection, Video tampering	
29.	User	20	
32.	Micro SD	Micro SD card (support max. 128 GB or better), NAS; SFTP	
33.	Operating Temperature	-30 °C to +60 °C (–22 °F to 140 °F)	
34.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
35.	Power Out	12 VDC power output	
36.	Casing	Metal Body	
37.	Certifications	MTBF Certificate from STQC, BIS, STQC approved compliance report, CE, RoHS, FCC.	

ITEM NO. 10: 5MP BULLET IP FIXED LENS CAMERA WITH SMART IR

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
3.	Imaging Device	1/2.7"	
4.	Effective Pixels	5MP, 2592(H)×1944(V)	
5.	Scanning System	Progressive CMOS	
6.	Min. Illumination	Color 0.003lux @ F1.6(AGC ON); B/W 0 lux @ IR ON	
7.	Focal Length (Zoom Ratio)	3.6mm	
8.	Max. Aperture Ratio	F No. 1.6	
9.	Min. Object Distance	2m	
10.	Lens Type	Fixed(M12)	
11.	Smart IR	Support	
12.	IR Viewable Length	Up to 30m	
13.	Camera Title	On/Off	
14.	Day & Night	IR cut filter with auto switch (Day/Night/Auto/Image/Schedule)	
15.	Backlight Compensation	Off/On (5 Zone)	
16.	Wide Dynamic Range	True WDR	
17.	Digital Noise Reduction	3D DNR	
18.	Motion Detection	Off/On (8 Level)	
19.	Privacy Masking	Off/On (4 Zone, Rectangle)	
20.	Gain Control	Auto	
21.	White Balance	Auto/Manual	
22.	Electronic Shutter Speed	1/5s ~ 1/20,000s	
23.	On-Board Storage Interface	Support via Micro SD Interface	
24.	On-Board Storage	Up to 512GB	
25.	External Storage Support	Supports recording/storage over NAS devices	
26.	Audio	Built-in microphone	
27.	Audio Code Type	G.711A/ G.711U	
28.	Hardware Reset	Yes	
29.	Analytics Support	Built-in Edge Analytics Supported	
30.	Smart Feature	Face Detection, Face Recognition, Pedestrian & Vehicle Classification, Perimeter Intrusion Detection,	

		Loitering Detection, Line Crossing Detection, Object Detection, Abandoned Object Detection, Cross Counting, Heat Map, Crowd Density Detection, Queue Length Detection, Rare Sound Detection, Intrusion Detection, Region Entrance Detection, Region Exiting Detection, Motion Detection, Video Tamper Detection	
31.	Smart Feature Scheduling	Supports scheduling for smart features	
32.	Simultaneous Analytics Support	Supports up to 2 analytics simultaneously	
33.	Report Export	Analytics reports/data shall be exportable in Excel (.xls/.xlsx) or CSV format	
34.	Ethernet	RJ45(10/100BASE-T)	
35.	Video Compression Format	H.265+/ H.265/ H.264+/ H.264	
36.	Resolution	Main Stream @25/30 FPS 5MP(2592x1944),4MP(2592x1520),3MP(2304x1296), 1080P(1920x1080), 960P(1280*960) Sub Stream @25/30 FPS 1080P(1920x1080), 720P(1280x720),VGA(640x480) Third Stream @25/30 FPS VGA(640x480), QVGA (320x240)	
37.	Frame Rate	All video streams shall support real-time streaming at 25/30 FPS	
38.	Video Stream Support	Camera shall support 3 independent video streams, with minimum 2 streams supporting HD resolution	
39.	Video Quality Ajustment	256Kbps ~ 8Mbps	
40.	Bitrate control method	CBR/VBR	
41.	Streaming Capability	Triple-Stream(Main/Sub/Third)	
42.	Protocol	IPv4, IPv6, TCP/IP, HTTPS, RTSP/RTP/RTCP, IGMP/Multicast, SMTP, SNMP, DHCP, NTP, UPnP, UDP, ARP, TLS, SFTP	
43.	ANR Support	Supports Automatic Network Replenishment (ANR) functionality	
44.	Web browser	IE10/11 Safari V12.1 above Firefox V.52 above Google chrome V.57 above Edge V.79 above	

45.	Security	IP address filter;complicated password; Authenticated username and password	
46.	Streaming Method	Unicast/Multicast	
47.	Application Programming Interface	ONVIF(Profile S/G/T/M)	
48.	Operating Conditions	-35°C~+60°C/less than $\leq 95\%$ RH	
49.	Ingress Protection	IP67	
50.	Input Voltage / Current	D12V/POE(IEEE802.3af)	
51.	DC Power Interface	The DC interface shall support both power input and power output functionality when powered through PoE	
52.	Power Consumption (IR OFF)	2.5W-3.5W	
53.	Power Consumption (IR ON)	4.5W-6W	
54.	Material	Metal	
55.	Certification	NDAA, CE, FCC, RoHS, BIS-ER/STQC	

ITEM NO. 11: 5MP DOME IP FIXED LENS CAMERA WITH SMART IR

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	Imaging Device	1/2.7"	
2.	Effective Pixels	5MP 2592(H)×1944(V)	
3.	Scanning System	Progressive CMOS	
4.	Min. Illumination	Color 0.003lux @ F1.6(AGC ON) ; B/W 0 lux @ IR ON	
5.	Focal Length (Zoom Ratio)	3.6mm	
6.	Max. Aperture Ratio	F No. 1.6	
7.	Min. Object Distance	2m	
8.	Lens Type	Fixed(M12)	
9.	Smart IR	Support	

10.	IR Viewable Length	Up to 30m	
11.	Camera Title	On/Off	
12.	Day & Night	IR cut filter with auto switch (Day/Night/Auto/Image/Schedule)	
13.	Backlight Compensation	Off/On (5 Zone)	
14.	Wide Dynamic Range	True WDR	
15.	Digital Noise Reduction	3D DNR	
16.	Motion Detection	Off/On (8 Level)	
17.	Privacy Masking	Off/On (4 Zone, Rectangle)	
18.	Gain Control	Auto	
19.	White Balance	Auto/Manual	
20.	Electronic Shutter Speed	1/5s ~ 1/20,000s	
21.	On-Board Storage Interface	Support via Micro SD Interface	
22.	On-Board Storage	Up to 512GB	
23.	External Storage Support	Supports recording/storage over NAS devices	
24.	Audio	Built-in microphone	
25.	Audio Code Type	G.711A/ G.711U	
26.	Hardware Reset	Yes	
27.	Analytics Support	Built-in Edge Analytics Supported	
28.	Smart Feature	Face Detection, Face Recognition, Pedestrian & Vehicle Classification, Perimeter Intrusion Detection, Loitering Detection, Line Crossing Detection, Object Detection, Abandoned Object Detection, Cross Counting, Heat Map, Crowd Density Detection, Queue Length Detection, Rare Sound Detection, Intrusion Detection, Region Entrance Detection, Region Exiting Detection, Motion Detection, Video Tamper Detection	
29.	Smart Feature Scheduling	Supports scheduling for smart features	
30.	Simultaneous Analytics Support	Supports up to 2 analytics simultaneously	
31.	Report Export	Analytics reports/data shall be exportable in Excel (.xls/.xlsx) or CSV format	
32.	Ethernet	RJ45(10/100BASE-T)	

33.	Video Compression Format	H.265+/H.265/H.264+/H.264	
34.	Resolution	Main Stream @25/30 FPS 5MP(2592x1944),4MP(2592x1520),3MP(2304x1296), 1080P(1920x1080), 960P(1280*960) Sub Stream @25/30 FPS 1080P(1920x1080), 720P(1280x720),VGA(640x480) Third Stream @25/30 FPS VGA(640x480), QVGA (320x240)	
35.	Frame Rate	All video streams shall support real-time streaming at 25/30 FPS	
36.	Video Stream Support	Camera shall support 3 independent video streams, with minimum 2 streams supporting HD resolution	
37.	Video Quality Ajustment	256Kbps ~ 8Mbps	
38.	Bitrate control method	CBR/VBR	
39.	Streaming Capability	Triple-Stream(Main/Sub/Third)	
40.	Protocol	IPv4, IPv6, TCP/IP, HTTPS, RTSP/RTP/RTCP, IGMP/Multicast, SMTP, SNMP, DHCP, NTP, UPnP, UDP, ARP, TLS, SFTP	
41.	ANR Support	Supports Automatic Network Replenishment (ANR) functionality	
42.	Web browser	IE10/11 Safari V12.1 above Firefox V.52 above Google chrome V.57 above Edge V.79 above	
43.	Security	IP address filter;complicated password;Authenticated username and password	
44.	Streaming Method	Unicast/Multicast	
45.	Application Programming Interface	ONVIF(Profile S/G/T/M)	
46.	Operating Conditions	-35~+60°C/less than ≤ 95% RH	
47.	Ingress Protection	IP67	
48.	Input Voltage / Current	D12V/POE(IEEE802.3af)	
49.	DC Power Interface	The DC interface shall support both power input and power output functionality when powered through PoE	

50.	Power Consumption (IR OFF)	2.5W-3.5W	
51.	Power Consumption (IR ON)	4.5W-6W	
52.	Material	Metal	
53.	Certification	NDAA, CE, FCC, RoHS, BIS-ER/STQC	

ITEM NO. 12: 5MP DOME IP FIXED LENS VANDAL PROOF CAMERA WITH SMART IR

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	Imaging Device	1/2.7"	
2.	Effective Pixels	5MP 2592(H)×1944(V)	
3.	Scanning System	Progressive CMOS	
4.	Min. Illumination	Color 0.003lux @ F1.6(AGC ON) ; B/W 0 lux @ IR ON	
5.	Focal Length (Zoom Ratio)	2.8mm	
6.	Max. Aperture Ratio	F No. 1.6	
7.	Min. Object Distance	1.8m	
8.	Lens Type	Fixed(M12)	
9.	Smart IR	Support	
10.	IR Viewable Length	Up to 30m	
11.	Camera Title	On/Off	
12.	Day & Night	IR cut filter with auto switch (Day/Night/Auto/Image/Schedule)	
13.	Backlight Compensation	Off/On (5 Zone)	
14.	Wide Dynamic Range	True WDR	
15.	Digital Noise Reduction	3D DNR	
16.	Motion Detection	Off/On (8 Level)	

17.	Privacy Masking	Off/On (4 Zone, Rectangle)	
18.	Gain Control	Auto	
19.	White Balance	Auto/Manual	
20.	Electronic Shutter Speed	1/5s ~ 1/20000s	
21.	On-Board Storage Interface	Support via Micro SD Interface	
22.	On-Board Storage	Up to 512GB	
23.	External Storage Support	Supports recording/storage over NAS devices	
24.	Alarm	1 input, 1 output	
25.	Audio	1 input (RCA), 1 output (RCA)	
26.	Audio Code Type	G.711A/ G.711U	
27.	Hardware Reset	Yes	
28.	Analytics Support	Built-in Edge Analytics Supported	
29.	Smart Feature	Face Detection, Face Recognition, Pedestrian & Vehicle Classification, Perimeter Intrusion Detection, Loitering Detection, Line Crossing Detection, Object Detection, Abandoned Object Detection, Cross Counting, Heat Map, Crowd Density Detection, Queue Length Detection, Rare Sound Detection, Intrusion Detection, Region Entrance Detection, Region Exiting Detection, Motion Detection, Video Tamper Detection	
30.	Smart Feature Scheduling	Supports scheduling for smart features	
31.	Simultaneous Analytics Support	Supports up to 2 analytics simultaneously	
32.	Report Export	Analytics reports/data shall be exportable in Excel (.xls/.xlsx) or CSV format	
33.	Ethernet	RJ45(10/100BASE-T)	
34.	Video Compression Format	H.265+/ H.265/ H.264+/ H.264	
35.	Resolution	Main Stream @25/30 FPS 5MP(2592x1944),4MP(2592x1520),3MP(2304x1296), 1080P(1920x1080), 960P(1280*960) Sub Stream @25/30 FPS 1080P(1920x1080), 720P(1280x720),VGA(640x480) Third Stream @25/30 FPS VGA(640x480), QVGA (320x240)	
36.	Frame Rate	All video streams shall support real-time streaming at 25/30 FPS	

37.	Video Stream Support	Camera shall support 3 independent video streams, with minimum 2 streams supporting HD resolution	
38.	Video Quality Ajustment	256Kbps ~ 8Mbps	
39.	Bitrate control method	CBR/VBR	
40.	Streaming Capability	Triple-Stream(Main/Sub/Third)	
41.	Protocol	IPv4, IPv6, TCP/IP, HTTPS, RTSP/RTP/RTCP, IGMP/Multicast, SMTP, SNMP, DHCP, NTP, UPnP, UDP, ARP, TLS, SFTP	
42.	ANR Support	Supports Automatic Network Replenishment (ANR) functionality	
43.	Web browser	IE10/11 Safari V12.1 above Firefox V.52 above Google chrome V.57 above Edge V.79 above	
44.	Security	IP address filter;complicated password;Authenticated username and password	
45.	Streaming Method	Unicast/Multicast	
46.	Application Programming Interface	ONVIF(Profile S/G/T/M)	
47.	Operating Conditions	-35~+60°C/less than $\leq$ 95% RH	
48.	Ingress Protection	IP67	
49.	Impact Protection	IK10	
50.	Input Voltage / Current	D12V/POE(IEEE802.3af)	
51.	DC Power Interface	The DC interface shall support both power input and power output functionality when powered through PoE	
52.	Power Consumption (IR OFF)	2.5W-3.5W	
53.	Power Consumption (IR ON)	4W-5.5W	
54.	Material	Metal	
55.	Certification	NDAA, CE, FCC, RoHS, BIS-ER/STQC	

ITEM NO. 13: 5MP BULLET IP MOTORIZED LENS CAMERA WITH SMART IR

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	Imaging Device	1/2.7"	
2.	Effective Pixels	5MP, 2880 (H) x1620 (V)	
3.	Scanning System	Progressive CMOS	
4.	Min. Illumination	Color 0.004lux @ F1.6(AGC ON); B/W 0 lux @ IR ON	
5.	Focal Length (Zoom Ratio)	2.8-12mm	
6.	Optical Zoom	Supported 4.2X Optical Zoom	
7.	Max. Aperture Ratio	F No. 1.8 (W) ~ 3.3(T)	
8.	Min. Object Distance	0.2M~INF	
9.	Lens Type	Motorized(Ø14)	
10.	Smart IR	Support	
11.	IR Viewable Length	Up to 50m	
12.	Camera Title	On/Off	
13.	Day & Night	IR cut filter with auto switch (Day/Night/Auto/Image/Schedule)	
14.	Backlight Compensation	Off/On (5 Zone)	
15.	Wide Dynamic Range	True WDR	
16.	Digital Noise Reduction	3D DNR	
17.	Motion Detection	Off/On (8 Level)	
18.	Privacy Masking	Off/On (4 Zone, Rectangle)	
19.	Gain Control	Auto	
20.	White Balance	Auto/Manual	
21.	Electronic Shutter Speed	1/5s ~ 1/20,000s	
22.	On-Board Storage Interface	Support via Micro SD Interface	
23.	On-Board Storage	Up to 512GB	
24.	External Storage Support	Supports recording/storage over NAS devices	
25.	Alarm Interface	1 input, 1 output	
26.	Audio Interface	1 input (RCA), 1 output (RCA)	
27.	Audio Code Type	G.711A/ G.711U	
28.	Hardware Reset	Yes	

29.	Analytics Support	Built-in Edge Analytics Supported	
30.	Smart Feature	Face Detection, Face Recognition, Pedestrian & Vehicle Classification, Perimeter Intrusion Detection, Loitering Detection, Line Crossing Detection, Object Detection, Abandoned Object Detection, Cross Counting, Heat Map, Crowd Density Detection, Queue Length Detection, Rare Sound Detection, Intrusion Detection, Region Entrance Detection, Region Exiting Detection, Motion Detection, Video Tamper Detection	
31.	Smart Feature Scheduling	Supports scheduling for smart features	
32.	Simultaneous Analytics Support	Supports up to 2 analytics simultaneously	
33.	Report Export	Analytics reports/data shall be exportable in Excel (.xls/.xlsx) or CSV format	
34.	Ethernet	RJ45(10/100BASE-T)	
35.	Video Compression Format	H.265+/H.265/H.264+/H.264	
36.	Resolution	Main stream@25/30fps: 5MP(2880x1620), 4MP(2560x1440), 3MP(2304x1296),1080P(1920x1080), 720P(1280x720) Sub stream@25/30fps: 720P(1280x720),VGA(640x480),QVGA(320x240) Third stream@/2530fps: VGA(640x480), QVGA (320x240)	
37.	Frame Rate	All video streams shall support real-time streaming at 25/30 FPS	
38.	Video Stream Support	Camera shall support 3 independent video streams, with minimum 2 streams supporting HD resolution	
39.	Video Quality Ajustment	256Kbps ~ 8Mbps	
40.	Bitrate control method	CBR/VBR	
41.	Streaming Capability	Triple-Stream(Main/Sub/Third)	
42.	Protocol	IPv4, IPv6, TCP/IP, HTTPS, RTSP/RTP/RTCP, IGMP/Multicast, SMTP, SNMP, DHCP, NTP, UPnP, UDP, ARP, TLS, SFTP	
43.	ANR Support	Supports Automatic Network Replenishment (ANR) functionality	
44.	Web browser	IE10/11 Safari V12.1 above	

		Firefox V.52 above Google chrome V.57 above Edge V.79 above	
45.	Security	IP address filter;complicated password;Authenticated username and password	
46.	Streaming Method	Unicast/Multicast	
47.	Application Programming Interface	ONVIF(Profile S/G/T/M)	
48.	Operating Conditions	-35°C~+60°C/less than $\leq 95\%$ RH	
49.	Ingress Protection	IP67	
50.	Input Voltage / Current	D12V/POE(IEEE802.3af)	
51.	DC Power Interface	The DC interface shall support both power input and power output functionality when powered through PoE	
52.	Power Consumption (IR OFF)	3W-4W	
53.	Power Consumption (IR ON)	7W-9W	
54.	Material	Metal	
55.	Certification	NDAA, CE, FCC, RoHS, BIS-ER/STQC	

ITEM NO. 14: 5MP BULLET LPD EMBEDDED IP MOTORIZED LENS CAMERA WITH SMART IR

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	Imaging Device	1/2.7"	
2.	Effective Pixels	5MP 2880 (H) x1620 (V)	
3.	Scanning System	Progressive CMOS	
4.	Min. Illumination	Color 0.004lux @ F1.6(AGC ON); B/W 0 lux @ IR ON	
5.	Focal Length (Zoom Ratio)	5mm ~ 50 mm	
6.	Optical Zoom	Supported 10X Optical Zoom	
7.	Max. Aperture Ratio	F No. 2.0±5%	

8.	Min. Object Distance	0.2m~∞	
9.	Lens Type	Motorized(Ø14)	
10.	Smart IR	Support	
11.	IR Viewable Length	Up to 80m	
12.	Camera Title	On/Off	
13.	Day & Night	IR cut filter with auto switch (Day/Night/Auto/Image/Schedule)	
14.	Backlight Compensation	Off/On (5 Zone)	
15.	Wide Dynamic Range	True WDR	
16.	Digital Noise Reduction	3D DNR	
17.	Motion Detection	Off/On (8 Level)	
18.	Privacy Masking	Off/On (4 Zone, Rectangle)	
19.	Gain Control	Auto	
20.	White Balance	Auto/Manual	
21.	Electronic Shutter Speed	1/5s ~ 1/20,000s	
22.	On-Board Storage Interface	Support via Micro SD Interface	
23.	On-Board Storage	Up to 512GB	
24.	External Storage Support	Supports recording/storage over NAS devices	
25.	Alarm	1 input, 1 output	
26.	Audio	1 input (RCA), 1 output (RCA)	
27.	Audio Code Type	G.711A/ G.711U	
28.	Hardware Reset	Yes	
29.	Analytics Support	Built-in Edge Analytics Supported	
30.	Smart Feature	Licenses Plate Detection/ Recognition, Face Detection, Face Recognition, Pedestrian & Vehicle Classification, Perimeter Intrusion Detection, Loitering Detection, Line Crossing Detection, Object Detection, Abandoned Object Detection, Cross Counting, Heat Map, Crowd Density Detection, Queue Length Detection, Rare Sound Detection, Intrusion Detection, Region Entrance Detection, Region Exiting Detection, Motion Detection, Video Tamper Detection	
31.	Embedded Licenses Plate Detection	Support	

32.	Smart Feature Scheduling	Supports scheduling for smart features	
33.	Simultaneous Analytics Support	Supports up to 2 analytics simultaneously	
34.	Report Export	Analytics reports/data shall be exportable in Excel (.xls/.xlsx) or CSV format	
35.	Ethernet	RJ45(10/100BASE-T)	
36.	Video Compression Format	H.265+/H.265/H.264+/H.264	
37.	Resolution	Main stream@25/30fps: 5MP(2880x1620), 4MP(2560x1440), 3MP(2304x1296),1080P(1920x1080), 720P(1280x720) Sub steam@25/30fps: 720P(1280x720),VGA(640x480),QVGA(320x240) Third stream@/2530fps: VGA(640x480), QVGA (320x240)	
38.	Max. Framerate	50Hz: 25fps@5MP 60Hz: 30fps@5MP	
39.	Frame Rate	All video streams shall support real-time streaming at 25/30 FPS	
40.	Video Stream Support	Camera shall support 3 independent video streams, with minimum 2 streams supporting HD resolution	
41.	Video Quality Ajustment	256Kbps ~ 8Mbps	
42.	Bitrate control method	CBR/VBR	
43.	Streaming Capability	Triple-Stream(Main/Sub/Third)	
44.	Protocol	IPv4, IPv6, TCP/IP, HTTPS, RTSP/RTP/RTCP, IGMP/Multicast, SMTP, SNMP, DHCP, NTP, UPnP, UDP, ARP, TLS, SFTP	
45.	ANR Support	Supports Automatic Network Replenishment (ANR) functionality	
46.	Web browser	IE10/11 Safari V12.1 above Firefox V.52 above Google chrome V.57 above Edge V.79 above	
47.	Security	IP address filter;complicated password;Authenticated username and password	
48.	Streaming Method	Unicast/Multicast	

49.	Application Programming Interface	ONVIF(Profile S/G/T/M)	
50.	Operating Conditions	-30~+60°C/less than $\leq$ 90% RH	
51.	Ingress Protection	IP67	
52.	Input Voltage / Current	D12V/POE(IEEE802.3af)	
53.	DC Power Interface	The DC interface shall support both power input and power output functionality when powered through PoE	
54.	Material	Metal	
55.	Certification	NDAA, CE, FCC, RoHS, BIS-ER/STQC	

ITEM NO. 15: VARIFOCAL LENS 5-50MM FOR BOX CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Focal length	5-50mm	
2	Lens Pixel	5MP or better	
3	Image format	1/2.7"	
4	Aperture	F 1.6	
5	Mount	CS	
6	Field of Angle	1/2.7" - W: 65.7°(D)x49.6°(H)x36.9°(V)~T: 5.2°(D)x7°(H)x5.2°(V) , 1/2.9"(3:2) -W: 58.1°(D)x47°(H)x33.2°(V)~T: 8.1°(D)x6.6°(H)x4.7°(V) , 1/4" - W: 42°(D)x33°(H)x25°(V)~T: 5.9°(D)x4.7°(H)x3.6°(V)	
7	Min. object Dimension	0.5m	
8	IR Correction	Yes	
9	Zoom	Manual	
10	Focus	Manual	
11	Iris	DC-Iris	
12	Operating temperature	-30°C~+70°C (-22°F~+158°F) , <90% RH	

ITEM NO. 16: 4MP VARIFOCAL BULLET CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	4MP Bullet Camera with Motorized Varifocal Lens	

2.	Sensor	The camera should be equipped with a minimum of 1 / 2.7-inch 4MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 2560 (H) × 1440 (V) for high-definition video quality	
4.	Minimum Illumination	0.001 lux@F1.4 or better	
5.	Shutter Speed	Auto/Manual, 1/3s~1/10000s	
6.	Lens	2.8–13 mm (± 5%) with OEM Fitted Varifocal Motorized lens	
7.	Mirror Function	Supports	
8.	S/N Ratio	>57 dB or better	
9.	Warm Light	Warm Light Range of 60 Mtr.	
10.	Gain Control (AGC)	Auto/Manual	
11.	Video Compression	H.265/H.264	
12.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
13.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
14.	Stream Capability	Quad Stream or better	
16.	Video Streaming	Main stream: 4M (2688 × 1520)@1–20 fps/ (2560×1440)1~25/30fps Sub stream 1: D1@1–25/30 fps Sub stream 2: D1@1–25/30 fps Sub stream 3: D1@1fps	
17.	Resolution	4MP,3MP,2MP,1.3MP,720P, D1 & CIF can be set at any resolution as per requirement	
18.	Motion Detection	Supports	
19.	Privacy Mask	Supports	
20.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
21.	Dual Light	4MP Dual Light Bullet Camera (IR Range of 60 Mtrs, Warm Light Range of 60 Mtrs)	
22.	ROI	The Camera should allow at least 3 sections of the camera view to be streamed separately for distinguished viewing and recording.	
23.	Audio Compression	G.711a/G.711Mu	
24.	Audio In/Out	1 Channel in/1 Channel Out	
25.	Alarm In/Out	1 Channel in/1 Channel Out	
26.	Built in Mic	Supported	
27.	Intelligent features	Tripwire, Intrusion	
28.	Protocol	SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE,	

		NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, ONVIF (Profile S, Profile G, Profile T), unicast, multicast	
29.	Ethernet	RJ-45 (10/100Base-T)	
30.	Event Trigger	No SD card, SD card full, SD card error, Network disconnection, IP conflict, illegal access, Motion detection, Video tampering, Tripwire, Intrusion, Audio detection, Voltage detection, Security exception, External alarm	
31.	Cyber Security	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot	
32.	User	5 or better	
33.	Micro SD	Micro SD card (support max. 128 GB or better); SFTP	
34.	Operating Temperature	-30 °C to +60 °C (−22 °F to 140 °F)	
35.	IR Range	Up to 60 Meter or Better	
36.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
37.	Housing	IP67 & IK10(Optional)	
38.	Certifications	STQC approved compliance report, BIS, CE, FCC, RoHS.	

ITEM NO. 17: 4MP VARIFOCAI DOME CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	4MP Dome Camera with Motorized Varifocal Lens	
2.	Sensor	The camera should be equipped with a minimum of 1/2.7-inch 4MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 2560 (H) × 1440 (V) for high-definition video quality	
4.	Minimum Illumination	0.001 lux@F1.4 or better	
5.	Shutter Speed	Auto/Manual, 1/3s~1/10000s	
6.	Lens	2.8–13 mm (± 5%) with OEM Fitted Varifocal Motorized lens	
7.	Mirror Function	Supports	
8.	S/N Ratio	>57 dB or better	
9.	Gain Control (AGC)	Auto/Manual	
10.	Video Compression	H.265/H.264	

11.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
12.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
13.	Stream Capability	Quad Stream or better	
14.	Video Streaming	Main stream: 4M (2688 × 1520)@1–20 fps/ (2560×1440)1~25/30fps Sub stream 1: 720p@1–25/30 fps Sub stream 2: D1@1–25/30 fps Sub stream 3: D1@1fps	
16.	Resolution	4MP,3MP,2MP,1.3MP,720P, D1 & CIF can be set at any resolution as per requirement	
17.	Motion Detection	Supports	
18.	Privacy Mask	Supports	
19.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
20.	ROI	The Camera should allow at least 3 sections of the camera view to be streamed separately for distinguished viewing and recording.	
21.	Audio Compression	G.711a/G.711Mu	
22.	Audio In/Out	1 Channel in/1 Channel Out	
23.	Alarm In/Out	1 Channel in/1 Channel Out	
24.	Built in Mic	Supported	
25.	Intelligent features	Tripwire, Intrusion	
26.	Protocol	SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE, NFS, UDP, UPnP, ICMP, SSL, DHCP, SMTP, RTSPS, ONVIF (Profile S, Profile G, Profile T), unicast, multicast	
27.	Ethernet	RJ-45 (10/100Base-T)	
28.	Alarm Event	No SD card, SD card full, SD card error, Network disconnection, IP conflict, illegal access, Motion detection, Video tampering, Tripwire, Intrusion, Audio detection, Voltage detection, External alarm, Security exception	
29.	Cyber Security	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot	
30.	User	5 or better	
31.	Micro SD	Micro SD card (support max. 128 GB or better); SFTP	
32.	Operating Temperature	-30 °C to +60 °C (–22 °F to 140 °F)	
33.	IR Range	Up to 50 Meter or Better	

34.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
35.	Housing	IP67 & IK10	
36.	Certifications	STQC approved compliance report, BIS, CE, FCC, RoHS.	

ITEM NO. 18: 4MP FIXED BULLET CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	4MP Bullet Camera with Fixed Lens	
2.	Sensor	The camera should be equipped with a minimum of 1 /2.7-inch 4 MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 2560 (H) × 1440 (V) for high-definition video quality	
4.	Minimum Illumination	0.05 lux@F1.4 or better	
5.	Shutter Speed	Auto/Manual, 1/3~1/100000s	
6.	Lens	The Camera should be provided with an OEM fitted 3.6mm Lens	
7.	S/N Ratio	>57dB or better	
8.	Gain Control (AGC)	Auto/Manual	
9.	Video Compression	H.265/H.264	
10.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
11.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
12.	Stream Capability	Quad Stream or better	
13.	Video Streaming	Mainstream: 2688 × 1520@ (1–20 fps)/2560×1440(1~25/30fps) Sub stream 1: D1@(1–25/30 fps); Sub stream 2: D1@(1–25/30 fps); Sub stream 3: D1@1fps	
14.	Resolution	4MP,3MP,2MP,1.3MP,720P Can be set at any resolution as per requirement.	
15.	Intelligent features	Tripwire, Intrusion	
16.	Motion Detection	3 Areas or Better	
17.	Privacy Mask	3 Areas or Better	
18.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
19.	ROI	The Camera should allow at least 3 sections of the camera view to be streamed separately for distinguished viewing and recording.	

20.	Audio Compression	G.711a/G.711Mu	
21.	Audio	Built-in Mic	
22.	Audio Input & Output	1 Ch in & 1 Ch Out	
23.	Alarm Input & Output	1 Ch in & 1 Ch Out	
24.	Mirror Function	Supports	
25.	Protocol	SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, ONVIF (Profile S, Profile G, Profile T), unicast, multicast	
26.	Security Features	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot	
27.	Ethernet	RJ-45 (10/100Base-T)	
28.	Alarm Event	Network disconnection, IP conflict, illegal access, Motion detection, Video tampering, Tripwire, Intrusion, Audio detection, External alarm,Security exception	
29.	User	5 or better	
30.	Dual Light	4MP Dual Light Bullet Camera (IR Range of 50 Mtrs , Warm Light Range of 30 Mtrs)	
31.	Warm Light	Warm Light Range of 30 Mtr. or better	
32.	IR Range	The camera should have Smart IR and cover distances up to 50 mtr or above.	
33.	Micro SD	SFTP, Mirco SD card (Max. 128 GB or better)	
34.	Operating Temperature	-30 °C to +60 °C (–22 °F to 140 °F)	
35.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
36.	Weatherproof Standard	IP67 and IK10(Optional) with OEM Fitted Metal Body	
37.	Certifications	STQC approved compliance report, BIS, CE, FCC, RoHS.	

ITEM NO. 19: 4MP FIXED DOME CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	4MP Dome Camera with Fixed Lens	
2.	Sensor	The camera should be equipped with a minimum of 1 /2.7-inch 4 MP CMOS sensor applying progressive	

		scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 2560 (H) × 1440 (V) for high-definition video quality	
4.	Minimum Illumination	0.05 lux@F1.4 or better	
5.	Shutter Speed	Auto/Manual, 1/3~1/100000s	
6.	Lens	The Camera should be provided with an OEM fitted 3.6mm Lens	
7.	S/N Ratio	>57dB or better	
8.	Gain Control (AGC)	Auto/Manual	
9.	Video Compression	H.265/H.264	
10.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
11.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
12.	Stream Capability	Quad Stream or better	
13.	Video Streaming	Mainstream: 2688 × 1520@ (1–20 fps)/2560×1440(1~25/30fps) Sub stream 1: D1@(1–25/30 fps); Sub stream 2: D1@(1–25/30 fps); Sub stream 3: D1@1fps	
14.	Resolution	4MP,3MP,2MP,1.3MP,720P Can be set at any resolution as per requirement.	
15.	Intelligent features	Tripwire, Intrusion	
16.	Motion Detection	3 Areas or Better	
17.	Privacy Mask	3 Areas or Better	
18.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
19.	ROI	The Camera should allow at least 3 sections of the camera view to be streamed separately for distinguished viewing and recording.	
20.	Audio Compression	G.711a/G.711Mu	
21.	Audio	Built-in Mic	
22.	Audio Input & Output	1 Ch in & 1 Ch Out	
23.	Alarm Input & Output	1 Ch in & 1 Ch Out	
24.	Mirror Function	Supports	
25.	Protocol	SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, ONVIF (Profile S, Profile G, Profile T), unicast, multicast	

26.	Security Features	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot	
27.	Ethernet	RJ-45 (10/100Base-T)	
28.	Alarm Event	Network disconnection, IP conflict, illegal access, Motion detection, Video tampering, Tripwire, Intrusion, Audio detection, External alarm, Security exception	
29.	User	5 or better	
30.	Dual Light	4MP Dual Light Vandal Dome Camera (IR Range of 50 Mtrs , Warm Light Range of 30 Mtrs)	
31.	Warm Light	Warm Light Range of 30 Mtr. or better	
32.	IR Range	The camera should have Smart IR and cover distances up to 50 mtr or above.	
33.	Micro SD	SFTP, Mirco SD card (Max. 128 GB or better)	
34.	Operating Temperature	-30 °C to +60 °C (–22 °F to 140 °F)	
35.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
36.	Weatherproof Standard	IP67 and IK10 with OEM Fitted Metal Body	
37.	Certifications	STQC approved compliance report, BIS, CE, FCC, RoHS.	

ITEM NO. 20: 4MP LICENSE PLATE READING CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	4MP LPR Camera with Varifocal Motorized Lens	
2.	Sensor	The camera should be equipped with minimum of 1/1.8" 4 MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 2688 (H) × 1520 (V) for high quality Video Recording	
4.	Minimum Illumination	0.01 lux@F1.2 or better	
5.	Shutter Speed	Auto/Manual, 1/50s~1/10000s	
6.	Lens	The Camera should be provided with an OEM fitted 10mm -50mm (±5) Motorized Lens	
7.	S/N Ratio	>55dB or better	
8.	Gain Control (AGC)	Auto/Manual	
9.	Video Compression	H.265/H.264	

10.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
11.	Wide Dynamic Range	The camera should give a WDR range of minimum 140dB WDR	
12.	Video Streaming	Main stream (2688 × 1520@30 fps), sub stream (1600 × 1200@30 fps)	
13.	Resolution	4MP,2MP,1.3MP,720P, D1 & CIF can be set at any resolution as per requirement.	
14.	ICR	Supports ICR auto switch: IR cut-off filter (IRCF) with the polarizing filter is used during the daytime, and switches to the common IR cut-off filter at night	
15.	Trigger Mode	Video detection	
16.	OSD Overlay	Time, Address, Device SN, Lane No., Plate number, Plate color, Vehicle logo, Vehicle type, Vehicle color, Vehicle size, Vehicle speed, Country/region, Event (violation name), and motor-cycle attributes (Type, Number of people, and Helmet)	
17.	Automatic Network Recovery (ANR)	Platform, FTP (SD card is required)	
18.	Image Tampering	Verifies watermarks in videos and images	
19.	Security	Authorized username and password, MAC address binding, HTTPS encryption, and network access control	
20.	Defog	The camera should be equipped with Defog which can be used to help in improving the captured image in poor weather condition such as smog, fog or smoke. The visibility of the cameras can be enhanced in any weather condition.	
21.	Positioning	GPS	
22.	Capture Speed Rate	5 to 120 Kmph or better	
23.	Bad Pixel Correction	Support	
24.	Target Detection	Motor vehicle; motorcycle	
25.	Vehicle Type Recognition	Vehicle head: SUV, Large bus, Sedan, Light truck, Pickup, Heavy truck, Medium truck, Van, Medium bus, MPV Vehicle tail: SUV, Large bus, Sedan, Light truck, Pickup, Heavy truck, Medium truck, Van	
26.	Interface Ports	RS-485, RS-232	
27.	Lane Coverage	1/2 lanes	
28.	Audio Compression	G.711a/ G.726	
29.	Alarm IN/Out	2 channel in / 2 Channel Out	
30.	Audio IN/Out	1 channel in / 1 Channel Out	
31.	Protocol	SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE,	

		NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, ONVIF (Profile S, Profile G, Profile T), unicast, multicast	
32.	Ethernet	RJ-45 (10/100Base-T)	
34.	Alarm Event	Storage full, Storage error, External alarm, No storage card, License plate blocklist, Illegal access, Network disconnection, IP conflict	
35.	Cyber Security	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot	
36.	Effective Range for LPR	The camera should have IR cover distance up to 30 mtr or above.	
37.	Micro SD	SFTP;Micro SD card (support max. 128 GB or better)	
38.	Operating Temperature	-30 °C to +60 °C (-22 °F to 140 °F)	
39.	Power Source	Dual Power Source 12–36 VDC & PoE (802.3af)	
40.	Weatherproof Standard	IP67,IK10	
41.	Certifications	STQC approved compliance report, BIS, CE, FCC, RoHS.	

ITEM NO. 21: 4MP BOX CAMERA WITH COMPLETE ACCESSORIES

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	4 MP Box Camera	
2.	Sensor	1/2.8" image sensor	
3.	Resolution	2560 x 1440	
4.	Minimum Illumination	0.03 Lux@F1.2 0 Lux with IR	
5.	Shutter Speed	1/1 to 1/100,000 sec adjustable, slow shutter speed required	
6.	Features	Defog, 3D-DNR, HLC, BLC, white balance	
7.	Lens	5-50 mm MVF Lens	
8.	Gain Control (AGC)	Auto/ Manual	
9.	Video Compression	H.265, H2.64 Focus Control: Auto and Manual	
10.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
11.	Audio Compression	G.711U & G.711A	
12.	Video Streaming	Min 4 streams @ H.265 Main stream: 4MP @ 25/30fps Sub stream: 720P @ 25/30fps	

		Third stream: VGA @25/20fps Fourth stream: VGA @25/30fps	
13.	Video Bitrate	16 Kbps-8Mbps	
14.	Audio Input & Output	Built in Mic or 1/1(Full Duplex)	
15.	Alarm Input & Output	1/1	
16.	Protocol	TCP/IP, IPv4, IPv6, SSL, TLS, HTTP, HTTPS, HTTP-Base64, HTTP-Digest, DHCP, DNS, RTP, RTSP, RTSPS, RTCP, ICMP, NTP, SMTP, IGMP, SNMP (V1,V2,V3), UDP, Multicast, ONVIF Profile S, G, T &M	
17.	Security Features	Authorised user name & Password, HTTPS with password, HTTPS digest authentication, watermark, RTSPS, AES 256 encryption, SHA256 and RSA2048, OTP, signed firmware, firmware anti-rollback, TEE (Trusted Execution Environment), TRNG, User Authentication, and encrypted firmware, Hardware secure boot	
18.	User	20 or better	
19.	IR Range	50 mtr or better	
20.	Micro SD	Min 2 TB or better	
21.	Operating Temperature	-40 to 70 degree	
22.	Power Source	12VDC/PoE (802.3af)	
23.	Weatherproof Standard	IP67, IK10 or better	
24.	Certifications	CE, FCC, BIS-ER, STQC, MTBF:1,00,000 hrs or better	

ITEM NO. 22: 4MP PTZ CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	4MP Pan, Tilt, Zoom Camera	
2.	Sensor	The camera should be equipped with a minimum of 1/2.8 Inch 4 MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 2560 (H) x 1440 (V) for high-definition video quality	

4.	Minimum Illumination	0.05 lux@F1.6 or better	
5.	Shutter Speed	Auto/Manual, 1/1~1/30,000s	
6.	Lens	The Camera should be provided with an OEM fitted 3.95mm ~177.75mm Lens (± 5 mm)	
7.	S/N Ratio	>53dB	
8.	Gain Control (AGC)	Auto/Manual	
9.	Optical Zoom	Minimum 45x Optical zoom which helps to bring physically magnify the image	
10.	Digital Zoom	Minimum 16x Digital zoom which helps to enlarges the image electronically.	
11.	Defog	The camera should be equipped with Defog which can be used to help in improving the captured image in poor weather condition such as smog, fog or smoke. The visibility of the cameras can be enhanced in any weather condition.	
12.	Image Stabilization	Electronic Image Stabilization (EIS) provides smooth video in situations where a camera is subject to vibrations	
13.	Video Compression	H.265/ H.264	
14.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
15.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR (Must be Hardware driven)	
16.	Video Parameters	Saturation, brightness, contrast, sharpness, gain	
17.	Video Streaming	The camera should Support triple Stream that are individually configurable	
18.	Frame Rate	Main stream: 4MP(2560x 1440)@(1-25/30fps), Sub stream 1: 720p/D1@(1-25/30 fps) Sub stream 2: D1/CIF @(1-25/30 fps)	
19.	Resolution	4MP,2MP,1.3MP,720P, D1 & CIF can be set at any resolution as per requirement.	
20.	Pan Travel	Pan: 0° to 360° endless, Tilt: -20° to +90°, auto flip 180°	
21.	Manual Speed	Pan: 0.1° ~260° /s, Tilt: 0.1° ~120° /s or better	
22.	Presets	290 or better	
23.	Preset Speed	Pan: 0.1°/s-300°/s, Tilt: 0.1°/s-200°/s or better	
24.	Special Features	Up to 290 Presets, 4 Pattern, 7 Tour (up to 32 presets per tour), 4 Auto Scan	
25.	Motion Detection	Supports	
26.	Privacy Mask	22 Areas or Better	
27.	RS-485	1 Port	

28.	IR Cut Filter	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
29.	Region of Interest	The Camera should allow ROI in the camera view to be streamed separately for distinguished viewing and recording.	
30.	Audio Input/ Output	1 channel in / 1 Channel Out	
31.	Audio Compression	G.711a/G.711Mu	
32.	Alarm IN/Out	6 channel in / 2 Channel Out	
34.	Protocol	IPv4, IPv6, HTTP, HTTPS, RTSPS, SMTP, DHCP, DNS, UPnP, NTP, SNMP, ONVIF (Profile S, Profile G, Profile T), Unicast, Multicast	
35.	Ethernet	RJ-45 (10/100Base-T)	
36.	Tracking Trigger Event	Motion detection, Video tampering, Network disconnection, IP address conflict, Illegal access, Storage anomaly	
37.	Analog Output	1 channel (CVBS output, BNC)	
38.	User	5 or better	
39.	IR Range	The camera should have Smart IR and cover distance up to 300 mtr or above.	
40.	Alarm Linkage	Capture, Recording, Send email, Preset, Tour, Pattern, Alarm digital output	
41.	Micro SD	Micro SD card (support max. 128 GB or better), SFTP	
42.	Operating Temperature	-40 °C to +60 °C	
43.	Power Source	Dual Power Source 24 VDC, 2.5 A (± 25%) & PoE+ (802.3at)	
44.	Weatherproof Standard	IP67, IK10, TVS 8000V lightning proof, surge protection, voltage transient protection	
45.	Certifications	STQC approved compliance report, BIS, MTBF, CE, FCC, RoHS.	

ITEM NO. 23: 2MP PTZ CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	2MP Pan, Tilt, Zoom Camera	
2.	Sensor	The camera should be equipped with a minimum of 1 /2.8 Inch 2 MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 1920 (H) × 1080 (V) for high-definition video quality	

4.	Minimum Illumination	0.005 lux@F1.6 or better	
5.	Shutter Speed	Auto/Manual, 1/1~1/30,000s	
6.	Lens	The Camera should be provided with an OEM fitted 3.95mm ~177.75mm Lens (± 5 mm)	
7.	S/N Ratio	>55dB	
8.	Gain Control (AGC)	Auto/Manual	
9.	Optical Zoom	Minimum 45x Optical zoom which helps to physically magnify the image	
10.	Digital Zoom	Minimum 16x Digital zoom which helps to enlarge the image electronically.	
11.	Defog	The camera should be equipped with Defog which can be used to help in improving the captured image in poor weather conditions such as smog, fog or smoke. The visibility of the cameras can be enhanced in any weather condition.	
12.	Image Stabilization	Electronic Image Stabilization (EIS) provides smooth video in situations where a camera is subject to vibrations	
13.	Video Compression	H.265/H.264	
14.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
15.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR (Must be Hardware driven)	
16.	Video Streaming	The camera should Support H.265 Quad Stream that are individually configurable	
17.	Frame Rate	Main stream: 2MP/1MP/D1 @(1-25/30 fps) sub stream 1: 2MP/1MP/D1 @(1-25/30 fps) Sub stream 2:D1/CIF @(1-25/30 fps) Sub stream 3: D1/CIF @(1-25/30 fps)	
18.	Resolution	2MP,1MP, D1 & CIF can be set at any resolution as per requirement.	
19.	Pan/Tilt Range	Pan: 0° to 360° endless, Tilt: -20° to +90°, auto flip 180°	
20.	Manual Speed	Pan: 0.1° ~260° /s, Tilt: 0.1° ~120° /s	
21.	Presets	290 or better	
22.	Preset Speed	Pan: 295° /s; Tilt: 195° /s	
23.	Special Features	Up to 290 Presets, 4 Pattern, 7 Tour (up to 32 presets per tour), 4 Auto Scan	
24.	Motion Detection	Supports	
25.	Privacy Mask	22 Areas or Better	
26.	IR Cut Filter	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	

27.	Region of Interest	The Camera should allow at least 3 sections of the camera view to be streamed separately for distinguished viewing and recording.	
28.	Audio Input/ Output	1 channel in / 1 Channel Out	
29.	Audio Compression	G.711a/G.711Mu	
30.	Alarm IN/Out	6 channel in / 2 Channel Out	
31.	Protocol	IPv4, IPv6, HTTP, HTTPS, RTSPS, SMTP, SFTP, DHCP, DNS, UPnP, NTP, Multicast, NFS, PPPoE, SNMP V1/V2/V3, ICMP,IGMP, ONVIF (Profile S, Profile G, Profile T), Unicast, Multicast	
32.	Ethernet	RJ-45 (10/100Base-T)	
34.	Alarm Event	Motion/Tampering detection, network disconnection detection, IP conflict detection, memory card state detection, memory space detection	
35.	User	5 or better	
36.	IR Range	The camera should have Smart IR and cover distance up to 300 mtr or above.	
37.	Security Features	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot	
38.	Micro SD	SFTP, Micro SD card (support max. 128 GB or better)	
39.	Operating Temperature	-40 °C to +60 °C	
40.	Power Source	Dual Power Source 24 VDC, 2.5 A (± 25%) & PoE+ (802.3at)	
41.	Casing	Metal	
42.	Weatherproof Standard	IP67, IK10, TVS 8000V lightning proof, surge protection, voltage transient protection	
43.	Certifications	STQC approved compliance report, BIS, MTBF, EMI/EMC, CE, FCC, RoHS.	

ITEM NO. 24: PTZ CONTROLLER

S.No	Parameter	Required specifications	Compliance (Yes/No)
1.	General	Controller shall support control of minimum 8 ptz cameras, expandable up to 255 cameras	
2.	Control type	Support both IP-based and serial-based PTZ camera control	
3.	Supported protocols	VISCA, VISCA over IP, ONVIF, PELCO-P, PELCO-D	
4.	Network interface	Minimum 1 × rj45 ethernet port (10/100/1000 Mbps)	
5.	Serial interfaces	RS-232, RS-422, RS-485 support	

6.	Camera discovery	Auto-discovery of PTZ cameras over network	
7.	Joystick type	4d joystick for pan, tilt, zoom, and focus control	
8.	Control features	Variable speed joystick control for smooth camera movement	
9.	Dedicated controls	Separate controls for zoom, focus, iris, white balance	
10.	Camera selection	Minimum 6 direct camera selection buttons	
11.	Programmable keys	Minimum 6 user-programmable keys	
12.	Preset support	Minimum 8 presets per camera (higher preferred)	
13.	Preset functions	Preset store, recall, and delete functionality	
14.	Display	Built-in LCD/OLED display (minimum 2 inches)	
15.	User interface	Menu-driven interface for configuration and control	
16.	Status indicators	Led indicators for power, network, and operation status	
17.	Integration support	Compatible with video switchers, streaming systems, and vms platforms	
18.	Power supply	Support poe (ieee 802.3af/at) and/or 12v dc input	
19.	Latency	Low latency with real-time response	
20.	Movement control	Simultaneous pan and tilt (diagonal movement support)	
21.	Build quality	Metal/industrial-grade chassis	
22.	Mounting	Desktop type or rack-mountable	
23.	Compatibility	Compatible with cameras of different make	
24.	Operating temperature	0°C to 50°C or better	
25.	Firmware upgrade	Firmware upgrade via network or usb	

ITEM NO. 25: 2MP FIXED DOME MOBILE CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	2MP Dome Camera with Fixed Lens	
2.	Sensor	The camera should be equipped with minimum of 1/2.8 inch 2 MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 1920 (H) × 1080 (V) for high-definition video quality	
4.	Minimum Illumination	0.006 lux@F1.6 or better	
5.	Shutter Speed	Auto/Manual, 1/3~1/1000000s	
6.	Lens	The Camera should be provided with an OEM fitted 2.8/3.6mm Fixed Lens	
7.	S/N Ratio	>54dB	

8.	Gain Control (AGC)	Auto/Manual	
9.	Video Compression	H.265/H.264	
10.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	
11.	Defog	The camera should be equipped with Defog which can be used to help in improving the captured image in poor weather conditions such as smog, fog or smoke. The visibility of the cameras can be enhanced in any weather condition.	
12.	Image Rotation	Support	
13.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB WDR	
14.	Video Streaming	The camera should Support H.265 Quad Stream that are individually configurable	
15.	Frame Rate	Main stream: 2MP/1.3MP/1MP/D1@(1-25/30fps), Sub stream 1: D1/VGA/CIF@(1-25/30fps) Sub stream 2: 2MP/1.3MP/1MP/D1@(1-25/30fps), Sub stream 3: D1/VGA/CIF@(1-25/30fps)	
16.	Resolution	2MP,1.3MP,720P, D1 & CIF can be set at any resolution as per requirement.	
17.	Privacy Mask	3 Areas or Better	
18.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
19.	Mirror Function	Support	
20.	OSD (On Screen Display)	The Camera should support Camera title, Date & Time OSD Features	
21.	Audio Compression	G.711a/G.711Mu	
22.	Audio	Built-in Mic	
23.	Protocol	IPv4, IPv6, HTTPS, TCP/IP, HTTP, RTP, ARP, RTSP, SMTP, FTP, SFTP, DHCP, DNS, UPnP, NTP, Unicast, Multicast, NFS, PPPoE, SNMP, ICMP, ONVIF (Profile S, Profile G, Profile T)	
25.	Security Features	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot.	
26.	Ethernet	1 (Built-in M12 port/network data of 10 M/100 M)	
27.	Alarm Event	Motion/tampering detection, audio detection, network disconnection detection, IP conflict detection, memory card state detection, memory space detection	
28.	User	20	
29.	IR Range	The camera should have Smart IR and cover distance up to 30 mtr or above.	

30.	Micro SD	Micro SD card (support max. 128 GB or better)	
31.	Operating Temperature	-30 °C to +60 °C (–22 °F to 140 °F)	
32.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
33.	Weatherproof Standard	IP67 and IK10 with OEM Fitted Metal Body	
34.	Certifications	STQC approved compliance report, BIS, MTBF, CE, FCC, RoHS.	

ITEM NO. 26: FULL HD OFFLINE BODY WORN CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	Image Sensor	CMOS	
2.	Screen	2 inch LCD full HD display, diagonal ≥ 51 mm	
3.	Angle	140° wide angle	
4.	Digital Zoom	16x	
5.	Video Frame Rate	30 frames per second	
6.	Video playback	2/4/8x fast forward and rewind	
7.	Video Capture	Support	
8.	Overlay Watermark	Support	
9.	Native	Support (on-site playback of video/photo/audio files)	
10.	One-click Playback	Support (one-click playback of the latest recording file)	
11.	Segmented	Support (multiple time-segmented video can be set)	
12.	Key Tag	Support (one-click mark highlight video during video capture)	
13.	Password Protection	Support (software password protection, tamper-proof, anti-delete)	
14.	Log Function	Support (files are attached with time, product number, user number, etc.)	
15.	Car Mode	Support (can be equipped with a dedicated car suction cup for driving recorder)	
16.	Illuminable	Support (can be used as lighting and fill light at night)	
17.	Alarm	Support (long press the OK button to activate the alarm sound and alarm flash)	
18.	Video Function	One-click recording (in the off state, directly press the "Record" key to enter the recording state)	
19.	Compression	H.264	
20.	Video Resolution	1920x1080@30p, 1280x720@30p, 640x480@30p	
21.	Snapshot	30MP, 14MP, 12MP, 8MP, 5MP	
22.	Exposure Mode	Automatic	
23.	Auto Power Off	30Sec, 1min, 3min, 5min, 10 min	
24.	Storage	128GB Internal storage	

25.	Loop Recording	Support (when the memory is full, the system will automatically delete the last recorded segment and continue recording)	
26.	One-Button Recording	Supports separate recording, dual microphone noise reduction	
27.	Recording Function	Video (MOV), Audio (WAV), Snapshot (JPEG)	
28.	Recording Time	8 hours recording with one full charge	
29.	Charging Time	≤4h	
30.	Overwrite Function	Available	
31.	Night vision	10 meters	
32.	Infrared Night	4 meters to see the human face, 8 meters to see the human contour	
33.	Screen saver	30Sec, 1min, 3min, 5 min	
34.	Battery capacity	3200mAh Lithium Battery	
35.	USB Interface	USB 2.0/ Type-C (Optional)	
36.	Flashlight	Available	
37.	Led Indicators	Available	
38.	Drop Test	1.8m	
39.	Working Temperature	-30°C~55°C	
40.	Working Humidity	≤93%	
41.	Weatherproof Standard	IP6	
42.	Certificates	STQC approved compliance report, BIS, CE, RoHS, FCC.	

ITEM NO. 27: DOCKING STATION FOR OFFLINE BWC CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Docking Slot	The charging slot adopts cabin type dock design	
2	Docking Slot Number	10 pcs	
3	Indicator Light 1	The red light LED is the power indicator, the red light will be on after power on	
4	Indicator Light 2	Green LED lights up after detecting a successful connection, and flashes when data is being transmitted	
5	Switch	Rocker switch, main power switch with light	
6	Power on Switch	Power on switch M16 with lock and light	
7	AC Socket	AC socket, national standard	
8	Product Material	Use sheet metal integrated chassis, paint, integrated independent design; the shell material is 1.0mm cold rolled steel plate, and the surface is treated with anti-static powder coating	

9	Support automatic Charging (when body worn camera connect to docking station)	The charging current is 1A-1.5A, supporting charging protection	
10	Data Line	Compatible with mainstream data lines such as MINI USB, Apple, Micro USB, Type-c, etc	
11	Support Charging Protection	Hardware automatic detection function, automatically disconnect the charging channel when the battery is full	
12	Reliability Test	MTBF $\geq$ 20000h	
13	Fuse	220V 2A	
14	USB Interface	USB 2.0 HUB, transmission rate $\geq$ 400M/min	
15	Operating Temperature	-10C° ~ 50°C Surface air flow	
16	Certificates	CE, RoHS, FCC, BIS.	

ITEM NO. 28: FULL HD ONLINE BODY WORN CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	Image Sensor	CMOS	
2.	Screen	2 inch LCD full HD display, diagonal $\geq$ 51mm	
3.	Angle	140° wide angle	
4.	Digital Zoom	16x	
5.	Video Frame Rate	30 frames per second	
6.	Video playback	2/4/8x fast forward and rewind	
7.	Video Capture	Support	
8.	Overlay Watermark	Support	
9.	Native	Support (on-site playback of video/photo/audio files)	
10.	One-click Playback	Support (one-click playback of the latest recording file)	
11.	Segmented	Support (multiple time-segmented video can be set)	
12.	Key Tag	Support (one-click mark highlight video during video capture)	
13.	Password Protection	Support (software password protection, tamper-proof, anti-delete)	
14.	Log Function	Support (files are attached with time, product number, user number, etc.)	
15.	Car Mode	Support (can be equipped with a dedicated car suction cup for driving recorder)	
16.	Illuminable	Support (can be used as lighting and fill light at night)	
17.	Alarm	Support (long press the OK button to activate the alarm sound and alarm flash)	

18.	Video Function	One-click recording (in the off state, directly press the "Record" key to enter the recording state)	
19.	Compression	H.264	
20.	Video Resolution	1920x1080@30p, 1280x720@30p, 640x480@30p	
21.	Snapshot	30MP, 14MP, 12MP, 8MP, 5MP	
22.	Exposure Mode	Automatic	
	Connectivity	4G LTE/5G SIM support Wi-Fi, Bluetooth	
	GPS	Built-in GPS	
	Remote Access	Live view and playback via web/mobile application	
23.	Auto Power Off	30Sec, 1min, 3min, 5min, 10 min	
24.	Storage	128GB Internal storage	
25.	Loop Recording	Support (when the memory is full, the system will automatically delete the last recorded segment and continue recording)	
26.	One-Button Recording	Supports separate recording, dual microphone noise reduction	
27.	Recording Function	Video (MOV), Audio (WAV), Snapshot (JPEG)	
28.	Recording Time	8 hours recording with one full charge	
29.	Charging Time	≤4h	
30.	Overwrite Function	Available	
31.	Night vision	10 meters	
32.	Infrared Night	4 meters to see the human face, 8 meters to see the human contour	
33.	Screen saver	30Sec, 1min, 3min, 5 min	
34.	Battery capacity	3200mAh Lithium Battery	
35.	USB Interface	USB 2.0/ Type-C (Optional)	
36.	Flashlight	Available	
37.	Led Indicators	Available	
38.	Drop Test	1.8m	
39.	Working Temperature	-30°C~55°C	
40.	Working Humidity	≤93%	
41.	Weatherproof Standard	IP6	
42.	Certificates	STQC approved compliance report, BIS, CE, RoHS, FCC.	

ITEM NO. 29: DOCKING STATION FOR ONLINE BWC CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Docking Slot	The charging slot adopts cabin type dock design	

2	Docking Slot Number	10 pcs	
3	Indicator Light 1	The red light LED is the power indicator, the red light will be on after power on	
4	Indicator Light 2	Green LED lights up after detecting a successful connection, and flashes when data is being transmitted	
5	Switch	Rocker switch, main power switch with light	
6	Power on Switch	Power on switch M16 with lock and light	
7	AC Socket	AC socket, national standard	
8	Product Material	Use sheet metal integrated chassis, paint, integrated independent design; the shell material is 1.0mm cold rolled steel plate, and the surface is treated with anti-static powder coating	
9	Support automatic Charging (when body worn camera connect to docking station)	The charging current is 1A-1.5A, supporting charging protection	
10	Data Line	Compatible with mainstream data lines such as MINI USB, Apple, Micro USB, Type-c, etc	
11	Support Charging Protection	Hardware automatic detection function, automatically disconnect the charging channel when the battery is full	
12	Reliability Test	MTBF $\geq$ 20000h	
13	Fuse	220V 2A	
14	USB Interface	USB 2.0 HUB, transmission rate $\geq$ 400M/min	
	Ethernet Port	1 x Gigabit LAN (RJ45)	
	WiFi	802.11 b/g/n/ac	
	Network protocols	TCP/IP, FTP, SFTP, HTTP/HTTPS	
15	Operating Temperature	-10C° ~ 50°C Surface air flow	
16	Certificates	CE, RoHS, FCC, BIS.	

ITEM NO. 30: 4G BODY WORN CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Feature	Specification	
2	Operating System	Android 12	
3	Screen	2.4 inch colour touch screen	
4	Image Sensor	CMOS	
5	Angle of View	Horizontal: 110°, Diagonal: 140°	
6	Video Compression	H.265, H.264, MP4, TVI	
7	Video format	MP4	
8	Video clip	Auto, 1min, 3min, 5min, 10min, 20min, 30min	

9	Picture format	JPEG	
10	Lens	4MP Lens	
11	White light	Manual	
12	Resolution	2K@30fps, 2MP@30fps, 1M@30fps, 480P@30fps	
13	Live streaming resolution	2K, 2M, 1M, 480P	
14	Pre-recording	Up to 60 seconds	
15	Post-recording	OFF, 10s, 30s, 1min, 2min, 5min, 10min, 30min	
16	Burst interval	2s, 3s, 5s, 10s, 20s, 30s	
17	Bluetooth	BT5.0, for wireless earphone	
18	Indicator Light	Video recording: red light is flashing, Audio recording: yellow light is flashing, Standby: green light is always on, Live streaming: blue light is flashing	
19	External Port	Support Type-C USB 3.0	
20	Protocol	Support ONVIF, RTMP, RTSP, FTP, WebRTC and other streaming media protocols and SIP protocol.	
21	Wi-Fi	2.4/5GHz, 802.11 a/b/g/n/ac	
22	IR	IR Distance Up to 10 Mtr.	
23	IR Control	Auto, Manual	
24	Drop resistance	2 Mtr.	
25	Memory	Built-in memory 32GB to 128 GB or better	
26	Snapshot	52MP	
27	4G Network Band	TDD-LTE Band 38/39/40/41 FDD-LTE Band 1/2/3/4/5/7/8/20/26 GSM 850/900/1800/1900 WCDMA Band 1/2/5/8 TD-SCDMA Band 34/Band39	
28	Battery	3000mAh or better	
29	Battery Backup	About 48 hours	
30	Working hours	720P Continues working 16 Hours (8 Hrs. per Battery)	
31	Certification	STQC approved compliance report, CE, FCC, BIS, RoHS.	

ITEM NO. 31: DOCKING STATION FOR 4G BWC CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Screen	12 inch touch screen, resolution 1920 x 1080 or better	
2	Memory	RAM+ROM, 8G+128G or better	
3	Operating System	Android 12.0 or better	
4	Local Storage	Support 3 disks (2TB~12TB optional)	
5	Data Interface	8 channel docking slot or USB connection	

6	Automatically backup	When BWC connect to the terminal, it will back up all the video, audio, pictures and log file automatically	
7	Storage empty	The terminal will empty all the data in the BWC when the backup finished	
8	Status display	During the backup progressing, it can display the device id, Name, Group, Storage space, Back- up status and so on	
9	Upload	All the video files will upload to the centre server automatically or manually	
10	System log	System will record all operation log of the terminal	
11	Backup time	8 channel 16G data can be finished in 60 minutes, average speed is 4~6MB/S	
12	Recharging	8 channels BWC can finish recharging in 4 hours and 45 minutes if the unit is OFF, if it's ON, it need about 5 hours	
13	Network	1 RJ45, 100/1000M	
14	USB	3 USB 2.0 ports	
15	Operating temperature	-20°C~-55°C	
16	Working time	7x24 hours continue working	
17	Working power	Normal voltage:AC100V—240V~50/60HZ	
18	Certification	BIS, CE, FCC, RoHS.	

ITEM NO. 32: FISHEYE CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	IP Camera	6MP Fisheye Camera	
2.	Sensor	The camera should be equipped with a minimum of 1 /2.5-inch 6MP CMOS sensor applying progressive scan technology to record more fluid footage and avoid distortion created by moving objects.	
3.	Resolution	Minimum 2560 (H) × 2560 (V)	
4.	Minimum Illumination	0.05 lux@F1.8 or better	
5.	Shutter Speed	Auto/Manual, 1/3~1/100000s	
6.	Lens	The Camera should be provided with an OEM fitted 1.6mm Lens or better	
7.	S/N Ratio	>55dB or better	
8.	Gain Control (AGC)	Auto/Manual	
9.	Video Compression	H.265/H.264	
10.	Back Light Comp.	BLC should allow adjusting the gain of the camera to improve exposure of the subjects that are in front of a bright light source	

11.	Wide-Dynamic-Range	The camera should give a WDR range of minimum 120dB Real WDR	
12.	Stream Capability	Triple Stream or better	
13.	Video Streaming	Max Resolution in O Mode by Default Main stream: 6MP (2560 × 2560)@1–25/30 fps, Sub stream: 2MP (1440 × 1440)@1–25/30 fps, third stream: 2MP (1440 × 1440)@1–25/30 fps Resolution of 2 Split Windows in 2P Mode: Sub stream: Panoramic View and Split Window: (1920 × 1440)@1– 25/30 fps, (640 × 480)@1–25/30 fps, (320 × 240)@1– 25/30 fps, Third stream: Panoramic View and Split Window: (1920 × 1440)@1– 25/30 fps, (640 × 480)@1 –25/30 fps, (320 × 240)@1– 25/30 fps	
14.	Resolution	6MP,4MP, 2MP,1.6MP Can be set at any resolution as per requirement.	
15.	Intelligent features	Tripwire, Intrusion	
16.	Motion Detection	3 Areas or Better	
17.	Privacy Mask	4 Mosaics + 4 color blocks	
18.	ICR	The camera shall incorporate a physical Auto ICR filter for quality images both during day and night	
19.	ROI	The Camera should allow at least 3 sections of the camera view to be streamed separately for distinguished viewing and recording.	
20.	Audio Compression	G.711a/G.711Mu	
21.	Audio	Built-in dual Mic	
22.	Audio Input & Output	1 Ch in & 1 Ch Out	
23.	Alarm Input & Output	1 Ch in & 1 Ch Out	
24.	Mirror Function	Supports	
25.	Intelligent Scene Adaption	Supports	
26.	Decoding Mode	Front-dewarp, Back-dewarp	
27.	Display Mode	Front-dewarp (hardware decoding): 1O, 1P, 2P, 1R, 2R, 4R, 1O+ 3R 2P/2R: Supports split screen for 2 windows. 4R: Supports split screen for 4 windows	
28.	Heat Map	Support	
29.	RS-485	1 Port	
32.	EPTZ	Support	
33.	Built-in Speaker	Support	
34.	Protocol	IPv4, IPv6, HTTP, HTTPS, TCP, UDP, ARP, RTP, RTSP, RTSPS, RTCP, RTMP, SMTP, SFTP, DHCP, DNS, QoS, UPnP, NTP, Multicast, Unicast, ICMP, IGMP, PPPoE, SNMP V3, TLS Version 1.2 & 1.3,SSL	

35.	Security Features	Video encryption, Firmware encryption, Configuration encryption, Digest, WSSE, Account lockout, Security logs, IP/MAC filtering, syslog, HTTPS, 802.1x, Trusted boot, Trusted execution, Trusted upgrade, Session security, Security warning	
36.	Ethernet	RJ-45 (10/100Base-T)	
37.	Alarm Event	No SD card, Low SD card space, SD card error, Network disconnection, IP conflict, Account Lockout, Motion Detection, Video Tampering, Scene Changing, Tripwire, Intrusion, Audio Detection, Intensity change, Voltage Detection, External Alarm, Security exception	
38.	User	20 or better	
39.	IR Range	20 mtr or above.	
40.	Micro SD	SFTP, Mirco SD card (Max. 128 GB or better)	
41.	Operating Temperature	-30 °C to +60 °C (–22 °F to 140 °F)	
42.	Power Source	Dual Power Source 12 VDC & PoE (802.3af)	
43.	Weatherproof Standard	IP67 and IK10 with OEM Fitted Metal Body	
44.	Certifications	STQC approved compliance report, BIS, CE, FCC, RoHS.	

ITEM NO. 33: DASHCAM WITH 3 CAMERA (FRONT, REAR AND CABIN) WITH GPS SUPPORT

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
FRONT CAMERA			
1	Angle of View	H=113° D=135.6° V=60° or better	
2	Image sensor	1/2.8" or better	
3	Lens	3.6mm fixed lens	
4	Aperture	F1.75 or better	
5	Compression	H.264/H.265	
6	Resolution	8MP or better	
REAR CAMERA			
7	Angle of View	H=102° D=124.4° V=53.4° or better	
8	Image sensor	1/2.9" or better	
9	Lens	3.6mm fixed lens	
10	Aperture	F2.0 or better	
11	Compression	H.264/H.265	
12	Resolution	2MP or better	
CABIN CAMERA			
13	Angle of View	H=102° D=124.4° V=53.4° or better	
14	Image sensor	1/2.9" or better	

15	Lens	3.6mm fixed lens	
16	Aperture	F2.0 or better	
17	Compression	H.264/H.265	
18	Resolution	2MP or better	
19	Night Vision	Available	
DISPLAY			
20	Screen type	IPS (In-Plane Switching)	
21	Screen size	10.16 centimeters	
22	Screen Resolution	400mm x 960mm or better	
VIDEO			
23	Video Format	MP4	
24	Video Encoding	H.265/H.264	
25	Video resolution	8MP(3840*2160P @25fps) + 2MP(1920*1080P @25fps) + 2MP(1920*1080P @25fps), ADAS ON: 2K(2560*1440P @30fps) + 2MP(1920*1080P @30fps, ADAS ON: 2MP(1920*1080P @30fps) + 2MP(1920*1080P @30fps)	
FUNCTIONS			
26	Smart Features	GPS, Voice prompt,G-Sensor, GPS tracking, Speed Alert, Collision detection, WDR	
27	Record Type	Record audio, Regular recording	
28	ADAS	Support (works only with Front + Rear or Cabin camera), ADAS ON: (Keep 4MP resolution for ADAS)	
29	Parking Mode	Support (Type C Hardwire Kit)	
NETWORK			
30	Connectivity	AP Mode(Only for Playback mode at 4MP Resolution)	
AUDIO			
31	Microphone	Support	
32	Speaker	Support	
STORAGE			
33	SD Card	Upto 1TB Max(Not included in camera)	
PHOTO			
34	Photo format	JPG	
HARDWARE			
35	Battery	1mAh Button Battery or better	
36	Housing Type	Plastic	
37	Power Source	5V/2.5A Type C	
38	Working temperature range	-10-60°C	
30	Certificates	ISO 9001:2015, ISO 20000-1: 2018	

ITEM NO. 34: 4G DASHBOARD CAMERA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
Front Camera			
1	Angle of View	H-115°, D-136°, V-61° or better	
2	Image sensor	1/2.9" Image sensor or better	
3	Lens	3.0 mm	
4	Max. Aperture	F1.5	
5	Compression	H.265	
6	Resolution	2MP (1920 x 1080p) or better	
Rear Camera			
7	Angle of View	H-102°, D-124°, V-53° or better	
8	Image sensor	1/2.9" Image sensor or better	
9	Lens	3.35mm or better	
10	Max. Aperture	F2.0	
11	Compression	H.265	
12	Resolution	2MP (1920 x 1080p) or better	
Video			
13	Video Format	MP4	
14	Video Resolution	2MP (1920 x 1080P)@25fps + 2MP (1920 x 1080P)@25fps	
Audio			
15	Microphone	Support	
16	Speaker	Support	
Snapshot			
17	Photo Format	JPG	
Functions			
18	Smart Features	Voice Prompt, GPS Tracking, Motion Detection, G-Sensor, Collision Detection, HDR	
19	Record Type	Audio Recording, Regular Recording	
20	Parking Mode	Support (Type C Hardwire Kit)	
Connection and Storage			
21	Connection	4G LTE	
22	Connectivity	AP Mode (only for Playback Mode)	
23	4G/5G SIM	Support	
24	SD Card	Upto 1TB Max(Not included in camera)	
Hardware			
25	Casing	PC + ABS	
26	Power Source	Type C 5V/3.4A	
27	Operating Temperature	-10°C~60°C	

28	Certificates	ISO 9001:2015, ISO 20000-1: 2018, CE, FCC and ROHS, BIS	
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ITEM NO. 35: DASHBOARD CAMERA WITH GPS

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Video Frame Rate	1080P@30fps	
2	DDR	512Mbit	
3	Flash Memory	64Mbit	
4	View Angle	H: 100.87°, V: 53.60°, D: 120.56° or better	
5	Video Format	MP4	
6	Video Encoding	H.265	
7	WDR	Support	
8	Micro SD	Up to 16~512GB (Class 10 U3 Category)	
9	Charger	5V/1.5A Type-C	
10	Sound Recording	ON/OFF	
11	Smart Features	Voice prompt, G-Sensor, GPS Logging, Speed Alert, Collision detection, WDR	
12	Operating Temperature	-20°C ~ 65°C	
13	Certificates	ISO 9001:2015, ISO 20000-1: 2018	

ITEM NO. 36: HOUSING WITH BRACKET

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Material	Aluminium (case)	
2	IR Distance	0~100m	
3	Dimension	404mm x164mm x132mm	
4	Inside Dimension	255mm(L) x 90mm(W) x 70.5mm(H) 215mm(L) x 90mm(W) x 83mm(H)	
5	Window Dimension	Φ60mm	
6	Operating Temperature	Set: -40°C ~ 60°C	
		Heater: ON: <+5°C(+41°F)/ OFF: +5°C(+41°F)	
		Cooler: ON: 37±1°C(98.6±33.8°F)/ OFF: 20±1°C(68±33.8°F)	
7	Ingress Protection	IP67, IK10	
8	Humidity	≤90% RH	
9	Power Supply	AC24V/5A	
10	Power Consumption	55W (Without camera)	

ITEM NO. 37: 64GB/128GB SD CARD SPECIFICATIONS

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Low power consumption	Support	
2	Performance	30 MB/s Min Write speed or better	
3	High Speed Data transfer	Support	
4	Video Speed Class	30 or better	
5	Application Capable of Recording	4K/2K Video or better	
6	Micro SD Card	64/128 GB	
7	Read Speed	up to 100MB/s or better	
8	Read/Write Cycle	up to 1000 Cycles or better	
9	Operation Temperature Range	0°C~70°C or better	
10	Humidity	95% RH under 25°C	

ITEM NO. 38: 8 CHANNEL NETWORK VIDEO RECORDER WITH 2 SATA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Processor	Industrial-grade processor	
2	IP Camera Input	8 channels	
3	Operating System	Embedded LINUX	
4	User Interface	Web, Local GUI	
5	Video Output	1 HDMI 4K, 1 VGA	
6	Resolution	8 MP; 6 MP; 5 MP; 4 MP; 3 MP; 1080p; 960p; 720	
7	Motion Detection	Supports	
8	Video Loss	Supports	
9	Incoming Bandwidth	160 Mbps or better	
10	Outgoing Bandwidth	80 Mbps or better	
11	Alarm Input /Output	4 Channel/ 2 Channel	
12	Audio Input /Output	1 Channel/ 1 Channel	
13	Disk Interface	2 SATA III Ports, up to 16TB Each	
14	Alarm Events	Record, snapshot, IPC external alarm output, buzzer, log, preset, email	
15	Recording Mode	General, motion detection, intelligent, alarm	
16	Playback Capability	2-ch@8MP (25fps), 4 Channel 4 MP@25 fps, 8-ch@1080P(25fps)	
17	Intelligent Alarm	Face detection, face recognition, perimeter protection, people counting, heat map	

18	Abnormality Alarm	Camera offline, storage error, full storage, IP conflict, MAC conflict, login lock, network security alarm	
19	Multi-Channel Playback	Up to 8 channels	
20	Backup Mode	USB Device/Network	
21	Playback Mode	Instant playback, general playback, event playback, tag playback, smart playback	
22	Network Port	1 RJ-45 port (10/100/1000Mbps)	
23	Interface Ports	2 USB Ports (1 Rear USB2.0, 1 Front USB2.0)	
24	Network Protocols	HTTP, HTTPS, TCP/IP, IPv4/IPv6, UPnP, SNMP, RTSP, UDP, SMTP, NTP, DHCP, DNS, IP Filter, PPPoE, DDNS, FTP	
25	Power Supply	Single, 12VDC, 4 Amp or as per OEM Standard	
26	Working Temp	-10 ~+55°C / 10~90%RH / 86~106kpa	
27	Certifications	BIS, UL, CE, FCC, RoHS	

ITEM NO. 39: 8 CHANNEL NETWORK VIDEO RECORDER WITH 2 SATA FOR LPR SUPPORT

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	User Interface	Web & Local Graphic User Interface	
2	Processor	Industrial-grade processor	
3	Video Output	1 HDMI(4K), 1 VGA	
4	Camera supported Resolution	Supports up to 12MP; 8MP; 5MP; 4MP; 3MP; 2MP Resolutions	
5	Channel	8 channels	
6	Video Compression	H.265/ H.264	
7	Incoming Bandwidth	380 Mbps or better	
8	Outgoing Bandwidth	380 Mbps or better	
9	Alarm Input & Output	4 Channel & 2 Channel	
10	Audio Input & Output	1 Channel & 1 Channel	
11	Disk Interface	2 SATA III Ports, up to 20TB Each	
12	Disk Group	Supports	
13	Alarm Linkage	Record, Snapshot, Local alarm output, IPC external alarm output, Buzzer, Log, Preset, Email	
14	Recording Mode	General, Motion detection, Intelligent, Alarm, POS	
15	Playback Capability	4 Channel 8 MP@25 fps, 8 Channel 4 MP@25 fps	
16	Intelligent Features by Camera	Face detection, Face recognition, Perimeter protection, License Plate Reading, People counting, Heat map	

17	Abnormality Alarm	Camera offline, Storage error, Disk full, IP conflict, MAC conflict, Login lock, Cybersecurity exception	
18	Playback Mode	Instant playback, General playback, Event playback, Tag playback, Smart playback (face and motion detection)	
19	Backup Mode	USB Device/Network	
20	Multi-channel Playback	Up to 8 Channels	
21	Network Port	1 RJ-45 port (10/100/1000Mbps)	
22	Interface Ports	2 USB Ports (1 Rear USB3.0, 1 Front USB2.0), 1 RS485, 1 RS232	
23	Network Protocols	HTTP, HTTPS, TCP/IP, IPv4, UDP, NTP, DHCP, DNS, SMTP, UPnP, Multicast, ONVIF (Profile T, Profile S, Profile G)	
24	Power Supply	Single, 12VDC, 4 Amp or as per OEM Standard	
25	Working Temp	-10 ~+55°C / 10~90%RH / 86~106kpa	
26	Certifications	BIS, UL, CE, FCC, RoHS	

ITEM NO. 40: 16 CHANNEL NETWORK VIDEO RECORDER WITH 4 SATA PORTS

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Processor	Industrial-grade processor	
2	IP Camera Input	16 channels	
3	Operating System	Embedded Linux	
4	User Interface	GUI and Web	
5	Video Output	1 HDMI 4K, 1 VGA	
6	Resolution	12 MP; 8 MP; 6 MP; 5 MP; 4 MP; 3 MP; 1080p; 960p; 720	
7	Video Display Split	1/4/8/9/16	
8	Motion Detection	Supports	
9	Disk Group	Supports	
10	Incoming Bandwidth	256 Mbps or better	
11	Outgoing Bandwidth	256 Mbps or better	
12	Alarm Input /Output	16 Channel/ 4 Channel	
13	Audio Input /Output	1 Channel/ 1 Channel	
14	Disk Interface	4 SATA III Ports, up to 16TB Each	
15	General Alarm	Motion detection, Privacy masking, Video loss, Scene changing, PIR alarm, IPC external alarm	
16	Recording Mode	Manual, Schedule (Regular, MD (Motion Detection), Alarm	
17	Playback Capability	4-ch@8MP(25fps), 8 Channel 4 MP@25 fps, 16-ch@1080P(25fps)	

18	Abnormality Alarm	Camera offline, storage error, full storage, IP conflict, MAC conflict, login lock, network security alarm	
19	Search Mode	Time /Date, Alarm and Motion Detection	
20	Backup Mode	USB Device/Network	
21	Playback	Instant playback, General playback, Event playback, Tag playback, Smart playback	
22	Ethernet	2 RJ-45 port (10/100/1000Mbps)	
23	Interface Ports	2 (1 front USB 2.0 port, 1 rear USB 3.0 port), 1 HDMI, 1 VGA, 1 RS232, 1 RS485	
24	Protocols	HTTP, HTTPS, TCP/IP, IPv4/IPv6, UPnP, SNMP, RTSP, UDP, SMTP, NTP, DHCP, DNS, IP Filter, PPPoE, DDNS, FTP, ONVIF 22.06(Profile T, Profile S, Profile G)	
25	Power Supply	Single, AC 100~240V, 50/60 Hz	
26	Working Temp	-10 ~+55°C / 10~90%RH / 86~106kpa	
27	Certifications	BIS, UL, CE, FCC, RoHS	

ITEM NO. 41: 32 CHANNEL NETWORK VIDEO RECORDER WITH 4 SATA PORTS

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Processor	Industrial-grade processor	
2	Operating System	Embedded LINUX	
3	User Interface	Web & Graphic User Interface	
4	Video Output	2 HDMI (4K), 2 VGA	
5	Camera supported Resolution	Supports up to 12MP; 8MP; 5MP; 4MP; 3MP; 2MP Resolutions	
5	Video Compression	H.265/ H.264	
6	Channel	32 channels	
7	Incoming Bandwidth	380Mbps or better	
8	Outgoing Bandwidth	380Mbps or better	
9	Motion Detection	supports	
10	Alarm Input /Output	16 Channel/ 6 Channel	
11	Audio Input /Output	1 Channel/ 1 Channel	
12	Intelligent Features by Camera	Face detection, Perimeter protection, Face recognition, Crowd distribution, People counting, LPR, Vehicle density, Heat map	
13	Disk Interface	4 SATA III ports, up to 20TB Each	
14	Disk Group	supports	
15	General Alarm	Motion detection, Local alarm, Camera external alarm, Network alarm	
16	Recording Mode	General, Motion detection, Intelligent, Alarm	

17	Alarm Linkage	Record; Local alarm output, IPC external alarm output, Audio, Buzzer, Log	
18	Playback Capability	4-channel 16 MP@25 fps; 8 channels 8MP@25fps; 12 channels 5MP@25fps; 16 channels 4MP@25fps, 32 channels 2MP@25fps	
19	Backup Mode	USB device and network	
20	Playback Function	Instant playback, General playback, Event playback, Tag playback, Smart playback (face and motion detection)	
21	Abnormality Alarm	Camera offline, Storage error, Disk full, IP conflict, MAC conflict, Login lock, Cyber security exception	
22	Ethernet	2 RJ-45 port (10/100M/1000Mbps)	
23	Network Mode	Multi-address mode, load balance, fault tolerance and other network port binding modes	
24	Interface Ports	3(1 front USB 2.0 port, 2 rear USB 3.0 ports), 1 RS232, 1 eSATA Port, 1 RS485	
25	Protocols	HTTP, HTTPS, TCP/IP, IPv4, UDP, NTP, DHCP, DNS, SMTP, UPnP, Multicast, ONVIF (Profile T, Profile S, Profile G)	
26	Power Supply	Single, 100 V–240 V AC, 50 Hz–60 Hz	
27	Working Temp	-10°C ~+55°C / 10~90%RH / 86~106kpa	
28	Certifications	BIS, UL, CE, FCC, RoHS.	

ITEM NO. 42: 32 CHANNEL NETWORK VIDEO RECORDER WITH 8 SATA PORTS

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Processor	Industrial-grade processor	
2	Operating System	Embedded LINUX	
3	User Interface	Web & Graphic User Interface	
4	Video Output	2 HDMI (4K), 2 VGA	
5	Camera supported Resolution	Supports up to 12MP; 8MP; 5MP; 4MP; 3MP; 2MP Resolutions	
6	Video Compression	H.265/ H.264	
7	Channel	32 channels	
8	Incoming Bandwidth	380Mbps or better	
9	Outgoing Bandwidth	380Mbps or better	
10	Motion Detection	supports	
11	Alarm Input /Output	16 Channel/ 8 Channel	
12	Audio Input /Output	1 Channel/ 1 Channel	
13	Intelligent Features by Camera	Face detection, Face recognition, Perimeter protection, License Plate Reading, People counting, Heat map	

14	Disk Interface	8 SATA III ports, up to 20TB Each	
15	RAID	RAID 0/1/5/6/10	
16	Disk Group	supports	
17	General Alarm	Motion detection, Local alarm, Camera external alarm, Network alarm	
18	Recording Mode	General, Motion detection, Intelligent, Alarm	
19	Alarm Linkage	Record; Local alarm output, IPC external alarm output, Audio, Buzzer, Log	
20	Playback Capability	4-channel 16 MP@25 fps; 8 channels 8MP@25fps; 12 channels 5MP@25fps; 16 channels 4MP@25fps, 32 channels 2MP@25fps	
21	Backup Mode	USB device and network	
22	Playback Function	Instant playback, General playback, Event playback, Tag playback, Smart playback (face and motion detection)	
23	Abnormality Alarm	Camera offline, Storage error, Disk full, IP conflict, MAC conflict, Login lock, Cyber security exception	
24	Ethernet	2 RJ-45 port (10/100M/1000Mbps)	
25	Network Mode	Multi-address mode, load balance, fault tolerance and other network port binding modes	
26	Interface Ports	4 (2 front USB 2.0 ports, 2 rear USB 3.0 ports), 1 eSATA Port, 1 RS232, 2 RS485	
27	Protocols	HTTP, HTTPS, TCP/IP, IPv4, UDP, NTP, DHCP, DNS, SMTP, UPnP, Multicast, iSCSI, ONVIF (Profile T, Profile S, Profile G)	
28	Power Supply	Single, 100 V–240 V AC, 50 Hz–60 Hz	
29	Working Temp	-10°C ~+55°C / 10~90%RH / 86~106kpa	
30	Certifications	BIS, UL, CE, FCC, RoHS.	

ITEM NO. 43: 64 CHANNEL NETWORK VIDEO RECORDER WITH 8 SATA PORTS

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Processor	Industrial-grade processor	
2	Operating System	Embedded LINUX	
3	User Interface	Web & Graphic User Interface	
4	Video Output	2 HDMI (4K), 2 VGA	
5	Camera supported Resolution	Supports up to 12MP; 8MP; 5MP; 4MP; 3MP; 2MP Resolutions	
6	Video Compression	H.265/ H.264	
7	Channel	64 channels	
8	Incoming Bandwidth	380Mbps or better	

9	Outgoing Bandwidth	380Mbps or better	
10	Motion Detection	supports	
11	Alarm Input /Output	16 Channel/ 8 Channel	
12	Audio Input /Output	1 Channel/ 1 Channel	
13	Intelligent Features by Camera	Face detection, Face recognition, Perimeter protection, License Plate Reading, People counting, Heat map	
14	Disk Interface	8 SATA III ports, up to 20TB Each	
15	RAID	RAID 0/1/5/6/10	
16	Disk Group	supports	
17	General Alarm	Motion detection, Local alarm, Camera external alarm, Network alarm	
18	Recording Mode	General, Motion detection, Intelligent, Alarm	
19	Alarm Linkage	Record; Local alarm output, IPC external alarm output, Audio, Buzzer, Log	
20	Playback Capability	4-channel 16 MP@25 fps; 8 channels 8MP@25fps; 12 channels 5MP@25fps; 16 channels 4MP@25fps, 32 channels 2MP@25fps	
21	Backup Mode	USB device and network	
22	Playback Function	Instant playback, General playback, Event playback, Tag playback, Smart playback (face and motion detection)	
23	Abnormality Alarm	Camera offline, Storage error, Disk full, IP conflict, MAC conflict, Login lock, Cyber security exception	
24	Ethernet	2 RJ-45 port (10/100M/1000Mbps)	
25	Network Mode	Multi-address mode, load balance, fault tolerance and other network port binding modes	
26	Interface Ports	4 (2 front USB 2.0 ports, 2 rear USB 3.0 ports), 1 eSATA Port, 1 RS232, 2 RS485	
27	Protocols	HTTP, HTTPS, TCP/IP, IPv4, UDP, NTP, DHCP, DNS, SMTP, UPnP, Multicast, iSCSI, ONVIF (Profile T, Profile S, Profile G)	
28	Power Supply	Single, 100 V–240 V AC, 50 Hz–60 Hz	
29	Working Temp	-10°C ~+55°C / 10~90%RH / 86~106kpa	
30	Certifications	BIS, UL, CE, FCC, RoHS.	

ITEM NO. 44: 128 CHANNEL NETWORK VIDEO RECORDER WITH 16 SATA

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Processor	Industrial-grade processor	
2	Operating System	Embedded LINUX	

3	User Interface	Web & Graphic User Interface	
4	Video Output	2-channel VGA, 4-channel HDMI video output	
5	Video Resolution	Supports up to 32MP ;24MP; 16MP; 12MP; 8MP; 5MP; 4MP; 3MP; 2MP Resolutions	
6	Video Compression	H.265/ H.264	
7	Channel	128 channels	
8	Incoming Bandwidth	1200 Mbps or better	
9	Recording Bandwidth	1200 Mbps or better	
10	Outgoing Bandwidth	1000Mbps or better	
11	Motion Detection	Supports	
12	Video Loss	Supports	
13	Alarm Input	32 Channel or better	
14	Alarm Output	16 Channel or better	
15	Artificial Intelligence by NVR	Face detection (5 Channels); face recognition (5 Channels); perimeter protection (24 Channels); Smart Motion Detection Plus (32 Channels) - reducing false alarms caused by leaves, rain and lighting condition change	
16	Artificial Intelligence by Camera	Face detection (32 Channels); face recognition (By Recorder); video metadata (human, motor vehicles, and non-motor vehicles) (8 Channels); perimeter protection (16 Channels) ; SMD Plus (Smart Motion Detection -32 Channels); LPR (License Plate Recognition - 64 Channels); vehicle density; heat map; people counting	
17	Hard Disk	16 SATA III ports, up to 20TB Each	
18	Disk Group and Hot Swapping	Supports	
19	N+M cluster	Supports	
20	RAID	RAID 0/1/5/6/10	
21	General Alarm	Motion detection; privacy masking; video loss; scene changing; PIR alarm; IPC external alarm; cybersecurity exception	
22	Recording Mode	Manual; schedule (general; Motion; alarm; Motion& alarm; intelligent)	
23	Search Mode	Time /Date, Alarm & Motion	
24	Playback Capability	4-channel 16 MP@30 fps; 8 channels × 8MP@30fps; 12 channels × 5MP@30fps; 16 channels × 4MP@30fps	
25	Backup Mode	USB Device/Network	
26	Playback Function	Play; pause; stop; fast forward; fast backward; rewind; play by frame, Full screen; backup (cut/file) ; partially enlarge; audio on/off,smart playback (face and motion detection)	

27	Abnormality Alarm	Camera disconnection, storage error; disk full, IP conflict; MAC conflict, login locked and cyber security exception	
28	Ethernet	4 (10/100/1000/2500 Mbps Ethernet port, RJ-45)	
29	Network Mode	Multi-address mode, load balance, fault tolerance	
30	Interface Ports	4 (2 front USB 2.0 ports, 2 rear USB 3.0 ports), 1 RS232, 1 RS485, 1 eSATA Port	
31	Protocols	HTTP; HTTPS; TCP/IP; IPv4; RTSP; UDP; NTP; DHCP; DNS; SMTP; UPnP; DDNS; Alarm Server; IPSearch; Multicast; Auto Registration; ISCSI; ONVIF (Profile S/profile T/Profile G)	
32	Power Supply	100 V–240 V AC, 50 Hz–60 Hz	
33	Redundant Power Supply	Supports	
34	Working Temp	-10°C ~+55°C / 10~90%RH / 86~106kpa	
35	Certifications	BIS, UL, CE, RoHS, FCC.	

ITEM NO. 45: 4 CH. POE MOBILE NETWORK VIDEO RECORDER

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Processor	High-performance industrial embedded micro-controller	
2	Operating System	Embedded LINUX	
3	Two-way Talk	Supported	
4	Operation Interface	WEB, AV, VGA, HDMI	
5	IP Camera Input	4 PoE Ethernet Ports, all channels 2MP Total output power of PoE: 36 W Max. output power of a single port: 25.4 W or better	
6	Video Output	AV OUT x 1, VGA x 1, HDMI x 1 or better	
7	Video Resolution	800 × 600, 1280×1024 or better	
8	Video Display Split	,1/4	
9	Video Compression	H.265, H.264 or better	
10	Alarm Input	8 channels for alarm input, 1 channel for pulse speed measuring or better	
11	Alarm Output	1 channel of controllable 12V alarm output, digital quantity or better	
12	Audio Compression	G.711A/G.711U/PCM	
13	Audio Input	4 (with Built-in Mic camera)	
14	Audio Output	1 aviation port for audio output	
15	Image Quality Adjustment	Image quality adjustable across six levels	
16	Hard Disk	1, 2.5-inch HDDs (SATA) up to 2TB or better	

17	SD Card	1 SD card, Up to 256GB or better	
18	Recording Mode	Auto, Manual, motion detection, schedule, alarm Record alarm > alarm > motion detection > schedule	
19	OSD	Channel, time, GPS position	
20	Playback	1, 4	
21	Backup Mode	HDD, USB flash drive and network backup	
22	Interface Ports	Front panel: 2 × USB 2.0 Rear panel: 1 × USB 2.0 from EXTEND port, 2 Port RS232, 2 Port RS485, 1 TV Output, 1 Pulse Count, 1 CAN Port	
23	Face Detection and Face Recognition	Support	
24	Ethernet	1 x 10M/100M RJ45 or better	
25	Alarm Linkage	Record, snapshot, local external alarm output, buzzer, log, screen prompt, tour	
26	Abnormal Alarm	No HDD, HDD error, insufficient capacity, illegal login, ACC off, high temperature, rollover, battery low voltage, over speed, low speed, collision, rapid turn, rapid speedup, hard braking, low battery safety exception, network security exception	
27	GPS	Support	
28	Wi-Fi	Supports built-in 2.4 G Wi-Fi modules or better	
29	3G/4G	Support or better	
30	Gyroscope	Supports event detection and alarm such as rollover, collision, rapid speedup/slowdown/ turn.	
31	Power Supply	DC 6-36V with the built-in UPS (Enables system protection in normal power cut-off and in under voltage of vehicle battery.)	
32	Power Consumption	11 W or better(without peripheral)	
33	Operating Temperature	-30 °C to +70°C (−22 °F to +158 °F)	
34	Operating Humidity	10 ~ 90%	
35	Certifications	BIS, CE, FCC, RoHS.	

ITEM NO. 46: 8 CH. POE MOBILE NETWORK VIDEO RECORDER

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Processor	High-performance industrial embedded micro- controller	
2	Operating System	Embedded LINUX	
3	Two-way Talk	Supported	
4	Operation Interface	WEB, AV, VGA, HDMI	
5	IP Camera Input	8 PoE Ethernet Ports, all channels 1080P Total output power of one group: 36 W (ch1-ch4 as one group, ch5-	

		ch8 as one group) Max. output power of a single port: 25.4 W or better	
6	Video Output	AV OUT x 1, VGA x 1 , HDMI x 1 or better	
7	Video Resolution	800 × 600, 1280×1024 or better	
8	Video Display Split	, 1/4/8/9	
9	Video Compression	H.265, H.264 or better	
10	Alarm Input	8 channels for alarm input, 1 channel for pulse speed measuring or better	
11	Alarm Output	1 channel of controllable 12V alarm output, digital quantity or better	
12	Audio Compression	G.711A/G.711U/PCM	
13	Audio Input	8 (with Built-in Mic camera)	
14	Audio Output	1 aviation port for audio output	
15	Image Quality Adjustment	Image quality adjustable across six levels	
16	Hard Disk	2, 2.5-inch HDDs (SATA) up to 2TB or better	
17	SD Card	1 SD card, Up to 256GB or better	
18	Recording Mode	Auto, Manual, motion detection, schedule, alarm Record alarm > alarm > motion detection > schedule	
19	OSD	Channel, time, GPS position	
20	Playback	1, 4	
21	Backup Mode	HDD, USB flash drive and network backup	
22	Interface Ports	Front panel: 2 × USB 2.0 Rear panel: 1 × USB 2.0 from EXTEND port, 3 Port RS232, 2 Port RS485, 1 TV Output, 1 Pulse Count, 1 CAN Port	
23	Face Detection and Face Recognition	Support	
24	Ethernet	1 x RJ45 (10/100/1000Mbps)	
25	Alarm Linkage	Record, snapshot, local external alarm output, buzzer, log, screen prompt, tour	
26	Abnormal Alarm	No HDD, HDD error, insufficient capacity, illegal login, ACC off, high temperature, rollover,battery low voltage, over speed, low speed, collision, tapid turn, rapid speedup, hard braking,low battery safety exception, network security exception	
27	GPS	Support	
28	Wi-Fi	Supports built-in 2.4 G Wi-Fi modules or better	
29	3G/4G	Support or better	
30	Gyroscope	Supports event detection and alarm such as rollover, collision, rapid speedup/slowdown/ turn.	
31	Power Supply	DC 6-36V with the built-in UPS (Enables system protection in normal power cut-off and in under voltage of vehicle battery.)	
32	Power Consumption	12 W or better(without peripheral)	

33	Operating Temperature	-30 °C to +70°C (–22 °F to +158 °F)	
34	Operating Humidity	10 ~ 90%	
35	Certifications	BIS, CE, FCC, RoHS.	

ITEM NO. 47: 4 PORT GIGABIT POE SWITCH

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	PoE Ports	4, 1000Mbps; RJ45 ports; Max. 30W Output of Single PoE Port Transmission distance:0~100m	
2	Uplink Ports	2, 1000Mbps; Transmission Distance: 0-100m	
3	PoE Power Budget	45W or better	
4	Anti-thunder Level	Common mode: 2KV Differential mode: 2KV	
5	Switch Capacity	12 Gbps Full duplex or better	
6	ESD	Air discharge: 8KV, Contact discharge: 6KV	
7	Network Port	6	
8	Transmission Distance	0-100m/100 Mbps	
9	PoE Standard	IEEE802.3af, IEEE802.3at	
10	Packet Forwarding Rate	1.488Mpps/port	
11	Watchdog	Support	
12	MAC Address List	2K or better	
13	Power Source	Built-in Power Supply, Input: 110-264V AC, 50/60Hz	
14	Operating Temperature	-10°C~ -50°C	
15	Humidity	10%-95% , non-condensing	
16	Certifications	TEC Approved.	

ITEM NO. 48: 8 PORT GIGABIT POE SWITCH

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	PoE Ports	8, 1000Mbps; RJ45 ports	
2	Uplink Ports	2 x 1000Mbps RJ45 ports + 2 x 1000Mbps SFP ports	
3	Switch Capacity	24Gbps Full duplex	
4	PoE Power Budget	120W or Better	
5	Surge Protection	Common mode/RJ45 port: 4KV Differential mode/RJ45 port: 2KV Common mode/Power board: 2K Differential mode/Power board: 2KV	
6	PoE Watchdog	Supported	
7	Network Port	12	
8	Transmission Distance	0-100m/1000Mbps or Port 7-8 Max. 250m/10Mbps via Cat.5e or more under Extend mode	

9	PoE Standard	IEEE802.3af, IEEE802.3at	
10	Frame Filter & Transmission Rate	14800pps the most for 10Mbps port, 148800pps the most for 100Mbps port, 1488000pps the most for 1000Mbps port	
11	MAC Address List	8K or better	
12	Power Source	Built-in Power Supply, Input: 110-240V AC, 50/60Hz	
13	Operating Temperature	-10°C~ -50°C	
14	Humidity	10%-95% , non-condensing	
15	Certifications	TEC Approved.	

ITEM NO. 49: 16 PORT GIGABIT POE SWITCH

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	PoE Ports	16, 10/100/1000Mbps; RJ45 ports; Max. 30W Output of Single PoE Port	
2	Uplink Ports	2 x 1000Mbps RJ45 ports + 2 x 1000Mbps SFP ports	
3	Switching Capacity	40Gbps Full duplex or better	
4	Packet Forwarding Rate	29.76Mpps or better	
5	MAC Address List	8K or better	
6	Transmission Distance	0-100m/1000Mbps or Port 9-16 Max. 250m/10Mbps via Cat.5e or more under Extend mode	
7	PoE Feature	All ports support MDI/MDIX	
8	PoE Standard	IEEE802.3af, IEEE802.3at	
9	PoE Power Budget	200W or better	
10	Packet Buffer	3Mb or better	
11	PoE watchdog	Support	
12	Surge Protection	Common mode/RJ45 port: 4KV, Differential mode/RJ45 port: 2KV Common mode/Power board: 4KV, Differential mode/Power board: 2KV	
13	ESD Protection	Air discharge:8KV, Contact discharge:6KV	
14	Network protocol and Standard	IEEE802.3/802.3u/802.3ab/802.3z/802.3x	
15	Forwarding Mode	Store-and-forward	
16	Power Source	Bult-in Power Supply, Input: 110-240V AC, 50/60Hz	
17	Operating Temperature	-10°C~-50°C	
18	Operating Humidity	10%-95% , non-condensing	
19	Certifications	TEC Approved	

ITEM NO. 50: 24 PORT GIGABIT POE SWITCH

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	PoE Ports	24, 10/100/1000Mbps; RJ45 ports; Max. 30W Output of Single PoE Port	
2	Uplink Ports	2 x 1000Mbps RJ45 ports + 2 x 1000Mbps SFP ports	
3	Switching Capacity	56Gbps Full duplex or better	
4	Packet Forwarding Rate	41.664Mpps or better	
5	PoE Standard	IEEE802.3af, IEEE802.3at	
6	MAC Address List	8K or better	
7	Transmission Distance	0-100m/1000Mbps or Port 17-24 Max. 250m/10Mbps via Cat.5e or more under Extend mode	
8	PoE Feature	All ports support MDI/MDIX	
9	PoE Power Budget	300W or better	
10	Network protocol and Standard	IEEE802.3/802.3u/802.3ab/802.3z/802.3x	
11	Packet Buffer	3Mb or better	
12	PoE watchdog	Support	
13	Surge Protection	Common mode/RJ45 port:4KV, Differential mode/RJ45 port:2KV, Common mode/Power board:4KV, Differential mode/Power board:	
14	ESD Protection	Air discharge:8KV, Contact discharge:6KV	
15	Forwarding Mode	Store-and-forward	
16	Power Source	Bult-in Power Supply, Input: 110-240V AC, 50/60Hz	
17	Operating Temperature	-10°C~-50°C	
18	Operating Humidity	10%-95% , non-condensing	
19	Certifications	TEC Approved	

ITEM NO. 51: 8 PORT GIGABIT SWITCH ADDITIONAL 4*10G SFP+ PORTS (LAYER 2)

S.No	Minimum Technical Specifications	Compliance (Yes/No)
General Features		
1.	The switch should support a minimum of 8 nos. 10/100/1000 Ethernet Ports	
2.	The switch should support a minimum of 4*10G SFP+ Uplinks	
Performance and Scalability		
3.	The switch should support Full-duplex Switching bandwidth of 96 Gbps	
4.	The switch should support 64-Byte Packet Forwarding Rate of 71.4 Mpps	
5.	The switch should support a 800MHz CPU	

6.	The switch should support 16 MB of Flash memory	
7.	The switch should support 256 MB of DRAM	
8.	The switch should support mac address 16K	
9.	The switch should support 4096 VLAN IDs	
10.	The switch should support Jumbo frames of 9K bytes	
11.	The switch should support Maximum transmission unit (MTU) of 12K	
12.	The switch should support 64 IP routes	
13.	The switch support intervlan communcation	
Dimension		
14.	The Switch should be 1RU	
15.	The switch should support Operating temperature from 0°to 50°C	
16.	The switch should support Operating relative humidity 5% to 95% noncondensing	
Power Supply		
17.	The switch should support an auto-ranging power supply with input voltages between 100 and 240V AC	
Standards		
18.	The switch should support IEEE 802.1D Spanning Tree Protocol	
19.	The switch should support IEEE 802.1p	
20.	The switch should support IEEE 802.1Q Trunking	
21.	The switch should support IEEE 802.1s Multiple Spanning Tree (MSTP)	
22.	The switch should support IEEE 802.1w Rapid Spanning Tree (RSTP)	
23.	The switch should support IEEE 802.1x	
24.	The switch should support SNMP v1, v2c, and v3	
Layer-2 Features		
25.	The switch should support IEEE 802.1Q VLAN encapsulation	
26.	The switch should support Spanning-tree root guard to prevent other edge switches becoming the root bridge.	
27.	The switch should support IGMP filtering	
28.	The switch should support Per-port multicast storm control to prevent faulty end stations from degrading overall systems performance	
29.	The switch should support Per-port unicast storm control to prevent faulty end stations from degrading overall systems performance	
30.	The switch should support IGMP v1, v2 Snooping	
31.	The switch should support IGMP v3 Snooping	
Network security features		
32.	The switch should support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.	
33.	The switch should support Port-based ACLs for Layer 2 interfaces to allow application of security policies on individual switch ports.	
34.	The switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.	

35.	The switch should support TACACS+ and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.	
36.	The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.	
37.	The switch should support Private VLAN or equivalent	
DHCP Features		
38.	The switch should support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addresses DHCP binding database, and to rate-limit the amount of DHCP traffic that enters a switch port.	
39.	The switch should support DHCP Option 82 data Insertion	
40.	The switch should support DHCP Option 82 - Configurable Remote ID and Circuit ID	
L3 features		
41.	The switch should support basic L3 routing features	
42.	The switch should support at least 512 routes	

ITEM NO. 52: 24 PORT GIGABIT STACKABLE SWITCH WITH ADDITIONAL 4SFP+ PORTS

S.No	Minimum Technical Specifications	Compliance (Yes/No)
General Features		
1.	The switch should support a minimum of 24 nos. 10/100/1000 Ethernet Ports	
2.	The switch should support a minimum of 4 SFP+ Uplinks.	
Performance and Scalability		
3.	The switch should support Full-duplex Switching bandwidth of 128 Gbps	
4.	The switch should support 64-Byte Packet Forwarding Rate of 95 Mpps	
5.	The switch should support at least 16 MB of Flash memory	
6.	The switch should support at least 256 MB of DRAM	
7.	The switch should support 64 VLANs	
8.	The switch should support 4096 VLAN IDs	
9.	The switch should support Jumbo frames of 9216 bytes	
10.	The switch should support Maximum transmission unit (MTU) of 10K	
11.	The switch should support 16000 Unicast MAC addresses	
Stacking		
12.	The Switch architecture should be able to stack 4 switches together with virtual stacking	

13.	The Switch stack should be based on Distributed forwarding Architecture, where in each stack member forwards its own information on network.	
14.	The Switch stacking should support 20 Gbps of throughput.	
15.	The Switch stacking should support single IP address management for the group of switches.	
Dimension		
16.	The Switch should be 1RU	
17.	The switch should support Operating temperature from 0°to 45°C	
18.	The switch should support Operating relative humidity 10% to 90% noncondensing	
Power Supply		
19.	The switch should support SINGLE AC POWER SUPPLY 100 and 240V AC.	
Standards		
20.	The switch should support IEEE 802.1D Spanning Tree Protocol	
21.	The switch should support IEEE 802.1p	
22.	The switch should support IEEE 802.1s Multiple Spanning Tree (MSTP)	
23.	The switch should support IEEE 802.1w Rapid Spanning Tree (RSTP)	
24.	The switch should support IEEE 802.1x	
25.	The switch should support SNMP v1, v2c, and v3	
Layer-2 Features		
26.	The switch should support Per-port multicast, broadcast and unicast storm control to prevent faulty end stations from degrading overall systems performance	
27.	The switch should support Auto-negotiation on all ports to automatically selects half- or full- duplex transmission mode to optimize bandwidth	
28.	The switch should support IGMP v1, v2 Snooping	
29.	The switch should support IGMP v3 Snooping Multicasting	
30.	The switch should support IGMP v1, v2 Filtering	
Layer-3 Features		
31.	The switch should support Static Routing, RIPv1/v2, OSPFv2 OSPFv3	
32.	The switch should support LPM Routing	
33.	The switch should support IPv4/v6 dual stack	
34.	The switch should support VRRP, UDLD, IGMP v1/v2/v3, IGMP Proxy	
Network security features		
35.	The switch should support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.	
36.	The switch should support Port-based ACLs for Layer 2 interfaces to allow application of security policies on individual switch ports.	

37.	The switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.	
38.	The switch should support TACACS+ and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.	
39.	The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.	
40.	The switch should support Private VLAN, Guest VLAN, or equivalent	
DHCP Features		
41.	The switch should support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addresses DHCP binding database, and to rate-limit the amount of DHCP traffic that enters a switch port.	
42.	The switch should support DHCP Option 82 data Insertion	
43.	The switch should support DHCP Server/Client for IPv4/IPv6	
44.	The switch should be a MII model	
45.	There should be service center locations available all over India	
46.	Switch Should Be TEC approved	

ITEM NO. 53: 48 PORT GIGABIT STACKABLE SWITCH WITH ADDITIONAL 4SFP+ PORTS DUAL AC PS (LAYER 3)

S.No	Minimum Technical Specifications	Compliance (Yes/No)
General Features		
1.	The switch should support a minimum of 48 nos. 10/100/1000 Ethernet Ports	
2.	The switch should support a minimum of 4 SFP+ Uplinks.	
3.	10G SFP transceivers provided with the switch should be from the same OEM	
Performance and Scalability		
4.	The switch should support Full-duplex Switching bandwidth of 176 Gbps	
5.	The switch should support 64-Byte Packet Forwarding Rate of 132Mpps	
6.	The switch should support at least 16 MB of Flash memory	
7.	The switch should support at least 512 MB of DRAM	
8.	The switch should support 64 VLANs	
9.	The switch should support 4096 VLAN IDs	
10.	The switch should support Jumbo frames of 9216 bytes	
11.	The switch should support Maximum transmission unit (MTU) of 10K	
12.	The switch should support MAC addresses Table of 32K	

Stacking		
13.	The Switch architecture should be able to stack 4 switches together with virtual stacking	
14.	The Switch stack should be based on Distributed forwarding Architecture, where in each stack member forwards its own information on network.	
15.	The Switch stacking should support 40 Gbps of throughput.	
16.	The Switch stacking should support single IP address management for the group of switches.	
Dimension		
17.	The Switch should be 1RU	
18.	The switch should support Operating temperature from 0°to 50°C	
19.	The switch should support Operating relative humidity 10% to 90% noncondensing	
Power Supply		
20.	The switch should support internal AC power supplies ranging from voltages between 100 and 240V AC without having to connect any external DC power supplies	
Standards		
21.	The switch should support IEEE 802.1D Spanning Tree Protocol	
22.	The switch should support IEEE 802.1p	
23.	The switch should support IEEE 802.1s Multiple Spanning Tree (MSTP)	
24.	The switch should support IEEE 802.1w Rapid Spanning Tree (RSTP)	
25.	The switch should support IEEE 802.1x	
26.	The switch should support SNMP v1, v2c, and v3	
Layer-2 Features		
27.	The switch should support Per-port multicast, broadcast and unicast storm control to prevent faulty end stations from degrading overall systems performance	
28.	The switch should support Auto-negotiation on all ports to automatically selects half- or full- duplex transmission mode to optimize bandwidth	
29.	The switch should support IGMP v1, v2 Snooping	
30.	The switch should support IGMP v3 Snooping Multicasting	
31.	The switch should support IGMP v1, v2 Filtering	
32.	The switch should support SP, WRR, Traffic Shaping	
Layer-3 Features		
33.	The switch should support Static Routing, RIPv1/v2, OSPFv2 OSPFv3	
34.	The switch should support LPM Routing	
35.	The switch should support IPv4/v6 dual stack	
36.	The switch should support VRRP, UDLD, IGMP v1/v2/v3, IGMP Proxy	
Network security features		

37.	The switch should support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.	
38.	The switch should support Port-based ACLs for Layer 2 interfaces to allow application of security policies on individual switch ports.	
39.	The switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.	
40.	The switch should support TACACS+ and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.	
41.	The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.	
42.	The switch should support Private VLAN, Guest VLAN, or equivalent	
43.	Should support Management options through TFTP, FTP, SFTP, NTP, ZTP, SPAN, RSPAN along with Telnet, SSH v1/2, HTTP, HTTPS, SNMP v1/v2/v3, RMON	
DHCP Features		
44.	The switch should support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addresses DHCP binding database, and to rate-limit the amount of DHCP traffic that enters a switch port.	
45.	The switch should support DHCP Option 82 data Insertion	
46.	The switch should support DHCP Server/Client for IPv4/IPv6	
Warranty and Support		
47.	OEM should provide warranty of at least 3 years from the date of purchase	
48.	Service centers to be present in across PAN-India and a Toll-free support to be available in India for online assistance regarding the switch installation	
49.	OEM should be TEC Certified	

ITEM NO. 54: 8 PORT INDUSTRIAL POE SWITCH

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Network Port	8 x 10/100/1000Mbps ports 2 x 1000Mbps SFP ports 1 x Console port	
2	Network Standard	IEEE 802.3i, IEEE 802.3u, IEEE802.3ab, IEEE802.3x, IEEE802.3az, IEEE802.3af, IEEE802.3at	
3	Optical Cable	Multi mode: 850nm 0 ~ 550M, Single mode: 1310nm 0 ~ 40KM, 1550nm 0 ~ 120KM	

4	Twisted Pair Transmission	10BASE-T: Cat3,4,5 UTP(≤ 100 meter) 100BASE-TX: Cat5 or later UTP(≤ 100 meter) 1000BASE-T: Cat5 or later UTP(≤ 100 meter)	
5	MAC Address List	8K or better	
6	Switching Capacity	20Gbps	
7	PoE Power Budget	120W	
8	Packet Forwarding Rate	14.88Mpps	
9	Max/Average Power Port	30W per Port	
10	VLAN	Support port based VLAN (4K), IEEE802.1q Support protocol based VLAN Support Voice VLAN Support for MAC address-based VLANs Support Access, Trunk, Hybrid three types of port configuration QinQ; Generic VLAN Registration Protocol (GVRP)	
11	Layer 3 Function	L2+ network management function, Support IPV4/IPV6 management	
12	Port Aggregation	Support LACP, Support static polymerization, Support the largest 8 aggregation groups; each aggregation group supports 8 ports	
13	Spanning Tree	Support STP (IEEE802.1d), Support RSTP (IEEE802.1w), Support MSTP (IEEE802.1s)	
14	Industrial Ring Network Protocol	Support G.8032 (ERPS), support 255 loops at most, and supports 1024 devices per ring The self healing time of the ring network is less than 20ms	
15	QoS	Support Diff-Serv QoS, Each port supports 8 output queues, Support 802.1p/DSCP priority mapping, Support queue scheduling mechanism (SP, WRR, SP+WRR), Support priority tag Mark/Remark, Support stream based packet filtering, Support for stream based redirection, Support flow based speed limit	
16	Safety Characteristics	Support user grading management and password protection Support IEEE802.1X authentication / centralized MAC address authentication Support AAA&RADIUS authentication Support the number of MAC address learning restrictions Support MAC address black hole Support SSH 2.0 to provide secure passwords for user login Support SSL to ensure data transmission security Support port isolation Support the speed limit function of ARP message Support IP source address protection Support ARP intrusion detection function Support against DoS attacks Support port broadcast message suppression Support host data backup mechanism Binding capabilities of IP+MAC+VLAN+ ports	

17	Multicast	Support IGMP Snooping V1/V2 and support 1024 multicast groups at most Support the user's quick departure mechanism Support MLD Snooping V1/V2 Support multicast VLAN	
18	ACL	Support L2 to L4 packet filtering function, match the first 80 bytes of the message Provide based on the source MAC address, destination MAC address, source IP address, destination IP address, IP protocol type, TCP/UDP port, TCP/UDP port range, VLAN and other definition ACL Support ACL based on port and VLAN	
19	Mirror	Bi-directional traffic mirroring supporting the basic port	
20	DHCP	Support DHCP Client, Support DHCP Snooping	
21	Management And Maintenance	Support Console/AUX Modem/Telnet/SSH2.0 CLI command line configuration Support WEB network management (HTTPS) Support FTP, TFTP, Xmodem, SFTP file download management Support SNMP V1/V2C/V3 Support one bond reduction Support NTP clock Support system work log Support Ping detection Support cable state detection Support CPU instant utilization status view Support link layer discovery protocol LLDP centre	
22	Forwarding Mode	Store-and-Forward	
23	Lightning Protection	Lightning protection: 6KV 8/20us;Protection level: IP40 IEC61000-4-2(ESD):±8kV contact discharge,±15kV air discharge IEC61000-4-3(RS):10V/m(80~1000MHz) IEC61000-4-4(EFT): power cable:±2kV; data cable:±2kV IEC61000-4-5(Surge):power cable:CM±2kV/DM±1kV; data cable:±4kV IEC61000-4-6(radio frequency transmission):10V(150kHz~80MHz) IEC61000-4-8(power frequency magnetic field):100A/m;1000A/m ,1s to 3s IEC61000-4-9(pulsed magnet field):1000A/m IEC61000-4-10(damped oscillation):30A/m 1MHz IEC61000-4-12/18(shockwave):CM 2.5kV,DM 1kV IEC61000-4-16(common-mode transmission):30V; 300V,1s FCC Part 15/CISPR22(EN55022):Class A IEC61000-6-2(Common Industrial Standard)	
24	Mechanical Properties	EC60068-2-6 (anti vibration), IEC60068-2-27 (anti shock), IEC60068-2-32 (free fall)	
25	Operating Temperature	-40 ~ +75°C	
26	Certifications	TEC Approved	

ITEM NO. 55: 4 PORT INDUSTRIAL POE SWITCH

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Network Port	4 x 10/100/1000Mbps ports 2 x 1000Mbps SFP ports 1 x Console port	
2	Network Standard	IEEE 802.3i, IEEE 802.3u, IEEE802.3ab, IEEE802.3x, IEEE802.3az, IEEE802.3af, IEEE802.3at	
3	Network Medium	10BASE-T: Cat3,4,5 UTP(≤100 meter) 100BASE-TX: Cat5 or later UTP(≤100 meter) 1000BASE-T: Cat5 or later UTP(≤100 meter)	
4	MAC Address List	8K or better	
5	Switching Capacity	12Gbps	
6	PoE Power Budget	120W	
7	Jumbo Frame	12K Bytes	
8	Packet Forwarding Rate	8.928Mpps or better	
9	VLAN	256 Static VLAN , Support Port-based, IEEE 802.1Q Tagged-based, 8 groups Protocol-based, 256 MAC-based, Voice VLAN: 16 OUI Mode (Auto/Manual) Surveillance VLAN: 16 OUI Mode (Auto/Manual) QinQ (IEEE 802.1ad)- Basic GARP VLAN Registration Protocol (GVRP)	
10	L2 Switching Features	8K MAC Address Table 10K (10000) Jumbo Frame Flow Control - 802.3x (Full-duplex) , Back-Pressure (Half-duplex) Spanning Tree - IEEE 802.1D (STP) , IEEE 802.1w (RSTP) , IEEE 802.1s (MSTP)/16 instances , Auto Edge Port , BPDU Filtering , ERPS, Self Loop Detection Link Aggregation - IEEE 802.3ad LACP, Static Trunk , Max 8 Group ,Max 8 Ports/Group , Traffic Load Balancing	
11	L3 Switching Features	Static Routing - IPv4/IPv6 Address Resolution Protocol (ARP) - Static ARP	
12	Multicast	Common - 256 Multicast Groups , Immediate Leave , Static/Forbidden Router Port , Static/ Forbidden Forward Port -,128 profiles Filtering , Throttling IGMP Snooping - IGMP v1/v2 ,IGMP v3 Basic (BISS) ,IGMP v2/v3 Querier MLD Snooping - MLD v1/v2 Multicast VLAN Registration (MVR) - IPv4	
13	QoS	Priority Queue- 8 queues/port Queue Scheduling - WRR, WFQ , Strict Priority, Hybrid (WRR+SP or WFQ+SP) Class of Service - Port-based , 802.1p , IP TOS Precedence , IP DSCP Trusted QoS Rate Limit - Port-based (Ingress/Egress)	
14	Security	AAA Authentication , 8 TACACS+ , 8 RADIUS Authentication Manager - IEEE 802.1X ,MAC Auth ,	

		Web Auth , Guest VLAN , Port-based , Host -based Account Manager - Local Authentication , 8 Multiple User Account , Multi-Level Security (Manager/Operator) , Password Recovery Procedures Management Access - Management VLAN , 256Management ACL SSL - SSLv2 ,SSLv3 ,TLSv1 WebUI - HTTPS CLI - SSH v1/v2 Port Security - 256 Dynamic Lock Storm Control - Broadcast , Unknown Multicast , Unknown Unicast Spanning Tree - BPDU Guard Protected Port (Port Isolation) , Black Hole MAC , CPU Defence Engine , DoS Prevention , DHCP Snooping (with Option 82) , Dynamic ARP Inspection , 256 IP Source Guard , IP/MAC/Port Binding (IMPB) , Dynamic VLAN Assignment	
15	IPv6 Features	IPv6 Host - Auto Configuration ,Static IPv6 Address and Prefix Length , Static IPv6 Default Gateway , IPv6 Neighbour Discovery (ND) , IPv6 Duplicate Address Detection , ICMPv6 IPv6 Application - HTTP/HTTPS ,TELNET , SSH , SNMP , TFTP , Syslog , PING , DHCPv6	
16	ACL	ACL Type - L2/L3/L4 , 512 MAC-based ,512 IPv4-based , 512 IPv6-based PoE Function - Power , Current , Voltage , PoE Watch Dog, Access Rules - 1024	
17	Management	CLI - 3 sessions Console , 3 sessions Telnet (RFC854) WebUI - HTTPS SNMP(v1,v2c,v3) File Management - Firmware Upgrade/Backup , Dual Images , Configuration Download/ Backup ,Multiple Configurations Upload/Download - TFTP (RFC783) ,HTTP , UART Time Management - Local - SNTP Port Management - Friendly Port Name (Port Description) ,Error Disabled Recovery Line Management - Console , Telnet (RFC854) , SSH v1/v2 DHCP - Client , DNS - Client , Software Reset Button ,IEEE (802.3az) 32 entries / type RMON Management	
18	Transfer Method	Store-and-Forward	
19	Power Source	48V DC Suitable Industrial Grade Power Supply	
20	Operating Temperature	-40 ~ +75°C	
21	Certifications	TEC Approved	

ITEM NO. 56: 8 PORT MANAGED POE SWITCH

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
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1	Network Port	8 x 10/100/1000Mbps ports 2 x 1000Mbps SFP ports 1 x Console port	
2	Network Standard	IEEE 802.3i, IEEE 802.3u, IEEE802.3ab, IEEE802.3x, IEEE802.3az, IEEE802.3af, IEEE802.3at	
3	PoE Power Budget	120W or better	
4	Network Media (Cable)	10Base-T: UTP category 3, 4, 5 cable (maximum 100m) 100Base-Tx: UTP category 5, 5e cable (maximum 100m) 1000Base-T: UTP category 5e, 6 cable (maximum 100m) 1000Base-X: MMF, SMF	
5	Transfer Method	Store-and-Forward	
6	PoE Ports	8 x PoE ports compliant with 802.3at/af	
7	Switching Capacity	20Gbps	
8	Jumbo Frame	12K Bytes	
9	PoE Standard	IEEE802.3af, IEEE802.3at	
10	Packet Forwarding Rate	41.67Mpps	
11	MAC Address List	8K	
12	Power Source	100~240VAC,50/60HZ	
13	Operating Temperature	-10°C~ -50°C	
14	Certifications	ISO 9001, 14001, 27001, 45001,20000 CMMI Level 3 & Level 5, ISO/IEC 27032, GDPR	

ITEM NO. 57: 16 PORT MANAGED POE SWITCH

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Network Port	16x10/100/1000Mbps RJ45 ports, 2x1000Mbps SFP fiber ports or 1x Console port	
2	Network Standard	IEEE 802.3i, 802.3u, 802.3ab, 802.3x, 802.3az, 802.3at, 802.3af	
3	Switching Capacity	36Gbps	
4	Packet Forwarding Rate	26.784Mpps	
5	PoE Ports	RJ45, 16xPoE ports compliant with 802.3af/at	
6	MAC Address List	8K	
7	Packet Buffer	4.1Mbit	
8	Jumbo Frame	10KBytes	
9	Transfer Method	Store-and-Forward	
10	Indicator	Electrical port indicator, optical port indicator, power input indicator, system running indicator	
11	VLAN	Surveillance VLAN: 16 OUI Mode (Auto/Manual) Voice VLAN: 16 OUI Mode (Auto/Manual) QinQ (IEEE 802.1ad): Basic GARP VLAN Registration	

		Protocol (GVRP)4096 Static VLAN IEEE 802.1Q Tagged-based 8 groups Protocol-based 256 MAC-based	
12	Quality of Service (QoS)	Trusted QoS Queue Scheduling: WRR, WFQ, Strict Priority, Hybrid(WRR+SP or WFQ+SP) Class of Service: Port-based, 802.1p, IP TOS Precedence, IP DSCP Rate Limit: Port-based (Ingress/Egress)	
13	Operating Temperature	0°C~45°C(0°F~113°F)	
14	Operating Humidity	10%~90% non-condensing	
15	Power Source	AC100~240V 50/60Hz	
16	Power Budget	240W or better	
17	Certifications	ISO 9001, 14001, 27001, 45001,20000 CMMI Level 3 & Level 5, ISO/IEC 27032, GDPR	

ITEM NO. 58: 24 PORT MANAGED POE SWITCH

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Network Port	24 x 10/100/1000Mbps ports 4 x 1000Mbps Combo ports 1 x Console port	
2	Network Standard	IEEE 802.3i, IEEE 802.3u, IEEE802.3ab, IEEE802.3x, IEEE802.3az, IEEE802.3af, IEEE802.3at	
3	PoE Ports (RJ45)	24 x PoE ports compliant with 802.3at/af	
4	Transfer Method	Store-and-Forward	
5	MAC Address Table	8K or better	
6	Switching Capacity	56Gbps	
7	Packet Buffer	4.1Mbit	
8	Packet Forwarding Rate	41.67Mpps	
9	Jumbo Frame	12K Bytes	
10	Power Budget	390W	
11	Power Pin Assignment	1/2(+), 3/6(-)	
12	Power Input	AC 180~240V	
13	Operating Temperature	-0°C ~55°C	
14	Certifications	ISO 9001, 14001, 27001, 45001,20000 CMMI Level 3 & Level 5, ISO/IEC 27032, GDPR	

ITEM NO. 59: CAT6 CABLE SPECIFICATIONS

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
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1	Conductor	Solid Bare Electrolytic Grade Copper	
2	Insulation	Polyethylene (HDPE)	
3	Nominal Conductor Diameter	23 AWG	
4	Cross Filler	HDPE	
5	Outer Sheath	PVC Sheath/ LSHZ	
6	Pairing	Twisted into Two core	
7	Approximate OD	5.80 mm	
8	Rip Cord	Yes	
9	Sequential Marking	At Every Meter	
10	Resistance Unbalance	5% Max	
11	Conductor Resistance	93.5Ω/1000 Mtr@20°C Max	
12	Mutual Capacitance	5.6nf/100Mtr. Max	
13	NVP	69%	
14	Min Bending Radius	10x Jacket Dia	
15	Impedance	100±15% Ω	
16	Packing	305 Mtrs	
17	Operating Temperature	-20 to +60°C	

ITEM NO. 60: OUTDOOR CAT6 CABLE SPECIFICATIONS

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Conductor	Solid Bare Electrolytic Grade Copper	
2	Insulation	Polyethylene (HDPE)	
3	Nominal Conductor Diameter	24 AWG (0.48mm ± 0.020mm)	
4	Separator	Each pair separated with a cross separator	
5	Pairing	2 insulated conductors twisted together	
6	Outer Jacket	PE	
7	Inner Jacket	PVC	
8	Colour of Jacket	Black	
9	Approximate OD	5.8 ± 0.1 mm	
10	Impedance	100±15% Ω	
11	Resistance Unbalance	5% Max	
12	Nominal Velocity of Propagation	69%	
13	Resistance Unbalance	5% Max	
14	Conductor Resistance	≤9.38/100m	
15	Resistance Unbalance	5% Max	
16	Capacitance Unbalance	330pF/100m	

17	Bending Radius	< 8 x Cable Diameter at -20° ±1°C	
18	Delay Skew	<45nS	
19	Mutual Capacitance	<5.6nf/100m	
20	Sequential Marking	At Every Meter	
21	Operating Temperature	-15 to +60°C	
22	Packing	305 Mtrs	

ITEM NO. 61: ARMOURED CAT6 CABLE SPECIFICATIONS

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Conduct Type	Solid Bare Electrolytic Grade Copper	
2	Nominal Conductor Diameter	23 AWG (0.555 ± 0.015mm)	
3	Insulation	Polyethylene (HDPE)	
4	No. of Pair	4, Each pair Twisted	
5	Pairing	Twisted into Two core	
6	Outer Jacket	LD	
7	Approximate OD	9.30 ±0.55 mm	
8	Inner Jacket	PVC	
9	Sequential Marking	Every Meter	
10	Resistance Unbalance	5% Max	
11	Conductor Resistance	93.5Ω/km@20°C Max	
12	Mutual Capacitance	5.6nf/100Mtr. Max	
13	NVP	69%	
14	Impedance	100±15% Ω	
15	Worst Cable Skew	45ns/ 100mtr.	
16	Armour	Aluminium (0.6mm)	
17	Packing	305 Mtrs	
18	Temperature	-20 to +60°C	

ITEM NO. 62: 4U INDOOR RACK

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Wall Mount Rack	4U	
2	Basic frame	CRCA sheet 0.6mm thickness with toughened glass.	
3	Construction	Welded	
4	Cable Entry/Exit provision	Top & Bottom cover: cable entry cut-outs.	
5	Front Door	Lockable–Toughened glass with Lock & Key.	
6	Powder coated	Coated Color RAL– 7035	

7	Accessories	PDU 3 Sockets (5amp), 1U cantilever tray, 1 Fan Included.	
8	Width	550mm	
9	Depth	350mm	

ITEM NO. 63: 6U INDOOR RACK

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Wall Mount Rack	6U	
2	Basic frame	CRCA (MS SHEET)	
3	Construction	Welded	
4	Cable Entry/Exit provision	Top & Bottom with Rubber at Edges	
5	Front Door	Toughened Glass with Lock & Key.	
6	Load Bearing Capacity	30Kg	
7	Powder coated	Coated Color RAL– 7035	
8	Mounting	19” Vertical Mounting RAIL with Clear “U” Marking	
9	Accessories	1 Fan (230V AC/90CFM), 1 Cantilever Tray, One 6 Socket (5amp) PDU, 1 Hardware Packet	
10	Width	550mm	
11	Depth	450mm	

ITEM NO. 64: 12U INDOOR RACK

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Wall Mount Rack	12U	
2	Basic frame	CRCA MS Sheet	
3	Construction	Welded	
4	Cable Entry/Exit provision	Top & Bottom with Rubber at Edges	
5	Front Door	Toughened Glass with Lock & Key	
6	Vertical Mounting RAIL	19” inch with Clear “U” Marking	
7	Powder coated	Coated Color RAL– 7035	
8	Certificates	DIN41494 or equivalent ISO Standards	
9	Load Bearing Capacity	40Kg	

10	Accessories	1 PDU, 6Socket(5/15Amp), 1 Cooling Fan (230V AC/90CFM), 1 Cantilever Tray, 1 Cable Manager, 1 Hardware Kit	
11	Width	550mm	
12	Depth	450mm	

ITEM NO. 65: 24U INDOOR RACK

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Wall Mount Rack	24U	
2	Basic frame	CRCA sheet	
3	Construction	Welded.	
4	Cable Entry/Exit provision	Top & Bottom with Rubber at Edges	
5	Front Door	Toughened Glass with Lock & Key.	
6	Wheel	Caster Wheel (Set of 4)-2 with Break & 2 Without break	
7	Powder coated	coated Color RAL– 7035.	
8	Adjustable Levelers	Adjustable Levelers (Set of 4) Sets 1	
9	Accessories	Floor mount 24U, Rear Metal Door With Cam Lock, Side Panels With Key Locks and Slam Latch	
10	Width	600mm	
11	Depth	800mm	

ITEM NO. 66: 42U INDOOR RACK

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Wall Mount Rack	STIL-42U Floor standing Server rack-closed from all side	
2	Basic frame	CRCA structure	
3	Construction	Welded	
4	Cable Entry/Exit provision	Top & Bottom with Rubber at Edges with Mounting Angle 4	
5	Main frame	Main frame pillars with Width, having 2nos 6 line cable entry/exit provision at top and bottom with rubber protection	
6	Side Panels	Fully louvered detachable side panel with Latches	
7	Powder coated	Rack finishing with electrostatic Powder coated paint	
8	Accessories	Fan housing unit with 4 fans: 1No. 1U Cantilever Tray (400mm depth): 2 No. PDU 6 Indian round Pin Socket 5/15Amp Indian round Pin Socket with MCB 32Amp:	

		2 No. 1U Cable manager: 2 No. Caster Wheels (4 Nos. - 1 set): 1 No. Hardware Packet (10 Nos.): 1/Rack	
9	Width	600mm	
10	Depth	1000mm	

ITEM NO. 67: 2U OUTDOOR RACK

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Wall Mount Rack	2U	
2	Basic frame	CRCA (MS SHEET) 0.8mm thickness.	
3	Construction	Welded.	
4	Cable Entry/Exit provision	Bottom with 2nos. Cable Entry/Exit cut-outs with rubber protection.	
5	Front Door	Front plain door with key lock and gasket	
6	Top	Plain top with extension on 3 sides (LH, RH & Front)	
7	Mounting	Wall/Pole mount with brackets	
8	Weatherproof	IP55 Rated (Waterproof and dust proof)	
9	Standard Finish	PP Powder Coating, Rust proof.	
10	Width	450mm	
11	Depth	350mm	

ITEM NO. 68: 6U OUTDOOR RACK

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Wall Mount Rack	6U	
2	Basic frame	GI (Galvanized Sheet)	
3	Construction	Welded.	
4	Cooling Fans	Provided at the Front Door with a Door Hood- 90CFM AC Fan, PDU 5amp	
5	Front Door	Front plain door with key lock and gasket	
6	Frame	Rigid frame fixable to the pole	
7	Mounting	Wall/Pole mount with brackets	
8	Weatherproof	IP55 Rated (Waterproof and dust proof)	
9	Standard Finish	PP Powder Coating, Rust proof	
10	Width	550mm	
11	Depth	450mm	

ITEM NO. 69: 9U OUTDOOR RACK

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Wall Mount Rack	9U	
2	Basic frame	CRCA (MS SHEET) 0.8mm thickness.	
3	Construction	Welded.	
4	Cooling Fans	Cooling fans provision on Left and Right side, 90CFM, 230V AC Fan - 2 Nos (minimum) Self-adhesive thermal foam from inside Door Hinges - 2 Nos, 6 Socket PDU (5amp	
5	Cable Entry/Exit provision	Bottom with 2nos. Cable Entry/Exit cut-outs with rubber protection.	
6	Front Door	Front plain door with key lock and gasket	
7	Top	Plain top with extension on 3 sides (LH, RH & Front)	
8	Mounting	Wall/Pole mount with brackets	
9	Weatherproof	IP56 Rated (Dust proof, Rust proof & Rainwater protected)	
10	Standard Finish	Power Coated RAL 7035 PP (Light Grey).	
11	Width	550mm	
12	Depth	500mm	

ITEM NO. 70: 16 BAY NAS

S.No	Parameter	Required Specification	Compliance (Yes/ No)
1.	Form Factor	Rack Mountable (3U or better) with rail kit	
2.	Number of Bays	Minimum 16 × 3.5"/2.5" hot-swappable drive bays	
3.	Supported Drives	SATA III (6 Gbps) / SAS (12 Gbps), Surveillance-grade HDD	
4.	Raw Storage Capacity	Minimum 200 TB (expandable to 500 TB or higher via expansion units)	
5.	Processor	Server-grade multi-core CPU (Intel Xeon / AMD Ryzen), minimum 6–8 cores	
6.	Memory (RAM)	Minimum 16 GB DDR4 ECC (expandable up to 64 GB or more)	
7.	RAID Support	RAID 0, 1, 5, 6, 10, JBOD	
8.	Write Optimization	Optimized for high sequential write throughput (≥ 1 GB/s)	
9.	SSD Cache Support	Read/Write SSD cache acceleration support	
10.	Network Interfaces	Minimum: 2 × 10GbE SFP+ ports + 2 × 1GbE RJ45 ports	
11.	Throughput	Should support high concurrent video streams (≥ 500+ HD camera streams depending on bitrate)	
12.	Protocols Supported	SMB/CIFS, NFS, FTP, iSCSI	

13.	Surveillance Compatibility	Compatible with VMS/NVR systems (ONVIF compliant, CCTV storage optimized)	
14.	Recording Support	Continuous 24×7 recording with multi-stream handling	
15.	File System	Support for high-integrity file systems (ZFS / Btrfs / EXT4)	
16.	Data Protection	Snapshot, replication, failover support	
17.	Hot Swap Support	Hot-swappable drives with RAID rebuild capability	
18.	Power Supply	Dual redundant hot-swappable PSU	
19.	Cooling System	Redundant hot-swappable fans (high airflow for continuous operation)	
20.	Expansion Capability	Support for external JBOD expansion (up to 40+ drives)	
21.	PCIe Expansion	Minimum 2 PCIe slots for NIC / cache / GPU (optional analytics)	
22.	Security Features	AES-256 encryption, access control, audit logs	
23.	Monitoring & Alerts	SNMP, email alerts, disk failure alerts	
24.	Operating System	Dedicated NAS OS with web GUI and surveillance modules	
25.	Warranty	Minimum 3 years OEM warranty with onsite support	
26.	Certifications	CE / FCC / RoHS certified	

ITEM NO. 71: 24 BAY NAS

S.No	Parameter	Required Specification	Compliance (Yes/ No)
1.	Form Factor	Rack Mountable (3U or better) with rail kit	
2.	Number of Bays	Minimum 24 × 3.5"/2.5" hot-swappable drive bays	
3.	Supported Drives	SATA III (6 Gbps) / SAS (12 Gbps), Surveillance-grade HDD	
4.	Raw Storage Capacity	Minimum 300 TB (expandable to 700 TB or higher via expansion units)	
5.	Processor	Server-grade multi-core CPU (minimum 8–12 cores)	
6.	Memory (RAM)	Minimum 32 GB DDR5 ECC (expandable up to 128 GB or more)	
7.	RAID Support	RAID 0, 1, 5, 6, 10, JBOD (RAID 6 mandatory)	
8.	Write Optimization	High sequential write throughput (≥ 2 GB/s)	
9.	SSD Cache Support	Read/Write SSD cache support	
10.	Network Interfaces	Minimum: 2 × 10GbE SFP+ ports + 2 × 1GbE	
11.	Throughput	Should support high concurrent video streams (≥ 800+ HD camera streams depending on bitrate)	
12.	Protocols Supported	SMB/CIFS, NFS, FTP, iSCSI	

13.	Surveillance Compatibility	Compatible with VMS/NVR systems, ONVIF compliant	
14.	Recording Support	Continuous 24×7 multi-stream recording	
15.	File System	Enterprise grade file system with data integrity features	
16.	Data Protection	Snapshot, replication, failover support, RAID rebuild	
17.	Hot Swap Support	Drives + PSU + fans hot-swappable	
18.	Power Supply	Dual redundant hot-swappable PSU	
19.	Cooling System	Redundant hot-efficiency fans	
20.	Expansion Capability	Support for external JBOD expansion (up to 100+ drives)	
21.	PCIe Expansion	Minimum 2 PCIe slots	
22.	Security Features	AES-256 encryption, access control, audit logs	
23.	Monitoring & Alerts	SNMP, email alerts, disk failure alerts	
24.	Operating System	Dedicated NAS OS with web GUI and surveillance modules	
25.	Warranty	Minimum 3 years OEM warranty with onsite support	
26.	Certifications	CE / FCC / RoHS certified	

ITEM NO. 72: 48 BAY NAS

S.No	Parameter	Required Specification	Compliance (Yes/ No)
1.	Form Factor	Rack Mountable (4U or higher) with rail kit	
2.	Number of Bays	Minimum 48 × 3.5” hot-swappable drive bays	
3.	Supported Drives	SATA / SAS enterprise & surveillance HDD/SSD	
4.	Raw Storage Capacity	Minimum 700 TB	
5.	Processor	Dual Server-grade multi-core CPU (minimum 12-24 cores)	
6.	Memory (RAM)	Minimum 64 GB DDR5 ECC (expandable up to 256 GB or more)	
7.	RAID Support	RAID 0, 1, 5, 6, 10, JBOD (RAID 6 mandatory)	
8.	Write Optimization	High sequential write throughput (≥ 4 GB/s)	
9.	SSD Cache Support	Read/Write SSD cache support	
10.	Network Interfaces	Minimum: 2 × 25GbE SFP+ ports + 2 × 10GbE + 1 GbE	
11.	Throughput	Should support high concurrent video streams (≥ 1500+ HD camera streams depending on bitrate)	
12.	Protocols Supported	SMB/CIFS, NFS, FTP, iSCSI	
13.	Surveillance Compatibility	Compatible with VMS/NVR systems, ONVIF compliant	
14.	Recording Support	Continuous 24×7 multi-stream recording	

15.	File System	Enterprise grade file system with data integrity features	
16.	Data Protection	Snapshot, replication, failover support, RAID rebuild	
17.	Hot Swap Support	Drives + PSU + fans hot-swappable	
18.	Power Supply	Dual redundant hot-swappable PSU	
19.	Cooling System	Redundant hot-efficiency fans	
20.	Expansion Capability	Support for external JBOD expansion (up to 100+ drives)	
21.	PCIe Expansion	Minimum 3 PCIe slots	
22.	Security Features	AES-256 encryption, access control, audit logs	
23.	Monitoring & Alerts	SNMP, email alerts, disk failure alerts	
24.	Operating System	Dedicated NAS OS with web GUI and surveillance modules	
25.	Warranty	Minimum 3 years OEM warranty with onsite support	
26.	Certifications	CE / FCC / RoHS certified	

ITEM NO. 73: EXTERNAL IR WITH ADJUSTABLE ANGLE, EYE PROTECTION

S.No	Parameter	Required Specification	Compliance (Yes/No)
1.	External IR Illuminator	Camera system shall support external infrared (IR) illuminator for enhanced night vision capability	
2.	IR Range	External IR should provide minimum illumination distance of 50–150 meters	
3.	Adjustable Angle	IR unit shall have mechanical adjustment (pan/tilt/angle control) to align with camera field of view	
4.	Beam Control	Should support adjustable beam angle to ensure uniform illumination and avoid overexposure	
5.	Synchronization	IR illuminator should be synchronized with camera day/night mode (Auto IR ON/OFF)	
6.	Eye Protection	IR system shall comply with eye safety standards (IEC 62471 or equivalent)	
7.	Auto Intensity Control	Should support automatic IR intensity adjustment based on object distance to prevent glare and ensure eye safety	
8.	Mounting	External IR unit should be weatherproof and suitable for outdoor mounting (minimum IP66/IP67)	
9.	Power Supply	Should support standard power input (12V DC / PoE / as per system design)	
10.	Compatibility	IR illuminator should be fully compatible with the supplied camera system	

ITEM NO. 74: SURVEILLANCE HARD DISK – 1, 2, 4, 6, 8, 10, 20 TB

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	Marketing Name	Surveillance HDD	
2.	Interface	SATA 6Gb/s	
3.	Cache Multi segmented (MB)	64	
4.	Bytes per Sector	4096	
Surveillance Performance			
5.	RV (Rotational Vibration) Sensor	Y	
6.	Drive Bays Supported	1 to 16	
7.	Cameras Supported	Up to 32	
8.	Seek Average, Read (ms)	<9.5	
9.	Seek Average, Write (ms)	<9.5	
10.	Average Data Rate, Read/Write (MB/s)	146	
11.	Max Sustained Data Rate, OD Read (MB/s)	180	
Voltage			
12.	Voltage Tolerance, Including Noise (5V)	±5%	
13.	Voltage Tolerance, Including Noise (12V)	±10%	
14.	Power Management		
15.	Startup Power (A)	2	
16.	Operating Mode, Typical (W)	5.6	
17.	Idle Average (W)	4	
18.	Standby Mode (W)	0.5	
19.	Sleep Mode (W)	0.5	
Environmental			
20.	Temperature		
21.	Operating (ambient, min °C)	0	
22.	Operating (drive case, max °C)	70	
23.	Non-operating (ambient, min °C)	-40	
24.	Non-operating (ambient, max °C)	70	
Reliability			
25.	Load/Unload Cycles	300,000	
26.	Non recoverable Read Errors per Bits Read, Max	1 per 10E14	
27.	Annualized Failure Rate (AFR)	<1%	
28.	Power-On Hours	8760	

29.	Warranty	3 years	
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ITEM NO. 75: IR ILLUMINATOR - 100 METER

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	LED Type	12PCS 2W High Power LED	
2	Wavelength	850nm	
3	Beam Angle	60°	
4	Day and night switch	Auto	
5	IR Distance	100 Mtr.	
6	Bracket	Mounting	
7	Temperature	-40°C to +50°C	
8	Ingress Protection	IP65	
9	Color	Gray or vary as per OEM	
10	Housing	Aluminum Die Casting	
11	Panel	Tempered glass panel	
12	Voltage	AC110-220V/AC24V/DC12V	
13	Plug	AC110-220V (standard), other voltage optional	
14	Wire	12VDC/24VAC : 45 cm	
15	Power consumption	22W or vary as per OEM	

ITEM NO. 76: LCD MONITOR

S.No.	Parameter	Specification	Compliance
1	Screen Size	17" or higher	
2	Panel Typer	TN	
3	Resolution	HD or Better	
4	Brightness	Minimum 180 cd/m2	
5	Refresh Rate	More than 60 Hz	
6	Response Time	5 ms	
7	Input Output Ports	1 x HDMI 1 x VGA	
8	Monitor Stand	Table Mount with Tilt Adjustment, optional wall mount	
9	Software	Same make OEM Software for controlling/adjusting monitor features like: Brightness, Colour, Contrast, Volume, PIP, Pre-set saving, Screen Partition through Software only	
10	Certificates	BIS	
11	Warranty	3 years	

ITEM NO. 77: VIDEO WALL WITH 1.8MM B2B PANEL (3X2 MATRIX)

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Category	Video Wall Panel	
2	Diagonal Size (Inches)	55"	
3	Panel Type	IPS	
4	Resolution	1920*1080 (Full HD)	
5	Bezel Gap (screen to screen)	1.8 mm or Lower	
6	Depth of Video wall Screen	Must be sleek with depth less than 86mm or better.	
7	Input Ports	HDMI 2 (HDCP 2.2), DP (HDCP 2.2), DVI-D (HDCP 1.4), Audio In, RS-232C In, RJ45 (LAN), IR In, USB 2.0 Type A	
8	Output Port	DP Out (Input : HDMI / DVI / DP), Audio Out, RS-232C Out, RJ45 (LAN)	
9	Brightness (Typ.)	500 nit or better	
10	Operation Hours	24x7	
11	Contrast Ratio	1000:1	
12	Haze%(for lesser reflection of room light)	28% or more	
13	Power consumption Typical	200 Watt or lower	
14	Energy Star Rating	8	
15	IP Rating	IP5x	
16	Additional Hardware & Software Features	Internal Memory 8 GB, Sensor (Temperature Sensor, BLU Sensor, Acceleration(Gyro) Sensor), Embedded CMS (Local Contents Scheduling, Group Manager), USB Plug & Play, Fail Over, Background Image (No Signal Image), Sync Mode (RS-232C Sync, Local Network Sync), Play via URL, Rotation (Screen Rotation, External Input Rotation), Gapless Playback, Tile Mode Setting (Max. 15 × 15), Status Mailing, Control Manager, 3rd Party Compatibility (Crestron Connected®2)), Power (Smart Energy Saving, PM Mode, Wake on LAN, Network Ready), HDMI-CEC3), SI Server Setting, webRTC, Pro:Idiom, W/B Setting by Grey Scale.	
17	Accessories	Remote Control, Batteries, User Manual, Power cable etc.	
18	Certifications	BIS, CE, FCC and UL.	

19	Operating Temperature	0°C to 40°C or better	
20	Humidity	10 % to 80 %	
21	Product Life	50000 Hrs MTBF or better	
22	Warranty (Years)	3 or more	
23	Product must not be from Chinese Origin and OEM under taking for DPIIT Notification must be attached.	Yes	
24	OEM must be manufacturer of product and not just importer.	Yes	
25	OEM must have service centres in J&K	Yes	
26	Certifications	ISO 9001, 14001& 45001.	
27	OEM must have R&D facility in India.	Yes	

ITEM NO. 78: VIDEO WALL WITH .88MM B2B PANEL (3X2 MATRIX)

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1	Screen Size	55"	
2	Panel Technology	IPS	
3	Aspect Ratio	16:9	
4	Native Resolution	1,920 X 1,080 (FHD)	
5	Brightness (Typ.)	500nit	
6	Contrast Ratio	1,100:1	
7	Viewing Angle (H x V)	178 X 178	
8	Orientation	Portrait & Landscape	
9	Response Time	8ms (G to G)	
10	Surface Treatment (Haze)	28%	
11	Operation Hours (Hours /Days)	24/7	
12	Bezel Width	Even bezel: 0.88mm	
13	Weight (Head)	16.8Kg	
14	Monitor Dimensions (W × H× D)	1,210.51 x 681.22 x 86.5mm	
15	Handle	Yes	
16	VESA™ Standard MountInterface	600 x 400	
17	Life Time(Typ.)	60000 Hrs	
18	Internal Player	System on CHIP(SOC)	

19	Input	HDMI (2), DP , DVI-D, Audio, USB2.0	
20	Output	DP, Audio	
21	External Control	RS232C In/Out, RJ45 In/Out, IR In	
22	Operation Temperature	0 °C to 40 °C	
23	Operation Humidity	10 % to 80 %	
24	Power Supply	AC 100-240V~, 50/60Hz	
25	Power Type	Built-In Power	
26	Typ./Max.	200W / 250W	
27	Smart Energy Saving	105W	
28	Basic	Remote Controller(include battery 2ea), Power Cord, RS232C cable, Lan cable, DP cable, IR Receiver, Guide Bracket, Screws, Manual	

ITEM NO. 79: CONTROLLER FOR VIDEO WALL

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	Processor Chip	Intel i5 Processor	
2.	Operating System	Windows 10 Pro or higher -64 bit	
3.	RAM	16 GB or higher	
4.	SSD	450 GB or better	
5.	Output	02 no's HDMI Outputs (with looping)	
6.	Inputs	04 no's HDMI* FHD Inputs	
7.	Network	Dual LAN	
8.	Cooling System	Front Fan 200 x 200 x 30 mm fan	
9.	Size	Small having dimension (H x W x D) 10.9 x 10.2 x 12.4 inch (+- 15%)	
10.	Power Supply	Maximum Power Consumption 500W	
11.	Unix/ Linux Emulation	Should be possible to display images from Unix/ Linux workstation	
Wall Management Software Software to be provided to manage the layout on the display.			
12.	Scaling and display	Software enable user to display, multiple sources up to any size and any size and anywhere on the display wall. (Pixel to pixel)	
13.	RS232, TCP/IP	RS232 & TCP/IP support should be available for other interfaces	
14.	Remote Control	Controller can be controlled by remote RC through LAN with MAC OS/OSX and windows.	
15.	Auto Source Detection	Software should support for auto source detection	

16.	Layout Management	Should support for video, RGB, DVI, Internet explorer, Google Chrome, Desktop application and remote desktop monitoring layouts.	
17.	Scenarios	Software should be able to save and load desktop layouts from local or remote machines	
18.	Layout Scheduler	- All the layouts can be scheduled as per user convenience - Software should support auto launch of layouts according to specified time event by user.	
19.	Launch Application	Software should be able to support	
20.	Integration with touch Interface	System can able to work with 3 rd party touch interfaces (Creston, AMX)	
21.	User friendly	Software should be user friendly	
22.	Web UI	Software should support web based UI; can be opened for layout control & create new layout on windows, android, MAC OS.	
23.	Zoning	Logical division of wall with ability to create layouts for specified logical zone without interface with other zone	
24.	Multiple Video wall	Software should be capable to control multiple video wall from same software	
25.	Licensing	Software based licensing with lifetime license on same hardware	
26.	Source Type supported	Hardware Inputs, Google chrome, IE, Screen scrapping, HTML5, RSSFEED, TICKER, RTP, RTSP, H.264/video/ Images	

ITEM NO. 80: LPU 4 CORE

S.No	Minimum Technical Specifications	Compliance (Yes/No)
1.	10th Gen, Intel Processor 4 Core and 8 Logical 3.3 Ghz Processor ,Base Frequency ~2.9 GHz or higher ,8 GB DDR4 Memory or better, SSD SATA, Ethernet 1GBX2Ports network adaptor.	

ITEM NO. 81: LPU 32 CORE

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.		10th/Latest Gen, Intel Xeon Scalable Processor with 32 Physical Cores and 64 Logical Threads (Base Frequency ~2.5 GHz or higher),	

	32 GB DDR4-3200 (or higher) Standard Memory (expandable), RAID Controller with 2 x 1TB Enterprise SATA / SSD Drives (RAID 1 supported), Dual Port Ethernet 1GbE / 10GbE Network Adaptor, Suitable for Indoor Deployment, rack/desktop mountable, with adequate cooling and power efficiency.		
2.	CPU/Processor	System Should support 10th Gen i7 10700 8Core/16 Thread Processor, Base Frequency ~2.9 GHz or higher, Intel® H610 chipset or better	
3.	Memory	Should Support Upto 2* DDR5 4800MHz/5600MHz SO-DIMM up to 64GB, Should be populated with 16GBRAM from day 1	
4.	Storage	Supports 2 * SSD SATAIII (6 Gb/s) & 1TB SSD Populated from day one	
5.	Network	2* Gigabit LAN	
6.	I/O	4* USB3.2 (Gen.2) 2* HDMI and/or DP 1* Audio jack (Line-out/MIC combo) 1* DC-in (3 PIN Industrial Connector) 4* COM (RS232/422/485) Support 1* Power button , 1* Reset 1* Power LED, 1*HDD LED	
7.	Compliance	CE, FCC, RoHS, BIS, MIL-STD-810G	
8.	Temperature	Operating Temperature: -10~65 ° C Storage Temperature: -20~80 ° C	
9.	Power Supply Range	DC 12-36V Input including power supply	
10.	Design	Fanless cooling design ensuring reliable and silent operation.	
11.	OS Support	Windows 10/11 Pro or Linux	
12.	CPU/Processor	System Should support 10th Gen i7 10700 8Core/16 Thread Processor, Base Frequency ~2.9 GHz or higher, Intel® H610 chipset or better	
13.	Memory	Should Support Upto 2* DDR5 4800MHz/5600MHz SO-DIMM up to 64GB, Should be populated with 16GBRAM from day 1	

ITEM NO. 82: OUTDOOR LPU 4 CORE

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	CPU/Processor	System Should support 12th Gen i3 12300 4Core/8 Thread Processor, Intel® H610 chipset	
2.	Memory	Should Support Upto 2* DDR5 4800MHz/5600MHz SO-DIMM up to 64GB, Should be populated with 16GBRAM from day 1	

3.	Storage	Supports 2 * 2* SATAIII (6 Gb/s) & 1* M.2 M-key (2280, SATA/PCIe Gen.3 x4 interface) 1TB SSD Populated from day one	
4.	Network	2* Gigabit LAN	
5.	I/O	4* USB3.2 (Gen.2) 2* HDMI 2* DP 1* Audio jack (Line-out/MIC combo) 1* DC-in (3 PIN Industrial Connector) 5* COM (2*RS232/422/485, 3*RS232)Support 1* Power button , 1* Reset 1* Power LED, 1*HDD LED	
6.	Internal/External Slots	1* M.2 E-key (2230, PCIe x1/USB2.0 interface) support for Wi-Fi 1* M.2 B-key (3042/3052, USB3.1/USB2.0/PCIe x1 interface) support 4G/5G module Single PCI Express x16(Gen.4)	
7.	Compliance	CE, FCC, RoHS, BIS, MIL-STD-810H	
8.	Temperature	Operating Temperature: -10~65 ° C Storage Temperature: -20~80 ° C	
9.	Power Supply Range	DC 12-36V Input including power supply	
10.	Design	Fanless cooling design ensuring reliable and silent operation.	
11.	OS Support	Windows 10/11 Pro or Linux	

ITEM NO. 83: OUTDOOR LPU 12 CORE

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	CPU/Processor	System Should support 12th Gen i7 12700 12Core/20 Thread Processor, Intel® H610 chipset or better	
2.	Memory	Should Support Upto 2* DDR5 4800MHz/5600MHz SO-DIMM up to 64GB, Should be populated with 32GBRAM from day 1	
3.	Storage	Supports 2 * SSD SATAIII (6 Gb/s) &	
4.		1TB SSD populated from days one	
5.	Network	2* Gigabit LAN	
6.	I/O	4* USB3.2 (Gen.2) 2* HDMI and/or DP 1* Audio jack (Line-out/MIC combo) 1* DC-in (3 PIN Industrial Connector) 4* COM (RS232/422/485)Support	

		1* Power button , 1* Reset 1* Power LED, 1*HDD LED	
7.	Internal/External Slots	1* M.2 E-key (2230, PCIe x1/USB2.0 interface) support for Wi-Fi 1* M.2 B-key (3042/3052, USB3.1/USB2.0/PCIe x1 interface) support 4G/5G module Single PCI Express x16(Gen.4)	
8.	Compliance	CE, FCC, RoHS, BIS, MIL-STD-810G	
9.	Temperature	Operating Temperature: -10~65 ° C Storage Temperature: -20~80° C	
10.	Power Supply Range	DC 12-36V Input including power supply	
11.	Design	Fanless cooling design ensuring reliable and silent operation.	

ITEM NO. 84: OUTDOOR LPU 16 CORE

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	CPU/Processor	System Should support 13th Gen i7 13700 16Core/24 Thread Processor, Intel® H610 chipset	
2.	Memory	Should Support Upto 2* DDR5 4800MHz/5600MHz SO-DIMM up to 64GB, Should be populated with 32GBRAM from day 1	
3.	Storage	Supports 2 * 2* SATAIII (6 Gb/s) & 1* M.2 M-key (2280, SATA/PCIe Gen.3 x4 interface) 1TB SSD populated from days one	
4.	Network	2* Gigabit LAN	
5.	I/O	4* USB3.2 (Gen.2) 2* HDMI 2* DP 1* Audio jack (Line-out/MIC combo) 1* DC-in (3 PIN Industrial Connector) 5* COM (2*RS232/422/485, 3*RS232)Support 1* Power button , 1* Reset 1* Power LED, 1*HDD LED	
6.	Internal/External Slots	1* M.2 E-key (2230, PCIe x1/USB2.0 interface) support for Wi-Fi 1* M.2 B-key (3042/3052, USB3.1/USB2.0/PCIe x1 interface) support 4G/5G module Single PCI Express x16(Gen.4)	
7.	Compliance	CE, FCC, RoHS, BIS, MIL-STD-810H	
8.	Temperature	Operating Temperature: -10~65 ° C Storage Temperature: -20~80 ° C	

9.	Power Supply Range	DC 12-36V Input including power supply	
10.	Design	Fanless cooling design ensuring reliable and silent operation.	
11.	OS Support	Windows 10/11 Pro or Linux	

ITEM NO. 85: OUTDOOR LPU 32 CORE

S.No	Parameter	Minimum Technical Specifications	Compliance (Yes/No)
1.	CPU/Processor	System should support latest intel® xeon scalable processor (3rd gen or higher) with minimum 32 cores / 64 threads	
2.	Memory	Should Support Upto 2* DDR5 4800MHz/5600MHz SO-DIMM up to 64GB, Should be populated with 32GBRAM from day 1	
3.	Storage	Supports 2 * 2* SATAIII (6 Gb/s) & 1* M.2 M-key (2280, SATA/PCIe Gen.3 x4 interface) 1TB SSD populated from days one	
4.	Network	2* Gigabit LAN	
5.	I/O	4* USB3.2 (Gen.2) 2* HDMI 2* DP 1* Audio jack (Line-out/MIC combo) 1* DC-in (3 PIN Industrial Connector) 5* COM (2*RS232/422/485, 3*RS232)Support 1* Power button , 1* Reset 1* Power LED, 1*HDD LED	
6.	Internal/External Slots	1* M.2 E-key (2230, PCIe x1/USB2.0 interface) support for Wi-Fi 1* M.2 B-key (3042/3052, USB3.1/USB2.0/PCIe x1 interface) support 4G/5G module Single PCI Express x16(Gen.4)	
7.	Compliance	CE, FCC, RoHS, BIS, MIL-STD-810H	
8.	Temperature	Operating Temperature: -10~65 ° C	
9.		Storage Temperature: -20~80 ° C	
10.	Power Supply Range	DC 12-36V Input including power supply	
11.	Design	Fanless cooling design ensuring reliable and silent operation.	
12.	OS Support	Windows 10/11 Pro or Linux	

ITEM NO. 86: LIU 8 PORT

Sr.No.	Description	Compliance Yes/ No
1.	SITC of LIU 8 PORT Rack Mount - Loaded (SC) SM,FIBER PATCH PANELS – RACK MOUNT Have sufficient slots accommodate Simplex/duplex SC/LC/FC adapters individually. Aluminum base material for light mounting, Should have Splice Tray & Cable Spool provision inside, Accessory kit consists of cable ties, mounting ear screw earthling and spiral wrap tube. Can Include 16 LC,8 SC,8 ST and 8 FC Terminations ,Removable Rubber grommet to allow for pre-terminated fiber trunk installation, protect cable and minimize dust build up, Should have cable ties, mounting ear screws and spiral wrap tube	

ITEM NO. 87: LIU 12 PORT

Sr.No.	Description	Compliance Yes/ No
1.	SITC of LIU 12 PORT Rack Mount - Loaded (SC) SM,FIBER PATCH PANELS – RACK MOUNT Have sufficient slots accommodate Simplex/duplex SC/LC/FC adapters individually. Aluminum base material for light mounting, Should have Splice Tray & Cable Spool provision inside, Accessory kit consists of cable ties, mounting ear screw earthling and spiral wrap tube. Can Include 48 LC,24SC,24 ST and 24 FC Terminations ,Removable Rubber grommet to allow for pre-terminated fiber trunk installation, protect cable and minimize dust build up, Should have cable ties, mounting ear screws and spiral wrap tube	

ITEM NO. 88: SPLIT AC 1.5 TONNE

Sr.No.	Specifications		Compliance (Yes/No)
1.	Heating Upto	-4 °C	
2.	Cooling Upto	52 °C	
3.	Capacity	1.5 Tonne	
4.	Annual Power Consumption (ISEER)	4.5 or higher	
5.	Star Rating	5	
6.	Filter Type	Anti-Viral	
7.	Add Filter	PM 2.5 or better	
8.	Refrigerant	R-32	
9.	WiFi Ready	Yes	
10.	Air Swing	Smart 4-Way	
11.	Air Flow (m3/Hr)	880 or higher	
12.	Inverter technology enabled	Yes	
13.	Three years comprehensive onsite warranty	Yes	

ITEM NO. 89: 1000 VA ONLINE UPS SYSTEM

Sl. No	COMPONENT FEATURE	SPECIFICATION REQUIRED	Compliance Yes/ Model No.	No
1.	Capacity in VA	1000VA		
2.	Capacity in WATTS	800 Watts.		
3.	Inverter Device	IGBT based PWM Technology Microprocessor control digital design double conversion true online UPS		
4.	Rated Output Voltage	230 V (1-Phase)		
5.	Rated Output Current	2.8 A at 0.8 p.f.		
6.	Input Voltage Range	110-300 VAC, 230V 50 Hz		
7.	Input Frequency Range	40 Hz to 70 Hz		
8.	No. of phases	Single Phase with Ground		
9.	Voltage Regulation (Mains Mode)	± 1% or better		
10.	Waveform	Pure sine wave		
11.	Power Factor	0.99 or better		
12.	Crest Factor	3:1		
13.	Output Power Factor	0.8 lag or more		
14.	Output Voltage	200V AC- 240V AC		
15.	Output Freq. Regulation (inverter mode)	50 Hz ± 0.5%		
16.	Overall Efficiency	>=88%		
17.	Cold start feature	Required		
18.	Overload Capacity	110% (for 10Minutes), 125% for 1 minute		
19.	Batteries	SMF (VRLA) Type to provide 1 hrs. backup Min VAH: 1512 VAH		
20.	Transfer Line	0 ms		
21.	Noise Level	< 55 db @1meter.		
22.	By pass	static bypass		
23.	Compatibility	UPS to be compatible with DG Set Supply		
24.	Quality Standards	BIS		
25.	Software/ Interface	Software Option/ RS 232 port/ DB-9 Port (OPTIONAL), SNMP interface support		
26.	Additional / Extra Features Offered (If any)	Technical advantages		
27.	Warranty	Three years onsite warranty on UPS and batteries.		

ITEM NO. 90: 3 KVA ONLINE UPS SYSTEM

Sr. No.	Technical Specifications		Compliance Yes/ Model No.	No
1.	Manufacturer	ISO 9001 & ISO 14001 Certified		

2.	Technology	IGBT Based PWM Technology Microprocessor controlled Digital Design Double Conversion True on line UPS	
3.	Overall Efficiency(AC-AC)	>=88%	
4.	Input Voltage & Range	230V 50Hz, range 110V-300V AC	
5.	Input Frequency Range	40 to 70 Hz	
6.	Input Phase	Single Phase with Ground	
7.	Input power factor	0.99 or better	
8.	Output voltage	200VAC-240VAC	
9.	Voltage Regulation	+/- 1% (or better)	
10.	Frequency	50Hz +/-0.1% (Free Run Mode)	
11.	Harmonic Distortion (THD)	<3% (linear load) and 4% (Non Linear load)	
12.	Output Waveform	Pure Sine Wave	
13.	Crest Factor	3:1	
14.	Output Power factor	0.8 lag or more	
15.	Battery Backup	Min. One hour battery backup	
16.	Battery Type	Sealed Lead Maintenance Free VRLA type (Lead Calcium SMF Batteries NOT acceptable) or better	
17.	DC Bus Voltage	As per OEM Architecture	
18.	Battery Capacity	Min. 4032VAH	
19.	Transfer time	0 ms	
20.	Battery Enclosure	Battery Enclosure: Power coated cabinets/ Open Rack, Made of Screw / Nut-Bolt less for easy installation & maintenance	
21.	General Operating temperature	0 to 40 Degree C	
22.	Noise Level	<55 db@ 1 meter	
23.	Alarms & Indications	All Necessary alarms & indications essentials for performance monitoring of UPS like mains fail, low battery & fault detection	
24.	By pass	Automatic Bypass Switch	
25.	Compatibility	UPS to be compatible with DG Set supply	
26.	Communication interface	RS 232/USB port for software interface, SNMP interface Support	
27.	Certification	BIS	
28.	Transients	All Critical source and sensitive loads should have protection from Transients	
29.	MCOV	The unit shall have maximum Continuous Operating voltage (MCOV) rating of min 320 Volts	
30.	Warranty	Three onsite warranty on UPS and batteries.	

ITEM NO. 91: 5 KVA ONLINE UPS

Sr. No.	Item Description		Compliance Yes/ No Model No.
1.	Manufacturer	ISO 9001 & ISO 14001 Certified	
2.	Technology	IGBT Based PWM Technology Microprocessor controlled Digital Design	

		Double Conversion True on line UPS	
3.	Overall Efficiency	>=91%	
4.	Input Voltage & Range	230Vac (1Ph+ N) Range 160V-300V AC (1-Phase) @ 100% load	
5.	Input Frequency Range	50 Hz	
6.	Input Phase	Single Phase in/1 Phase out	
7.	Input power factor	0.99 @100% load	
8.	Output voltage	220VAC	
9.	Voltage Regulation	+/-1%	
10.	Frequency	50Hz +/-0.1Hz	
11.	Harmonic Distortion (THD)	<=2%THD (linear load)	
12.	Output Waveform	Pure Sinewave	
13.	Crest Factor	3:1(max.)	
14.	Output Power factor	≥0.9	
15.	Battery Backup	Min 01 hour battery backup	
16.	Battery Type	Sealed Lead Maintenance Free VRLA type or better	
17.	DC Bus Voltage	As per OEM Architecture	
18.	Battery Capacity(VAH)	Min. 8064VAH	
19.	Transfer time	AC mode to battery & Inverter to bypass=0	
20.	Battery Enclosure	Battery Enclosure: Power coated cabinets/ Open Rack, Made of Screw / Nut-Bolt less for easy installation & maintenance	
21.	General Operating temperature	0 to 95%RH @ 0.40 degree C(non-condensing)	
22.	Noise Level	<55 db@ 1 meter	
23.	Alarms & Indications	All Necessary Alarms & Indications essentials for performance monitoring of UPS like mains fail, low battery, overload & fault detection etc.	
24.	By pass	Automatic Bypass Switch	
25.	Compatibility	UPS to be compatible with DG Set supply	
26.	Communication interface	RS 232/USB port for software interface, SNMP interface Support	
27.	Certification	BIS	
28.	Transients	All Critical source and sensitive loads should have protection from Transients	
29.	MCOV	The unit shall have maximum Continuous Operating voltage (MCOV) rating of min 320 Volts	
30.	Warranty	Three years onsite warranty on UPS and batteries.	

ITEM NO. 92: 5KVA DG SET WATER COOLED

Name of the Item	Description	Compliance Yes/ No Make & Model No.
5 KVA DG set water cooled	5 KVA / 4 KW Silent Diesel Generating set – Air Cooled Diesel Engine (LATEST CPCB NORMS COMPLIANT) producing 8 or higher bhp at 1500 rpm. under NTP conditions having Single cylinder Naturally Aspirated with	

	Class A-1 / A-2 Governor, coupled to a 5 KVA Single phase , alternator of 0.8 power factor with H Class Insulation, 230 volts, 50 Hz, 2 wires on a common base frame complete with AMF Control Panel , 1 Nos. 12 Volts DC Battery with Battery Leads, fuel tank & soundproof acoustic enclosure duly approved by CPCB Authorized lab. with three years onsite warranty.	
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ITEM NO. 93: WORKSTATION WITH INTEL CORE I5 PROCESSOR

Sr. No	Specification	Description	
1.	Processor	Intel Core i5	
2.	Chipset	Intel Q series	
3.	Memory	16 GB DDR5	
4.	Hard Disk Drive	256GB M.2 SSD or higher	
5.	Expansion Slots	1 PCIe x16 slot; 1 PCIe x4 slots; Min 2 M.2 slots for NVMe SSD and 1 for Wifi & BT	
6.	Graphic Card	Nvidia RTX, 4GB	
7.	I/O Ports	Minimum 2 x USB Type A 2.0 1 x USB Type C 1 x HDMI	
8.	Networking	Intel Ethernet Connection 10/100/1000 or better	
9.	Out of Band Management	Intel vPro	
10.	OS	Windows 11 for Workstations (64-bit)	
11.	Display	LED Backlit	
12.	Screen Size	23 inch or higher	
13.	Brightness	250 nits or higher	
14.	Warranty	3 Years Onsite Comprehensive Warranty	

ITEM NO. 94: FIREWALL HARDWARE

Sl. No.	Item Description	Revised Technical Specification (OEM-Neutral)	Compliance (Yes/No)
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1	Make	To be mentioned by the Bidder	
2	Model No.	To be mentioned by the Bidder	
3	Country of Origin	To be mentioned by the Bidder	
4	Hardware Architecture		
4.1	Form Factor	Hardware-based firewall shall be rack-mountable and shall not exceed 1RU	
4.2	Architecture	Firewall shall be based on multi-core processing architecture (CPU and/or ASIC assisted) suitable for enterprise NGFW deployments	
4.3	Performance Basis	All performance figures shall be achieved with all security services enabled and shall be supported by OEM datasheets	
4.4	Interfaces & Ports	Appliance shall have at minimum: • 1 × Console Port • 1 × Dedicated 1GbE Management Port • 2 × USB 3.0 ports supporting WWAN USB cards (5G/LTE/4G/3G or equivalent) • Dual Power Supply (internal or hot-swappable)	
4.5	Network Interfaces	Appliance shall have minimum 16 × 1G Copper ports and minimum 6 × 10G SFP+ ports or equivalent/higher	
4.6	Expandability	Appliance shall support future interface expansion within the same chassis or equivalent OEM-supported method	
4.7	Storage	Appliance shall have minimum 128 GB or higher storage from Day-1, expandable to 256 GB or higher	
5	Performance & Scalability		
5.1	Firewall Throughput	≥ 5 Gbps	
5.2	IPS Throughput	≥ 3.5 Gbps	
5.3	Threat Protection Throughput	≥ 3.5 Gbps with IPS, Gateway AV, Anti-Spyware/Malware & Application Control enabled	
5.4	Session Capacity	Concurrent Sessions ≥ 2 Million New Connections/sec ≥ 20,000	
5.5	IPsec VPN Performance	≥ 2 Gbps IPsec throughput and ≥ 3000 Site-to-Site IPsec VPN tunnels	
5.6	Remote Access VPN	≥ 500 concurrent SSL VPN users	
5.7	VPN Clients	≥ 1000 IPsec VPN clients	
5.8	Wireless Scalability	Support for ≥ 500 Wireless APs, either integrated or through OEM-certified wireless controller from Day-1	
5.9	SSL Performance	SSL inspection throughput ≥ 800 Mbps and ≥ 150K SSL connections	
6	General Firewall Features		
6.1	Core Features	Unified Threat Policy, Bandwidth Management, Policy-Based Routing, WAN Load Balancing & Integrated SD-WAN	
6.2	Encrypted Threat Protection	Capability to detect and prevent threats hidden in encrypted traffic including malware, C&C communication and data exfiltration	
6.3	Zero-Touch Provisioning	Support Zero-Touch provisioning and centralized onboarding (App-based or equivalent OEM mechanism)	
6.4	Routing	Support Static Routing, Dynamic Routing (OSPF, RIP, BGP) and route-based VPN	
6.5	VPN Resilience	Support DPD, NAT-Traversal, DHCP over VPN, and dynamic routing over VPN links	

6.6	SD-WAN	SD-WAN functionality shall be available without mandatory additional hardware. Required licenses to be provided from Day-1	
6.7	Guest Access	Support guest user Internet access through pass-through or captive-portal based authentication	
6.8	Rule Visualization	Graphical visualization of Access, NAT and Routing rules with real-time usage statistics	
7	Firewall Security Features		
7.1	Malware Inspection	Bi-directional inspection of inbound, outbound and intra-zone traffic using Gateway AV & Cloud-based intelligence	
7.2	DPI	Deep Packet Inspection across all ports and protocols without practical file size limitations	
7.3	Inspection Architecture	High-performance inspection architecture with low latency suitable for enterprise traffic loads	
7.4	IPS	Integrated IPS capable of detecting exploits and vulnerabilities	
7.5	DoS/DDoS Protection	Protection against DoS/DDoS using SYN protection, rate limiting, and flood protection mechanisms	
7.6	SSL Inspection	Transparent SSL/TLS decryption, inspection and re-encryption	
7.7	Sandbox / ATP	OEM-owned or OEM-managed Cloud/Appliance-based Sandbox for advanced threat detection	
7.8	Zero-Day Protection	Capability to detect and block unknown and zero-day threats	
7.9	Side-Channel Mitigation	Capability to mitigate known CPU-based side-channel attack vectors	
7.10	File Types	Support inspection of common file types including executables, PDFs, Office documents, archives and mobile files	
7.11	Hold-and-Analyze	Ability to hold suspicious files pending sandbox verdict	
7.12	TLS	Support TLS 1.3	
7.13	Signatures	IPS, AV and Application signatures shall be provided and regularly updated from Day-1	
8	High Availability		
8.1	Failover	Support hardware failover with session synchronization	
8.2	HA Mode	Active/Passive High Availability with State Sync	
9	Visibility & Monitoring		
9.1	Traffic Visibility	Real-time visibility of applications, users, IPs and security events	
9.2	Dashboards	GUI-based dashboards for system, network and security status	
9.3	Threat Visibility	Real-time visibility of threats, infected hosts and encrypted traffic	
10	Management & Reporting		
10.1	Centralized Management	Centralized configuration, logging, monitoring and reporting (On-prem or Cloud)	
10.2	Bulk Operations	Support centralized firmware upgrade, certificate management and global policy templates	
10.3	Access Security	Role-based access control and account lockout	
10.4	Closed Network	Support on-prem deployment with HA and multi-factor authentication	
10.5	Analytics	Real-time traffic and risk analytics	
10.6	Backup	Support configuration backup	

10.7	Flow Protocols	Support NetFlow/IPFIX or equivalent	
11	Certification, Warranty & Services		
11.1	Certifications	Firewall should comply with globally recognized security certifications or independent security validations	
11.2	Support	24x7 OEM technical support via phone, email and web	
11.3	India Presence	OEM should have technical support presence in India	
11.4	Warranty	Minimum 3 years comprehensive warranty including subscriptions, patches and firmware upgrades	
11.5	Services	Bidder shall carry out on-site installation, testing and commissioning	

ITEM NO. 95: FIREWALL 1YEAR LICENSE

ITEM NO. 96: FIREWALL 3 YEAR LICENSE

ITEM NO. 97: PVC CONDUIT

Sr.No.	Description	Compliance Yes/ No
1.	PVC Conduit 1 inch. White with ISI mark	

ITEM NO. 98: POLE WITH COMPLETE ERECTION

ITEM NO.	Description	Compliance (Yes/No)
98.1	Rust free black color Pole 4 inch. or higher with complete erection with civil work, digging, installation etc.	
98.2	Rust free black color Pole 6 inch. or higher with complete erection with civil work, digging, installation etc.	
98.3	L Shaped pole with complete erection	
98.4	T shaped pole with complete erection	

ITEM NO. 99: FACE PLATE

Sr.No.	Description	Compliance (Yes/No)
1.	Single & DUAL square plate, Quad in Rectangular shape	
2.	Write on labels in transparent plastic window – supplied with plate	
3.	Screw hole covers – to be supplied with plate	
4.	Face Plate with shutter	
5.	Should be able to support variety of jacks – UTP, STP	

ITEM NO. 100: FEEDER PILLAR

Sr.No.	Description	Compliance (Yes/No)
1.	Feeder Pillar WxHxD 3x4x3 Feet Having Roof type Upper Body Front 2 Door Opening Powder Coated Body MCV for Power Control and 2No 5 AMP Socket, 3AMP 2 Socket	

ITEM NO. 101: WIRES

ITEM NO.	Description	Compliance (Yes/No)
101.1	1.5 MM 2 CORE WIRE	
101.2	2.5 MM 2 CORE WIRE	
101.3	2.5 MM 3 CORE WIRE	
101.4	PCV INSULATED 6MM WIRE	
101.5	PVC INSULATED 10MM WIRE	
101.6	1.5 MM 2 CORE ARMOURED WIRE	
101.7	2.5 MM 2 CORE ARMOURED WIRE	
101.8	2.5 MM 3 CORE ARMOURED WIRE	
101.9	G.I WIRE (PER KG)	

ITEM NO. 102: LICENSES (DUPLICATE)

ITEM NO.	Description	Compliance (Yes/No)
102.1	BASE PLATFORM VIOLATION LICENSE	
102.2	ANPR VIOLATION LICENSE	
102.3	NO HELMET VIOLATION LICENSE	
102.4	TRIPLE RIDING VIOLATION LICENSE	
102.5	SPEED VIOLATION LICENSE	
102.6	FREE LEFT LANE VIOLATION LICENSE	
102.7	SEAT BELT VIOLATION LICENSE	

ITEM NO. 103: HDMI CABLE

ITEM NO.	Description	Compliance (Yes/No)
103.1	HDMI CABLE 1.5 MTR.	
103.2	HDMI CABLE 3 MTR.	
103.3	HDMI CABLE 5 MTR.	
103.4	HDMI CABLE 10 MTR.	
103.5	HDMI CABLE 15 MTR. (FIBER)	
103.6	HDMI CABLE 20 MTR. (FIBER)	
103.7	HDMI CABLE 50 MTR. (FIBER)	

ITEM NO. 104: FIBER CABLE

ITEM NO.	Description	Compliance (Yes/No)
104.1	FIBER CABLE 6 CORE	
104.2	FIBER CABLE 12 CORE	
104.3	FIBER CABLE 24 CORE	
104.4	FIBER CABLE 48 CORE	

ADDITIONAL ITEMS		
ITEM NO.	Description of the Item	Quoted/ Not Quoted
ITEM NO. 105	Earthing Chemical	
ITEM NO. 106	Earthing Copper Plate	
ITEM NO. 107	Joint Box	
ITEM NO. 108	Bamboo Joint Box	
ITEM NO. 109	FIBER UNDERGROUNDING (PER MTR.)	
ITEM NO. 110	FIBER ACCESSORIES	
ITEM NO. 111	ROLLER WHEEL FOR FIBER	
ITEM NO. 112	HDPE PIPE	
ITEM NO. 113	HDPE DUCKET PIPE	
ITEM NO. 114	WIRELESS MOUSE	
ITEM NO. 115	WIRELESS MOUSE + KEYBOARD	
ITEM NO. 116	POWER EXTENSION ASSEMBLED	
ITEM NO. 117	POWER EXTENSION	
ITEM NO. 118	SPIRAL PIPE	
ITEM NO. 119	RADAR	
ITEM NO. 120	STORAGE SERVER 300 TB	
ITEM NO. 121	STORAGE SERVER 600 TB	
ITEM NO. 122	24 PORT SFP L2+ MANAGED SWITCH WITH 4 10GE SFP+ SLOTS	
ITEM NO. 123	8 PORT SFP L2+ MANAGED SWITCH WITH 4 10GE SFP+ SLOTS	
ITEM NO. 124	48 PORT SFP L2+ MANAGED SWITCH WITH 4 10GE SFP+ SLOTS	
ITEM NO. 125	SFP 1 G	
ITEM NO. 126	SFP 10 G	
ITEM NO. 127	SFP 20 G	
ITEM NO. 128	SFP 100 G	
ITEM NO. 129	MEDIA CONVERTER 10/100/1000	
ITEM NO. 130	SFP PATCH CORD	
ITEM NO. 131	MEDIA CONVERTER PATCH CORD	
ITEM NO. 132	16 PORT FIBER PATCH PANNEL	
ITEM NO. 133	24 PORT FIBER PATCH PANNEL	
ITEM NO. 134	JUNCTION BOX	
ITEM NO. 135	EARTHING	

SOFTWARE APPLICATIONS

ITEM NO. 136: CENTRAL VIDEO MANAGEMENT SOFTWARE

S.No	Technical and Functional Specifications	Compliance (Yes/No)
1.	The IP Central Video Management Software should allow Live Viewing, and Management solution of Network Video surveillance systems & shall not have any Limit on the Number of Cameras to be Connected and shall be scalable to unlimited IP cameras in the future by augmentation of camera channel licenses and server hardware components.	
2.	The Open Platform Central Video Management Software (VMS) Application, should be Brand Agnostic, should not be from the same Camera OEM & should support various third Party ONVIF IP Cameras, this is Compulsorily required so that the Same VMS Applications can be scaled up in future by just Adding third Party ONVIF IP Cameras & Additional Software Licenses.	
3.	The Central Video Management Software shall be Client-Server based IP Video security solution that shall provide seamless management of Digital Video, Audio and data across an IP network. Video from sites shall be possible to view from single or numerous workstations simultaneously at any time. Cameras, recorders, and viewing stations may be placed across the terminal in the IP network.	
4.	The Offered Central VMS Software should be ONVIF S, G, T & M Profile Compliant & should be a Full/Contributing/Registered Affiliate/User/Observer any ONVIF Member. Central VMS OEM to Submit a Valid Certificate to Substantiate the Proof.	
5.	The IP Central Video Management Software shall be Licensed & Perpetual Licenses to be Provided, such that they are Valid for Lifetime.	
6.	The Central VMS must be supported on 64-bit Microsoft Windows operating system platforms like Windows 10 Professional, Windows 11 Professional, Windows Server 2019 Standard Edition, & Windows Server 2022 Standard Edition.	
7.	The Central VMS shall support iPad, Android and iPhone devices & shall also support web clients.	
8.	The Central Video Management System shall be a fully distributed solution, designed for limitless multi-site and multiple-server installations requiring 24/7 surveillance with support for devices from different vendors. The Video Management System shall offer centralized management of all devices, servers, and users and must empower a flexible rule-based system driven by schedules and events.	
9.	The Central VMS management server shall be able to intelligently scan an IP network for new devices (cameras or servers) along with automatic model detection.	

10.	The Central VMS system shall provide an integrated secure, scalable and easily accessible software-based solution for the management of the existing & future physical security infrastructure	
11.	The Central VMS system shall provide a powerful and efficient management interface for all the security systems across all monitored sites.	
12.	The Central management server shall allow access to a system manager in the form of Configuration Client from where the administrator can configure and manage all servers, cameras and users.	
13.	The Central VMS Application must Support for P2P Communication Model for Communication of the NVR & the CVMS at the Remote Locations. Any Additional Hardware & Software required for Achieving the P2P Communication Model has to be Considered as a part of the BID.	
14.	Streaming Features & Capability:	
15.	The Central VMS must support for Video streaming Codecs like H.265+, H.265, H.264, MPEG4, or MJPEG at a minimum of 5 fps to 60 fps at minimum CIF to Full HD (1080p) and 4K resolution and the Highest Resolution as Supported by the Cameras.	
16.	The Central VMS must support RTP over UDP, RTP over TCP, and HTTP streaming.	
17.	The Central VMS must support multiple brand IP cameras, encoders, and network video recorders. The Proposed central VMS must support the following features when connected with third-party DVRs & NVRs: i. Fetching & Displaying Live Streams from all Channels of NVR, ii. Fetching Recorded Playback Video Streams from all Channels of NVR, iii. Alarm Events iv. Hard Disk Health Status of DVRs & NVRs v. PTZ Controls of PTZ Cameras via the NVR.	
18.	The Central VMS must for Exporting the desired portion of video (recorded in NVR) in mp4, avi, and .asf formats on Local Client Workstation or DVD/USB or any external device. Viewing of this recording must be playable on an authorized player, which shall be provided by the software manufacturer or in a media player on OS Windows, Linux/Unix, or Apple Mac.	
19.	The Central VMS must have Encryption Ability to encrypt video while exporting. Options of 56-bit, 128-bit, and 256-bit encryption.	
20.	The Central VMS must have Encryption Ability for Export of signed video using public/private key.	
21.	Live, Playback & PTZ Control Parameters	
22.	Live View possible for minimum 110 cameras simultaneously on 1 screen/monitors using software video wall and up to 64 playback videos in a single video screen.	
23.	Configurable Matrix views with size and number of cameras. Pre-defined views from full screen, 1x1 to 8x8.	

24.	View sequencing with user driven time interval.	
25.	Dual Streaming and Automatic Switching from Low to High Quality on Full screen mode.	
26.	Option to change Live View directly from cameras or from VMS server using RTSP and HTTP options	
27.	It should support live view and Playback from minimum 10 clients- Both local and remote	
28.	It should support event-based playback.	
29.	Client System shall have an inbuilt Alarm/Incident Management Dashboard to view all Edge Analytics and ANPR applications alerts/ events	
30.	Ability to search based on Date/Time/Camera, Name, ID and Location for more than one camera simultaneously.	
31.	Customized camera views based on : User input number of cameras. User chosen shape and size.	
32.	Digital Zoom : Both complete live picture and Zoomed picture should be visible simultaneously while zooming. Should be available On Live and Playback Videos. Zoom available on snapshots too.	
33.	PTZ: PTZ option available through mouse and joystick Gaming joystick as well as PTZ joystick options available On screen PTZ control with Click and Zoom facility PTZ Presets and tours setting	
34.	Software should allow creation of multiple camera sequences. It should be possible to set the dwell time for the cameras within the sequence.	
35.	Software should allow sequences control (pause/play, skip forwards, skip backwards).	
36.	Live view and Playback available at the same time with Playback window running side by side with live view window.	
37.	The Central VMS Client Application must Support for Instant Playbacks & should be available as a window pop-up on click of an event from the event screen.	
38.	The Central VMS Client Application must have the event window with a specific snapshot of that event should be shown simultaneously in the live view screen. Clicking on the event should play a recording of that event time.	
39.	The Central VMS Client Application must have the Playback Navigation Tree View with Recording Server, camera list, year/months list, and the date-wise playlist.	
40.	The Central VMS Client Application must Option of common timeline for syncing of multiple cameras while playback.	
41.	The Central VMS Client Application must have the Ability to make a bookmark of any portion of a video and view a list of all bookmarks.	

42.	The Central VMS Client Application must Support for Instant Playback and Quick Search of event-based recordings.	
43.	Playlist with files listed for each date. User can click on a date to play recordings.	
44.	The Central VMS Client Application must Support integration with GIS or Google Maps.	
45.	Mobile Surveillance & Remote Viewing Parameters	
46.	Ability to view live video on iOS and Android phones or devices with or without installing proprietary Apps.	
47.	PTZ Control on Mobile App and Remote Locations	
48.	VMS and Mobile App support for multiple sites spread across WAN to be controlled and viewed from central location.	
49.	Remote Administration over internet.	
50.	Ability to make a Phone call/IVR on any alert or alarm	
51.	The Mobile App must also Support for Audio Streaming along with Video Streaming.	
52.	Streaming Parameters	
53.	Option for RTSP, HTTP, RTSP over HTTP streaming or both simultaneously at individual camera level.	
54.	Authentication parameters (username, password) for streaming to remote clients.	
55.	Should support multiple Brand IP Cameras, Encoders, Network Video Recorders. The Offered Central VMS must support the Following features when Connected with Third Party DVR's & NVR's i.Fetching & Displaying Live Streams from all Channels of NVR, ii.Fetching Recorded Playback Video Streams from all Channels of NVR, iii.Alarm Events iv.Hard Disk Health Status of DVR's & NVR's v. PTZ Controls of PTZ Cameras via the NVR.	
56.	Administration & Failover Parameters	
57.	Automatic discovery of devices using UPnP and/or ONVIF	
58.	Add all cameras with single click. Apply settings to multiple cameras of same model with single click.	
59.	Generate logs & reports in Graphical & Tabular form and export in pdf, excel or more format	
60.	Automatic Health check-up of Connected Devices (IP Cameras & NVR's)	
61.	User role-based cameras and feature access. Define users with passwords and access to only specific cameras	
62.	Complete server logs including login access, system settings change, archiving events, and all activity done by administrator or any other user in the system.	
63.	VMS control of cameras and monitoring on client workstations shall be done through the administrator interface.	

64.	System watchdog feature be available to alert in case of failure of cameras and servers.	
65.	Camera Support Parameters	
66.	Should support multiple brand IP cameras, encoders, NVR's and DVRs. No restriction on camera hardware.	
67.	Should support ONVIF protocol including Profile-S, G, T & M.	
68.	Advance Features	
69.	The VMS licensing shall require MAC Id of Server/ Recorder only, not of camera devices.	
70.	VMS Web Client	
71.	The Central VMS Web Client shall have Dashboarding Capabilities, such that the Dashboard should Support for Drawings/Maps GIS Layer, OSM Layer, Autocad .dwg File, .JPEG file format, .PDF file format, Customized Video Grid for Live & Playback of Video & Events Table	
72.	The Central VMS Web Client shall show the Camera details with Key Performance Indicators like, Total Cameras connected, Total Cameras Disconnected, Status Visualization in the form of Pie Chart	
73.	The Central VMS Web Client shall have a Reporting functionality in the form Camera Uptime, Downtime.	
74.	The VMS Web Client must support for H.265 & H.265+ Codec Live & Playback Streaming.	
75.	The VMS Web Client shall support comprehensive data filtering for most reports based on entity type, event type, event timestamp, custom fields, and more.	

ITEM NO. 137: FACIAL RECOGNITION SOFTWARE

S.No	Technical and Functional Specifications	Compliance (Yes/No)
1.	The Proposed AI based FRS shall be based on as Artificial Intelligence (AI) & Deep Learning Platform. The FRS system shall make use of the latest technologies such as AI & Deep learning & should be Supported on the latest multiple CPU or GPUs from respective OEMs	
2.	Face Recognition System (FRS) should identify or verify a person from various kinds of photo inputs from digital image files to video sources. It should enable security professionals to shortlist, target, and identify against the watchlist Criminals and potential miscreants	
3.	The system should offer logical algorithms and user friendly, simple graphical user interface making it easy to perform the facial matching. Face detection and recognition based on real time video processing.	
4.	The FRS system shall be enterprise grade highly scalable providing the most accurate results for the most demanding real time and post event offline mode).	

5.	Face Recognizer software should provide the following capabilities:	
	● Face Recognition System shall work on real time and offline mode (On Pre-Recorded Video Feeds)	
	● Detect and log faces.	
	● Recognize faces (with pre-registration)	
	● The system shall work on partial occlusion of face, glasses, scarfs, changes of facial expression etc.	
	● Search for similar faces from a single camera or across multiple cameras	
	● Detect face images from a single camera or across multiple cameras and real time trigger alerts if a blacklist/wanted match is found	
	● Match suspected criminal faces from pre-recorded video feeds obtained from CCTVs deployed in various critical identified locations, or with the video feeds received from private or other public organization's video feeds.	
6.	● Allows users to track people's presence across multiple cameras or locations to identify potential issues or threats	
	● Creates an automated log of people in the camera or scene which can be used for forensic investigations	
	The facial recognition system should be able to recognize subjects appearing simultaneously in multiple live video streams retrieved from IP surveillance cameras.	
	The Facial recognition system should seamlessly be integrated to the video management system	
	The system should be able to detect multiple faces from live single video feed.	
	The FRS Application must Support FRS Processing from Video Resolution 720p (HD Resolution) to Upto Max. 1080p (Full HD Resolution)	
	The FR software system should support to integrate with 3rd party camera (ONVIF Compliant)	
	The system shall be able to work on windows / Linux operating system.	
7.	The system should be able to be implemented on both the Server and Workstation.	
8.	The system shall support database systems like MY SQL or Postgre SQL.	
9.	Shall be able to do automatic face detection & recognition from the CCTV Camera feed OR from user-uploaded videos/images. Provision to upload suspect's photo & search the face	
10.	The FRS system shall have Enrollment, training, Multiple enrollments per person, Video enrollment for person which captures 5-10 pictures per enrollment. It should have Recognition and Enrollment from both Video and Image.	
11.	The system should be supporting various file formats like JPEG and PNG format for enrolment.	
12.	FRS system should have Detection speed latency Recognition in less than 1-2 seconds in video mode.	
13.	The user interface of the facial recognition system should have a report generation tool. It should be able to generate real time reports such as Audit log report, MIS report, Daily Detection Report, Statistics Report.	
14.		
15.		
16.		
17.		
18.		

19.	Dashboarding capabilities to show Health status of server, cameras, storage	
20.	FRS system should have web-based interface	
21.	Deep learning based facial Recognition 1:1 & 1: N Face matching Ability.	
22.	The system should have the ability to handle the initial real-time watch list of Face. Support multiple facial blacklists or whitelists.	
23.	The facial recognition system should be able to work on the server/ desktop OS as per the requirement.	
24.	The FRS Application must have ONVIF Discovery Tool within the Application for detecting ONVIF Cameras. Such that the FRS system shall support the auto-discovery of any ONVIF compliant camera.	
25.	The UI of the FRS system should support live Video Streaming of all the connected Facial Recognition cameras for Live monitoring in real-time. Real-time Updating of Snapshots taken by Facial Recognition Cameras shall not be Acceptable.	
26.	The Backend Facial Recognition Application should be from the same OEM of the Offered/proposed Facial Recognition Software & should not be from any 3rd Party OEM.	
27.	To ensure the support of an open eco-system, the FRS system shall be a truly open & independent solution module and not embedded in any NVR or any IP Cameras.	
28.	The Proposed Facial Recognition Software (FRS) Server Application should have undergone Audit as per OWASP Top 10 Web Application Security Risks. A Security Test Report/Certificate from STQC to be Submitted by the respective OEM for FRS Analytics to Substantiate the Proof of the Security testing. For the compatibility with all the cameras or future cameras, proposed FRS Analytics application must be ONVIF S,G,T and M Compliant under Analytics category and listed on ONVIF website.	

ITEM NO. 138: INTELLIGENT TRAFFIC MANAGEMENT / ENFORCEMENT SYSTEM (ITMS/ ITES)

Technical and Functional Specifications	Compliance (Yes/No)
Automatic Number Plate Recognition i. The ANPR Application shall automatically detect the license plate in the captured video feed in real-time. ii. ANPR Application shall be designed to work for 24x7 unattended operations iii. ANPR Application shall perform OCR (optical character recognition) of the license Plate characters (English alpha-numeric characters in standard fonts). iv. ANPR Application shall store JPEG image of vehicle and license plate and enter the license plate number into DBMS like My Sq/Postgre etc. database along with date and time stamp. v. ANPR Application should support for Search for Vehicle based on the Following Criteria:	

○ full or partial number of the license plate, ○ colour of the vehicle, ○ Speed of the vehicle ○ classification of vehicle, ○ Junction Name ○ Event Type (e.g. ANPR, Red Light Violation, Speed Violation, etc.) vi. ANPR Application should support for searching for similar plates across Single or multiple cameras. vii. ANPR Application should able to detect single row, double row, multi row, square and rectangular plates as well viii. ANPR Application should Compare against Watch List database to detect any matches ix. ANPR Application should support for Real-time alerts on Plate matches x. ANPR Application should Detect, Recognize and Search License Plates. xi. Vehicle monitoring is a large part of outdoor security & surveillance and integrated traffic systems. xii. It should Enable security professionals to shortlist, target, and identify “wanted”, “Suspicious”, “Stolen” unauthorized, plates. xiii. Allows users to track vehicles across multiple cameras or locations to identify potential threats. xiv. Should generate an alarm in case of any identified vehicle plate xv. Enables automated matching against a watch list with real time alerting xvi. The system Graphical User Interface should support English Language & the Graphical User interface (GUI) should provide following information: ○ Image of the Complete vehicle ○ Image of the Cropped Number Plate ○ Text conversion of number plate after using OCR (Optical Character Recognition) technology ○ Date and Time of offending vehicle ○ Event/images/chart of ANPR ○ Records and logs all License Plates at a scene, for forensic investigations. xvii. The Min. Video resolution Supported should: Min. 1080p & the Max. Video Resolution Supported should be Up to 4K Resolution. xviii. Min. Framerate: 25-30 FPS & Max. Upto 120FPS or the Max. Frame Rate Supported by the Cameras. xix. Image quality: LP image contrast should be high at different times of day, especially at night time. The image needs to have minimal noise at low light situations. xx. System should able to give vehicle image with license plate image xxi. Store events with plate images xxii. The system shall store the vehicle license number into a relational SQL database (MySQL)/Postgre along with date timestamp and Camera details. The necessary license/ subscription/support services of the database software should be bundled with the ANPR software. xxiii. The ANPR Application must be. ○ Open architecture and easy to integrate of alerts via http/XML ○ Integrates with VMS or third-party VMS at central level. ○ Can be integrated with e-Challan system ○ Option to include or exclude zones ○ Real-time alerts on Vehicle violation detection	
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○ Detailed Reports of violations xxiv. The ANPR Application should have ONVIF Discovery Tool within the Application for detecting ONVIF Cameras. The Proposed ANPR/ITMS Application shall be based on an Open Platform & should support various 3rd Party ONVIF Cameras. xxv. Should work with real-time IP cameras, live videos. xxvi. The ANPR Application shall be OS Agnostic & should Compulsorily be Compatible on Windows Operating System & Linux Operating Systems both. xxvii. The ANPR Application shall have more than 95% Accuracy during daytime and 85% during night-time for all different types and classes of vehicles. xxviii. The ANPR Application should Detects for both Standardized (High Security Registration Plates) and Non-Standardized plates. xxix. The ANPR Application should have an Intuitive Graphical User Interface (GUI) & user-friendly menu driven Interface for the Configuration & Viewing the ANPR Application. For Ease of Operation & Maintenance, the Configuration should strictly be possible through the GUI & not through the Command Line Interface (CLI). Any Configuration through CLI shall not be Acceptable. xxx. The ANPR Application should have Multiple Grid options like 1x1, 2x2, 2x1, 3x3, 4x4, 1+2, 1+5, 1+7 with various Grid options for Live Video Streaming Capabilities in real-time. Real-Time Updating of Image Snapshot on any Transaction or Violation shall not be Acceptable. Live Streaming Support within the ANPR Application is a must & should be Demonstrated. xxxi. The ANPR Application should be a Web Based Application, so that it can Accessed on a Standard Web Browser from any System within the LAN. The Configuration of System should also be possible through the Web Browser itself. xxxii. The System shall have Health Check Dashboard to Monitor the Complete Server/LPU Health Status. Alarm shall be generated if CPU, RAM Exceeds the Operating Threshold & should be notified to the Operator in the form of Toggle Notification. xxxiii. The System shall Advanced Vehicle Tracking Section to track a Particular vehicle of Interest across Multiple ITMS/ANPR Cameras in the System. xxxiv. The ANPR Application must have the Capability to Play the Recorded Video Clip of the Speed Violation Event within the Client GUI Application itself. xxxv. The ANPR Application must have the Capability to Export Pre & Post Recording of the Speed Violation Event in Standard Video Formats like .avi, .asf, .mp4 & .ts xxxvi. The ITMS Application should have Undergone Application Security as per OWASP Top 10 from STQC. A valid STQC certificate issued to the OEM for ITMS application to be submitted along with the bid documents.	
AI Based Vehicle Speed Violation Detection (SVD) - Detects the speed of vehicle from video surveillance camera. - Speed detection should range between 10 to 200 km/hr. - Should support Configurable Speed Limit threshold as per the User Requirement.	

iv.	Real Time Alerts for Speed Violation along with Snapshots & Actual Speed of the Infractioning Vehicle.	
v.	Should be Possible to Review Violation & Evidence Data/	
vi.	Should be able to capture the Number/License Plate of the Vehicle that has violated the Pre-Defined Speed Threshold.	
vii.	Should be possible for Detection of Object/Vehicle Speed for Single/Multiple Lanes.	
viii.	Should be able to integrate the Speed Violation along with ANPR to e-Challan System.	
ix.	The SVD Application should have more than 95% Accuracy during Day time and 85% during night-time for all types of vehicles classes for OCR.	
x.	The SVD Application must store Video & Images of Multiple Violating Vehicles in Different Lanes with a Unique ID, Location/Direction, Device ID, Lane ID or Lane No. And Evidence Image & ANPR Image along with Date & Time Stamp in the encrypted form in relational Database.	
xi.	The SVD Application must have options for Smart Searching & Exporting the Vehicles data for High-Speed Violations only.	
xii.	The SVD Application must give Real-time alerts on Speed Violation.	
xiii.	The SVD Application must have advanced searching capabilities with options for filtering by violation type, Number Plate Search, with option for search with AND/OR function to be applied to two different parameters for finding the exact Violation/Infraction.	
xiv.	The SVD Application must Automatically Pop-up of Hot-listed Vehicles upon Detection of Hot-Listed Number/License Plates.	
xv.	The SVD Application must have option for creating various User Defined Categories like VIP Vehicles, Stolen Vehicles, and Suspicious Vehicles. For each Category a Number/License Plate Number can be Assigned & Accordingly that Category of Vehicle can be searched in the Database.	
xvi.	The SVD Application must have support for Actionable Intelligence that includes automatic E-Mailing/SMS to respective concerned Authorities.	
xvii.	The SVD Application shall be Compatible on Windows Operating System & Linux Operating Systems both.	
xviii.	The SVD Application should support Integration with RTO/VAHAN Database for gathering Infractioning Vehicle's details & the Vehicle's owner details.	
xix.	The SVD Application should have an Intuitive Graphical User Interface (GUI) & user friendly for the Configuration & Viewing the SVD Application.	
xx.	The SVD Application should have an Intuitive Graphical User Interface (GUI) & user-friendly menu driven Interface for the Configuration & Viewing the SVD Application. For Ease of Operation & Maintenance, the Configuration should strictly be possible through the GUI & not	

through the Command Line Interface (CLI). Any Configuration through CLI shall not be Acceptable. xxi. The SVD Application should have Multiple Grid options like 1x1, 2x2,2x1,3x3,4x4,1+2,1+5,1+7 with various Grid options for Live Video Streaming Capabilities in real-time. xxii. The SVD Application should be a Web Based Application, so that it can Accessed on a Standard Web Browser from any System within the LAN. xxiii. The SVD Application should have a Built-in E-Challan generation option in a Customized/User Centric Format. xxiv. The SVD/ITMS Application should have Undergone Application Security as per OWASP Top 10 from STQC. A valid STQC certificate issued to the OEM for ITMS application to be submitted. xxv. The Video based Speed Violation Detection System (SVDS)Application shall have undergone Comparative Speed Assessment & Validation by ARAI for Speeds Up to 200 Km/hr. xxvi. A Detailed Assessment Report with Test Speeds Up to 200 Km/Hr should be Submitted as a Proof for the Video Based Speed Violation Detection System (SVDS). xxvii. The System shall have Health Check Dashboard to Monitor the Complete Server/LPU Health Status. Alarm shall be generated if CPU, RAM Exceeds the Operating Threshold & should be notified to the Operator in the form of Toggle Notification. xxviii. The System shall Advanced Vehicle Tracking Section to track a Particular vehicle of Interest across multiple ITMS/SVD Cameras in the System. xxix. The SVD Application must have the Capability to Play the Recorded Video Clip of the Speed Violation Event within the Client GUI Application itself. xxx. The SVD Application must have the Capability to Export Pre & Post Recording of the Speed Violation Event in Standard Video Formats like .avi, .asf, .mp4 & .ts	
No Helmet Detection i. No Helmet Detection Algorithm must Recognize people on moving Two-Wheeler/Motorcycle vehicles, detect head and recognize the presence of helmet. ii. The No Helmet Detection Camera shall detect for Rider's Head with or without a Helmet on a Two-Wheeler Vehicle. iii. If No Helmet is detected on the Rider's Head then a Metadata Overlay (Bounding Box) on the Rider shall be marked with Text No Helmet. iv. No Helmet Detection in Real-time, with Evidence Monitoring of Infraction/Violation of No Helmet Riding in Real-time v. No Helmet Detection systems must work by Evidence Capturing Mechanism of Commuters travelling on a Two-Wheeler without a Helmet in tandem with the ANPR System.	

vi.	No Helmet Detection Application must have options for Smart Searching & Exporting the Vehicles data for No Helmet Violations only.	
vii.	No Helmet Detection Application must give Real-time alerts on No Helmet Detection.	
viii.	No Helmet Detection Application must have advanced searching capabilities with options for filtering by violation type, Number Plate Search, with option for search with AND/OR function to be applied to two different parameters for finding the exact Violation/Infraction.	
ix.	No Helmet Detection Application must Automatically Pop-up of Hot-listed Vehicles upon Detection of Hot-Listed Number/License Plates.	
x.	No Helmet Detection Application must have option for creating various User Defined Categories like VIP Vehicles, Stolen Vehicles, Suspicious Vehicles. For each Category a Number/License Plate Number can be Assigned & Accordingly that Category of Vehicle can be searched in the Database.	
xi.	No Helmet Detection Application must have support for Actionable Intelligence that includes automatic E-Mailing/SMS to respective concerned Authorities.	
xii.	No Helmet Detection Application shall be Compatible on Windows Operating System & Linux Operating Systems both.	
xiii.	No Helmet Detection Application should support Integration with RTO/VAHAN Database for gathering Infractioning Vehicle's details & the Vehicle's owner details.	
xiv.	No Helmet Detection Application should have a Built-in E-Challan generation option in a Customised/User Centric Format.	
xv.	The No-Helmet Detection Application should have an Intuitive Graphical User Interface (GUI) & user-friendly menu driven Interface for the Configuration & Viewing the No-Helmet Detection Application. For Ease of Operation & Maintenance, the Configuration should strictly be possible through the GUI & not through the Command Line Interface (CLI). Any Configuration through CLI shall not be Acceptable.	
xvi.	The No-Helmet Detection Application should have Multiple Grid options like 1x1, 2x2, 2x1, 3x3, 4x4, 1+2, 1+5, 1+7 with various Grid options for Live Video Streaming Capabilities in real-time.	
xvii.	The No-Helmet Detection Application should be a Web Based Application, so that it can Accessed on a Standard Web Browser from any System within the LAN.	
xviii.	The No-Helmet Application should have a Built-in E-Challan generation option in a Customized/User Centric Format.	
xix.	The ITMS Application should have Undergone Application Security as per OWASP Top 10 from STQC. A Certificate from STQC for the ITMS Application to be Submitted.	
Triple Riding Detection		

Triple Riding Detection system should work by Evidence Capturing Mechanism of Commuters travelling on a Two-Wheeler with 3 Persons on a Single Vehicle (Triple Riding) in tandem with the ANPR System. i. The Triple Riding Detection Camera shall detect for the No. of Person Riding on a Bike/Two-Wheeler Vehicle. ii. If more than 2 Persons are found to be Riding on a Bike/Two-Wheeler vehicle then the Triple Riding Detection System Shall Automatically Identify it as Triple Riding Detected & a Metadata Overlay (Bounding Box) on the Rider shall be marked with Text Triple Riding. iii. Triple Riding Detection in Real-time Traffic Scenario, with Evidence Monitoring of Infraction/Violation of Triple Riding in Real-time. iv. Triple Riding Detection Application must have advanced searching capabilities with options for filtering by violation type, Number Plate Search, with option for search with AND/OR function to be applied to two different parameters for finding the exact Violation/Infraction. v. Triple Riding Detection Application must Automatically Pop-up of Hot-listed Vehicles upon Detection of Hot-Listed Number/License Plates. vi. Triple Riding Detection Application must have option for creating various User Defined Categories like VIP Vehicles, Stolen Vehicles, and Suspicious Vehicles. For each Category a Number/License Plate Number can be Assigned & Accordingly that Category of Vehicle can be searched in the Database. vii. Triple Riding Detection Application must have support for Actionable Intelligence that includes automatic E-Mailing/SMS to respective concerned Authorities. viii. Triple Riding Detection Application shall be Compatible on Windows Operating System & Linux Operating Systems both. ix. Triple Riding Detection Application should support Integration with RTO/VAHAN Database for gathering Infractioning Vehicle's details & the Vehicle's owner details. x. Triple Riding Detection Application should have a Built-in E-Challan generation option in a Customised/User Centric Format. xi. The Triple Riding Application should have an Intuitive Graphical User Interface (GUI) & user-friendly menu driven Interface for the Configuration & Viewing the Triple Riding Application. For Ease of Operation & Maintenance, the Configuration should strictly be possible through the GUI & not through the Command Line Interface (CLI). Any Configuration through CLI shall not be Acceptable. xii. The Triple Riding Application should have an Intuitive Graphical User Interface (GUI) & user friendly for the Configuration & Viewing the Triple Riding Application. xiii. The Triple Riding Application should have Multiple Grid options like 1x1, 2x2, 2x1, 3x3, 4x4, 1+2, 1+5, 1+7 with various Grid options for Live Video Streaming Capabilities in real-time. xiv. The Triple Riding Application should be a Web Based Application, so that it can Accessed on a Standard Web Browser from any System within the LAN.	
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xv. The Triple Riding Application should have a Built-in E-Challan generation option in a Customized/User Centric Format. xvi. The ITMS Application should have Undergone Application Security as per OWASP Top 10 from STQC. A Certificate from STQC issued to OEM for the ITMS Application to be Submitted.	
AI Based Wrong Way Driving Detection Wrong Way Driving Detection System Should Identify the direction of expected flow of vehicles in a road or junction. The system dynamically detects vehicles moving in the wrong direction and captures with evidence. - The Wrong Way Driving Detection System shall detect for the Direction of the Expected Flow of Vehicles in a Road or Junction. - If the Vehicle is found to be Moving or Travelling in the Wrong Direction then the Wrong Way Driving Detection System Shall Automatically Identify it as Wrong Way Driving Detected & a Metadata Overlay (Bounding Box) on that Particular Vehicle shall be marked with Text Wrong Wat Driving. - The Wrong Way Driving Detection must work/function in Real-time Traffic Scenario, with Evidence Monitoring of Infraction/Violation of Wrong Way Driving Detection in Real-time. - Wrong Way Driving Detection Application must have advanced searching capabilities with options for filtering by violation type, Number Plate Search, with option for search with AND/OR function to be applied to two different parameters for finding the exact Violation/Infraction. - Wrong Way Driving Detection Application must Automatically Pop-up of Hot-listed Vehicles upon Detection of Hot-Listed Number/License Plates. - Wrong Way Driving Detection Application must have support for Actionable Intelligence that includes automatic E-Mailing/SMS to respective concerned Authorities. - Wrong Way Driving Detection Application shall be Compatible on Windows Operating System & Linux Operating Systems both. - Wrong Way Driving Detection Application should support Integration with RTO/VAHAN Database for gathering Infractioning Vehicle's details & the Vehicle's owner details. - Wrong Way Driving Detection Application should have a Built-in E-Challan generation option in a Customised/User Centric Format. - The Wrong Way Driving Application should have an Intuitive Graphical User Interface (GUI) & user-friendly menu driven Interface for the Configuration & Viewing the Wrong Way Application. For Ease of Operation & Maintenance, the Configuration should strictly be possible through the GUI & not through the Command Line Interface (CLI). Any Configuration through CLI shall not be Acceptable.	

xi. The Wrong Way Driving Application should have an Intuitive Graphical User Interface (GUI) & user friendly for the Configuration & Viewing the Triple Riding Application. xii. The Wrong Way Driving Application should have Multiple Grid options like 1x1, 2x2, 2x1, 3x3, 4x4, 1+2, 1+5, 1+7 with various Grid options for Live Video Streaming Capabilities in real-time. Real-Time Updating of Image Snapshot shall not be Acceptable. xiii. The Wrong Way Driving Application should be a Web Based Application, so that it can Accessed on a Standard Web Browser from any System within the LAN. The Configuration of System should also be possible through the Web Browser itself. xiv. The Wrong Way Driving Application should have a Built-in E-Challan generation option in a Customized/User Centric Format. xv. The ITMS Application should have Undergone Application Security as per OWASP Top 10 from STQC. A Certificate from STQC for the ITMS Application to be Submitted.	
Red Light Violation Detection (RLVD) I. Red Light Violation Detection (RLVD) system is a system for capturing details of vehicles that have crossed the stop line at the junction while the traffic light is red. System shall be able to automatically detect red light through evidence camera units. The information so captured shall be used to issue challans to the violators. II. RLVD system is a combined solution with ANPR system. RLVD camera covers the complete road of the junction giving an overview of the junction from a wide field of view. ANPR camera will capture the license plate of the violating vehicle using OCR and the violation event tagged with ANPR image, OCR data, shall be Stored in a Relational Database like My sql/Postgre. III. RLVD solution shall have an overview camera to capture the zoomed-out picture of the entire area when there is a red-light violation. IV. The RLVD System should not support any use of Hardware sensors for Traffic Light Colour Monitoring, the Traffic Lights shall be Monitored by the Overview Camera & in the Overview Camera of RLVD Application it must have a display of the Traffic Light Status in the Live Feed to check for the status of Traffic Light. V. The RLVD Application must store Video & Images of Multiple Violating Vehicles in Different Lanes with a Unique ID, Location/Direction, Device ID, Lane ID or Lane No. And Evidence Image & ANPR Image along with Date & Time Stamp in the encrypted form in relational Database. VI. The RLVD Application must have options for Smart Searching & Exporting the Vehicles data for Red Light Violations only. VII. The RLVD Application must give Real-time alerts on Red Light Violations. VIII. The RLVD Application must have advanced searching capabilities with options for filtering by violation type, Number Plate Search, with option for search with AND/OR function to be applied to two different parameters for finding the exact Violation/Infraction. IX. The RLVD Application must Automatically Pop-up of Hot-listed Vehicles upon Detection of Hot-Listed Number/License Plates.	

X.	The RLVD Application must have option for creating various User Defined Categories like VIP Vehicles, Stolen Vehicles, and Suspicious Vehicles. For each Category, a Number/License Plate Number can be Assigned & Accordingly that Category of Vehicle can be searched in the Database.	
XI.	The RLVD Application must have support for Actionable Intelligence that includes automatic E-Mailing/SMS to respective concerned Authorities.	
XII.	The RLVD Application shall be OS Agnostic & should Compulsorily be Compatible on Windows Operating System & Linux Operating Systems both.	
XIII.	The RLVD Application should support Integration with RTO/VAHAN Database for gathering Infractioning Vehicle's details & the Vehicle's owner details.	
XIV.	The RLVD Application should have an Intuitive Graphical User Interface (GUI) & user-friendly menu driven Interface for the Configuration & Viewing the RLVD Application. For Ease of Operation & Maintenance, the Configuration should strictly be possible through the GUI & not through the Command Line Interface (CLI). Any Configuration through CLI shall not be Acceptable.	
XV.	The RLVD Application should have Multiple Grid options like 1x1, 2x2, 2x1, 3x3, 4x4, 1+2, 1+5, 1+7 with various Grid options for Live Video Streaming Capabilities in real-time. Real-Time Updating of Image Snapshot on any Transaction or Violation shall not be Acceptable. Live Streaming Support within the ANPR Application is a must & should be Demonstrated.	
XVI.	The RLVD Application should be a Web Based Application, so that it can Accessed on a Standard Web Browser from any System within the LAN. The Configuration of System should also be possible through the Web Browser itself.	
XVII.	The RLVD Application should have a Built-in E-Challan generation option in a Customized/User Centric Format.	
XVIII.	RLVD system, in case of an offence detected, shall capture details such as site name, location details, lane number, date & time, registration number of car and type of offence on the image itself.	
XIX.	The system shall also be able to generate number of reports for analysis such as the traffic light with maximum offenders, peak time of traffic offence and other reports in discussion and as per the customization requirement for this project.	
XX.	The system shall be designed to work for 24x7 unattended operations.	
XXI.	The System shall have Health Check Dashboard to Monitor the Complete Server/LPU Health Status. Alarm shall be generated if CPU, RAM Exceeds the Operating Threshold & should be notified to the Operator in the form of Toggle Notification.	
XXII.	The System shall advanced Vehicle Tracking Section to track a Particular vehicle of Interest across Multiple ITMS/RLVD Cameras in the System.	
XXIII.	The RLVD Application must have the Capability to Play the Recorded Video Clip of the Red Light Violation Event within the Client GUI Application itself.	
XXIV.	The RLVD Application must have the Capability to Export Pre & Post Recording of the Red Light Violation Event in Standard Video Formats like .avi, .asf, .mp4 & .ts	
XXV.	The RLVD/ITMS Application should have Undergone Application Security as per OWASP Top 10 from STQC.	
	A Certificate from STQC for the ITMS Application to be Submitted.	

No Seatbelt Driving Detection

No Seat Belt Detection system should work by Evidence Capturing Mechanism of Commuters travelling in a Four-Wheeler or above Category Vehicle with Front Passengers not wearing a Seat Belt. The No Seat Belt Driving Detection should work in Conjunction with the ANPR System.

- i. The No Seat Belt Driving Detection Camera should detect for whether the seat belt is worn by the Front Passengers in the Four-Wheeler & above category vehicles.
- ii. If it detects that No Seat Belt is worn by the Passengers, then the No Seat Belt Detection System Shall Automatically Identify it as No Seat Belt Driving Detected & a Metadata Overlay (Bounding Box) on the Rider shall be marked with No Seat Belt Driving.
- iii. No Seat Belt Driving Detection in Real-time Traffic Scenario, with Evidence Monitoring of Infraction/Violation of No Seat Belt Detection in Real-time.
- iv. No Seat Belt Driving Detection Application must have advanced searching capabilities with options for filtering by violation type, Number Plate Search, with option for search with AND/OR function to be applied to two different parameters for finding the exact Violation/Infraction.
- v. No Seat Belt Driving Detection Application must have support for Actionable Intelligence that includes automatic E-Mailing/SMS to respective concerned Authorities.
- vi. No Seat Belt Driving Detection Application shall be Compatible on Windows Operating System & Linux Operating Systems both.
- vii. No Seat Belt Driving Detection Application should support Integration with RTO/VAHAN Database for gathering Infractioning Vehicle's details & the Vehicle's owner details.
- viii. No Seatbelt Driving Detection Application should have a Built-in E-Challan generation option in a Customised/User Centric Format.
- ix. No Seat Belt Driving Detection Application should have an Intuitive Graphical User Interface (GUI) & user-friendly menu driven Interface for the Configuration & Viewing the No Seat Belt Driving Detection Application. For Ease of Operation & Maintenance, the Configuration should strictly be possible through the GUI & not through the Command Line Interface (CLI). Any Configuration through CLI shall not be Acceptable.
- x. The No Seat Belt Driving Detection Application should have an Intuitive Graphical User Interface (GUI) & user friendly for the Configuration & Viewing the Triple Riding Application.
- xi. The No Seat Belt Driving Detection Application should have Multiple Grid options like 1x1, 2x2, 2x1, 3x3, 4x4, 1+2, 1+5, 1+7 with various Grid options for Live Monitoring.
- xii. The No Seat Belt Driving Detection Application should be a Web Based Application, so that it can Accessed on a Standard Web Browser from any System within the LAN.

xiii. The No Seat Belt Driving Detection Application should have a Built-in E-Challan generation option in a Customized/User Centric Format. The ITMS Application should have Undergone Application Security as per OWASP Top 10 from STQC. A Certificate from STQC for the ITMS Application to be Submitted.	
Free Left Lane Violation Detection i. Free Left Lane Violation Detection Algorithm must recognize vehicles approaching an intersection and detect violation of designated <i>Free Left Lane</i> rules in real-time. ii. The system shall automatically detect vehicles entering or blocking the <i>Free Left Lane</i> during restricted movement phases (e.g., red signal for straight/right movement while left turn is free). iii. If a vehicle violates the Free Left Lane rule, a Metadata Overlay (Bounding Box) shall be generated on the violating vehicle with violation text such as “<i>Free Left Lane Violation</i>”. iv. Detection must be performed in real-time, with evidence monitoring of the violation including time-stamped image/video clips. v. The system shall work through an Evidence Capturing Mechanism in tandem with the ANPR System to capture: • Vehicle Image • License Plate Image • Contextual Scene Image • Video Clip of Violation vi. The application must generate Real-time alerts upon detection of a Free Left Lane violation. vii. Free Left Lane Violation Detection Application should support Integration with RTO/VAHAN Database for gathering Infracting Vehicle’s details & the Vehicle’s owner details. viii. Free Left Lane Violation Detection Application should have a Built-in E-Challan generation option in a Customised/User Centric Format. ix. The ITMS Application should have Undergone Application Security as per OWASP Top 10 from STQC. A Certificate from STQC for the ITMS Application to be Submitted.	

ITEM NO. 139: AI BASED VIDEO ANALYTICS

Video management software (VMS) and ai based video analytics (ai-vas) should be from same OEM for seamless integration & interoperability. The video analytics shall offer a suite of analytics rules with artificial intelligence to provide automatic detection of a range of motion and non-motion behaviour of persons, objects and vehicles.

There shall be a provision of analytics and artificial intelligence through machine and deep learning solutions on video. There should be provision of at least 1 use-case (minimum) per camera. Each of the video analytics use case shall be able to run on a unified video management software platform itself.

Following video analytics and features should be supported based on licensing:

S.No	Technical and Functional Specifications	Compliance (Yes/No)
AI Based Intrusion Detection		
1.	The AI Based Perimeter Intrusion Detection Video Analytics use-case Should be able to detect an Upright Person in the Perimeter Intruding Zone within the field of view of the Camera shall raise an appropriate alarm in the Client Operator Application.	
2.	The Video Analytics Application must have the Option of Drawing Virtual Single/Multiple Lines along with Defining Logic for the Multiple Lines or have the Functionality to create multiple Virtual regions or Virtual Zones in a Field of view of Camera.	
3.	The System must have also have the Configuration Options for User Defined Drawing/Setting of the Zone within the Field of view of the Cameras with Configurable Border Width & it's Colour.	
4.	The System must have Configuration Option for Selecting the Alarm Interval in Seconds	
5.	The System should also have the Option to Select the type of Desired Object (Eg. Person Detection Model to Detect Person Intruding the Premises).	
Loitering Detection		
6.	The AI Based Loitering Detection Must automatically detect Person/Human that has moved continuously within the camera field of view in the Defined Zone for a configurable period of time.	
7.	The Application must Support for Creation of Multiple Zones within the same Field of View of the Cameras.	
8.	For Each Individual Zone, individual Configurable Parameters like Loitering Time & Name of the Zone should be Configurable.	
9.	The Application must also Support for Automatic Enabling & Disabling of Video Analytics based on Time Schedule for each & every Camera.	
10.	The AI Based Loitering Detection Analytics Video Stream must show the Metadata like Bounding Box over the Person/Human, ID, Etc.	
AI Based Crowd & Counting detection		

11.	The AI Based Crowd Detection Module must detect crowd formations and triggers alarms when a specified number of people (capacity) or a specified percentage of people (occupancy) thresholds is reached in the selected area.	
12.	Should have the Functionality to create multiple regions or Zones in a Field of view of Camera & should allow the user to Specify Crowd Thresholds Individually for each region. If within any region the Crowd Density Estimation exceeds the Threshold, then the system should raise an Alert.	
13.	The System must have Configuration Options for User Defined Drawing/Setting of the Zone within the Field of view of the Cameras with Configurable Border Width & it's Colour.	
14.	The System must have Configuration Options for Drawing Multi point Crowd Monitoring Zone where the Crowd Estimation & Counting is Desired. This Crowd Monitoring Zone Border's width & it's Depiction Colour must also Configurable.	
15.	The System must have Configuration Options for Inputting the User Defined Maximum Upper & Lower Limit Threshold	
16.	The System must have Configuration Option for Selecting the Alarm Interval in Seconds	
17.	It must be possible to configure Within a Single Filed of View/Camera, Multiple Monitoring Zones for Crowd Estimation & Counting can be Configured with each of them having different Crowd threshold Limits, The Different zone should be Distinguished with different Monitoring Zones Border Colours.	
AI Based Stopped Vehicle/illegal Parking Detection		
18.	The AI Based Stopped Vehicle Detection must function on the Vehicle Detection Model.	
19.	The System must Detect whether the Object is Vehicle & Should activate an alarm if vehicles are parked or Stopped in the Region of Interest/Field of View where they should not be Parked.	
20.	The Application must have the Provision & Functionality to create multiple regions or Zones in a Field of view of Camera & should allow the user to Define the Area for Stopped Vehicle Detection within the Camera's Field of View.	
21.	The System must have Configuration Options for Drawing Multi point Stopped Vehicle Detection Zone where the Stopped Vehicle is Desired. This Stopped Vehicle Detection Zone Border's width & it's Depiction Colour must also Configurable.	
22.	The System must have Configuration Options for Inputting the User Defined Input to Specify to The Length of Time field in seconds or minutes (Configurable).	
23.	The System must have Configuration Option for Selecting the Alarm Interval in Seconds	
ATCC (Automatic Traffic Counting and Classification)		
24.	Should provide high accuracy in real time vehicle counting and classification.	

25.	Minimum Classification supported should be bike, car, Truck/bus, large size vehicles.	
26.	Snapshot should be capture of each vehicle that is counted and classified.	
27.	System should have features with functions such as recording, snapshot capture, database management, reporting	
28.	Ability to Email or SMS any Video Analytics Event to mobile phones.	
29.	Offline analytics possible in avi, mp4, mpeg, h264/h265 and asf file formats.	
30.	Offline analytics should run in batch mode to take every file from specified folders and run analytics one by one on each file automatically.	
31.	Pre-buffer and Post buffer recordings up to 10 minutes for video analytic events.	
32.	Minimum and Maximum object size-based filtering	
33.	Define schedule of video analytics to run weekly, daily, day/night or according to user specified date and time.	
34.	Define minimum 20 shapes, lines or zone in single camera for video analytics	
35.	Technology is based on Live Camera and Recorded Videos	
36.	View snapshots of each event and click on event to play recording of that time period.	
37.	Reporting: Report of all events possible though bar and line charts.	
Features required in Analytics		
38.	Analytics can be applied in Full HD-1080P resolution, H265, H.264 compression and 25fps.	
39.	The VA shall support video from any camera supported by the VMS. For compatibility with all CCTV video analytics should be ONVIF S,G,M & T compliant and listed on ONVIF website.	
40.	The Video Analytics Platform shall be able to Perform on Both offline Pre-Recorded Video and Real time Live Video Streams.	
41.	The Video Management Platform must have the Option to Email, Phone call/IVR and Push Notification Alarm of any Event to mobile phones. Push method should be without SMS	
42.	Offline analytics possible in avi, mp4, ts, mpeg, h265, h264 and asf file formats	
43.	Offline analytics should run in batch mode to take every file from specified folders and run analytics one by one on each file automatically.	
44.	Pre-buffer and Post buffer recordings up to 10 minutes for video analytic events.	
45.	Minimum and maximum object size based filtering. Filtering based on Object type.	
46.	Define schedule of video analytics to run weekly, daily, day/night or according to user specified date and time	
47.	Define minimum 20 shapes, lines or zone in single camera for video analytics	
48.	Option to run analytics in silent mode	

49.	The video analytics application must have the capability to view snapshots of each event and click on event to play recording of that time period on the VMS Client Interface/GUI.	
50.	The video Analytics must have Ability to virtually map devices to one another in the VMS. For example, Fixed cameras and PTZ cameras so that event from fixed cameras can be used to notify PTZ cameras to Zoom, Pan or tilt or go-to preset positions and take snapshots of events. PTZ Tracking should happen to track the intruding object	
51.	Reporting: Report of all events possible through bar and line charts.	
52.	The video Analytics must have the Ability such that alerts can be searched and categorized based on this information. i.e. Timestamp (date & time), Alert Name, Alert Type, Camera Name, Camera ID.	
53.	Each of the video analytics use-case shall be structured as an independent module that can be deployed on any camera using a simple user interface utility, providing a complete visibility of the use cases and which cameras they are running on.	
54.	The video Analytics system shall be compatible with the latest technological advancements in the domain of computer vision and AI. Hence, it shall be able to quickly adapt to newer libraries and AI advancements. All the analytics and use-cases shall be based on advanced AI technology and shall not depend on traditional algorithms.	
55.	Event Notifications: The result of each of the use case shall be in the form of events that contain the screenshot with other metadata describing the event, such as detected objects, timestamp, camera/video that generated the event and all other metadata representing the event from different use cases. The Metadata must include the Bounding Boxes/Overlay on the Object Detected.	
56.	Resource Management View: The User interface shall provide a list of all the resources available in the system such as computing servers and cameras. The status of each of the devices, whether they are online/offline shall also be available at all times.	
57.	The algorithms powering the video intelligence system shall possess capability to operate parallel and distributed manner across a cluster of machines.	
58.	The system shall be a real-time video analytics engine that utilizes advanced image processing algorithms to turn video into actionable intelligence. The AI based Video Analytics system shall consist of video- processing & analytics engine that works seamlessly both on saved videos or camera streams in real-time and provide events to the user based on the use-case basis. The system shall be compatible with all ONVIF compliant IP cameras with H.264/H.265 video decoding. for compatibility with all CCTV video analytics should be ONVIF S,G,M & T compliant and listed on ONVIF website.	
59.	It is able to generate email or a text message to the designated recipients in case critical alerts are generated. The application shall escalate the alert to	

	the designated users through email or a text message in case the alert is not acknowledged by the operator in a specified period of time.	
60.	Video Analytics (VA) system should be native/ integrable to the VMS	
61.	It should be able to configure/view alert of video analytics on any of the cameras from the Video Management System desktop client Application	
62.	The VMS and VA must have tight integration so that there is no need to add cameras to VMS and VA servers separately.	
63.	Video Analytics Software should be native to the Video Management Software, Such that the Video Analytics events Including the snapshots and Pre & Post Recorded Video with Date & time Stamp, and types of Video Analytic event are available to user/Operator from a Single Graphical User Interface of the VMS Client Application. The VMS GUI must have the Provision to go to a Particular Event & view the Recorded Video where the playback timeline bar also shows VA Events in different colours form the time at which events occurred.	
64.	Video Management System and Video Analytics System should be from the same OEM.	
65.	With the Video Analytics Platform running on the same VMS Platform, the VA Events must take Snapshots & View snapshots of each event and click on event to play recording of that time period.	
66.	VA should allow the VA applications to configure and run as per hourly/daily/weekly schedule. Users should be able to create various schedules to deploy the VA applications as required.	
67.	The video Analytics should flag the video in the Video Management System. It should be possible for the operator to jump to the alert flag in the archived video for detailed investigation of the event.	
Video Analytics Functional Requirements		
68.	Proposed intelligent video analytics software shall have the capability to provide various alarms & triggers and should notify the Authorities if any incidence/violation happens.	
69.	The System shall be a real-time video analytics engine that utilizes advanced image processing algorithms & Artificial Intelligence to turn video into Actionable Intelligence.	
70.	The System shall provide configurable detection zones and lines to detect events of interest, Detection zones define an area of interest and Detection lines define a Virtual Line instead of a region.	
71.	The System shall facilitate creating multiple zones and lines in a single scene to trigger various alerts	
72.	The System shall allow the configuration of applicable rules and manage them	
73.	The system shall also enable editing the zones and lines to the desired shape or size.	

74.	The triggers generated by the applied rules shall provide visual indicators to identify the event. Such as a Green coloured Bounding Box changing the Bounding Box colour to Red on event.	
75.	The system shall enable detecting rules in the defined areas (zones/lines)	
76.	The system shall provide a functionality for configuring timelines for various events such as abandoned object, crowd detection, improper Parking or Vehicle Breakdown detection, etc.	
77.	The system shall allow classification of different objects like Animals, Vehicles and people	
78.	VAS should allow to add, edit, delete or disable and enable policies.	
79.	System shall have a sophisticated rule-based engine with powerful analytics capabilities that provides automatic event notification.	
80.	The city-wide surveillance system needs to have the capability to deploy intelligent video analytics software on any of selected cameras. This software should have the capability to provide various alarms & triggers.	

ITEM NO. 140: INTEGRATED COMMAND AND CONTROL CENTER (ICCC) APPLICATION

S.No	Technical and Functional Specifications	Compliance (Yes/No)
1.	The Integrated Command & Control Center Platform (ICCC) shall be an enterprise class IP-enabled application. The ICCC user interface (UI) applications shall present a unified security interface for the management, configuration, monitoring, co - relation, intelligence and reporting of various embedded systems and associated edge devices.	
2.	The ICCC shall support the seamless unification of various Public Safety element CCTV Surveillance System Video Management Software, AI Based Video Analytics Software, NMS, EMS, PA, ECB, Face Recognition Software & Intelligent Traffic Management/Enforcement System (ITMS/ITES), Perimeter control devices, third party security devices spread across multiple sites alerts by integration under a single platform.	
3.	The ICCC user interface (UI) applications shall present a unified security interface for the monitoring, co - relation, intelligence and reporting of various Embedded Systems, Sub-Systems and associated edge devices.	
4.	The platform must have native failover with no dependency on external virtualized or clustered applications. Solutions with external clustering like Windows Clustering, Microsoft SQL Clustering and VMware or Hyper-V etc. should not be proposed.	
5.	The ICCC platform must be a true unified management experience for critical infrastructure Monitoring, simplifying control room operation and system integration, minimizing total cost of ownership, and increasing operational efficiency critical to rapid decision-making.	

6.	The Command & Control solution should be implemented and complied to the industry open standards based Commercial-of-the-shelf (COTS) products.	
7.	Platform shall be open architecture based, Highly Scalable and able to integrate multiple disparate Video Surveillance systems seamlessly on a common platform.	
8.	Platform system shall provide a real time Common Operating Picture (COP) of all areas involving all agencies using a simple GUI.	
9.	System should provide tool to define/create any event/rule based Standard Operating Procedure (SOP) for decision making by optimizing the time to resolution for emergency and crisis situations.	
10.	Platform shall provide a dashboard functionality to manage workflows by integrating information from different agencies and systems to facilitate responsive decision making.	
11.	The Integrated Command & Control Center Application Platform shall have a built-in ONVIF Device Discovery Tool, so that ONVIF Cameras/Devices can Directly be added to the ICCC Application Platform.	
12.	The CCC shall embody the following characteristics: • Client-server Architecture • Support Multi-Site, Multiple-Hierarchy Deployment • Provide clear scalability • Central administration capability • Support local redundancy and high availability options • Capable of running in a virtual environment • Provide a mechanism to define key performance indicators, trends, leading indicators and visualize the indicators on a web based configurable dashboard infrastructure • Display a configurable indication of overall situation threat level • Provide communication capability to include email, mass notification, and application-based messages • Support the simulation of events, such as alarms, for training purposes. • The System shall be Modular & Scalable & allows for customisation to meet precise need of customer's unique requirement. • The System shall render services of Video Surveillance, Central Alarm, connection services to 3rd party data bases, Consume or Source web services. • The System shall have Graphical User Interface & tools to create Workflows & Rule Engine.	
Integration Features		
13.	Centralized Integrated Command and Control Center (ICCC) and video/event monitoring of unlimited cameras, Perimeter control devices, third party security devices spread across multiple sites or places.	

	Integration including but not limited to following external devices or applications: CCTV Surveillance System Video Management Software, AI Based Video Analytics Software, Face Recognition Software & Intelligent Traffic Management/Enforcement System (ITMS/ITES) under a single platform.	
14.	Supports protocols integration with SCADA though Modbus TCP, Modbus TCP, SIP, OPC, I/O inputs and Relay outputs, SDK integration in all programming languages, Database integration, Third party Application integration. Integration may also be required to be done and as per customer requirement.	
15.	Video Evidence plays a Major role in the Security System Aspect thus for Tight Integration Integrated Command and Control Center (ICCC) Application, Video Management Software (VMS), should be from same make/OEM for Seamless Integration & Endless Integration Capabilities between VMS & ICCC Application Platform.	
16.	All the alarms should be shown in same system. The systems should have ability to integrate with devices by either sending events from or receiving events from other devices. Event SDK support required. Events from Video System should be able integrate with third party applications and devices.	
17.	Integrated Command, Control, and Information Management System (ICCC) for handling all security operations-related tasks and improve work efficiency	
18.	The ICCC system shall be able to integrate, connect, and correlate information from security data and information from the following security subsystems using Ethernet-based connectivity: • CCTV Video Management Software • AI Based Video Analytics Software • Face Recognition Software • Intelligent Traffic Management/Enforcement System (ITMS/ITES) • And other platforms/ applications, if any.	
19.	The ICCC system shall be able to integrate, connect, and correlate information from security data and information from the following security subsystems using Ethernet-based connectivity.	
20.	The ICCC system shall enable the operator to quickly visualize the environment and assess alarm by reviewing related security information.	
Graphical User Interface (GUI) Display Functions		
21.	View and handle multiple alarms at one time.	
22.	View multiple video windows at one time. Operators shall be able to resize and move video windows.	
23.	View windows in a single monitor, across multiple monitors or video walls.	
24.	Access, display and manage events / alarms and related security data and information from subsystem based on priority and authority level.	
25.	Enable different graphical user interface “panes” to be modified to provide a customized operator experience.	

GIS Maps		
26.	Multiple map integration including OSM, Custom Maps, Google and Bing. Ability to add maps defined or given by customer.	
27.	Each map should support multiple layers or hierarchy of Base Layer and Overlay layer. Execute Query on layers and export the results.	
28.	Should support Geo Server	
29.	Finding Shortest path/Best Route between 2 GPS location. Measure distance and area on a map.	
30.	Supports Geo coding and reverse geo coding.	
31.	View and plot devices, cameras, vehicles, sensors and field personnel based on their GPS coordinates.	
32.	Devices, incidents, events and Status can be monitored and tracked on Maps	
33.	The GIS application shall enable real time information dissemination (Geo-Spatial and Non Geo-Spatial data)	
34.	The GIS application shall enable users to open up a new incident and directly associate it with a map location or to associate an already opened incident with a new map location.	
35.	The system shall also be capable to receive an API call which will open up a new incident and automatically place it on the map using a map location passed via API / Web Services. The relevant map location shall be displayed on the map for as long as the incident is open.	
36.	Customized Dashboards based on widgets and user selected options	
37.	Allow incorporation of “live” map displays from on-line map sources	
38.	Allow user to interactively drill down to specified security zones and sub-zones.	
39.	Allow user to view sensor and related name from map console.	
40.	Allow resources and objects to be tracked on map with geo-referenced trail.	
41.	Visually display an alarming sensor on map	
42.	Visually differentiate sensor alarm severities on map through different colour and icon identifiers	
43.	Immediately view alarm details (including description, video, etc.) and investigate the alarm from the map.	
44.	Allow user to choose camera from map to view live video.	
45.	Allow user to choose camera to play, pause, stop, slide forward or backward, and play recorded video from selected time.	
Dashboard		
46.	Provide alarm summary of each monitoring zone or monitoring area in graphical chart format.	
47.	Open Alert Count by Monitoring Zone / Monitoring Area	
48.	Enable Monitoring Zone or Monitoring area default to Summary view dashboard or to a map when the zone or area is selected	
Video Display Integration		

49.	Shall view live or recorded video from resizable and movable windows/Grid.	
50.	Should have an ability to perform video controls for video systems from workstation	
51.	Shall play, fast-forward, rewind, pause, and specify time to play recorded video	
52.	Shall take a video still image (snapshot) from live or recorded video	
53.	Shall export video for user specified time and duration	
54.	Shall have the capability to move PTZ cameras	
55.	Shall view Video in Video Matrix.	
56.	Shall display in 1x1, 2x2, 3x3 and 4x4 window formats	
57.	Shall enable operator to specify video windows to be displayed in matrix/ Video Wall.	
58.	Shall enable matrix settings to be saved per user	
59.	Shall be able to define view either live or recorded video or both Simultaneously can be displayed in the video matrix window.	
60.	Shall enable video snapshot to be taken and saved from any windowpane in the matrix view	
61.	Shall rotate through multiple video views based on predefined video camera sequence and duration.	
62.	Shall enable the user to pause the rotation of video and resume the video rotation again	
63.	Shall enable times between new video to be adjusted	
64.	Shall enable both live video and recorded video to be played Simultaneously.	
65.	Shall enable alarms to be generated from any video pane	
66.	Shall enable user to only view and control video for which they have been assigned permissions by the administrator	
67.	Shall manually create an alarm from the live or recorded video with specified severity and description	
User Specific & Customizable Dashboard		
68.	Provide alarm summary of each monitoring zone or monitoring area or a Monitoring Site in graphical chart format.	
69.	Open Alert Count by Monitoring Zone / Monitoring Area	
70.	Enable Monitoring Zone or Monitoring area or Monitoring a Site default to Summary view dashboard or to a map when the zone or area is selected.	
71.	Collects major information from other integrated sensors/platforms.	
72.	Multi-displays configurations	
73.	Use of, GIS tool which allows easy map editing for wide area monitoring (Google map, Bing map, OSM map, etc.).	
74.	Should provide tools to assemble personalized dashboard views of information pertinent to incidents, emergencies & operations of command center	

75.	Should provide historical reports, event data & activity log. The reports can be exported to pdf or html or any other format requested by the client.	
76.	Should provide dashboard filtering capabilities that enable end-users to dynamically filter the data in their dashboard based upon criteria, such as region, dates, product, brands, etc. and capability to drill down to the details	
SOP's (Standard Operating Procedures)		
77.	Must have the Ability to define SOPs (Standard Operating Procedures) to effectively handle a security situation.	
78.	Command & Control Centre should provide for authoring and invoking unlimited number of configurable and customizable standard operating procedures through graphical, easy to use tooling interface.	
79.	Standard Operating Procedures should be established, approved sets of actions considered to be the best practices for responding to a situation or carrying out an operation.	
80.	The users should be able to edit the SOP, including adding, editing, or deleting the activities.	
81.	There should be provision for automatically logging the actions, changes, and commentary for the SOP and its activities, so that an electronic record is available for after-action review.	
82.	The SOP Tool should have capability to define the following activity types:	
83.	Manual Activity - An activity that is done manually by the owner and provide details in the description field.	
84.	Automation Activity - An activity that initiates and tracks a particular work order and select a predefined work order from the list.	
85.	If-Then-Else Activity - A conditional activity that allows branching based on specific criteria. Either enter or select values for Then and Else.	
86.	Notification Activity - An activity that displays a notification window that contains an email template for the activity owner to complete and then send an email notification.	
87.	SOP Activity - An activity that launches another standard operating procedure.	
88.	ICCC Platform should provide for authoring and invoking unlimited number of configurable and customizable standard operating procedures through graphical drag and drop design tool preferably using workflow engine	
89.	ICCC platform should be able to pass the SOP step on to operator workstation for the user to respond based on his role and responsibility in the SOP to achieve faster response to the incidences or events.	
90.	Flowchart based creation of SOPs in the web interface.	
91.	Situation Management by defining appropriate actions, messages, and acknowledgement for alerts & events from various devices.	
92.	Define or customize rules (as per customer requirement) between different sensors and devices	

93.	Command & Control Centre should be able to correlate two or more events coming from different subsystems (incoming sensors) based on time, place, custom attribute and provide correlation notifications to the operators based on predefined business and operational rules in the configurable and customizable rule engine.	
94.	Load text, documents, images or other files or forms as instructions	
95.	Options to Forward alarms to other users in the system.	
96.	Incident Management Alarm reports including device status connect and disconnect Status reports.	
97.	Actions taken as part of SOP should be logged in audit trail with date time stamp and operator comments	
98.	Software/ application shall support on-demand or automatic outgoing call initiation through Integration with Contact Center Solution. If Required (Optional)	
Incident Management and Escalation Matrix		
99.	Any alarm or event can be made an incident either manually or automatic	
100.	Defining life cycle of incident from start to close. Assign incident to operators, field personnel.	
101.	Application should show the created incident in the Incident Register panel. Application Incident Register Panel should show the following details of the incident: • Incident ID with GPS Coordinates • Camera Location • Type of Alert • Alert Time • Trigger option to initiate the SOP • Status/ progress of the incident	
102.	The Software/ application shall be able to manually associate an incident to an asset and, vice versa, manually associate an asset to an existing incident.	
103.	Define escalation matrix of incidents. For example, in case of no response from operator, immediate SMS to higher Authorities or alert higher authorities if a device is not fixed within certain time limit.	
104.	Variety of Actions on events and incidents: Minimum Actions Required: SMS, PHONE CALL, EMAIL, SOUND Alarm, PTZ movement, SNMP, Video PoP up, Mobile Phone Push Notifications.	
105.	Should support for sudden critical events and linkage to standard operating procedures automatically without human intervention.	
106.	Should support for multiple incidents with both segregated and/or overlapping management and response	
107.	Should provide facility to capture critical information such as location, name, status, time of the incident and be modifiable in real time by multiple authors with role associated permissions (read, write).	

108.	Incidents should be captured in standard formats to facilitate incident correlation and reporting.	
109.	The system must identify and track status of critical infrastructure / resources and provide a status overview of facilities and systems	
110.	Should provide detailed reports and summary views to multiple users	
Alarm Centre		
111.	Ability to pop-up cameras in alarm screen. A separate screen provided where cameras are opened dynamically based on priority of alarms.	
112.	Screen configurable to view alarms or 1 -40 cameras simultaneously.	
113.	Defining Instruction Message for operator and Acknowledgement for alarms	
114.	Alarm priority and alarm colour based on Severity	
115.	Ability to run macros on an alarm	
116.	Ability to send SNMP messages on events	
Central Control Features		
117.	Centralized as well as distributed architecture for Video and Alarm monitoring of Unlimited cameras and devices spread across multiple sites and places	
118.	Hierarchical and group view of all sites at centralized location.	
119.	Database backup/restore option.	
120.	Alerts in central station or individual sites according to rules.- Email, SMS, Phone call, Sound alert, Pop up	
121.	Connection to Multiple monitors for Live(cameras, Fixed and PTZ), Alarm, GIS Map , Device status	
User Rights		
122.	Create users based on rights and roles.	
123.	Options for configuring rights based on following grouping Administrator, Viewer, Security Guard/Field Personnel	
124.	GUI User Interface control, look & feel configurable according to user role.	
125.	Setting up and configuration of alerts by authorized user	
Mobile Interface		
126.	Any user can login and open application from Mobile phones or ipads.	
127.	Alerts on Mobile phones in form SMS, MMS or push Notification	
128.	Ability to See Videos and Incident Snapshots on Mobile Interface.	
129.	Send Video, Audio and pictures from Mobile Phone to Command Centre	
130.	Update Incident Details and reporting from Mobile Interface.	
Reporting		
131.	Command & Control Centre should provide easy to use user interfaces for operators such as Click to Action, Charting, Hover and Pop Ups, KPIs, Event Filtering, Drill down capability, Event Capture and User Specific Setup	
132.	The solution should generate Customized reports based on the area, sensor type or periodic or any other customer reports as per choice of the administrators	

133.	Automatic and Manual reports generation of system status and export report in pdf, excel or html format.	
134.	Automatic logging of operator actions or response mechanism.	
135.	The reports shall be designed/ developed in hierarchical manner.	
136.	User can be able to view reports from summary to particular incident/ event/ alert/ case details	
137.	Filter details based on location, name, brand and display on dashboard	
138.	Checking of incidents and health status	
139.	Encrypted communication between clients and servers.	
140.	Automatic Report generation and email sending based on Configurable schedule of time, Day wise, Week wise and Month wise	
141.	The software/ application shall support searching through recorded video based on time, date, video source, image region and have the results displayed as both at panel and a series of thumbnail images.	
142.	The Intellectual Property Rights (IPR) of Offered Integrated Command & Control Center (ICCC) Application Platform must not reside in Country sharing Land Border with India. The Integrated Command & Control Center (ICCC) Application Platform Offered should not be Developed/manufactured by an entity in which the majority shareholding of the entity is from a Country sharing a Land Border with India. OEM must provide with a Declaration about the Intellectual Property Rights (IPR) & Source Code Residence/Filing in the respective Country as a Documentary Evidence. The Integrated Command & Control Center (ICCC) Application Platform OEM whose Intellectual Property Rights (IPR) & Source Code residing in India shall be Preferable. The OEM who is Claiming to be Make in India OEM with Local Content greater than 50%, then their Intellectual Property Rights (IPR) & Source Code must Reside in India only. Documentary Evidence to be Provided.	
143.	The Proposed Integrated Command & Control Center (ICCC) Application Platform should have undergone Audit as per OWASP, OWASP Top 10 Web Application Security Risks from STQC. A Security Test Report from STQC to be Submitted by the respective OEM to Substantiate the Proof of the Security testing. The Applications must have already undergone the Security testing/Auditing on or before the Bid Publishing Date. The Security testing must be Submitted as a Documentary Evidence/Proof.	

Annexure-II

Performance Bank Guarantee Template

[Date]

To,

The Managing Director,
H.P. State Electronics Development Corporation Ltd.,
First Floor, IT Bhawan, Mehli, Shimla-171013.

Dear Sir,

1. Whereas M/s _____ (hereinafter called “CONTRACTOR”) has supplied _____ (as per Bill of Material Specified in this Document) as per agreement/supply order No. _____ dated _____ signed between the HPSEDC (hereinafter called “Client”) and them and as per the agreement/supply order the M/s. _____ is supposed to furnish Performance Security for supply of _____ and maintain the same for a period of _____ years.
2. NOW THEREFORE KNOW ALL THE MAN THESE PRESENTS THAT WE, __ (Bank Name) _____ having its Head Office at _____ (hereinafter called “the Bank”) are bound up to the Client in the sum of Rs. _____/- (Rs. _____) only) for which payment will and truly to be made to the said Client, the Bank binds itself, its successors and assignees by these presents.
3. The Bank further undertakes to pay to the purchaser up to the above amount on receipt of its first written demand, without the Client having to substantiate its demand. The Client’s decision in this regard shall be final and shall not be called upon to question under any circumstances. The Bank Guarantee will remain in force up to _____. However, its validity can be got extended before _____ solely at the instance of the Purchaser. This clause shall remain valid notwithstanding anything else contained to the contrary in this document.
4. Our responsibility under this guarantee is restricted to Rs. _____/- (Rupees _____) only and it will remain enforce up to _____ unless a demand in writing is received by the bank on or before _____, all your rights under

the said guarantee shall be forfeited and we shall be released and discharged from all the liabilities thereunder.

5. This guarantee will remain in force up to <date of validity> and any demand in respect thereof should reach the Bank not later than the specified date/dates. However, notwithstanding anything else contained to the contrary in this Guarantee, if the implementing agency does not submit the fresh performance bank guarantee (as per required schedule and amount) till 15 days before expiry of this performance bank guarantee, the Purchaser may either forfeit the PBG or ask the Bank to extend validity of the Bank Guarantee for a further period not exceeding six months. In the latter situation, the Bank shall comply with such a request of extension.
6. Sealed with the Common Seal of the said Bank this _____ day of _____, 2026. In witness whereof the Bank, through its authorized officer, has set its hand and stamp on this _____ day of _____, 2026 for Bank _____

Witness

Signature

Name

M/s. _____ (complete address)

Note: This guarantee will attract stamp duty as a security bond.

A duly certified copy of the requisite authority conferred on the official/s to execute the Guarantee on behalf of the bank should be annexed to this guarantee for verification and retention thereof as documentary evidence.

Latest instructions for bidders:

- I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.
- II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- III. "Bidder from a country which shares a land border with India" for the purpose of this Order means: -
 - a. An entity incorporated, established, or registered in such a country; or
 - b. A subsidiary of an entity incorporated, established, or registered in such a country; or
 - c. An entity substantially controlled through entities incorporated, established, or registered in such a country; or
 - d. An entity whose beneficial owner is situated in such a country; or
 - e. An Indian (or other) agent of such an entity; or
 - f. A natural person who is a citizen of such a country; or
 - g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above
- IV. The beneficial owner for the purpose of (III) above will be as under:
 1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

Explanation—

- a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent. of shares or capital or profits of the company.
- b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements.

2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership.
 3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals.
 4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official.
 5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
- V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.
- VI. The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

The Bidder has to provide following declarations (duly signed and stamped):

Declaration 1 of Latest instructions to bidders

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I hereby certify that this bidder is not from such a country and is eligible to be considered."

Declaration 2 of Latest instructions to bidders

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India. I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]

Declaration 3 of Latest instructions to bidders

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I certify that this bidder is not from such a country or if from such a country, has been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached]"

In case bidder is Himachal based company/ firm/ entity then the bidder should submit a self-declaration certificate regarding above mentioned Declaration 1, 2 and 3.

Note: Interested bidder may refer to Office Memorandum (F. No. 6/18/2019-PPD) dated 23.07.2020 of Department of Expenditure, Ministry of Finance, Govt. of India for further details and all the requirements will be in accordance with this memorandum.